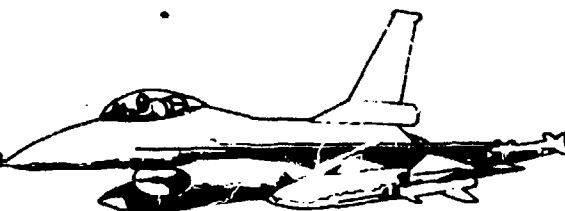
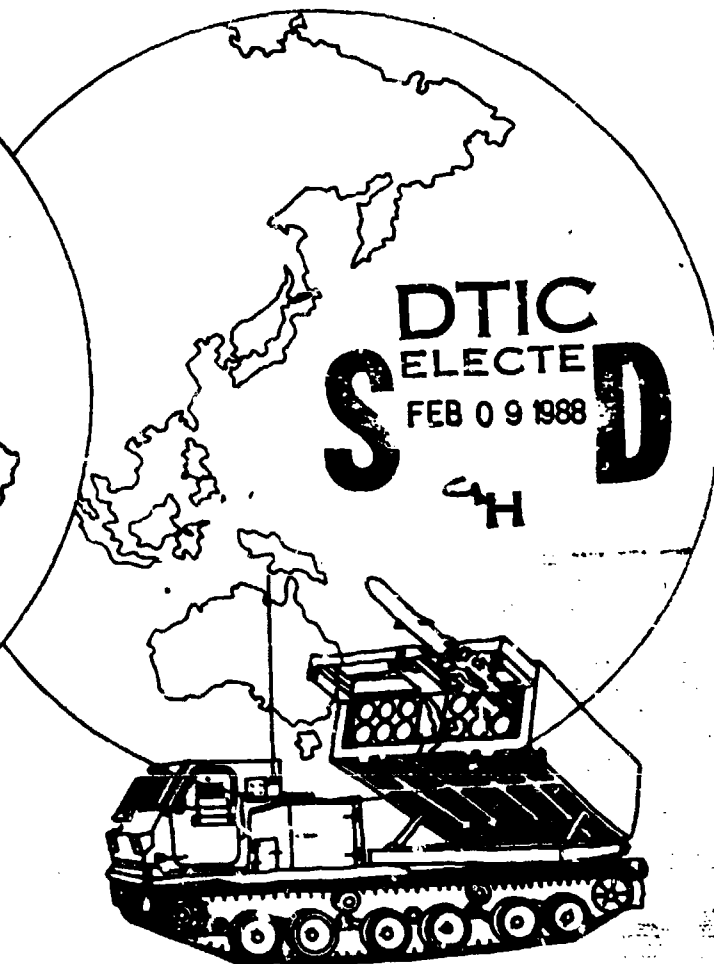
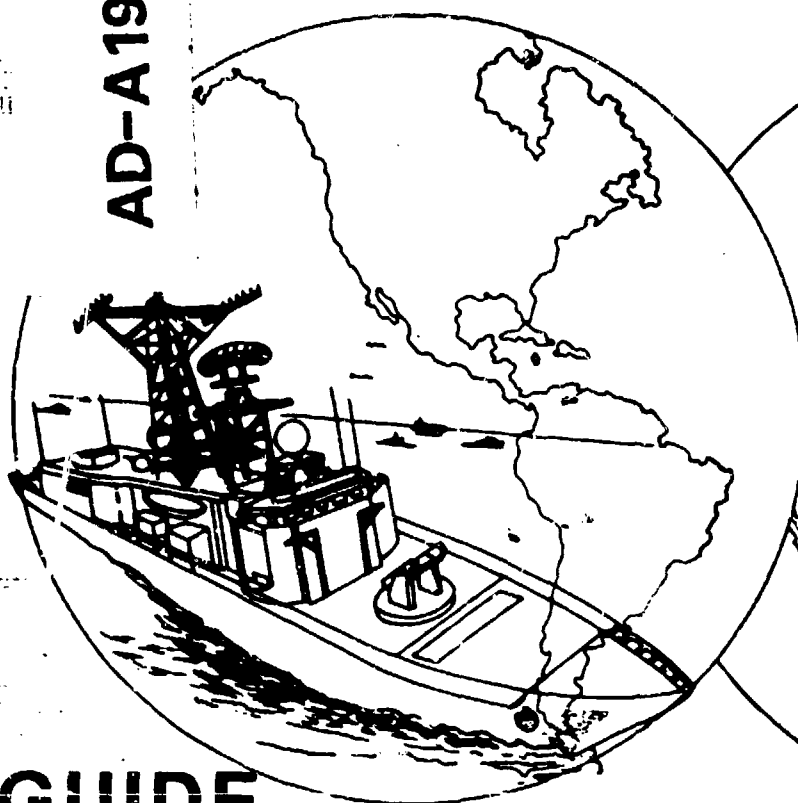


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# GUIDE FOR THE MANAGEMENT OF MULTINATIONAL PROGRAMS

DEFENSE SYSTEMS MANAGEMENT COLLEGE  
FORT BELVOIR, VIRGINIA



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# REPORT DOCUMENTATION PAGE

Form Approved  
GSA No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT "A" Approved for Public release; distribution unlimited	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		7a. NAME OF MONITORING ORGANIZATION Defense Systems Management College	
6a. NAME OF PERFORMING ORGANIZATION Advanced Technology, Inc.	6b. OFFICE SYMBOL (If applicable)	7b. ADDRESS (City, State, and ZIP Code) Fort Belvoir, VA 22060-5426	
6c. ADDRESS (City, State, and ZIP Code) 2121 Crystal Drive Arlington, VA 22202	8a. NAME OF FUNDING/SPONSORING ORGANIZATION Defense Systems Management College	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER MDA 903-96-C-0099	
6d. ADDRESS (City, State, and ZIP Code) Defense Systems Management College Fort Belvoir, VA 22060-5426	8b. OFFICE SYMBOL (If applicable) DSMC-SE-L	10. SOURCE OF FUNDING NUMBERS	
11. TITLE (Include Security Classification) Guide for the Management of Multinational Programs		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
12. PERSONAL AUTHOR(S) HARR, Francis C.; MCGOVERN, William M.; SNYDER, Terry W.; MCCLEAVE, Robert E.			
13a. TYPE OF REPORT FINAL	13b. TIME COVERED FROM 1/7/86 TO 11/5/87	14. DATE OF REPORT (Year, Month, Day) 1987 May 11	15. PAGE COUNT 578
16. SUPPLEMENTARY NOTATION Prepared in cooperation with OSD, all 3 services, and selected foreign embassies.			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
		International Acquisition; Program Management; Rationalization, Standardization, and Interoperability; Program Management; Co-development; Coproduction; NATO; Technology Transfer; Intelligence Property; Foreign Weapons Evaluation; Logistics; Contracting; Office of Interference; etc.	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) The guide was published with the approval of DSMC. Its goal is to provide program managers, who have had experience with domestic programs, background and substantive information on the many special and complex features of multinational programs. The guide stresses the need for all managers to consider early in their programs the important objectives of international elements cooperation.			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Christopher U. Nygren		22b. TELEPHONE (Include Area Code) (703) 664-6818	22c. OFFICE SYMBOL DSMC-SE-L

# MANAGEMENT OF MULTINATIONAL PROGRAMS

A HANDBOOK FOR MANAGERS  
ENTERING THE WORLD OF  
INTERNATIONAL ACQUISITION

SECOND EDITION

1987



Accession For	
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DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
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Distribution/	
Availability Codes	
Dist	Avail and/or Special
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THE DEFENSE SYSTEMS MANAGEMENT COLLEGE  
FORT BELVOIR, VIRGINIA

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## PREFACE

The emphasis on armaments cooperation with our allies has become an increasingly important element in weapons system acquisition management. It has been receiving continued emphasis from Congress as well as the Department of Defense (DoD). The impetus comes from the ever increasing cost and technical complexity of development and acquisition programs. When several nations undertake duplicative acquisition efforts there is a considerable waste of resources, and if carried through to deployment, the end result is little if any standardization and interoperability. In contrast, armaments cooperation often accrues significant military, economic, and political benefits.

This Guide is intended primarily for use in the courses at the Defense Systems Management College (DSMC), and secondarily as a desk reference document for program and project management personnel. The Guide is written for current and potential DoD Program Managers (PM), who have familiarity with the basic concepts, terms, and definitions employed in domestic programs. It is intended to help the PM deal with the multifaceted features of an international program by relating the above elements to those of a national program. It should be of assistance to personnel involved in international acquisitions both in this country and overseas. PMs must, of course, rely on official documentation for detailed decision-making and administration.

This Guide was revised by Advanced Technology, Inc. under contract MDA 903-86-C-0099, directed by DSMC. The variety of topics covered in this document attest to the complexity of the subject area. It is divided into 18 chapters covering all of the topical areas found in an international acquisition program.

DSMC is the controlling agency for this Guide.

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## **CHAPTER 1 INTRODUCTION**

### **INTRODUCTION**

For more than 35 years, the North Atlantic alliance has sought to produce collective conventional forces for defense of Europe through armaments cooperation. As early as 1950, the North Atlantic Command agreed that all unnecessary duplication of industrial effort must be eliminated.

It never has been. Today, in Western Europe, and the United States (US), there is too much duplication rather than constructive competition, as the following points, contained in an article by the US Permanent Representative to the North Atlantic Council (NAC)--Ambassador David M. Abshire, indicates:

- o Eleven firms in seven alliance countries are building antitank weapons.
- o Eighteen firms in seven countries are designing and producing ground-to-air weapons.
- o Sixteen companies in seven countries are working on air-to-ground weapons.

This kind of duplication is a waste of resources and contributes to a diminution of allied military capability.

The overall goal of our international coordination and technology transfer programs is to develop, field, and support--through equitable burdensharing--the most effective and interoperable conventional military equipment for our forces and those of our allies and friends. Our armaments cooperation activities focus on North Atlantic Treaty Organization (NATO) cooperation first, but also involve many other allied and friendly countries with whom we share security interests.

### **PURPOSE OF THIS GUIDE**

Standardization and interoperability as discussed in DoD Directive (DoDD) 2010.6 was reinforced in a June 1985 memorandum from the Secretary of Defense. The concept has been subsequently refined in a variety of newer initiatives primarily developed within the NATO context. These objectives are also being pursued in other United States alliance situations, such as the ABCA

agreements among America, Great Britain, Canada, and Australia, as well as with other friendly nations such as Japan, Israel, and the Republic of Korea (ROK). In each case of the last three countries we are cooperating in a bilateral manner.

The single most important person in facilitating standardization and interoperability with our allies is the Program Manager (PM), who is the Services' agent in managing the acquisition process. The purpose of this Guide is to assist the PM in managing a program in consonance with armaments collaboration objectives from inception through follow-on logistic support. The Guide stresses the importance of considering each new program as having potential international application, even though the decision to go international has not yet been made.

It is addressed to the experienced PM and presupposes the basic skills and experience necessary to manage a domestic program. Political, legal, economic, and technical problems that have traditionally arisen during international programs are identified, and solutions that have proved successful in the past are included, where possible. Service-specific approaches are avoided; the focus is on information that previous PMs felt would have been helpful had it been available at the time. It is hoped that this Guide will enable the PM to avoid some of the pitfalls of the past, and increase the military effectiveness of NATO and other US alliances by enabling armaments collaboration efforts to succeed.

#### THE INTERNATIONAL ARMAMENTS COLLABORATION ROAD

To better understand the meaning of the term requires a brief overview that describes the Department of Defense (DoD) involvement in international acquisition. The events along the international acquisition highway that are discussed in the following bullets are treated in a brief manner; however, they will be expanded upon, when required, in the subsequent chapters.

##### THE 1970s

- o Foreign military sales and grant aid represented a large portion of US involvement in the arena through the 1970s.
- o A triad of NATO arms cooperation initiatives involving Memoranda of Understanding (MOU), coproduction or dual production and Family of Weapons concepts began under auspices of the NATO Rationalization, Standardization,

and Interoperability (RSI) program as defined in DoDD 2010.6.

- o The Culver-Nunn Amendment in 1977 declared, among other items, that it is the statutory policy of the US that our weapons should be standardized, or at least interoperable, with those of our NATO allies.
- o Various general and reciprocal MOUs were developed with NATO allies, as well as Israel and Egypt. A significant reason for developing these MOUs was to allow waiver of the Buy American Act.
- o Multinational programs with NATO, as well as other individual countries, relied heavily on coproduction and licensed production. The offset issue developed in conjunction with the economic strains placed on the various countries' economies resulting from weapons procurement.

#### THE 1980s

- o The Trade Agreements Act of 1979 opened the US Government (USG) procurement market to international competition by signatory countries who likewise agreed to open their procurements. This essentially closed the US market to nonsignatory nations. In the US, there would no longer be preferential treatment of domestic offers on DoD procurements.
- o Emphasis began to shift in 1981 from the government-to-government approach underlying the above events to an industry-to-industry approach whenever possible.
- o In 1982, the Roth-Glenn-Nunn Amendment called for the heads of NATO governments to agree on a strategy and a structure for improving alliance arms cooperation, as well as policies that ended wasteful duplication and shared more equitably the financial burdens and economic benefits of NATO defense. The amendment desired the administration to go much further than earlier statements of intent in setting up a formally agreed framework for cooperation.
- o In 1983, a Defense Science Board (DSB) study (sometimes referred to as the Currie Report) was conducted to examine international industry-to-industry cooperation. The DSB generally concluded that many trends and im-

pediments exist that will inhibit such cooperation. Also strong, specific government policy decisions and involvement of industry can reverse these trends.

- o In 1983, a DoD task group on International Coproduction/Industrial Participation Agreements (sometimes referred to as the Denoon Report) was chartered to address the issues confronting DoD on international arms collaboration programs. A host of recommendations resulted on multiple subjects ranging from offsets and DoD organizational structure to technology transfer and trade issues.
- o Various initiatives have been undertaken by the US permanent representative to the NAC, the Under Secretary of Defense for Research and Engineering (USDRE), and the Secretary of Defense to emphasize armaments cooperation.
- o Recent cooperative legislation known as the Nunn and Quayle Amendments has been enacted by Congress. The Nunn Amendment is intended to obtain more results for a given level of Research and Development (R&D) funding through pooling of resources with other NATO nations. The Quayle Amendment is essentially an extension of previous authorities for cooperative R&D to permit the US to enter into truly cooperative production arrangements with NATO allies.

In reality, international armaments cooperation/collaboration is an all-encompassing term covering all forms, other than outright sales, of international arms programs that result from government-to-government agreements, or from government approval of export licenses. The ultimate aim of these efforts is to achieve the goals of standardization and interoperability. It is useful to point out the differences in terms as defined in the applicable Directive. Standardization is defined as:

"the process by which member nations of NATO achieve the closest practicable cooperation among forces, the most efficient use of research, development and production resources, and agree to adopt on the widest possible basis the use of: a) common or compatible operational, administrative, and logistics procedures; b) common or compatible technical procedures and criteria; c) common or compatible/interchangeable supplies, components, weapons, or equipment; and d) common or compatible tactical doctrine with corresponding organizational compatibility."

Interoperability is defined as:

"the ability of systems, units, or forces to provide services to and accept services from other systems, units or forces and to use the services so exchanged to enable them to operate effectively together."

#### ORGANIZATIONS RESPONSIBLE FOR ARMAMENTS COLLABORATION

There are many organizations that have a role to play in ensuring that the above goals become realities. Responsibilities are assigned to a variety of Office of the Secretary of Defense (OSD) organizations and the Services. Further, various alliance organizational elements are involved in the process. In addition, the State Department, the Treasury Department, the Office of Federal Procurement Policy, and other Federal agencies may have an impact on an international program. When applicable, the roles of these agencies and the impact that they have on any specific procurement will be described in the appropriate chapters.

#### IMPORTANCE OF ARMAMENTS COLLABORATION

The importance of armaments collaboration cannot be overemphasized. The impetus for such collaboration was highlighted as far back as 1978 in a DSB study on "Achieving Improved NATO Effectiveness through Armaments Collaboration." Since that time, additional reasons for achieving mutual cooperation have been identified. These are to:

- o Increase the capacity of coalition deterrence and defense.
- o Improve the burdensharing with wealthy security partner nations, thus increasing the efficiency of resources.
- o Raise the nuclear threshold by improving conventional forces.
- o Improve the production and mobilization base and quick-reaction capability of security partner industries.
- o Aid poorer security partner nations.
- o Allow a reduction in the need for US combat involvement in security partner defense.

The Soviet and Warsaw Pact buildup has continued at a steady

rate. This buildup, combined with rough parity in nuclear forces, has increased dependence of NATO upon conventional forces for defense and deterrence. The effort required to develop standardized or at least interoperable equipment, systems, and procedures will certainly increase the alliance's response capability. Stronger conventional forces will result, thus decreasing the likelihood of a nuclear exchange being required with all of its attendant ramifications.

The rising costs of newer, complex weapons systems and limited defense budgets have resulted in a decrease in the number of overall systems acquired. Greater burdensharing through emphasis on standardization efforts should help reduce the rising real R&D costs per unit and provide more opportunities for economies of scale in production, thus benefitting the poorer as well as the wealthier nations alike by allowing more systems to be produced. A more efficient use of resources applied to development, production, and support should occur when armaments collaboration is diligently pursued. With greater standardization comes the attendant benefit of having an industrial base that can respond to a variety of nations' requirements, versus the narrower sphere of a single nation.

#### RELEVANT UNITED STATES POLICY TENETS TOWARD ARMAMENTS COLLABORATION

Several tenets of US policy, as outlined in the Denoon Report, are felt to be relevant in the field of armaments collaboration. These are as follows:

- o With all friendly nations--to encourage the strengthening of their defense forces; to improve our ties and influence with them; and to enhance standardization and interoperability with US forces.
- o Within NATO and with Japan, New Zealand, and Australia--to implement standardization and interoperability to the maximum extent feasible.
- o Within NATO--to maintain a technologically advanced and economically viable defense industrial base on both sides of the Atlantic.
- o With selected nations--to assist them in strengthening their defense industrial base or in improving their general economy by means of collaborative defense programs.
- o To do our part to ensure increased, two-way defense



trade and aggressive, open, collaborative development activities.

- o To transfer US arms judiciously with effective USG control and direction, to further US interests.
- o To transfer sensitive or advanced technology only after careful scrutiny.

These basic aspects of US policy are felt to guide decision makers involved in armaments collaboration.

#### US GOALS FOR ARMAMENTS COLLABORATION

The goals or objectives of our major arms cooperative efforts in a foreign nation/region/alliance can be succinctly stated as a need to achieve the following:

- o Deployment and support of common--or at least inter-operable--equipment with allies.
- o Incentives for the allies to make greater investment in modern conventional military equipments.
- o Economies of scale afforded by coordinated research, development, production and logistic support programs.
- o DoD access to, use of, and protection of the best technology developed by our allies, and comparable allied access to, use of, and protection of the best US technology, thereby avoiding unnecessary duplication of developments.

The Secretary of Defense in a 1985 Memorandum to the Services specifically endorsed the above objectives as needed to achieve NATO armaments cooperation.

To accomplish these objectives, a variety of programs and initiatives have been established. These major approaches will be discussed more fully in Chapter 2.

#### SIGNIFICANCE OF ARMAMENTS COLLABORATION

Although many initiatives have been started, they, in reality, are only the "how" to get to the objective, which is to increase the military effectiveness of the various alliances. The interoperability of systems and equipments is of paramount importance. A program manager must take the above goals into

account early in his program if he can be reasonably sure it will become an international effort.

There are a variety of methods and techniques for internationalizing a program. These methods range from the US adopting a foreign system to a friendly foreign nation adopting a US system. In between these alternatives are codevelopment, coproduction, dual production, licensed production, and acquisition of components, for example, that contribute to interoperability. This Guide should answer the international program manager's need by facilitating his transition from the domestic scene to the international arena.

### ORGANIZATION OF THE GUIDE

The Guide (See Figure 1-1) contains 18 chapters and a number of related appendices, including a bibliography and a glossary. After this introductory chapter, the next four chapters primarily deal with the broad planning and environment framework needed to address armaments collaboration.

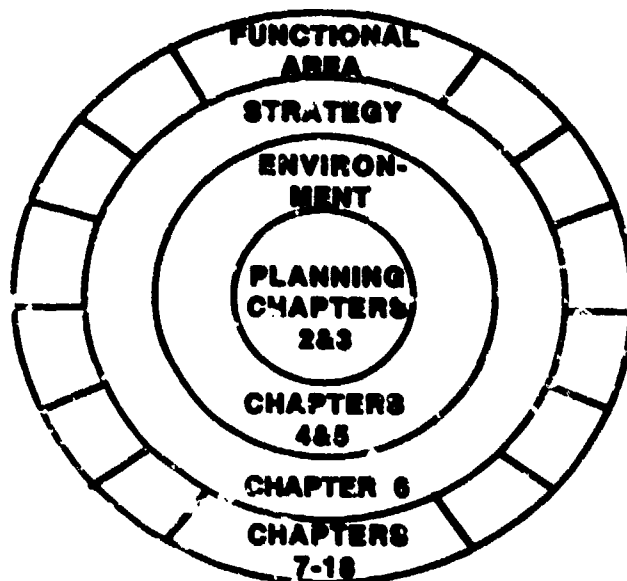


FIGURE 1-1. CHAPTER STRUCTURE

Chapter 6 is most important because it deals with the acquisition strategy for conducting international weapon system programs. This strategy encompasses broad approaches to technology application, contracting, business and financial management, logistics, modes of acquisition, and organizational structure.

**This chapter thus describes a framework for tying together the subsequent functional activity required for a well-conducted program.**

**The next 12 chapters address the functional areas in some detail describing USG, and especially DoD, policies and procedures for such functions as organizing program management offices, contract management, utilization of intellectual property, technology transfer, financial management, foreign weapons evaluation, cooperation in manufacturing and production, logistics, controlling the disclosure of military information, facilitation of necessary communication and information access and offset/countertrade. Many examples of past and ongoing international programs are presented to make the discussion more concrete.**

**The international environment is a dynamic and challenging workplace. This Guide, an educational tool, is designed to acquaint you with this environment. You, the individual Program Manager, face the challenge of remaining current.**

## CHAPTER 2 MAJOR INTERNATIONAL ARMS COLLABORATION APPROACHES

### INTRODUCTION

United States (US) interests in, and the transatlantic dialogue on, North Atlantic Treaty Organization (NATO) armaments collaboration could be said to have begun in earnest in August 1974 with the passage and signing of the Fiscal Year (FY) 1975 Department of Defense (DoD) Authorization Act, containing the first of a series of amendments expressing Congressional interest in NATO standardization. Between August 1974 and January 1977, the United States and NATO allies moved cautiously on both sides of the Atlantic to develop their respective policies toward increased weapons cooperation. In the United States, Congress added the Culver-Nunn Amendment to the DoD Authorization Act for FY 1977 (PL 94-301). The latter provided for the waiver of the Buy American Act in the larger sense of NATO standardization, expressing the sense of the Congress that "greater reliance on licensing and coproduction agreements" within NATO would facilitate standardization, and "encourage the governments of Europe to accelerate their present efforts to achieve European armaments collaboration among all members of the alliance" to obtain more realistic cooperation in defense procurement on the basis of a "two-way street" concept.

Early in 1975, DoD initiated attempts to coordinate efforts in support of NATO rationalization and standardization. By the end of 1975, the Office of the Secretary of Defense (OSD) had written policy directives and guidance to the Services to support NATO standardization efforts. During 1976, DoD sponsored contract studies on NATO standardization and licensing policy and on NATO standardization and technology transfer. The US also encouraged the NATO AC/94 Working Group on Intellectual Property to undertake an alliance-wide review of national licensing policies and obstacles to coproduction.

In Europe, the Eurogroup Ministers in November 1975 called for greater efforts to rationalize European armaments planning and collaboration and laid provisional plans for creation of a staff, or secretariat, that could collect and collate information on European research and development and procurement programs to facilitate weapons cooperation within Europe. Following the NATO ministerial meeting of December 1975, an ad hoc committee on equipment interoperability was created, and the Eurogroup initiative of November gave way to the creation of the Independent European Programme Group (IEPG) in February 1976. The IEPG has

the distinct advantage, in comparison to Eurogroup, of including France as an active participant in European weapons cooperation at the political level. The Assembly of the Western European Union (WEU) also contributed to encouraging European rationalization by sponsoring a symposium on European armaments policy in Paris during March of 1977.

DoD efforts to implement the Culver-Nunn Amendment and thus bring these trends to fruition culminated in DoD Directive (DoDD) 2010.6, which emphasizes NATO standardization. This directive, issued in March 1980, still forms a significant basis for armaments cooperation. Recent Secretary of Defense initiatives have called for continued emphasis on the basic tenets of this directive.

#### RECENT INITIATIVES/LEGISLATION

Armaments collaboration is based on the above foundation. A plethora of initiatives within Europe and the United States, as well as a variety of legislative actions, has formed the current view of such cooperation. An understanding of these major events is necessary in order to place the current approaches in the proper context.

The triad approach discussed in DoDD 2010.6 was the major concept employed in the early 1980s. During this time period a sense developed that government-to-government armaments deals had gone too far without the involvement of industry or Congress. In 1983, the Nunn-Roth-Glenn Amendment to the FY 83 Defense Appropriations Bill (PL 97-252) was enacted. The amendment expressed the sense of Congress that NATO nations should "coordinate more effectively their defense efforts and resources to create, at acceptable costs, a credible collective conventional force for the defense of the North Atlantic Treaty area," and "establish a cooperative defense industrial effort within Western Europe and North America that would increase the efficiency and effectiveness of NATO expenditures by providing a larger production base while eliminating unnecessary duplication of defense industrial efforts," in order "to share more equitably and efficiently the financial burdens, as well as the economic benefits (including jobs, technology and trade) of NATO defense." The amendment is the foundation of DoD's reciprocal Memorandum of Understanding (MOU) program to be discussed later in this chapter.

During this time period, DoD initiatives were being pursued to further cooperative efforts. A Defense Science Board (DSB) study (Phase I), headed by Dr. Malcolm R. Currie, was conducted to provide "how to" advice in response to the 1981 OSD decision to emphasize industry-to-industry cooperation and the Nunn-Roth-

Glenn Amendment. The study concluded that there are several prerequisites for achieving a substantial increase in industrial cooperation. The study indicated that the European allies must be persuaded to increase high quality investments in key military-oriented technologies in order for there to be a better balance and more effective technological partnership. The study also suggested that perhaps the US should begin thinking in terms of a "two-way street in technology" as the philosophical underpinning for industrial cooperation, rather than continuing to take a primarily economic view of the "two-way street." This, of course, presupposes that there would be a practical comprehensive resolution of technology transfer issues. In addition, it is essential that cooperative projects make good business sense to the industries on both sides of the Atlantic.

The Currie group indicated that a substantial transatlantic infrastructure for cooperation had developed in the late 1970s and early 1980s. The Secretary of Defense proposed that Emerging Technologies (ET) could become a vehicle for enhancing our cooperation and increasing the momentum of industrial cooperative efforts. The ET initiative was seen as a means of applying the West's strength (its technology) to counter the quantitative advantage held by the East. Microelectronics, machine intelligence, advanced communications, computational technology, and sensors composed some of the ET elements that could have a force multiplier effect. The US offered its allies opportunities for cooperation on high technology, high military payoff weapon systems in a variety of mission areas. The IEPG responded in a constructive manner to the initiative. In the NATO Conference of National Armaments Directors (CNAD), the allies agreed to a list of 16 ET projects to be dealt with on a priority basis.

During the same time period a second DoD task group was chartered (sometimes called the Denoon Report) to address International Coproduction/Industrial Participation Agreements. This group examined a variety of issues and made the following major recommendations:

- o The DoD should continue to participate in arms collaboration efforts as they can contribute to national security objectives; however, it must be selective in its participation and ensure that US interests are actually served.
- o US industry should be involved at each stage of project development.
- o The DoD should continue refusing to guarantee offsets; and industry's offset offers should be reviewed as they impact on the DoD and national security.

- o Decisions affecting pricing of programs (such as waiver of US Government (USG) charges and "Buy America") should be more consistent and should reflect overall national security interests.
- o DoD procedures, such as procurement practices, should be modified to take cognizance of international industrial bidding.
- o Technology transfer considerations should be integrated into the collaborative program process.
- o DoD needs a new procedure to evaluate key programs and give special attention to those proposed collaborative deals that have major ramifications.
- o The OSD/Service organizational review, coordination, and negotiation of programs must be clarified and streamlined.

The US permanent representative on the North Atlantic Council (NAC) developed a proposed resources strategy whose goal is to improve NATO's conventional defense effectiveness, and to do so through obtaining improved output per monetary unit invested. The components of this strategy included:

- o A conceptual military framework--a central concept of what must be done
- o A dynamic estimate of the military balance
- o A determination of critical deficiencies in specific terms
- o Better planning through goals and priorities
- o Effective technology management--harmonized technology protection and sharing
- o Armaments cooperation
- o An understanding of the relationship between economics and security.

In concert with the above efforts were various allied recognitions of the problems in cooperative development programs. As an example, the West German Defense Minister recognized a need to examine various aspects of the above strategy. Ultimately, the

NATO Defense Ministers charged the NATO Military Committee with examining selected components of the above approach. At the same time, the ministers recognized financial and other restrictions impinging on NATO's ability to generate necessary conventional improvements. All ministers realized that such an effort required considerable improvement in arms cooperation.

In 1984, the Secretary of Defense directed the Deputy Secretary of Defense to chair a DoD Steering Group for Armaments Cooperation. This group includes OSD principals and the Research Development, and Acquisition Service Secretaries. The group has discussed a variety of subjects including:

- o The emerging technologies
- o The industry-to-industry (Currie) report
- o Cooperative logistics programs
- o Factors inhibiting cooperation
- o Policy and options toward major European development efforts

This forum is a major factor in the effort to make defense spending more efficient by eliminating duplication now prevalent in the Research and Development (R&D) and production of NATO armaments.

Also in 1984, the DSB concluded a second major industry-to-industry study (Phase II) whose objective was to derive programmatic recommendations on industrial cooperation with Japan, especially with respect to technological cooperation. In contrast to Europe, where there have been established policies/relationships, the study group's effort to look to Japan could be based only on evolving policies and relationships. In this regard the DSB made the following recommendations:

- o Undertake to broaden, judiciously and reciprocally, our technology cooperation with Japan based on the firm requirement of a mutually beneficial two-way flow of technology.
- o Encourage industry-to-industry initiatives for technology cooperation, but ensure they serve the national interest.
- o Undertake codevelopment of two significant defense subsystems to gain experience on impediments and potential for codevelopment.



- o Define intergovernmental and government-industry roles and procedures for identifying, initiating, and conducting projects involving technological cooperation.
- o Initiate a means for improved understanding of the status and momentum of Japanese technologies.
- o Maintain surveillance over the progress of the US/Japanese technological cooperation.
- o Perform a high-priority, comprehensive interagency study on overall trade/defense/economic trade-off and strategy with respect to Japan to provide a broader policy context for technological cooperation.
- o Encourage the expansion of mission area analyses to develop specific requirements that can be translated into subsystem and technological areas of cooperation.
- o Provide guidance for US and Japanese industry concerning additional US technologies that could be released to Japan.

Within Europe, various non-NATO organizations have been examining armaments cooperation. The IEPG's explicit goal is to strengthen Western European defense industries to enable them to produce the required technologically advanced weapon systems in a competitive way. The IEPG has initiated various actions as follows:

- o Conducted studies to harmonize national equipment requirements and schedules for acquisition.
- o Identified some 30 technological areas for possible cooperation, which would take the form of Cooperative Technology Projects (CTPs). Five of the 30 projects are beyond the initial stages of investigation.
- o Examination of approaches to enhance the competitiveness of the European armaments industry.

The Western European Union and the Subcommittee on Defense Cooperation of the North Atlantic Assembly, among others, are forums where the issues of greater European cooperation are assessed by those who must decide how national resources will be used. The NATO Industrial Advisory Group (NIAG) was officially created in the late 1960s to serve as a counterpart to the Army, Air Force, and Navy Advisory Groups. The NIAG was conceived as a way of bringing the views of industry to the NATO authorities on armaments matters in which industry plays a key role. The Currie

Report recommended that NIAG be empowered to take on a more active role in NATO program decisions, thus promoting industrial cooperation from the top.

In 1985, the NATO CNAD conducted a study on "The Enhancement of Armaments Cooperation between the Allies" under the Conventional Defense Improvement Initiative (CDI). Some nine critical deficiencies were identified that needed to be corrected. Improvements in these conventional deficiencies would raise the nuclear threshold. Armaments cooperation was viewed as a fundamental element needing to be accomplished in order to meet these recognized and agreed upon deficiencies.

In June 1985, the Secretary of Defense published a highly significant memorandum, which called for the Services to take the following steps:

- o First, seek out and use every opportunity to inform the Congress of the unequivocal military importance of common and integrated military equipments within the alliance.
- o Second, ensure that existing and new acquisition programs for armaments to be used by NATO meet the criteria of the four objectives cited in the basic letter. (These objectives are cited in Chapter 1 of this Guide.)
- o Third, ensure adequate protection for shared technology in cooperative research, development, production, and acquisition of defense-related equipment.
- o Fourth, in establishing operational and design requirements for future major weapons systems, the Services will consult with their European counterparts. Cooperative joint research, development, production, and acquisition programs will be thoroughly explored, particularly in cases in which common operational and design requirements can be established; mission effectiveness would be maintained at an acceptable level; technology sharing, on a bilateral basis, would provide near-equal benefits to cooperating nations; economies of scale and/or avoidance of duplicative costs are possible; and standardization and interoperability of NATO forces and equipment would be enhanced.
- o Fifth, the Services should establish and give management attention to nondevelopment item programs in order to provide an expeditious means of filling material

needs through acquisition of existing equipment from other alliance nations. Competition advocates will consider NATO industry sources and equipment along with those of the North American industrial base before approving acquisition strategies or justifications for other than full and open competition for individual contracts.

- o Sixth, the Services should review and revitalize the responsibilities and procedures of DoDD 2010.6, "Standardization and Interoperability of Weapons Systems and Equipments within the North Atlantic Treaty Organization."
- o Seventh, each Service should establish an education program for their personnel in order to develop and maintain appreciation for the significance of, and individual role in, furthering of alliance collective security through armaments cooperation.

#### CURRENT INITIATIVES/LEGISLATION

Congressional action to facilitate armaments collaboration took on new perspectives in the FY 86 DoD Authorization Act (PL 99-145). The Nunn and Quayle Amendments, as these became known in the acquisition community, will greatly enhance such cooperation. The Nunn Amendment noted that NATO countries spend more on defense than the Warsaw Pact, but field less equipment. To enhance cooperation, Congress authorized and appropriated \$200 million in equal amounts to the Services and Defense Agencies for cooperative R&D. In addition, it authorized \$50 million for side-by-side comparison testing of comparable items from the US and NATO nations. The intent of the amendment is to obtain more results for a given level of R&D funding through pooling of resources with other NATO nations.

The Quayle Amendment redefines Section 27 of the Arms Export Control Act (AECA). It allows entry into a cooperative project agreement with NATO or with one or more of its members. It applies only to cooperative projects jointly managed and described in a written agreement where:

- o One or more of the other participants equitably share with the United States the costs of research on, and development, testing, evaluation, or joint production (including follow-on support) of, certain defense articles;
- o For concurrent production in the United States and in

another member country of a defense article jointly developed in accordance with the above; or for procurement by the United States of a defense article or defense service from another member country.

This amendment allows the waiver of any provision of law, except the AECA, in formulating and regulating contracts. It also permits the US to enter into agreements that feature designation of specific subcontractors or contracting on behalf of the US by a partner nation. Congress extended this legislation in the FY 87 DoD Authorization Act to non-NATO allies.

The above events, both within the USG and in allied nations, depicts a considerable level of activity. Many of the new directions/initiatives have not been synthesized in either existing or new DoD Directives and/or Instructions (DoDIs). Consequently, DoD is in the process of reviewing/updating various DoDDs/DoDIs that pertain to the international acquisition arena.

#### RATIONALE FOR ARMS COLLABORATION OBJECTIVES

The general rationale for US support of these objectives/goals has been presented in laws passed by Congress as discussed above. These laws have a long history, insofar as Europe is concerned. The relationship with Japan regarding cooperation in defense equipment is tied to the Mutual Defense Security Assistance Agreement of 1954. This was developed primarily to establish a legal basis for the US to furnish military equipment and technology to Japan. Cooperation in defense technology was conducted through various exchange agreements; however, it was not until January 1983 when Prime Minister Nakasone allowed Japan to export military technology to the US only.

It is also the sense of Congress that weapon systems being developed wholly or primarily for employment in the NATO theater shall conform to a common NATO requirement in order to proceed toward joint doctrine and planning, and to facilitate maximum feasible standardization and interoperability of equipment. A common NATO requirement shall be understood to include a common definition of the military threat to the NATO countries.

Since countries tend to view the nature of the threat and the means for responding to the threat differently, the process of requirements definition involves reconciliation and compromise. If this process can be performed successfully, cooperative arrangements can be worked out that permit use of such approaches as codevelopment, coproduction, and licensing as an example. Such cooperative arrangements will then facilitate the achieve-

ment of the objectives of greater standardization and interoperability of weapon systems and other common military activities.

The subsequent discussion will describe the major approaches being pursued in DoD to accomplish the established goals. A number of examples are provided for each category. In addition, a number of topics closely related to the subject of international agreements are presented.

### ARMS COLLABORATION APPROACHES

Various modes of cooperation have been employed over the last 20 years. The current categorization of initiatives, as shown in Figure 2-1, combines selected elements from the past as well as newer categories presently being explored by DoD. They are as follows:

- o CODEVELOPMENT

This is a program based on a government-to-government agreement in which the industries of two or more countries take part in the development of a weapon system or item of equipment for which participating countries share the cost.

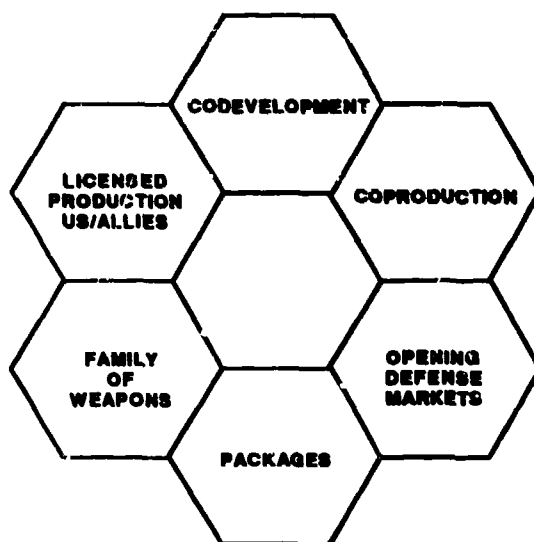


FIGURE 2-1. ARMAMENTS COLLABORATION APPROACHES

- o COPRODUCTION

This is a program based on a government-to-government agreement in which the industries of two or more countries take part in the production of a weapon system or

item of equipment that is being acquired by all of them.

o OPENING DEFENSE MARKETS

A reciprocal MOU forms the basis of this approach. In essence, each country looks at its requirements and products to satisfy their requirements. If an acceptable match is found between requirement and equipment, then the needed item is acquired from the source.

o PACKAGES

This is the newest concept to be applied by DoD and members of the alliance. A variety of the arms collaboration approaches may be used in this approach. Packaging is done by government-to-government, industry-to-industry, and industry-to-government agreements. In essence, each party to the acquisition shares in a piece of the economical pie through packaging, thus avoiding any offset requests. An offset is an arrangement in which, as a condition of a sale, a seller compensates a buyer for its purchase of goods or services in terms that go beyond consideration of price, quality, or delivery schedule of the item.

o FAMILY OF WEAPONS

This involves creation of families of weapons for systems not yet developed. Under this concept, participating nations would reach early agreement on the responsibility for developing complementary weapon systems in a mission area. The approach is to examine the weapons that nations plan to develop in the next few years, aggregate these weapons by mission area, and then coordinate the development of equipment when feasible.

o LICENSED PRODUCTION

Licensed production can be considered to be a subset of coproduction. Further specifics are provided under the Discussion of Approaches section.

Arms collaboration with Japan is being developed in an evolving manner on a case-by-case basis. The desires of the Japanese government and industry are to proceed along the lines of coproduction, licensed production, and codevelopment. Our approaches, however, must become part of a broader overall defense/economic policy toward Japan, as the DSB report indicated. An overview of Japan and the Republic of Korea as well as other countries is provided in Chapter 5.

## DISCUSSION OF APPROACHES

Each approach will be briefly discussed. Selected examples, if appropriate, will be provided to indicate the types of procurements being pursued. No attempt has been made to make the examples all inclusive. Readers desiring a comprehensive list of equipment being standardized can refer to the "DoD Standardization of Equipment within NATO" report submitted annually to Congress in accordance with Title 10 US Code(USC) Section 2457. This document is available from the Assistant Deputy Under Secretary for International Programs within USDRE. The DoD document presents a composite listing of systems being pursued under the above approaches. Before discussing these approaches, it is appropriate to review the principal document that forms the basis of most armaments cooperation models.

### MEMORANDUM OF UNDERSTANDING (MOU)

MOUs have been and continue to be a principal means of promoting standardization within the alliances through cooperative action. These are intended to encourage bilateral arms cooperation and trade; establish regular review of armaments programs and trade; and make efficient use of resources through expanded competition. DoD enters into reciprocal defense procurement and offset agreements with NATO, individual NATO governments, and other friendly governments to purchase and sell defense equipment and logistics support. The objectives of these agreements may be of a general nature to provide for waiver of the "Buy National" restrictions; promote greater cooperation in research, development, production, and procurement to enhance standardization and interoperability; and provide guidance on supplemental specific MOUs. Figure 2-2 lists the different types of MOUs and agreements.

#### General and Reciprocal Procurement MOUs

The general and reciprocal procurement MOUs that have been signed with other NATO nations are essentially the same and have the common theme of eliminating barriers such as "buy national" and import tariff penalties, and opening defense markets to competition on a reciprocal basis. Governments are responsible for informing industry of their policies and procedures, and industry is responsible for pursuing business opportunities. Appendix T to the DoD Supplement to the Federal Acquisition Regulation (FAR) contains these agreements. In all, 13 such MOUs have been signed including: Canada, the United Kingdom (UK), Norway, the Netherlands, the Federal Republic of

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- o General and Reciprocal Procurement MOUs
  - o Program-Specific MOUs
  - o Patent Interchanges (See Chapter 11 on Intellectual Property)
  - o Funding Agreements (See Chapter 13 on Financial Management)
  - o Security Agreements (See Chapter 17 on Disclosure of Military Information)
  - o Quality Assurance Agreements (See Chapter 15 on Production and Manufacturing)
  - o Data Exchange Agreements (DEAs)
  - o Standardization Agreements (STANAGs)
- 

FIGURE 2-2. TYPES OF MOUs AND INTERNATIONAL COOPERATIVE AGREEMENTS

Germany (FRG), Italy, Portugal, Belgium, Denmark, Luxembourg, France, Spain, Egypt, and Turkey. A Defense Cooperation Country Agreement has been concluded with Israel that provides for the Buy American exemptions for products listed in Annex B of the agreement. Similarly, foreign military sales offset agreements have been concluded with Australia and Switzerland that provide for case-by-case determinations to exercise an exception to the Buy American Act. An MOU with Greece is pending. Collectively, these countries are referred to as qualifying countries. Procedures for evaluating offers of qualifying country products are found in DoD FAR Supplement (DFARS) 25.7400. Specific waivers to the Buy American Act are set forth in Section 25 of the DoD FAR Supplement. Thus the MOUs do not guarantee placement of DoD contracts with firms located in qualifying countries; but rather offer an opportunity to compete.

Roles of the USG and industry are very important in collaborative programs. In the international defense area, industry cannot "do it by itself." The government must play an essential and enabling role. Industry should be involved in formulating the agreements in collaborative programs. In essence, there must be a balanced and complementary set of roles established.

#### Program-Specific MOUs

General MOUs give only general guidelines regarding program objectives, such as reciprocal or "fair opportunity to participate in production" agreements. A specific MOU is



usually required to cover each particular program. The MOU could cover codevelopment and coproduction, for example. Each general MOU sets the tone for reciprocity, but, often, the details must be presented in separate technical agreements, which might cover financial arrangements, cost-sharing formulae, or additional coproduction. Thus, industries almost always require licenses to manufacture parts, components, or end items. Industrial know-how and other intellectual properties may be released to a foreign manufacturer with appropriate restrictions on their use. Other nongovernmental agreements, such as quality control and inspections, may also be negotiated between US and foreign industries. These detailed understandings are contained in technical agreements that are appended to the MOUs. Program-specific MOUs will be discussed in subsequent discussions of the various arms collaboration approaches.

Before entering into a specific MOU for a cooperative defense project, the parties must determine that they have:

- o Clear-cut military requirements of all countries
- o Strong political will to cooperate
- o A need and desire to collaborate
- o Good personal arrangements among the project staffs of all participants
- o A good MOU that is explicit and meets the various national requirements, but which is not so detailed as to deny the project manager room to maneuver.

Similarly, when the MOU is signed, there must be a consensus among the countries that a signed MOU is binding. All countries must be aware of potential internal policy conflicts before signing the document to avoid any unilateral interference once it is signed. Most foreign nations assign a treaty status to the MOU. The US does not, as Congress does not ratify an MOU.

MOUs have been drafted and negotiated to meet the needs of each bilateral or multilateral situation. There are specific mutually agreed guidelines for all such arrangements. Appendix A contains a description of an MOU, which specifies each section appropriate to the MOU, explains the rationale of each section, and identifies those areas that require significant consideration. It is not intended to be an exact format, but a general structure and checklist of critical considerations.

A subsequent section will discuss international agreement preparation; however, it should be noted that prepara-

tion and approval of MOUs is time consuming. OSD, as a result of the Nunn and Quayle Amendments for cooperative projects, is placing emphasis on a streamlined MOU process as a means to move more rapidly on armaments cooperation. The intent is to give the Services flexibility and authority to negotiate MOUs based on concepts that the NATO National Armaments Directors (NAD) have agreed upon. The business aspects of the MOU should allow flexibility compared with areas such as currency exchange and third-party transfer provisions. There is no consistency in these "short form" MOUs regarding content and length, as well as other factors. The evolving dynamic nature of the process makes each MOU program dependent. This approach is being used on several new programs to be discussed in a subsequent section. In essence, the abbreviated MOU approach reflects a changing attitude rather than the business-as-usual approach.

### CODEVELOPMENT

The codevelopment agreement--generally a government-to-government MOU--defines the terms and conditions of participation by the participating countries and, sometimes, their industries. Participation in development may or may not lead to subsequent participation in production of the system or item. The agreement would, however, include matters critical to any subsequent coproduction arrangements, such as the provision for the transfer and protection of the technology, proprietary data, and intellectual property deriving from the codevelopment. Figure 2-3 provides selected features of this approach as well as the remaining approaches to be discussed. Codevelopment can be difficult to implement for the following reasons:

- o It is difficult to achieve maximum technology transfer at a very early stage in the program.
- o Companies are reluctant to invest money for an unsure program with an uncertain set of requirements.
- o Alliance industries are concerned about proprietary rights and eventual third country markets.

Codevelopment, however, has many positive factors. It offers the advantages of cost- and work-sharing, formation of a high quality team, standardization and interoperability enhancements, and the likelihood of obtaining the best technology through combined efforts. A variety of codevelopment projects have been implemented by all of the Services. The following discussion covers selected examples.

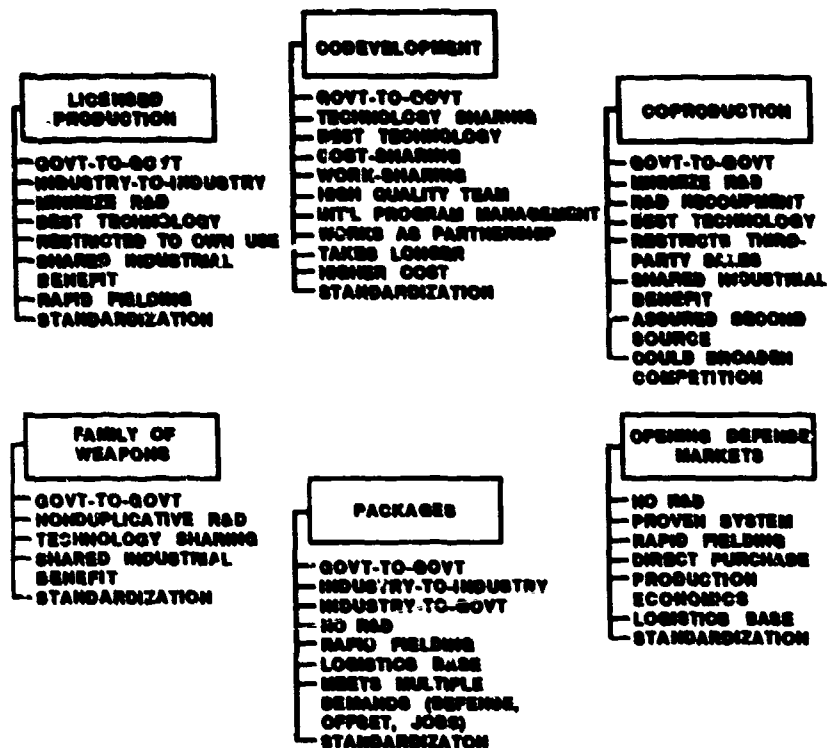


FIGURE 2-3. ARMAMENTS APPROACH FEATURES

### Multiple Launch Rocket System (MLRS)

The MLRS is an all-weather, rapid-fire non-nuclear system designed to supplement other weapons available to the Army division or corps commander for the delivery of a large volume of fire in a very short time against critical, time-sensitive targets. A basic MOU on a cooperative program for a medium MLRS was signed by the US, the UK, the FRG, and France in July 1979. The MOU encompasses the development of a multiple-launch, free-flight rocket system that will satisfy the agreed tactical requirements of all four participants.

The program calls for a three-phase cooperative effort. In Phase I, the US developed the system, including the rocket and improved conventional ammunition warhead. Concurrently in Phase II, the FRG is unilaterally developing the AT II scatterable antitank mine warhead. Phase III involves the cooperative development of a terminal guidance warhead for the attack of enemy armor vehicles.

Having concluded the concept definition stage of Phase III and selected a best technical approach for develop-

ment of Phase III, on 3 December 1983 participants signed an MOU Supplement initiating a cooperative development program for the Terminal Guidance Warhead (TGW). The TGW program is now in the Demonstration and Validation Phase. The TGW is being developed by a consortium called MDTT Joint Venture consisting of Martin Marietta Corporation (the US), Brandt Armaments (France), Thorn EMI Electronics (the UK), and Diehl GmbH & Company (the FRG).

#### Rolling Air Frame Missile (RAM)

The RAM is a Navy shipboard high-fire-power, low-cost, lightweight system designed to engage antiship missiles. The RAM program is in joint, full-scale development, following two years of advanced development by Denmark, the FRG, and the US under an MOU signed in April 1979. A production MOU is now being negotiated. The RAM program will be executed under the new provisions of the Arms Export Control Act as modified by the Quayle Amendment.

#### NATO Frigate Replacement for the 1990s (NFR-90)

The NFR-90 project is an effort by eight NATO nations (Canada, France, the FRG, Italy, the Netherlands, Spain, the UK, and the US) to design and build a frigate class ship capable of meeting the 1990-2000 threat. A pre-feasibility study, under the sponsorship of the NATO Industrial Advisory Group (NIAG), was completed in late 1982. Based on an April 1984 MOU, the eight nations are now participating in a feasibility study phase being conducted by the Hamburg-based International Ship Study GmbH (ISS) under the direction of the NATO Naval Armaments Group. The feasibility study (Phase I) has been completed, and nations are now negotiating an MOU for the Project Definition Phase (Phase II).

#### Long-Range Standoff Missile (LRSOM)

The NATO Air Force Armaments Group (NAFAG) has approved a NATO Staff Target (NST) for a Long-Range Standoff Missile. The NST for Long-Range Standoff Missiles identifies a NATO requirement for an air/ground-launched, standoff missile for attack of fixed, hardened-ground targets, primarily airfields. MOU negotiations by the FRG, the UK, and the US for feasibility studies of the LRSOM have been completed. The MOU was signed in July 1984. Two 15-month study contracts were awarded to two industrial consortia in April 1985.

### Nunn Amendment Programs

The Nunn Amendment resulted in an expeditious response by the National Armaments Directors to cooperate on the R&D efforts necessary to pursue seven programs. The NADs signed seven Statements of Intent (SOI) to proceed in this direction. These programs are as follows:

- o An Artillery-Delivered Autonomous Precision Munition
- o A NATO Identification System (NIS)
- o Air Force Modular Standoff Weapons (MSOWs)
- o A common NATO computer language based on the Ada computer language
- o A Multifunctional Information Distribution System (MIDS)
- o A Stand-Off Airborne Radar Demonstrator System (SOARDS) for a Joint Surveillance and Target Attack Radar System (JSTARS)

The SOIs for Ada, MIDS, and SOARDS have been replaced by MOUs.

### COPRODUCTION

The coproduction agreement--frequently an MOU but, for the US, sometimes simply a Foreign Military Sales (FMS) Letter of Offer and Acceptance (LOA)--defines the terms and conditions of participation by the participating countries and their industries. Participation in production may or may not derive from prior participation in development of the system or item. Usually the coproduction involves two or more assembly lines; frequently one in each participating country. Fabrication of parts and components may be duplicative, leading to two or more independent or parallel production sources and assembly lines; or it may be nonduplicative, leading to one interdependent or joint production source with, perhaps, several final assembly lines. The government-to-government agreement would include necessary provisions to enable production by nondeveloping sources of any part or component, or the system itself, by transferring the requisite technology and know-how from the developing source or sources to the nondeveloping producers. These provisions and transfer mechanisms may involve government-to-government sales of a second source Technical Data Package (TDP) and manufacturing rights, technical assistance, and material aid; or they may be based primarily on direct, industry-to-industry arrangements for work-

sharing and for transferring and protecting the requisite technology, proprietary data, and intellectual property rights by means of commercial licensing agreements. The coproduction mode is attractive because it concerns a clearly defined product and market; however, it does not necessarily lead to further programs. Selected examples of coproduction programs are as follows:

#### AGM-65 MAVERICK

The MAVERICK missile is a self-guided rocket-propelled air-to-surface missile designed to destroy small, hard tactical targets in the close-air support, interdiction, defense suppression and counter-air operations of tactical air forces. The development of this missile began in 1968 and has resulted in a "family" of terminal guidance seekers mated to a common center/aft section.

Development of the AGM-65D Imaging Infrared (IR) MAVERICK was initiated in October 1978. US production of IR MAVERICK started in September 1982 with the first AGM-65D delivered in October 1983. Several allied countries, including the FRG, Greece, and Turkey, have purchased TV MAVERICK (AGM-65A/B), through US FMS procedures. The US has signed an MOU for NATO coproduction of the AGM-65D with Italy leading a NATO consortium that also includes the FRG, the Netherlands, Denmark, and Turkey.

#### STINGER Air Defense Missile

The STINGER missile system is a shoulder-fired US-developed air defense system that will be coproduced by a NATO consortium consisting of the FRG, Greece, Italy, the Netherlands, and Turkey. An MOU covers the production effort.

#### Penguin Missile

The Penguin missile is a Norwegian infrared, countermeasures-resistant, helicopter-launched, offensive anti-ship weapon. The Penguin program entered full-scale development in January 1986 as a result of a contract signed between the Government of Norway and the United States Navy. A production MOU is under negotiation.

#### AV-8B Harrier

The AV-8B is an improved version of the UK-developed AV-8A Harrier V/STOL (Vertical/Short Takeoff and Landing)

aircraft, which has been operational in the USMC since 1971. In June 1981, the US and the UK governments signed an MOU for the development, production, and support of the AV-8B and its UK counterpart, the GR MK 5. McDonnell Douglas, the prime contractor for the US, is responsible for final assembly of AV-8Bs, while the UK prime contractor, British Aerospace, will supply the fuselage for all aircraft, as well as assembling GR MK 5s for the RAF.

### Licensed Production

Licensed production is a term used to indicate production by a nondeveloping source that is specifically authorized by a license from, or right granted by, the developing source or other party with disposal rights to the requisite intellectual property. The authorizing instrument may or may not be a formal licensing agreement. For industry-to-industry negotiated arrangements, it generally is a licensing agreement that contains detailed terms and conditions under which the license or right to produce is granted, and specifies the form and amount of consideration or payment. The authorizing instrument in a government-to-government negotiated arrangement may be simply the sale (for the US, generally handled under FMS procedures with an LOA) of limited rights with restrictions to produce the item for the purchasing country's defense needs. In licensed production, a follow-on capability from a technical viewpoint is established; however, production terms and conditions are specified in the agreement. Cooperation in defense equipment with Japan has taken this form in a variety of cases including the F-104 fighter, the F-15 fighter, the HAWK missile, and the M110 howitzer to the MK 46 torpedo, among others. Licensed production has involved TDP transfer both to and from our European partners. The Army's TOW, STINGER, and FLIR have been produced in Europe under this methodology. Similarly, the European 120mm tank gun has been produced in the US for the M1E1 Abrams tank.

### OPENING DEFENSE MARKETS

This approach to collaboration is, as previously stated, based on a reciprocal MOU. Specific program MOUs are not applicable in most cases. Selected examples of this category are as follows:

#### 10-Ton Truck

The Army required a 10-ton truck for its Pershing II battalions in Europe. Likewise, the US Air Force had a need

for a similar vehicle to move the Ground-Launched Cruise Missile (GLCM). These requirements are being satisfied by the 10-ton truck built by Maschinenfabrik Augsburg-Nürnberg (M.A.N.) of the FRG. A quantity of 468 trucks has been placed under contract, 219 for the Army and 249 for the Air Force. These vehicles will also be used in the US to replace Heavy Expanded Mobility Tactical Truck (HEMTTs) in the PERSHING II unit.

#### 9mm Pistol

The Army desired to standardize ammunition with its NATO allies and obtain a replacement for the .45 caliber pistol. The competition was open to all manufacturers of 9mm handguns worldwide. Beretta of Italy was awarded a multiyear contract in 1985 to produce some 315,930 pistols. Recent FY 87 Congressional legislation requires that further "buys" beyond the initial quantity of pistols, discussed above, must be recompeted.

#### T-45 Training System (T45TS)

This program calls for the procurement of 300 T-45A GOSHAWK training aircraft, 32 simulators, and 49 computer-aided devices that will be integrated into a complete training system. The carrier-suitable GOSHAWK, which is a derivative of the HAWK trainer being produced by British Aerospace (BAe) for the UK Royal Air Force, will replace current US Navy intermediate and advanced-phase jet training aircraft, which are nearing the end of their service lives. In October 1984, the McDonnell Douglas Corporation was awarded a contract for the full-scale development of the T-45 training system. McDonnell Douglas and BAe have agreed to split the airframe production effort. Other UK firms involved include Rolls Royce (turbine fan engines); Plessey (fuel boost pumps and electrical generators); Vickers (hydraulic pumps); Lucas (electrical activators), and Dowdy (ram air turbines, indicators, and hydraulic valves).

#### Mobile Subscriber Equipment (MSE)

The US recently decided to work with France to produce the new MSE communications system. This system will be the major corps and division communications system of the future. The US has specified that the MSE system must meet NATO analog and digital STANAGS for interoperability. Part of the MSE system will use French-developed RITA equipment and part will be similar to the already fielded TRI-TAC family of equipment. The RITA equipment is to be procured off-the-shelf and integrated into the system.



## **PACKAGES**

The most significant packaging concept is the FRG and US Patriot/Roland Cooperative Agreement. In 1983, the US and the FRG, recognizing the need to upgrade air defenses in Central Europe, began to discuss the problems of point and area defenses for air bases in the FRG. They realized that a cooperative venture of some type was the only viable approach because of the magnitude of costs involved. The key focus of the talks was on the deployment of the US Patriot and the FRG-French Roland surface-to-air missile systems under the principle of equivalent contribution. Under the agreement signed in July 1984, the following major commitments were made:

### **The US will:**

- o Purchase and provide 14 Patriot units, including one maintenance unit and one training unit, to the FRG at no cost.
- o Waive or reduce certain charges (in return for the FRG-provided goods and services) in connection with the FRG purchase of 14 Patriot units, including costs for non-recurring research, development, test, evaluation; production equipment; administrative services; quality assurance, inspection, and contract audit services; and other contract services, such as assembly, packing, crating, and transportation.

### **The FRG will:**

- o Purchase 14 Patriot units.
- o Purchase and provide 27 Roland units to the US at no cost, and operate and maintain these units for 10 years at US bases in the FRG.
- o Operate and maintain 12 US-owned Patriot units for 10 years at US bases in the FRG.
- o Spend \$50 million on air defense programs or other efforts.
- o Purchase and operate 68 Roland units at the FRG bases, six of which are collocated with US bases.

The agreement and subsequent arrangements provide for the FRG industry to participate in producing and maintaining both the US and the FRG Patriot units that are covered by the agreement.

## FAMILY OF WEAPONS

The last approach to arms collaboration is the concept of a family of weapons. Central to the concept is the belief that some of the shortcomings of individual weapon system collaboration can be eased or overcome by a collaboration that encompasses several systems in a specified functional or technological family. The DSB, in its 1978 report, assessed the pro's and con's of the family of weapons, and, although raising doubts as to its merit and viability, did endorse the attempt to make it work, stressing that codevelopment and coproduction arrangements must be included. The Advanced Medium-Range Air-to-Air Missile (AMRAAM) and Advanced Short-Range Air-to-Air Missile (ASRAAM) are the weapons being developed under this approach. They are all-weather, all-aspect missiles with an active radar seeker. In August 1980, the US signed an MOU with France, the FRG and the UK for a cooperative program for the family of air-to-air missile systems. The FRG, the UK, and the US are full participants, while France is a signatory government only. The MOU provides for the US to develop AMRAAM for use by all participants to satisfy the medium range missile requirement defined in the "Operational Objective for NATO Air-to-Air Missiles for the 1980s and Beyond." In accordance with the MOU, the Europeans coassemble or dual-produce AMRAAM. Canada and Italy are observer governments under the MOU. Additionally, as provided in the MOU, the FRG and the UK will develop the Advanced Short-Range Air-to-Air Missile. Norway has also joined the ASRAAM program.

## COOPERATION WITH NON-NATO ALLIES AND OTHER FRIENDLY NATIONS

The US also shares strategic and security concerns with our non-NATO allies, as well as other friendly nations with whom agreements do not exist. US objectives with these nations are to enhance mutual security interests, primarily by assisting them in developing a self-sufficient defense capability.

The US continues armaments cooperation activities with friendly Middle East nations. Cooperation with Israel has provided the Services with valuable battlefield information from the 1982 Israeli conflict in Lebanon. This exchange of information, as well as efforts to co-develop new systems, is expected to continue. Elsewhere in the Middle East, the US has signed a defense industrial cooperation agreement with Pakistan that constitutes a significant addition to the security assistance efforts devoted to that country.

Cooperation with the ROK constitutes an important element in securing that nation's independence and freedom. Armaments cooperation programs, most notably in the sale of tanks, communica-

tions equipment, and missiles, are helping to strengthen their defense capabilities.

The US has achieved considerable progress in establishing balanced armaments cooperation with Japan with the signing of notes authorizing the transfer of Japanese military technology to the US. DoD has conducted an intensive assessment of two critical technological areas to determine where increased US/Japanese cooperation in these selected areas would be in our mutual interest. The Defense Policy Advisory Committee on Trade (DPACT) has prepared an assessment of increased armaments cooperation from the perspectives of both trade and defense.

In the Pacific region, progress continues in assisting the People's Republic of China (PRC) to modernize in a manner that does not threaten the national security of the US or that of allies and friends throughout the region. Additional cooperative programs with Australia have been negotiated. The US is seeking projects of mutual interest with Indonesia and Singapore.

Cooperation with friendly countries in Latin America continues to improve, commensurate with the needs and capabilities of the individual countries. An MOU on military industrial cooperation, as well as an Air Force Scientist and Engineer Exchange Program, has been concluded with Brazil. The US is arranging for exploratory discussions with Mexico on establishing long-term cooperative programs in military technology.

#### CONTRACTING WITH FOREIGN SOURCES

This section is intended to be only a basic explanation of some of the more significant aspects of the statutes and regulations of DoD that are applicable to arms collaboration. It is not a substitute for any requirements of the FAR or the DoD FAR Supplement. This section is composed of competition considerations, statutory restrictions applicable to foreign sources, exceptions to statutory restrictions, and reverse foreign military sales.

#### COMPETITION CONSIDERATIONS

The primary statutory coverage of DoD contracting is found in Chapter 137 of Title 10, the Armed Services Procurement Act, as amended. Although the DoD contracting system has always embraced the objective of achieving competition to the maximum practical extent, the level of emphasis in today's contracting environment is unprecedented. In 1984, Congress enacted the Competition in Contracting Act (CICA), which restricts the use of

other than full and open competitive acquisition procedures. In summary, the act requires the use of full and open competition except in seven limited circumstances:

- o Only one responsible source
- o Unusual and compelling urgency
- o Industrial mobilization or experimental, developmental, or research work
- o Required by an international agreement
- o Authorized or required by statute
- o National security
- o Public interest.

The DoD FAR Supplement 6.3 describes each of these exceptions and provides examples of instances in which they are appropriately used. For each exception, and depending on the dollar value of the proposed acquisition, there are various justification and approval requirements that are also specified in Subpart 6.3.

#### STATUTORY RESTRICTIONS

Within this general competitive framework of competition, however, there are several statutory and regulatory constraints that either affect the competitive standing of a foreign product, or prevent DoD from buying the foreign product in selected instances. These constraints are:

- o Buy American Act and the balance of payments program
- o Defense appropriation act restrictions
- o Small business/labor surplus area set-asides
- o Mobilization base restrictions
- o Technology transfer.

#### Buy American Act and the Balance of Payments Program

The Buy American Act (41 USC 10a-d) provides that the government give preference to domestic end products purchased

for use in the United States. An ancillary program, however, is the Balance of Payments (BOP) program, which was implemented by DoD in 1964 to alleviate the impact of DoD expenditures on the US balance of international payments. The BOP program provides preference to domestic products purchased for use outside the United States. The implementation of these two domestic preference treatments works in a similar fashion through the bid evaluation process.

#### Defense Appropriation Act Restrictions

As can be seen from the Buy American Act and BOP program discussion above, although the implementation does not result in an outright prohibition of the purchase of foreign products, they are placed at a competitive disadvantage at the prime contract level. There are other statutory restrictions, however, that Congress has attached over the years to the DoD annual appropriation acts that restrict the expenditure of appropriated funds for certain foreign products. These various amendments are discussed in Chapter 10.

#### Small Business/Labor Surplus Area Set Asides

It is also US policy to limit certain contracts to small businesses (as defined in FAR Part 19) so as to provide a fair share of government contracts to small US firms who have the capacity to produce the required goods or provide necessary services.

#### Mobilization Base Restricted Acquisitions

One of the CICA exceptions to full and open competition is for mobilization base reasons. If a DoD component determines that it is necessary to restrict a particular acquisition in the interest of establishing or maintaining an industrial mobilization base that is capable of furnishing supplies in the event of a national emergency, he may do so. These restricted acquisitions are open only to industrial preparedness planned producers in the US and Canada.

#### Technology Transfer

Some DoD contracts require access to classified US military information. The National Disclosure Policy (NDP) governs the release of the information. A recipient foreign government may release US classified information to its con-

tractors, provided it is not released to third country persons without USG permission, and provided the recipient government assumes certain other responsibilities for its protection (accomplished by a government-to-government security agreement). In order for a foreign contractor to receive information necessary to bid on or perform a classified contract, the contractor must be sponsored by its government. The US contracting agency must make a determination that the classified information is releasable to the government of the prospective recipient. In some cases, DoD must obtain release authority from another responsible US agency. If the classified information is determined to be releasable, it must be transferred through government-to-government channels. Required procedures designed to safeguard performance are set forth in the DoD Industrial Security Program (DoDD 5220.22). These same rules generally apply with regard to foreign attendance at meetings and other foreign requests for classified information. The procedures described above pertain to direct award of a contract by a DoD component. Chapters 8 and 17 cover further details on the above subject areas.

#### EXCEPTIONS TO STATUTORY RESTRICTIONS

There are several exceptions that apply; namely, the Trade Agreements Act of 1979, the DoD Reciprocal MOUs, and the recently enacted Quayle Amendment.

##### Trade Agreements Act of 1979

This agreement opened our government procurement market to international competition by signatory countries and essentially closed it to competition by nonsignatory nations. The agreement opens the market to signatory countries by eliminating the application of the Buy American/balance of payments restrictions to offers of certain items from signatory countries. The signatory countries to the agreement are identified in FAR 25.401 and are referred to as designated countries. Recently, the benefits of the agreement were extended to Caribbean Basin countries.

##### DoD Reciprocal MOUs

These previously discussed MOUs allow waiver of the Buy American Act. The Roth-Glenn-Nunn Amendment provides the statutory foundation for this under the public interest exception. Signatory nations to these MOUs are known as qualifying countries. The procedures for evaluating offers from these countries embody four fundamental principles: (1) offers are evaluated without applying artificial price differentials such as

those directed by the Buy American Act or the balance of payments program; (2) offers are evaluated without the cost of import duties and provision for duty-free-entry certificates is made; (3) solicitations will be made in accordance with the policies and criteria of DoD purchasing offices; and (4) offers must satisfy all solicitation requirements. Although the Buy American Act can be waived, the other statutory restrictions mentioned above are still applicable.

#### Quayle Amendment

The provisions of this amendment regarding the waiver of any provision of law, except the AECA, in formulating and regulating contracts and the designation of a specific subcontractor are all-important exceptions for cooperative projects.

#### REVERSE FMS

DoD has entered into a number of MOUs or agreements in the past 2 to 3 years for another government to acquire systems and equipment for DoD, a type of "reverse FMS" situation. There appears to be little written guidance for these types of acquisitions. The basic framework for "reverse FMS" policy is that all statutory requirements must be complied with; however, other normal FAR and DoD regulations may be waived if the military Service determines that adequate substitute provisions and safeguards are in the MOU to ensure that prices are fair and reasonable.

#### OFFSETS

Partners in coproduction projects and buyers of US items through FMS frequently request offsets as a condition of their participation in the project or their purchase of the weapon system of defense equipment, especially if the system or item is of predominantly US origin. The types of offsets requested may include the compensatory purchase by the USG or by US industry of designated goods and services outside the specific project or program. Increasingly during the 1980s, the types of offsets requested have instead been for participation by the industry of the purchasing country in stated portions, dollar values, or percentages of production of parts of the system or equipment composing the cooperative program or purchase. Such offset requests frequently go beyond these examples and may include requests for production of stated portions, dollar values, or percentages of the total production for US procurement and for other (third-party) sales. Because of the complexity of these

issues, Chapter 7 has been developed concerning Offsets/Counter-trade.

#### RELATED FOREIGN MILITARY SALES AND LEGAL CONSIDERATIONS

The US transfers military arms, equipment, and services to foreign countries through FMS, licensed commercial sales, and grant military assistance. FMS is by far the largest of these programs. International arms cooperation and collaboration leading to improved standardization and interoperability are affected by various FMS policy and legal considerations. This section discusses salient aspects of such legal and administrative issues.

President Reagan issued an Arms Transfer Policy Directive in July 1981 that declared "the transfer of conventional arms and other defense articles and services ... an essential element of (the US) global defense posture and an indispensable component of its foreign policy." Various factors are to be considered in the case-by-case consideration of arms sales requests:

- o Whether the transfer will enhance the recipient's capability to participate in collective security efforts with the US.
- o Whether the transfer will promote mutual interests in countering externally supported aggression.
- o Whether the transfer is compatible with the needs of the US forces, recognizing that occasions will arise when other nations may require scarce items on emergency bases.

Standardization and interoperability are part of several of the above elements.

#### LEGISLATIVE BASES FOR FMS

The primary legislation that forms the basis for FMS is the Arms Export Control Act, the Foreign Assistance Act (FAA), Foreign Assistance Authorization and Appropriation Acts, and the Export Administration Act (EAA). These acts are embodied in the USC, copies of which are available from the various Services' legal counsels. The implementing regulations and guidelines that are based on the above are covered in the following:

- o International Trade in Arms Regulations (ITARs) and the Munitions List (ML), which covers requirements for the



registration of arms producers and licenses for the export of arms, ammunition, and the implements of war.

- o Security Assistance Management Manual (SAMM), DoD 5105.38-N, which provides guidance for DoD elements engaging in FMS.

The AECA provides the President the authority to do the following:

- o Sell defense articles, defense services, and design and construction services to foreign countries and international organizations
- o Procure such articles and services for cash sales
- o Finance procurements by foreign countries
- o Guarantee lenders against the risks of nonpayment
- o Control the import and export of defense articles and services
- o Lease defense articles.

It should be noted that the AECA is the primary legislative tool that provides the basis for sales, as well as the cooperative agreements approach to armaments collaboration. The recently modified AECA provides for arms transfers outside of the FMS process.

The FAA authorizes the President to furnish military assistance to any friendly country or organization when it will strengthen US security and promote world peace. He may:

- o Acquire defense articles and services and provide them by loan or grant
- o Transfer grant funds to the FMS account for the recipient country to use in making purchases under the AECA.

#### FMS MANAGEMENT

The Director of the Defense Security Assistance Agency (DSAA) is the focal point in DoD for the management of FMS. Detailed procedures are contained in the SAMM covering the mechanisms and procedures to be used in managing these government-to-

government sales of defense articles or services. Basically, such transfers are processed through a series of steps as follows:

- o Initial purchaser country interest
- o Prenegotiation activity
- o Sales negotiation and consumation of the action
- o Program management and delivery
- o Follow-on support.

Readers desiring further details regarding FMS specifics should consult the SAM manual.

#### LEGISLATIVE PROVISIONS ENHANCING DEFENSE COOPERATION

The various pieces of legislation that were previously discussed cover broad aspects of international arms transfers. Specific elements of these acts are designed to foster improved armaments cooperation. The purpose of this section is to highlight the specifics that involve allied cooperation:

- o Section 3(d)(4) of the AECA exempts cooperative cross-servicing arrangements among members of NATO or between NATO and any of its member countries from the requirement of the 30-day notification to Congress.
- o Section 21(e)(2) of the AECA authorizes the President, in making sales of defense articles or services, to reduce or waive charges for the use of plant and production equipment (commonly referred to as asset use) and for a proportionate amount of any nonrecurring costs of research, development, and production of major defense equipment. Specifically, the President may grant waivers to eligible countries in connection with sales that "...significantly advance USG interests in NATO standardization with the armed forces of Japan, Australia, or New Zealand in furtherance of the mutual defense treaties between the US and those countries, or foreign procurement in the US coproduction arrangements."
- o Section 21(g) of the AECA relates to section 21(a)(1)(c). The latter section authorizes the sale of training to foreign countries through FMS, but requires the full costs to be recovered. The former section

allows for reciprocal training agreements with NATO and selected countries (Japan, Australia, and New Zealand) at reduced prices. There are multiple pricing schedules authorized to accommodate the reduced costs.

- o Section 21(h) of the AECA authorizes the President to provide, without charge, on a reciprocal basis quality assurance, inspection, and contract audit services to NATO countries and NATO infrastructure programs.
- o Section 27 of the AECA has been previously discussed under the cooperative projects legislation sometimes referred to as the Quayle and Nunn Amendments. Although the original section dated from 1979, the new changes are intended to foster joint R&D and production. The legislation adds a new dimension to arms transfer mechanisms by allowing for the transfer outside the FMS process.
- o Section 29 of the AECA authorizes the President to sell design and construction services to any eligible foreign country or international organization if such country or organization agrees to pay the full cost to the USG of furnishing such services.
- o Section 30 of the AECA permits the President to enter into agreements or other arrangements to provide field training and related support to military and defense personnel of a friendly foreign country or an international organization provided that country reciprocates.
- o Sections 36(b) and (c) of the AECA respectively relate to certifications to Congress of proposed FMS arms transfers and direct commercial sales. Section (b) reduces to 15 days the period during which Congress can object to such FMS transfers to NATO its member countries, as well as Australia, New Zealand, and Japan. A 30-day period exists for other FMS nations and all direct commercial sales. It should be noted that arms sales certifications must include a "Sensitivity of Technology Statement" regarding the extent to which the major defense items proposed to be sold contains sensitive technology. Section (b) was modified in 1985 to require a detailed justification for selling major defense items containing sensitive technology. In addition, if the sensitivity of technology or the capability is enhanced from the original certification, then Congress must be notified 45 days before delivery of the major defense item. Allied nation sales are not excluded from this requirement.

- o Section 61 of the AECA allows the President to lease defense articles in the DoD stocks to an eligible foreign country or international organization. Notification requirements exist for informing Congress of such pending actions. NATO, Japan, Australia, and New Zealand loan or lease actions are exempt from Congressional notification.
- o Section 514 (b)(1) of the FAA excludes NATO only from the dollar ceiling on defense equipment set aside as war reserve stock in stockpiles located in foreign countries for use by allied or other foreign countries.
- o Section 975 of Title 10, USC excludes NATO from the prohibition on the sale of certain defense articles classified as Prepositioned Material Configured to Unit Sets (POMCUS), as decrement stocks, or as prepositioned war reserve stocks.

#### NEGOTIATING INTERNATIONAL AGREEMENTS

Negotiation of international agreements is a highly structured process within DoD. This section discusses salient elements dealing with such negotiations.

#### INTERNATIONAL AGREEMENT DEFINED

An international agreement is any agreement concluded with one or more foreign governments, or with an international organization, that:

- o Is signed or agreed to by personnel or any DoD component, or by representatives of the State Department or any other department or agency of the USG
- o Signifies the intention of the parties to be bound in international law
- o Is denominated as an international agreement or as an MOU, MOA, memorandum of arrangements, exchange of notes, exchange of letters, technical arrangement, protocol, vote verbale, aide memory, agreed minute, contract, arrangement, or any other name connoting a similar legal consequence.

### AUTHORITY TO NEGOTIATE/CONCLUDE MOUs

DoDD 5530.3 requires the USDP to oversee the entire international negotiating process. DoD negotiators require the delegation of authority to conduct negotiation and to conclude international agreements. The responsibilities for approval of authority to conduct negotiations and conclude agreements is assigned to USDP, unless the authorizing regulation for the category of agreements specifies another DoD official. The USDP may delegate to the heads of DoD components the authority to approve negotiation and conclusion of categories of international agreements, with authority to redelegate, and may rescind or change any such delegations. Coordination with the State Department and, when appropriate, the National Security Council is accomplished by USDP or the head of each DoD component, or designee, to whom approval authority has been redelegated. DoDI 2050.1 redelegates approval authority to negotiate and conclude international agreements. Delegations of authority emanating from DoDD 5530.3 and DoDI 2050.1 are further implemented in AR 550-51, SECNAV Instruction 5710.25, and AFR 11-21 for the Army, Navy, and Air Force, respectively. It should be noted that all requests to negotiate and conclude agreements "having policy significance" must be reviewed by USDP. The Case Act requires consultation with the State Department in these instances.

Requests to the USDP, or his delegate, may ask for permission to negotiate and/or conclude an agreement. It may ask that a chief negotiator be designated. Assistance or augmentation may be requested from other components within DoD. Finally, the originator may request that OSD or some other agency conduct the negotiations. The request shall also contain a draft text, a legal memorandum, and a fiscal memorandum. Legal concurrence should be obtained at all staffing levels, including the OSD General Counsel (GC).

In some cases in the past, a formal charter was signed by the Deputy Secretary of Defense or the USDRE designating an individual to head the negotiation team and giving the Team Chief the authority to select membership from within OSD and the military Services. The M-1 tank negotiations with Switzerland and the RAPIER project are such examples. This charter concept establishes a contract between OSD leadership and their designated negotiator.

Written permission is required for all DoD personnel to participate in and conclude negotiations. The authorization to sign or conclude an agreement may be withheld until the draft document can be examined at the DoD component level. Negotiations often last a considerable period of time; consequently, informal discussions are a very useful preliminary to the formal negotia-

tions. Discussions can be started by a Data Exchange Agreement, for example.

#### DELEGATION OF AUTHORITY

Authority delegations are prescribed in DoDI 2050.1. It is important to note a significant modification to that document resulting from the Cooperative Project legislation, i.e., Section 27 of the AECA. Specifically, the Under Secretary of Defense for Research and Engineering is authorized to negotiate and conclude cooperative agreements for programs involving research interchange and codevelopment, and rationalization, standardization, and interoperability, including reciprocal MOU agreements. The Assistant Secretary of Defense (Acquisition and Logistics(ASD(A&L))) has the same authority to negotiate and conclude agreements for programs involving logistical support of defense equipment.

#### CENTRAL REPOSITORIES

Central repositories have been established so that an office of record exists for all international agreements in all categories. The USDRE maintains the repository for all data and information exchange project agreements. The DoD GC maintains the central repository for all other agreements. DoD components funnel the completed agreements to USDRE or the General Counsel directly. In addition, the Assistant Legal Advisor for Treaty Affairs in the State Department must be provided copies within 30 days in order to analyze and forward the agreement to the Congress within 60 days of its having been signed, as required by the Case Act.

#### EVALUATING MERITS OF COLLABORATIVE PROGRAMS

At the present time, there are no rules or set of criteria that can be applied in evaluating the merits of collaborative programs. The defining of criteria would assist PMs or proponents in collecting the type of information needed for decisions and would structure the eventual evaluation. The decision maker could be assured that all relevant aspects of the program/issue have been examined. Obviously, the level of detail would be dependent on the magnitude or criticality of the program/issue and on the status of program evaluation over time. By not defining explicit decision rules provides sufficient flexibility for the exercise of informed judgment in a complex technical-political-economic environment. A suggested approach to implementing a set of evaluation criteria is provided in Appendix B.

# CHAPTER 3 NATO STANDARDIZATION AND PLANNING SYSTEMS

## INTRODUCTION

The purpose of this chapter is to explain and clarify the ongoing efforts within the alliance to effect improved armaments cooperation between nations. Planning systems are essential prerequisites to identifying weapons needs of the North Atlantic Treaty Organization (NATO) countries that can be represented in programs governed by the approaches discussed in Chapter 2. Before discussing planning systems, it is appropriate to highlight various efforts aimed at standardization within the alliance inasmuch as these efforts, in many instances, ultimately become part of the standardized and interoperable weapon development process.

## STANDARDIZATION ACTIVITIES AND PROGRAMS

The Department of Defense (DoD) maintains involvement in several ongoing standardization programs. Several of these activities are important elements in promoting standards that affect the overall weapons acquisition process. Figure 3-1 depicts the principal NATO standing groups and agencies dealing with standardization. Subsequent discussion will focus on portions of the figure.

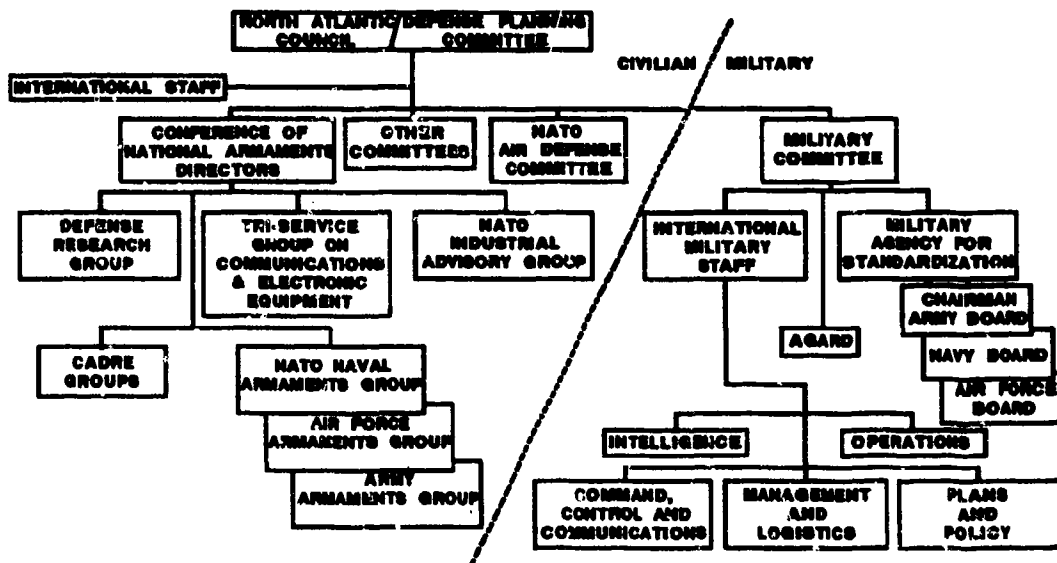


FIGURE 3-1. ORGANIZATION FOR STANDARDIZATION WITHIN NATO

The newest of these groups is the NATO Standardization Group, AC/315, which was formally established in 1985. AC/315 is an attempt to consolidate the number of standardization activities. There are many NATO committees, panels, and subgroups examining standardization issues. A major goal of the Group is to establish a comprehensive NATO Standardization Program to coherently align material and operational, and administrative standardization activities with user requirements. Although these standards do not drive the need for things, they do establish the necessary agreed-upon codifications to be used when an item is to be built. Consequently, a need exists to have a set of standards, rather than multiple conflicting standards from multiple groups.

The Military Agency for Standardization (MAS) has various panels and boards representing the interests of the Army, Navy, and Air Force segments of the alliance nations. Although dealing primarily with doctrine, tactics, and procedures, the MAS is a potential source for identification of equipment. During 1985 twenty-nine NATO Standardization Agreements (STANAGs) or amendments were promulgated for ground equipment, twenty-seven for naval equipment and twenty-four for air force equipment and procedures. For instance, the Air Board will soon be promulgating STANAG 3912, which adopts Ada (ANSI/MIL-STD-1815A) for programming avionics software. These agreements pertain to other than major end items. STANAGs are valuable to the formulation of contracts and the ultimate receipt of equipment meeting agreed-upon standards.

In November 1980, a NATO Air Defense Committee (NADC) was established to harmonize military requirements and risks associated with air defense, as stated by the NATO Military Authorities with pertinent political, economic, industrial, and technological factors obtained from nations and other NATO bodies. Concerned with near-term problems as well as long-term plans, this committee is NATO's senior body on air defense matters. Through three subordinate panels, it has investigated a number of complex areas, including the updating of the NATO air defense program, designing an integrated command and control system for all air operations, and studying ways of integrating the effects of offensive counter-air with established defensive air defense operations.

The NADC and its subgroup's activities provides an insight into sources of cooperative programs as the following example illustrates. The Air Defense Ad Hoc Working Group identified, among other issues, various weaknesses in the current Medium Surface to Air Missiles Systems (MSAMS). The Panel on Air Defense Weapons, in accordance with guidance provided by the NATO Air Defense Committee, identified two approaches to resolve these



MSAM deficiencies--gradually improve HAWK or develop a new system. The Conference of National Armaments Directors (CNAD) was tasked to accomplish the MSAM analysis, and Air Group VI was established as a subgroup of the NATO Air Force Armaments Group to do the work. Air Group VI developed an Outline NATO Staff Target (ONST) that lists characteristics of a proposed MSAM. The United States (US) and other nations are staffing this ONST and will participate in the system development. This MSAM effort is one of our prime candidates for cooperative development.

The next program to be discussed certainly does not develop specific requirements for systems or standards; however, it does have a positive influence on the broad standardization category. Funding to meet NATO military requirements derives from both national programs and NATO programs such as the NATO Infrastructure Program. The latter includes the categories of airfields; naval bases; Petroleum, Oil and Lubricants (POL); communications; navigation aids; warning installations; war headquarters; training installations; ammunition storage; forward storage sites; surface-to-air missiles; surface-to-surface missiles; and reinforcement support. Each year, the alliance funds, on a cost-shared basis, a large number of projects within these categories.

Through its deliberative processes and agreed-upon criteria, the Infrastructure Program has had a very positive influence on the standardization of common-funded facilities and equipment in support of the military requirement. The program includes common user systems such as the air defense early warning and command and control network; an extensive POL pipeline and storage network; an integrated command, control, and communications network; and static, alternate, and mobile war headquarters, as well as operational facilities for NATO forces.

#### ARMAMENTS PLANNING

Since the mid 1960s, the real burden of achieving weapons standardization and interoperability has shifted to the civil authorities and institutions within NATO. This shift recognized that achieving cooperation in development, common selection, and procurement is fundamentally a political and economic problem more than a military problem. A fresh start was begun in May 1966 when the North Atlantic Council approved the report of an exploratory group established to study the problem of standardization and to propose new solutions. The principal institutional device to emerge from the ensuing reorganization was the CNAD, which consolidated and replaced the earlier Defense Production Committee, the Armaments Committee, and the Committee of Defense Research Directors. Besides focusing standardization efforts in the civil structure of NATO and consolidating its committees,

this shift also recognized that the implied mandatory approach of the NATO Basic Military Requirements (NBMR) could not work. NBMRs was a system used early-on in NATO to specify common or standard requirements. The determination was made that what was required was a flexible, clearly voluntary system of exchanging information on national Research and Development (R&D) and procurement programs. In addition, it would encourage cooperation among any two or more NATO members in meeting their national requirements. A unique organization of nonofficial civilians was also established in the late 1960s to facilitate information exchange and voluntary cooperation on a broader base encompassing defense industries in the member countries. This organization, known as the NATO Industrial Advisory Group (NIAG), provides a forum for exchanging information and encouraging industrial cooperation. It also has been used to perform prefeasibility studies in various armaments areas.

In 1971, the work of the CNAD and its subgroups was given sharper focus and redirected to concentrate on the most pressing needs of the alliance. Budgetary and economic problems in all NATO countries gave a new urgency to achieving more efficient use of resources in the high priority, high cost areas of new weapons requirements through standardization. Moreover, the CNAD began to work much more closely with the NATO Military Authorities (NMAs) in identifying the most critical areas for interoperability.

The National Armaments Directors Representatives (NADREPs), who are members of the national delegations to NATO, meet regularly to carry out the routine tasks of the CNAD and to undertake any such tasks as the CNAD may direct. One of their tasks is to direct the work of the many cadre groups on behalf of the CNAD. In essence, these various groups, subgroups, panels, working groups, etc., all perform their missions in the name of the CNAD.

While the mandate of the CNAD continued to govern armaments collaboration in the alliance, in recent years, the alliance has been pursuing ways of greater coherence and structure in cooperative efforts. In the mid 1970s, a NATO Military Committee (MC) document cited specific planning needs. These are as follows:

- o Increase the NATO military authorities' contributions to the planning process
- o Develop a more cyclical work method for planning
- o Define the interface between equipment and force planning
- o Develop appropriate planning time scales

- o Increase alliance participation in the process.

From the above document and subsequent study came the NATO Armaments Planning Review (NAPR) and the Phased Armaments Programming System (PAPS). The next several sections discuss these two systems, their interrelationships to each other, and the US counterpart acquisition management process that uses the Joint Requirements and Management Board (JRMB).

### NATO ARMAMENTS PLANNING REVIEW

The NAPR, formally established in 1979, represents a step in the direction of achieving greater coherence and structure in cooperative efforts. The NAPR is primarily a review system designed to expose more clearly the opportunities for cooperation. These opportunities are presented to the National Armaments Directors and ultimately the North Atlantic Council.

NAPR is a systematic, cyclical review process by which attention can be focused on the most important and promising opportunities to achieve standardization and interoperability of NATO's future defense equipment and on areas where standardization is inhibited by divergence of national plans. These opportunities are revealed by a detailed analysis of the nations' annual plans for equipment acquisition and comparing them against the priorities for achieving standardization and interoperability of these equipments as determined by the MC in its bi-annual review of these plans. Figure 3-2 provides a simplified diagram of this process. The annual European input is provided through the Independent European Programme Group, with US and Canadian inputs provided separately. The replacement schedules and NMA inputs are provided by the International Staff and CNAD Main Armament Groups to be reviewed for cooperative opportunities not yet exploited. This review also identifies areas where nations are diverging from cooperation as a result of independent national decisions. The conclusions and recommendations resulting from this review are presented to the CNAD.

The four basic stages in this cyclical review are as follows:

- o Inputs

- National--completed each year
- NATO Military--completed once for each equipment item. Updated as required with a review for currency every 2 years

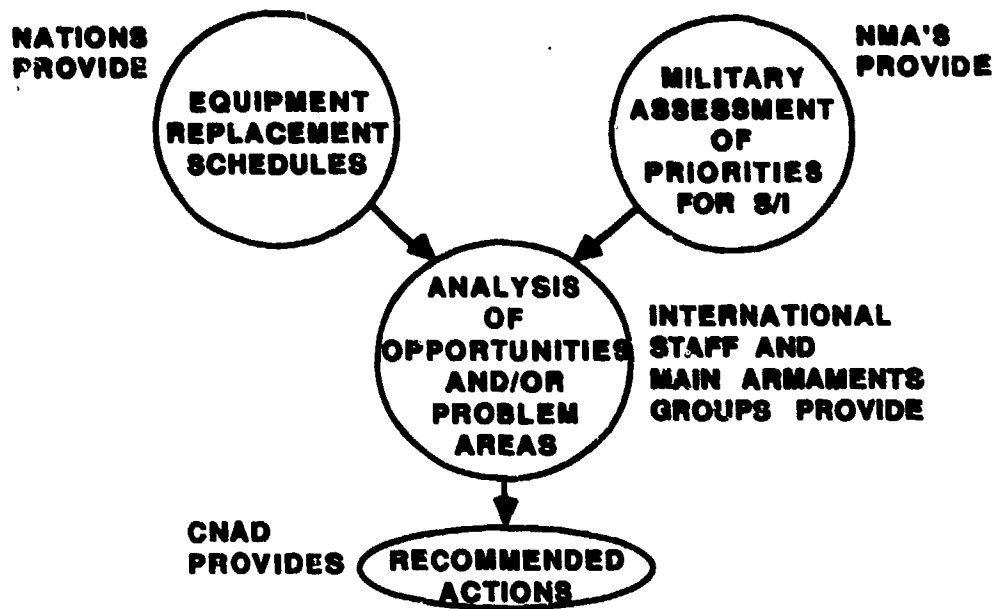


FIGURE 3-2. NAPR SYSTEM

- o Equipment Item Selection--completed each year
- o Equipment Item Analysis--completed as soon as possible but not later than two years following equipment item selection
- o Outputs--dependent upon equipment item analysis. Completed six months thereafter
  - Reports to CNAD
  - Reports to Council
  - Instructions from CNAD and Council.

The CNAD monitors work progress in this review process.

Several benefits accrue from the NAPR process. First, the NMA's judgments on priorities are available for consideration earlier in the CNAD decision process, thus having more effective impact on equipment decisions. In many cases in the past, collaborative projects have suffered because the NMA's military judgment has not been available until late in the decision process. Second, the NAPR elevates progress, or lack of progress, toward standardization/interoperability to the NADs, who can take appropriate action, both nationally and within NATO.

The NAPR is in the possession of the Service staffs. PM access to the document can be obtained through those channels. Automation has not been applied to the process; consequently, the document is only available in hardcopy format.

#### THE PHASED ARMAMENTS PROGRAMMING SYSTEM

One limitation of NAPR is that the data presented represent a rather mature stage of national planning. Attempts to collaborate are much more difficult when national equipment replacement schedules are firm. Several problems were encountered in seeking earlier communications on national plans and programs:

- o A lack of early visibility into national military requirements
- o A NATO review of these requirements before a commitment was made
- o Incomplete information on national plans
- o A lack of discipline in the reporting process for collaborative programs.

Since NAPR primarily addresses the later points, PAPS was created to address the requirements review issues.

The overall objective of PAPS is to provide a systematic and coherent, yet flexible, framework for promoting cooperative programs on the basis of harmonized military requirements. The procedures and implementing guidelines are based on two general principles: recognition of the sovereignty of nations in making equipment decisions, and utilization of the basic, NATO structure, without radical change, while providing clear roles, relationships, and tasks in the formal process. The process also reconciles these two principles with (1) fulfilling the most pressing military equipment needs of the alliance; (2) adapting to political, economic, and technical realities; and (3) establishing and maintaining broad cooperation throughout the Weapon System Life Cycle (WSLC).

The philosophy behind the PAPS concept is straightforward. There is a finite and fairly consistent number of points (milestones) in the life of a weapon system program where the nature of the program changes. At these milestones, decisions must be made regarding alternate courses of action. This is true for multinational as well as national programs. PAPS is intended to provide a structured approach to aid decision-making at these

milestones for all management levels involved in cooperative R&D and production programs within NATO, ranging from the working level (the Main Group Subordinate Bodies) to the senior national decision makers (the National Armament Directors - NADs). PAPS also helps clarify the roles of the national and NATO Military Authorities and the International Staff (IS) in the decision process.

PAPS is divided into seven phases and eight milestones as shown in Figure 3-3. These phases and milestones are shown on a timeline in Figure 3-4. For ease of reference, the DoD systems acquisition process is displayed in the same figure. There is considerable similarity between the two processes. There are, however, some differences. First, PAPS defines the start of the weapon system life cycle as the point when military authorities forward the mission need.

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Milestone 1	Mission Need Document (MND)*
Phase 1	Mission Need Evaluation
Milestone 2	Outline NATO Staff Target (ONST)
Phase 2	Prefeasibility
Milestone 3	NATO Staff Target (NST)
Phase 3	Feasibility
Milestone 4	NATO Staff Requirement (NSR)
Phase 4	Project Definition
Milestone 5	NATO Design and Development Objective (NADDO)
Phase 5	Design and Development
Milestone 6	NATO Production Objective (NAPO)
Phase 6	Production
Milestone 7	NATO In-Service Goals (NISLG)
Phase 7	In-Service
Milestone 8	National Disengagement Intentions (NADI)2

\* Mission Need Documents resulting from long-range planning/mission analysis are prepared by nations and Mission Need Committees. Procedures for the development and processing of MNDs by the NATO Military Authorities are set out in MC 289 (Final).

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FIGURE 3-3. PAPS MILESTONES AND PHASES

This is somewhat earlier than DoD, which defines the start as the point when approval of the need is obtained from the Secretary of Defense. PAPS also recommends attention be given to the in-

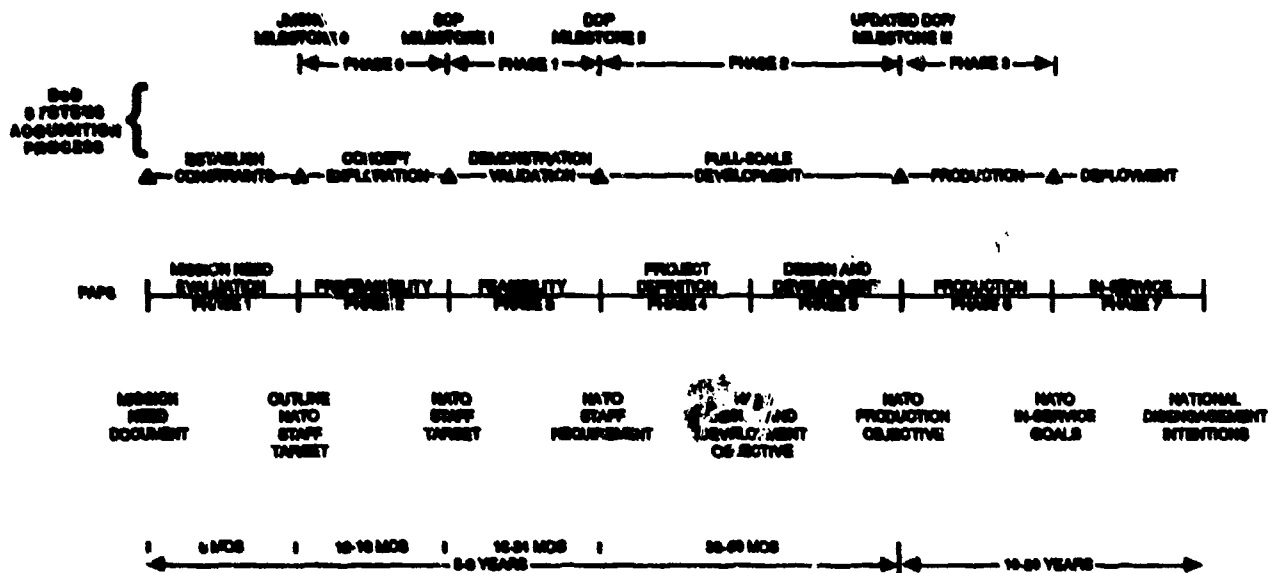


FIGURE 3-4. PAPS/DOD SYSTEMS ACQUISITION PROCESS STRUCTURAL RELATIONSHIP

service and disengagement phases at the mature stages of the weapon system life cycle, whereas OSD visibility terminates at the production decision.

The PAPS system is structured yet flexible. The phases follow the course of events in a normal project. The process is, however, flexible enough to permit skipping steps whenever it makes sense to do so. The formalization of the process insures that skipping steps will be a conscious, well-thought-out move.

The normal long-term planning processes, including mission area analyses, precedes the PAPS phases. It is a function that is continuously performed and broader than individual weapons systems. Long-range planning represents our assessment of the "state of the world," including technological, economical, social, and political factors. The East-West military balance is established, which affects various aspects of planning. Mission analysis of the current and future military balance is continuously assessed by the NMAs. This includes threat projections and analysis, development of Warsaw Pact tactical doctrine and concepts, assessment of equipment capabilities vis-a-vis the threat, and scenario development.

These trends are studied for important implications and are continuously incorporated in the capability of the alliance to affect the threat through NATO doctrine, tactics, force levels, logistics, weapons acquisition, and identification of other possible deficiencies in the forces. Harmonization of the NATO perceived threat, doctrine, and concepts is especially important

in the development of mission analyses, because this provides the basis for the mission need and successive cooperative research and development programs. Long-range forecasting leads to the mission need evaluation, which initiates the PAPS process.

## PAPS Phase Descriptions

### Phase 1 Mission Need Evaluation

The process starts with input from the mission analysis effort. Specific operational deficiencies in capabilities are identified, usually in relation to a mission area. These deficiencies are documented in operational terms as a "mission need" for the basis of this input to Phase 1. This Mission Need Document is prepared by either the national military staffs or the NMAs. The MND is forwarded for action to the office of the Assistant Secretary General for Defense Support (ASG/DS), who coordinates the document with the NADs, all NMAs, and other NATO staff and agencies. This coordination invites participation of all interested parties in seeking a NATO solution to the mission need. Although MNDs are all forwarded to the NADs, national responses may be provided through Main Armament Group (MAG) representatives in the appropriate MAG forum, especially for those MNDs without significant impact.

The MND is ultimately transformed by an ad hoc subgroup or panel of the appropriate MAAG into a set of functional system requirements. The functional system requirements, called an Outline NATO Staff Target, are built on the mission need and include gross financial, technical, and schedule estimates so that nations can better assess the necessity and desirability of entering into a cooperative development program. The subgroup/panel is established with representation from the interested nations, NMAs, and NATO agencies and operates under the aegis of the appropriate main armament group.

Although all nations may not participate in this or the development phases, they are encouraged to join in the drafting of the ONST. This is encouraged in order to harmonize requirements so as to achieve greater acceptance in, and eventually procurement by, these nations. To avoid narrowing the range of alternatives at this stage, the ONST must not overspecify characteristics of the required system. Phase 1 ends with submission of the ONST to the nations for approval. The ONST is comparable to the Justification for Major System New Start (JMSNS) in the US acquisition process.



## Phase 2 Prefeasibility

The prefeasibility phase would commence after approval of the ONST (milestone 2). The main thrust of this phase is for a subgroup or project group to conduct a preliminary evaluation of alternative concepts provided by member nations, or industry to satisfy the ONST and to identify the most promising technical concepts for further evaluation. Studies conducted during this phase should be only of sufficient scope to help identify the most promising concepts. Inputs could come from various organizations to include the NIAG. In any event, a NATO Staff Target is developed, based upon the evaluation of the prefeasibility studies detailing the capability being sought, and a summary of the most promising candidates. The subgroup, normally composed of members from nations planning to participate, also drafts appropriate follow-on documentation, such as an MOU and a Statement of Work (SOW) for Phase 3. Other than minor commitments of resources, member participation in the subgroup has been dependent solely on interest. The signing of the MOU, however, begins commitment of ever-increasing amounts of resources, as well as work-sharing arrangements through the production and in-service phases. The group may wish to develop the initial project plan, which could be used as the primary program management instrument integrating the essential technical, political, military, financial, and managerial factors during the subsequent phases of the weapon system life cycle. It is comparable to the acquisition strategy developed for the JRMB Milestone I. Forwarding the NST for decision completes Phase 2.

## Phase 3 Feasibility

This phase begins with the participating nations' approval of the NST and the signing of the MOU and/or Terms of Reference and approval of the SOW. NATO's role diminishes as the subgroup/panel of Phases 1 and 2 becomes a project group established to direct the follow-on activity and to conduct liaison with nonparticipating countries, the NMAs, and NATO agencies. With the relationships denoted in the MOU, the participating nations are now responsible for all centralized management of the technical, business, and logistics aspects of the joint project. NATO, however, must maintain close liaison with the project group. The project group is now responsible for evaluating candidate technical concepts to provide the necessary performance capabilities described in the NST. The system specification, logistics plan, and the estimates of unit production and fly-away costs, life-cycle costs, manpower and training requirements, development and production schedules, and other relevant data become the NATO Staff Requirement (NSR). The NSR represents a major decision document, since the participating

countries will now commit major development resources, and must assess the benefits of acquiring the system and budgeting for it. Phase 3 is concluded when the NSR is approved. In addition, the administrative concepts of the follow-on phases would be addressed in an MOU. This juncture in the process corresponds to Milestone II in the DoD acquisition cycle.

#### Phase 4 Project Definition

This phase is normally the first of the phases dealing with a single system design. Its main objective is to develop further details of the complete system specification, to develop initial subsystem specifications and consider design approaches. The project group transitions into a NATO Project Steering Committee to provide periodic reports to the CNAD. Reports are also provided to nonparticipating countries, the NMAs, and other NATO agencies. These reports should provide sufficient information for force structure, doctrine, tactical/operational concepts, training, and logistics. A joint common configuration management system should be set up early in the project definition stage, to remain under the technical authority of the developing nations until at least completion of the acquisition phase.

#### Phase 5 Design and Development

It is during this phase that detailed engineering and prototype fabrication is conducted to ensure full validation of the selected technical approach, including complete system integration and test to establish technical readiness and field capability. The result of this phase will be sufficient detailed documentation, manufacturing, and logistics data to permit the production phase to begin. Completion of Phase 5 corresponds to Milestone III in the DoD acquisition process.

#### Phase 6 Production

This phase leads to produced items of equipment. Operational data from using units are collected to assess the adequacy and highlight problems in performance, safety, logistics, training, and reliability and maintainability.

#### Phase 7 In-Service

During this phase, the system is in use. At some point, nations will express their intentions to retire the

system, identifying the specific point in the life cycle when a nation programs replacement of the existing system with a new capability.

#### Additional PAPS Considerations

The flexibility inherent in PAPS cannot be over-emphasized. Each project must be conducted according to its own merits and needs. Although the description of PAPS presents a step-by-step concept, the need for each and every step will depend on the circumstances associated with each project. The key elements are for participating nations to discuss their requirements early in the life cycle and to try to agree on common and peculiar requirements as the basis for the next phase.

At any point in the cycle, nations may discover there are reasons that prevent them from totally agreeing on military requirements, technical concept, or preferred system configuration to meet their needs. In such a case, a partially harmonized or separate project could evolve from the same MND, ONST, NST, or even NSR, but this would be the result of a conscious rather than accidental decision to do so. The benefits of the earlier collaboration would not be lost, and there would still be a strong appreciation of each other's needs. Moreover, if separate projects continue to evolve, one would expect close liaison to continue between them in order to ensure that the two or more systems are designed and developed according to the same standards, or that, if possible, some identical subsystems/components are chosen. Such continued liaison would be especially invaluable in considering system interfaces in order to achieve the necessary levels of interoperability when the systems are deployed.

#### Current Status

PAPS was established formally in 1980, and the CNAD officially agreed in 1981 to the phases and approach being taken. Complete procedures were developed during this same time period.

#### PAPS Relationship to NAPR

It should be noted that, while PAPS is a decision aid to identify and promote cooperative programs, NAPR is essentially a feedback review process that can help nations in at least three ways:

- o It can help identify priority areas in which national equipment replacement plans could (or should) be harmonized in a cooperative manner or when nations diverge from standardization or interoperability.
- o It can help them assess progress under PAPS; especially as more PAPS and CNAD data are included in the NAPR data base.
- o It can help CNAD monitor programs that are important to the alliance but are not common projects. In cases where standardization/interoperability is either not possible or not militarily important, NAPR can aid in an assessment of the resultant implications.

PAPS and NAPR, therefore, should be viewed as separate but related processes, whereby PAPS is a framework to aid decision making and NAPR a process for reviewing the results.

#### PAPS Relationship to European Countries

The European countries, as sovereign states, develop their own plans and subsequently enter into collaborative projects based on numerous economic and political factors. The PAPS structure reflects the plans being pursued by these various participating countries. In reality, many of the countries have acquisition processes that parallel the PAPS system in terms of phases and documentation. Further, PAPS and the DoD systems acquisition processes closely parallel each other. In essence, the participating countries control their joint efforts using PAPS as a form of risk reduction tool.

#### PAPS Relationship to US Decision Processes

PAPS and the DoD system acquisition process are, in some respects complementary. As shown in Figure 3-4, there are relationships between the two systems from conceptual viewpoints and phases. The current DoD Directives (DoDD) 5000.1 and 5000.2 are under revision due to several recent studies. A key change is the establishment of a Joint Requirements and Management Board to assume responsibilities for Milestones I, II, and III. The JRMB responsibilities will be outlined in the new DODDs.

Specific links tying the two systems together through exchanges of documentation, e.g., JSMNS, do not exist. More, importantly, however, PAPS provides a point of reference that readily integrates with the internal research, development,

and acquisition system of each NATO member nation. Cooperation will certainly be initiated at higher levels in identifying targets of opportunity. Within the past year, NATO's Assistant Secretary General for Defense Support, the CNAD, and the NMAs established a list of priority areas of activity for equipment development. This attempt to maximize cooperative development opportunities has been further blended with the current NATO initiative to exploit the emerging technologies to enhance conventional defense capabilities. The result was that the CNAD, the Defense Planning Committee (DPC) Ministers, and the North Atlantic Council Ministers agreed to pursue the above initiative. The results of the effort should certainly see a variety of highly visible requirements documents entering both systems.

#### LONG-TERM PROSPECTS FOR ARMAMENTS PLANNING

Long-term prospects for armaments cooperation and associated planning is more likely to be accomplished, due to political and economic factors in weapons acquisition, when there are uniquely converging interests, needs, and capabilities to collaborate on development and production. The establishment of significantly longer term military requirements continues to receive attention in the NATO Long-Term Defense Planning System. This system aims at analyses of mission areas in a timeframe beyond the current acquisition cycle. By postulating the threat environment and comparing the current capability to cope with the out-year threat, deficiencies are identified which can then be translated into requirements for conceptual and/or equipment development. As in any extended timeframe program, particularly one that seeks comprehensive solutions, progress is measured in small increments. The staff of the Supreme Allied Commander Europe (SACEUR) has taken leadership responsibility for a major share of the initial effort and has begun a careful approach to meld future-oriented national tactical concepts with the requirements inherent in coalition warfare.

#### DoD ACQUISITION MECHANISMS TO PROMOTE COOPERATION

There are a number of procedural mechanisms largely contained in the JRMB process that the Services and, ultimately, the Program Manager must observe. This section contains a discussion of relevant documents to assist in the effort.

#### JRMB REVIEW PROCESS

DoDD 5000.1 prescribes policy for major system acquisitions. It specifically states that "Cooperation with US

allies in the acquisition of defense systems will be maximized to achieve the highest practicable degree of standardization and interoperability of equipment, and to avoid duplication of effort." More specifically, the USDRE, when serving as the JRMB chair, will "ensure consistency in applying the policies regarding NATO rationalization, standardization, and interoperability for major systems."

Milestone reviews are governed by DoDD 5000.1 with detailed documentation requirements enumerated in DoDD 5000.2. DoDD 5000.2 prescribes some 39 acquisition management and system design principles two of which are relevant to this handbook. Specifically, international defense cooperation and standardization and interoperability are key principles for consideration. The Justification for Major System New Start requires both standardization and interoperability to be discussed. More importantly, the System Concept Paper (SCP) and Decision Coordinating Paper (DCP), which support the JRMB decision-making process, call for specifics regarding the standardization being pursued in the PM's selected alternative. The backup document, known as the Integrated Program Summary (IPS), which contains the program's details, requires that specifics be furnished on the international aspects of the program.

Recent DoD guidance adds emphasis to the various institutional processes used to evaluate and obtain results from armaments cooperation. The following requirements must be met:

- o The USDRE and ASD(A&L), as chairmen of the JRMBs, will, in cooperation with USDP, ensure that reconciliation with allied requirements, acquisition of allied developments and equipments, joint development and production, or some beneficial form of cooperation using allied capabilities are integral to each acquisition proposal or provide an alternative option. The responsible Service organization must ensure this type of information and data are presented in the Service system acquisition review process and also are submitted to Office of the Secretary of Defense (OSD) before the JRMB reviews.
- o The Director Program Analysis and Evaluation, as Executive Secretary for the Program Objectives Memorandum (POM) Review, ensures that the information and data as cited for JRMB review are available from the Services concurrently with submission of Service POMs for all major system new starts.

## COOPERATIVE OPPORTUNITIES DOCUMENT (COD)

In order to ensure that opportunities to conduct cooperative research and development projects are considered during the early decision points in the DoD's formal development review process in connection with any planned projects of the DoD, the Service prepares a formal arms cooperative opportunities document for review by the JRMB at its formal meetings. This document is prepared by the Services and staffed as part of the decision package as is it presented in the Service and OSD. The USDRE incorporates assessments and recommendations as appropriate. This requirement was levied on DoD by the FY86 DoD Authorization Act (PL 99-145). Whenever a JMSNS is prepared, a cooperative opportunities document is also prepared.

### Objectives

The COD is be a "living" document that is action-oriented. The intent of the document is to maximize cooperation with US allies in research and development, production, and acquisition of defense equipment and munitions so as to achieve the highest practicable degree of standardization and interoperability.

### Scope/Tailoring

Although the COD is configured around a new or planned development project, or one that is still in the early phase of the acquisition process, for projects that have matured beyond that point, even into production and transition, the outline should be used to the degree applicable. In such cases, the COD should be tailored to examine any remaining viable cooperative initiatives and to provide a comprehensive assessment of their cooperative value and potential for implementation.

The degree and nature of detail to be furnished in the COD is a function of the maturity of the program. In the beginning and early stages of the acquisition process, for example, greater attention should be given to investigating mutual requirements and cooperative R&D possibilities and analyzing relevant allied technology. As the program matures, however, additional iterations of the COD are necessary to flesh-out detailed possibilities for cooperation in subsequent phases of the acquisition cycle.

### Content

The formal document, as defined in the Congressional legislation, includes the following:

- o A statement indicating whether or not a project similar to the one under consideration by the DoD is in development or production by one or more of the other NATO member nations.
- o If a project similar to the one under consideration by the DoD is in development by one or more other member nations of NATO, an assessment by the Under Secretary of Defense for Research and Engineering as to whether that project could satisfy, or could be modified in scope so as to satisfy, the military requirements of the the project of the US under consideration by the DoD.
- o An assessment of the advantages and disadvantages with regard to program timing, developmental and life cycle costs, technology sharing, and Rationalization. Standardization, and Interoperability of seeking to structure a cooperative development program with one or more other NATO member nations.
- o The recommendation of the Under Secretary of Defense for Research and Engineering as to whether the Department of Defense should explore the feasibility and desirability of a cooperative development program with one or more other member nations of NATO.



## **CHAPTER 4**

### **NATO ALLIES OVERVIEW**

#### **INTRODUCTION**

If you have been selected as a government or industry Program Manager (PM) in an international collaborative project, you have been assigned to a position of considerable difficulty, challenge, and opportunity. The PM must make a determination as to what is necessary to be performed in order to accomplish the project within the established cost, schedule, and performance goals. Part of this determination is to understand the participating countries and any unique views that they bring to the table. The next two chapters provide overviews of various geographical regions of the world in which the United States (US) collaborates in armaments efforts.

#### **ENVIRONMENTAL DIFFERENCES**

The PM's task is multifaceted, and even more complicated in the international environment. The task of international transfer of technology and mutual defense support takes on added dimensions over national projects because of the differences in the structures and objectives of the participating countries and their defense contractors. As PM, your responsibilities include developing the system specifications from the requirements, developing the acquisition strategy, and controlling development and production through contracts with industry. The critical elements in achieving program objectives are diagrammed in Figure 4-1.

Factors that are comparable in a national as well as an international project are: (1) the military requirement, based on the perceived threat, doctrine, and tactics; (2) the available resources (capital, personnel and technology), and (3) the industrial base to support the program. The PM influences these factors by maintaining constant contact with the users or user representatives, and to obtain program benefits through careful planning and management. The acquisition strategy, as discussed in Chapter 6, is the key planning prerequisite.

Also important to the PM is the nonmeasurable environment of international operations: culture, attitudes, human behavior, national priorities, and other factors which represent differences among the countries involved. The goal to be emphasized for multinational management is measurement of organi-

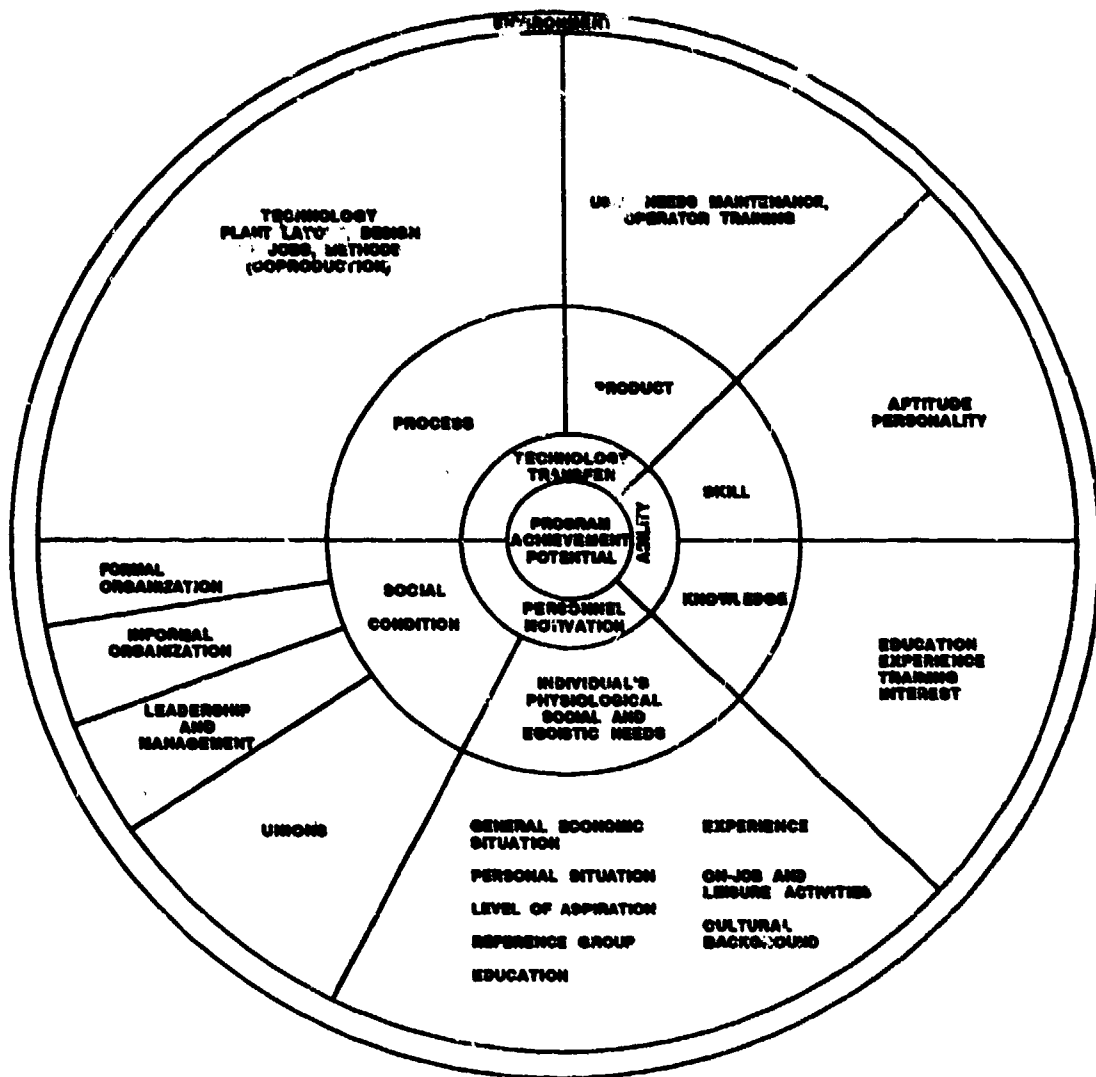


FIGURE 4-1. CRITICAL ELEMENTS OF THE INTERNATIONAL PROGRAM MANAGEMENT PROCESS

zational performance. A specification of critical elements for each participating nation and company is required to identify the differences in national and business objectives. These differences represent the environment of the international PM. Program achievement is determined not only by how effectively and efficiently people work but also by technical, economic, and political factors which play an important role, sometimes overwhelmingly. The plant, product, product mix, plant and job layout, design of machines and equipment, degree of integration (batch versus continuous) of production processes, raw materials, research and development management, and scientific and engineering management are all factors in the technology transfer process. User needs, maintenance requirements, and operator training are factors in the transfer of the product.

On the personnel side, employee motivation and ability are also essential to program achievement. Employees include executives and managers, the PM and his staff, and white- and blue-collar workers of the participating countries' governments and businesses. Ability is derived from knowledge and skill. Knowledge and skill are derived from aptitude, personality, education, experience, training, and interests. Motivation results from a combination of various social forces such as the formal and informal organization, leadership and management, and labor unions. The individual's motivation is also affected by psychological, social, and egoistic needs. Recognizing that all of these factors differ by country, a detailed knowledge of a country is important in program management. A good reference document on this subject is Peter Drucker's Management, originally published in 1971. This book compares management operation in the US, Europe, and Japan.

This brief discussion of Europe is designed to provide an overview of this key region of the world. Before entering into a discussion of specific topics, the reader should recognize that the Europe discussed in this chapter is a generalized model and not a specific reality. Europe is not a unified entity. It is a conglomerate of many languages and sovereign states, with different values. Europe, as it is seen today, is a group of countries, each working with others; however, there is no legal function that requires the countries to have the same standards. Law is based on the Napoleonic Code, which originally came from the tradition of Roman law. Europe does have enough similarity in laws, culture, and standards so that a representative Europe can be constructed. But a convergence of European countries is clearly evident in the European Economic Community (EEC). There is also enough similarity to permit a discussion of the issues. A key factor is that the European market is an aggregate with agreed-upon dividing lines and open borders, but it is not as integrated as the US. In essence, the Europe being discussed is not quite France, and not quite the Federal Republic of Germany (FRG), Belgium, or Italy.

The subsequent discussion will focus on five major areas: competition, defense industry practices, industry and education, taxation, and lastly, an overview will be provided on different management styles.

### COMPETITION

Differences do exist between the US and European countries with respect to competition in defense acquisition. The Euro-

peans do not generally believe in competition out of principle. Some Europeans are rather neutral to the idea, especially in the defense industry. Government-industry relationships are much closer. So are the relationships between industry management and the workers' unions. These differences, and the resulting less competition in Europe, pose a significant issue in US-European armaments collaboration. The influential factors are both historical and structural. The historical factors, which, to a degree have become less important in recent years, involve the system of guilds with its entry restrictions to different trades and professions, as well as its control over practices. This system has changed as larger industries and companies have developed, with the major industrial unions displacing the earlier trade organizations as important centers of labor and trade influence.

Even with the expansion of industries and companies, it is still important to understand the quasiprotective, noncompetitive environment that exists in the nonguild-related industrial activities. In these industries, the trend is to search for a noncompetitive niche in the economy rather than a push into someone else's territory. Hand-in-hand with this less competitive atmosphere is ~~entry~~ <sup>access</sup> to the selected business area, and only bigger companies ~~and~~ <sup>bring</sup> capital for investment purposes into other arenas. This attitude has helped to form in Europe many almost monopolistic structures. The frequently formed cartels are vertically organized trusts and have been almost the standard form of European industrial organization before antitrust laws came into being. Cartels often split the market among their members by type of product and by quantity; quite frequently they form joint enterprises to develop export markets, especially in the Third World.

The structural factors can be considered to be as important as the above elements in producing less competition in Europe compared with that experienced in the US. These factors are size of the market versus the national budget and the number of companies in the market.

#### SIZE OF MARKET VERSUS NATIONAL BUDGET

The defense forces of the larger European countries are as varied in defense systems as the US; however, the production numbers of such systems in these countries are substantially smaller. Other European countries, being smaller, have a lesser variety of defense systems because of limited access to export markets which makes production of many types of systems impractical as well as economically infeasible. The smaller defense budgets, which can be reflective of defense needs, but also of

defense effort efficiencies cause substantial differences in defense industry activity and capabilities, including breadth of product areas, extent of the industrial infrastructure, continuity of production, and size of programs.

#### NUMBER OF COMPANIES

In addition to the immediate post-World War (WW) II situation in Europe, the economic situation, primarily based on the size of the market, has substantially limited the number of companies in the defense industry. A strong movement toward mergers imposed by the European governments on their industries in certain sectors, has reduced the number of companies even more during the past few years, so that, in some European countries, only one or two companies exist in certain segments of the defense industrial base. Although both sets of factors tend to reduce competition, many European programs were, and are, based on competitive source selection. The F-16 and Multiple Launch Rocket System (MLRS) programs from the US are cases in point. In both cases, competition was desired and attained. Table 4-1 is a list of major European defense contractors.

TABLE 4-1. MAJOR EUROPEAN DEFENSE CONTRACTORS

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HAWKER SIDDLEY	FIAT
BRITISH AEROSPACE	FOKKER
MARCONI	PHILLIPS
PLESSY	FABRIQUE NATIONAL
AVION MARCEL DASSAULT	SABCA
AEROSPATIALE	PER UDSEN
THOMPSON CSF	NORDSK
MICRO TURBO	BOFORS
SIEMANS	ERICSON
M.A.N	SAAB
KRAUSE MAFEI	VOLVO
MESSERSCHMIDT	PILATUS
CASA	ROLLS-ROYCE

---

#### WINDS OF CHANGE

As the costs of weapon systems have risen, the European countries have sought to obtain better value for their defense expenditure. Competition is seen as a way to keep defense costs down. The United Kingdom (UK) and the FRG, as an example, are adopting more competitive approaches. While minimal internal

companies may be available to enhance competition, there are other approaches to aid in reducing the overall cost. The government can obtain the needed system domestically via a consortium or through offshore procurement. The UK is examining ways to procure material under a nondevelopment item acquisition methodology similar to that used by the US Army. All of these events point to signs of major changes in attitude toward competition.

### EUROPEAN DEFENSE INDUSTRY PRACTICES

Considering the possibilities of competition, European defense business policies have been aimed at cooperation and integration of the limited market and technological-industrial base available for research, development, and production. For intra-European collaborations, the critical issues for negotiation are: (1) work (or employment) sharing, (2) technology sharing in research and development, (3) market sharing, and (4) risk sharing. Such collaborations are carried out typically only after a common requirement has been identified and sources selected to carry the project from conceptual design to production, with the expectation that commitments will be maintained on the negotiated issues. In some cases, given an adequate scale of production and enough qualified companies, even though one company has developed the system, the production phase has been subjected to a new source selection, a practice sometimes used in the US too.

Another major difference between the US and European acquisition system is that, in Europe, programs are not normally reviewed by the legislative bodies each year during the Program Planning and Budget cycles as they are in the US. The difference in practice, including multiyear programming, normally results in more stability of a project once the program concept and overall funding have been approved by the parliament. This stability is largely driven by the underlying form of government. Under the parliamentary systems, the governments in power exert considerable control over the legislative bodies, thus ensuring the desired policies are brought to fruition. In the US process, there is considerably more latitude to challenge and potentially redirect programs.

To US industry, the European pattern of governmental-industrial cooperation is a comparatively unfamiliar environment. However, consolidations and international collaboration among European nations and industry have dramatically contributed to overall European defense industrial capability, and probably to marked efficiency and productivity through building on the well-capitalized industries of the principal European partners. Several additional factors are important. First, many of the

nationalized companies are being privatized, thus diminishing some of the close government/industrial bond. Second, the costs of labor are forcing companies toward greater automation. Particularly in the high-technology areas, the UK and French collaboration has led to the Lynx, Gazelle, and Puma helicopter; and Martel antiship missile; and the Jaguar ground attack/training jet; French and the FRG collaboration has resulted in the HOT and MILAN antitank weapons, the Kormoran air-to-ship missile, and the Alpha Jet and Roland; Canadian, the FRG, and French collaboration has produced a surveillance drone; and French and Italian collaboration has produced the OTOMAT SS naval missile and air-to-surface Albatrosses. The joint efforts between the UK, Italy, and FRG resulted in the Tornado fighter. The success of that program has spawned interest by the UK, France, Italy, the FRG, Spain, and also the US in building a European Fighter Aircraft (EFA) for the 1990s. Cooperation is ongoing between the UK, France, and the FRG to develop a third generation antitank guided weapons program, again with US interest in participation. Appendix C provides a detailed list of armaments cooperation programs. Many of these systems are clearly competitive with US designs on a systems performance basis. The US advantage seems to be in its ability to manage mass production efficiently, and the larger market it can command.

#### INDUSTRY AND EDUCATION

The nonuniversity engineer in Europe is the backbone of all industrial enterprise, while the trade masters are still quite often the souls of the workshops. The education of the non-university engineer takes approximately eight (including three years of engineering college) years with 30 hours per week in the classroom and approximately 15 hours per week on the drafting board and in the workshop; the trade master has about 10 hours per week in the classroom and 30 hours on the shop floor. In contrast, the academic engineer, (degree equivalent to the US masters degree) has approximately 35 hours per week of classroom education for five to seven years, and, in addition, an average of seven hours per week (mostly during vacation) of floor training. This slanting of education enables the engineer from the nonuniversity track to communicate down to the workbench and up to the development laboratory. In addition, the separation or early specialization between design and production engineers is almost unknown in Europe. In fact, independent design offices, or the physical separation of design offices from the plants, are very rare in Europe.

The talent distribution in the work force permits European industry to set up highly flexible manufacturing programs and to achieve efficient production of small lots. US industry must be

more specialized or subdivide the tasks to use a less skilled work force. The net result is that US operations tend toward large manufacturing units, with high specialization, versus the generally smaller scale of European operations. This smaller scale, combined with emphasis on work force stability to be discussed later, results in relatively labor-intensive European operations. Although European and US industries are introducing more production automation, there still is heavy European reliance on labor-intensive methods--methods tailored to smaller production runs, constrained funding profiles, and national employment policies.

### TAXATION

Although Europeans have quite a common view toward taxation and, in particular, toward the definition of profit--their views are not codified in a general "European Tax Theory." They tax pragmatically. This pragmatism has evolved from the lessons of WW II, ending with the complete collapse of the European economy. Essentially, the European governments consider private business as a source of employment; and, hence, are willing to support business in various ways: tax incentives, protection, and the right to make decisions with a minimum of legislative constraints. In return, the governments expect private industry to pay for a considerable number of the social benefits such as social security. Hence, the subjects of profit, social benefits, and job security are intertwined.

Quite frequently, in Europe governments encourage the use of the shortest possible and affordable depreciation allowances in order to support segments of industry. For example, when shipyards were down for lack of orders and ship operations were booming, certain European governments (Sweden, Norway, and the FRG) induced new ship orders by permitting a reduced depreciation time of three years for ships, compared with the more conventional 15 or 20 years.

The usual purpose of the depreciation allowance is to offer the opportunity to recoup investment and/or to accumulate sufficient money to replace present equipment with new equipment after a period of use. In the US, the investor can recoup only his original capital, while the European can typically accumulate capital based on the replacement cost.

At times, when industrial growth was desired, many European governments declared any profit to be tax-free, so long as that profit was reinvested in the company of origin within the same tax year. This prevents profit from emigrating through diversification.



An interesting European concept for influencing the direction and extent of economic growth is the combination of front-end subsidy to industry with back-end taxes on profits and sales. This combination provides the European governments with a simple fiscal control tool by (1) permitting industry to supply (whatever is considered as) essential goods at low prices in the market, (2) reducing the risk in volume production of the business operation, and (3) permitting policy to determine which industries and/or products should be heavily taxed. Of course, the system presupposes that subsidies for railroads, the postal operation, and staple food, as well as school and health services, and, to a large degree, housing, are not considered as unreasonable or undesirable; however, Europeans are accustomed to subsidizing these activities as a matter of course and general public interest.

#### LABOR STABILITY AND COMPENSATION PRACTICES

The above discussion provides some insight into incentives for the European entrepreneur. With the incentives goes an obligation to stabilize the labor force. The obligation to stabilize employment is almost nowhere in Europe clearly spelled out as a legal obligation; it is rather a de facto situation enforced by union contracts pertaining to severance pay, complaint procedures, and similar institutionalized actions.

Table 4-2 illustrates some of the general differences in personnel-related practices between the US/Canada and Europe. Relatively speaking, fringe benefits represent a higher percentage of the total compensation of European manufacturing companies than of US producers. This factor provides a greater motivation for the European worker to remain with a specific company and retain his benefits, compared to the more mobile US worker. From a scheduling standpoint, the US approach of relatively random vacation periods for the workers offers somewhat more flexibility than the tendency in Europe to meet vacation needs of the work force through plant shutdowns in smaller businesses. This is accompanied by the management advantage of full work-force availability during the nonvacation period. The European labor restrictions on overtime and on extra shifts, and the very low mobility of labor can create scheduling obstacles to integrated multinational programs, although economic factors do override these inhibitions, with large programs and demanding production schedules.

Widespread inhibitions or prohibitions against layoffs of personnel in Europe frustrate savings in production costs. The emphasis on maintaining employment levels in Europe has led many

**TABLE 4-2. DIFFERENCES IN PERSONNEL PRACTICES**

	UNITED STATES/ CANADA	EUROPE
WAGES	NOMINAL FRINGES HIGH WAGES AND REAL EARNINGS	HIGH FRINGES NOMINAL TO HIGH WAGES AND REAL EARNINGS (GERMANY IS AN EXCEPTION)
INCOME TAXES	NOMINAL (CANADIAN TAXES ARE HIGHER THAN US)	HIGHER
VACATIONS	INDIVIDUAL PREFERENCE	LONGER VACATIONS AND PLANT SHUT- DOWNS
EMPLOYMENT LEVEL	VARIABLE	LEVEL LOAD
WORK SCHEDULES	FLEXIBLE	LESS FLEXIBLE AND SLOWER
LAYOFFS	NO POLICY PROHIBITING	RESTRICTIVE POLI- CIES
PERSONNEL	TECHNICIANS-- MACHINE ORIENTED	CRAFTSMEN-- PRODUCT ORIENTED
TOOLING	CONSIDERABLE AUTOMATION	AUTOMATION INCREAS- ING
OVERTIME	WORKER ACCEPTANCE	WORKER ANTIPATHY

firms to stress the continuity of output rather than intermittent large orders, that tend to create employment peaks and valleys. Consequently, the European goal is to maintain the employment level, not necessarily to increase industrial capacity or employment--at least without the strong assurance that such increased employment will be maintained over an extended period. It is this factor that makes the prospect of a surge of large orders

from the US less than attractive. Such policies constrain the ability of European firms to expand the labor force to meet schedule or production commitments. Similarly, it may be difficult to overcome temporary obstacles in order to stay on schedule or to catch up once a schedule has slipped.

It is of interest that in the FRG, compared with private aerospace firms in other parts of Europe, significantly greater use has been made of subcontractors to avoid building manpower levels higher than those which can be sustained when orders begin to fall off. In European nationalized companies such as in France, on the other hand, the situation is reversed; i.e., little use is made of subcontractors. There is a view within European industry that, until 15 years ago, productivity, as measured by output per employee, was the main criterion of management in setting labor force levels; however, in the last few years, there has been a shift toward emphasizing employment. This change is due to public pressure to make sure that defense funds are used to keep European nationals employed. The movement toward nationalized engine and airframe companies in France and the UK appears to be based on similar concerns.

There are also some general differences between the US and Europe in the way manufacturing personnel skills are developed. In the US, there has been a movement toward developing the shop employee as the technician responsible for the operation of automated or computer-controlled equipment. In some European countries, the tendency is still to view the manufacturing worker as a craftsman; however, more automation is beginning to appear. One result of this European perception is shown in the smaller number of processing instructions on engineering drawings. In many cases, the worker can influence the specifics of manufacturing based on his experience. In the case of coproduction programs, this difference in practice has, on the one hand, caused difficulties irrespective of the direction of technology flow, but, on the other, can contribute to a higher quality of workmanship for normal-sized production runs.

Finally, some of the European Economic Community nations produce, in certain industrial sectors, about 50 percent for export, e.g., automotive. Hence, exporting is for many European companies the backbone of their production, while, with few exceptions, exporting had been a marginal consideration for most American companies until recently. In addition, economic rules of European production for export are not the same as for indigenous consumption. The goal of the export-dependent industry might be to search for productivity resulting in minimum production cost, while, for an industry producing primarily for indigenous consumption, the goal might be the combination of maximum employment combined with bearable cost. The Europeans view pro-

ductivity and, hence, the capital/labor ratio in production as an interdisciplinary problem in which technology, economy, and social factors intermingle.

### MANAGEMENT STYLES

Much can be learned from management philosophies and styles. The information in Table 4-3 crosses a wide variety of chapter boundaries; however, it is believed to be more applicable in this chapter, since it compares only US and European acquisition philosophies.

Table 4-3 reveals that the US tends to attempt larger and more frequent technological advances, emphasizes government control of numerous program management details, and considers worldwide mission requirements when determining the desired performance characteristics of weapons. Europe tends to require extensively tested prototypes before making production commitments, to vest more authority/responsibility in their contractors and program managers, to emphasize competition to a lesser extent (because the size of their industrial base does not permit a large number of competitors), and to focus primarily on the European operating environment when determining performance requirements. However, export considerations are playing a more significant role as of late, e.g., in France.

### CANADIAN RELATIONSHIP TO THE US

The US/Canadian relationship has been fostered over a considerable period of time and includes several significant features of interest to a PM. The US/Canadian arrangements exist to promote a strong, integrated, and more widely dispersed industrial base in North America, while achieving the most economical use of R&D and production resources of the two countries. Economic cooperation between the two countries encompasses a host of agreements beginning in 1940. Several of the more important events are as follows:

- o 1940--The heads of the two governments pledged defense cooperation between the two nations and the creation of a standing international defense committee, the Permanent Joint Board of Defense (PJBD).
- o 1941--The heads of the two governments agreed as a general principle that, in mobilizing the resources of this continent, each country should provide the other with the defense articles that it is best able to produce and above all, produce quickly, and that

**TABLE 4-3. RELATIVE DIFFERENCES BETWEEN SELECTED ASPECTS OF US AND EUROPEAN SYSTEM ACQUISITION PHILOSOPHIES**

<b>CHARACTERISTIC</b>	<b>UNITED STATES</b>	<b>EUROPE</b>
<b>SYSTEMS ACQUISITION STRATEGY</b>	<b>DISCRETE PERFORMANCE INCREASES, CONCURRENCY</b>	<b>EVOLUTIONARY, COMPLETE DEVELOPMENT BEFORE PRODUCTION DECISION</b>
<b>USE OF PROTOTYPING</b>	<b>INCREASING</b>	<b>HEAVY</b>
<b>DESIGN TEAMS</b>	<b>LARGE, ANONYMOUS</b>	<b>SMALL, KNOWN, STABLE</b>
<b>PROGRAM STABILITY</b>	<b>ANNUAL JUSTIFICATION, HIGH PERSONNEL MOBILITY</b>	<b>MULTIYEAR FUNDING, KEY PERSONNEL REMAIN WITH PROGRAM</b>
<b>SPECIFICATIONS</b>	<b>DETAILED</b>	<b>GENERAL, PERFORMANCE-ORIENTED, INDUSTRY INPUT TO SPECS</b>
<b>PROGRAM CONTROL BY</b>	<b>GOVERNMENT</b>	<b>GOVERNMENT/CONTRACTOR RESPONSIBILITY WITH INDUSTRY</b>
<b>LEGISLATIVE INTERVENTION</b>	<b>SIGNIFICANT: PROGRAM CANCELLATIONS, RESTARTS, STRETCH-OUTS, ETC.</b>	<b>LESS</b>
<b>COMPETITION</b>	<b>GREAT EMPHASIS</b>	<b>LESS EMPHASIS</b>
<b>MANAGEMENT TECHNIQUES</b>	<b>EXTENSIVE USE: PERT, LCC, DTC, ETC.</b>	<b>MINOR USE: EMPHASIS ON DIALOGUE BETWEEN USER AND DEVELOPER</b>
<b>MANAGEMENT LAYERS</b>	<b>MORE</b>	<b>LESS</b>
<b>PROGRAM MANAGER AUTHORITY</b>	<b>MORE</b>	<b>LESS BECAUSE THE PM ENVIRONMENT IS LESS "HOSTILE"</b>
<b>MATERIEL NEEDS</b>	<b>WORLDWIDE</b>	<b>EUROPEAN PRIMARILY</b>

production programs should be coordinated to this end.

- o 1949--The governments established the Joint Industrial Mobilization Committee to coordinate the plans of the US and Canada for industrial mobilization. The joint Committee is responsible to the Permanent Joint Board on Defense on matters of industrial mobilization.
- o 1950--The US/Canada agreed upon the handling, protection, and disclosure of classified military information.
- o 1951-1956--Procedures were established for placing and administering contracts between US military Services and Canadian contractors. It also provides for certain reciprocal arrangements facilitating procurement by each of the parties in the country of the other. (DFARS 25.71)
- o 1958--The Defense Production Sharing Program was established. The USG took two major steps to permit Canadian firms to compete with US industry as follows:
  - The Buy American Act restrictions were eliminated for a wide range of Canadian supplies used in the US defense program.
  - The USG regulations were changed to permit duty free entry for such goods.

These goals and objectives are clearly outlined in DoD FAR Supplement 25.71.

- o 1970--Production planning arrangements were established to allow for Canadian participation in the US Industrial Mobilization Production Program.
- o 1971-1983--A variety of agreements on audits, industrial security, and placement of Canadian firms on DoD qualified products lists were concluded during this period. In addition, a variety of weapons data exchange and test and evaluation agreements were signed.
- o 1985--A joint government declaration by the heads of the two governments resulted from the Quebec Summit on International Security. This essentially allowed certified contractors of each country access on an equally favorable basis to unclassified strategic technical data. It also provided for effective controls to protect such data in each country.

The Canadian/US relationship has resulted in the following key elements that make the bilateral association distinctive:

- o Canada is the only US ally whose industries constitute an integral part of the mobilization base; Canadian firms are listed in the DoD Register of Planned Emergency Producers and participate in the supply of critical manufactured goods and raw materials through the Defense Materials System (DMS) and the Defense Priorities System (DPS).
- o The US has computed its strategic stockpile requirements at lower levels in recognition that many materials are available from Canada under cooperative arrangements (of 35 critical raw materials for which the US is import-dependent, Canada is a major source of 23).
- o The International Traffic in Arms Regulations recognize the unique relationship, and permit US firms to send unclassified products and technical data on the Munitions List directly to Canada, without a government license.

The results of the above efforts have been to foster an extremely close relationship. Canada buys US major defense systems, such as the F-18 fighter. In turn, industries have developed in Canada to provide highly specialized products for integration into US systems. For example, Canada has very strong aerospace and electronics industry. Close industrial relationships exist between firms on both sides of the border, thus fostering even further the common bond between the US and Canada.

#### CONCLUSION

This chapter can be regarded as only a brief overview of the allied environment. General remarks have been provided on Europe as an entity; however, the individual countries have differences that cannot be disregarded by the PM in dealing with specific governments and companies. The PM should consider this chapter as a starting point for becoming familiar with the complexities and subtleties of European history, culture, politics, economics, and industrial structure and development. In conclusion, the PM should keep the following bits and pieces of information in mind whenever the NATO arena is involved in a cooperative effort:

- o Many home markets for most European manufacturers are too small to produce efficiently, making export to

other markets a necessity. For American manufacturers, on the other hand, exporting may be either a burden, a convenience, or an advantage--but not a "must," at least not until recently.

- o Europe has had hundreds of years to learn to live with less space, scarce resources, and growth in population.
- o Europe is recognizing a need to collaborate in order to strive toward more harmonization of national interests within the scope of the EEC. There is more convergence than divergence.
- o Europe, after disastrous destructions in two world wars, has, to a large degree, given up any dogmatic ideology. Europe pursues purely pragmatic lines within the framework of the EEC.
- o Europe is, from a management point of view, not one system but a conglomerate of many interacting systems of sovereign states. In order to understand what Europe is politically, think of the United States without the federal government, plus more than 10 different languages and cultural variations. Economically, Europe is a community of states that balance their individual interests within the EEC.
- o Some countries in Europe have never had antitrust laws. In contrast, (vertical) trusts have frequently been looked at as most efficient, and conglomerates of functional, unrelated companies are not the rule. Many European companies will, as a rule, stay in their line of business and not enter unknown territory for "investment only." However, there is a rising trend toward more diversification.
- o Europe prefers and supports the intensive mix and co-operation between industry and banking. The banks are considered as the finance side of the industry. The banks are mostly the proxy holder for the investors. This arrangement plays well together with the European profit definition--in which companies need not have profit on paper in order to be considered wealthy. For example, a company can use for long-range planning large amounts for research, new equipment, expansion, promotion, accelerated loan repayments, etc., but might not show any "pay-out" profit for years. This also explains the extremely low profit figures for some of the wealthiest European companies. In Europe, the long-



range profit is of more interest than the short-range profit, i.e., there is an emphasis on stability.

- o The law of most of the European nations is founded in Roman law and the Napoleonic Code. This influences the formulation of contracts and contract disputes--quite different in many aspects from the English common law practice, of which is based on customs and usage as modified by the rulings and interpretations of the judicial system. One advantage of the codification in European law lies in simplified contracting procedures.

## CHAPTER 5 SELECTED NON-NATO COUNTRIES OVERVIEW

### INTRODUCTION

An extraordinary phenomenon of the past 20 years has been the explosive growth of defense industries among nations that had previously been content to purchase military materiel from the established producers of the major powers. This has been particularly evident in the cases of several developing nations that had been thought to lack the financial resources, economic infrastructure, or technological base for such endeavors. Nonetheless, the centrifugal effect of the loosening of major military alliances, the painful experiences of nations cutoff from established suppliers for political reasons, and the recognition that defense industries are the most rapid way to introduce high technology into industrialization efforts have all lead to drives for greater weapon self-sufficiency, and even the development of export markets.

This chapter will review some of the political, strategic, and economic rationales for the diffusion of defense industries into ever greater numbers of nations. In addition, three significant examples of countries developing independent defense industries will be examined; Japan, the Republic of Korea (ROK), and Brazil.

### HISTORICAL PERSPECTIVE

At the end of World War II, there were only three remaining nations capable of designing, developing and producing major weapon systems: the United States (US), the United Kingdom (UK), and the Soviet Union. The pre-war industries of the Federal Republic of Germany (FRG), Japan, Italy, France, and Czechoslovakia were in ruins; and the newly developed capabilities of Canada, Australia, and South Africa were little more than basic production and assembly operations; although that of Canada was substantial in size, as an extension of the US industrial base. Dependence on the major powers for protection, and the ready availability from them of large quantities of almost new war surplus arms and equipment, made the creation of indigenous defense industries less essential to war-damaged developed nations and evolving less developed nations alike.

By the 1960s, however, the declining utility of that World

War II equipment, coupled with the economic and financial revival of Europe and Japan, made the reestablishment of significant defense industries in those countries both feasible and desirable. Feasible, because the requisite resources now existed and desirable because the modernization of national armed forces through the use of domestic industries would keep jobs and revenues at home, while at the same time increasing the national technological base.

This reestablishment of defense industries throughout the industrialized world in the 1960s, laid the groundwork for the creation of new defense industries in the developing world a decade later. It was the ready availability of technology and financial assistance from multiple sources, rather than just the great powers alone, that permitted the ROK, Taiwan, India, Brazil, and others to "shop around" for the best combinations of technology, credit terms, and relaxed political constraints to meet their needs. Several events of the 1970s accelerated the trend to arms manufacturing in the less-developed world. The US involvement in Vietnam, followed by the apparent retreat from established security commitments indicated in the Nixon Doctrine, the collapse of the South East Asia Treaty Organization (SEATO), the minimal US response to unprovoked North Korean attacks on American forces, and the refusal to sell advanced equipment to long-established allies and clients in Latin America and Asia, all lead to a growing distrust of the US as a reliable supplier. The normalization of relations between the US and the Peoples Republic of China, the change in political orientation in Egypt and Indonesia, and multiple changes in orientation in the nations of sub-Saharan Africa all disrupted long-standing arms supply agreements and created the need for large scale re-equipping of forces. The United Nations (UN) arms embargo against South Africa, and the near-embargo by most major nations of weapon sales to Taiwan, drove these two industrialized nations into large-scale weapon development and manufacturing. The need for specialized equipment and the opportunity for substantial revenue from foreign sales as well as the desire not to be a total client of the US did the same thing for Israel.

Once the decisions were made to create arms industries in these nations, the inability of their own armed forces to absorb economic production runs of the more capital-intensive items led to the search for export markets and direct competition with the established producers of the major powers. Although there are numerous nations whose newly developed defense industries could be studied, this chapter will be restricted to the three major examples noted. Although they differ from each other in their security, economic, and political needs; they are nonetheless similar in that they produce a wide range of military equipment and are largely self-sufficient in defense production.

## JAPAN

The true extent and importance of Japan's defense industries is often masked behind the popular perception that a nation that contributes but one percent of its Gross National Product (GNP) to defense cannot have significant armed forces, and that most Japanese defense equipment is of US origin. The reality is that one percent of a GNP as large as Japan's produces the world's eighth largest defense budget, and that the "US" equipment in Japan's arsenal is almost all manufactured under license in Japan, and is backed up by growing numbers of state-of-the-art indigenously designed equipment.

The emergence of Japan's post-war defense industrial base can be traced to the Korean War, when Japanese manufacturers were pressed into service rebuilding and repairing US military equipment for the UN forces. After the Korean War, the US Government contracted with many of these same manufacturers to produce equipment (primarily military vehicles) for US allies in the Pacific, under the Overseas Procurement-Japan (OSP-J) program. In June 1957, the First Defense Build-Up Plan (1957-61) was adopted. From that point on, Japanese defense production has been growing in both size and sophistication.

Japan's defense industries are unique in that the major producers are among the largest industrial firms in the world (they are also largely direct descendents of the pre-war Japanese defense industry), and defense production accounts for only a small percentage of their business. Of some 2,000 defense firms in Japan, the nine shown in Table 5-1 below produce 80 percent of all defense materiel. That in turn, however, represents less than 10 percent of their overall business.

This stands in stark contrast to the United States and the NATO nations of Europe, where the largest defense producers are dependent on government orders for their very survival. Given the fact that Japan has intentionally refrained from any foreign military sales since the early 1960s, and that its own military establishment is somewhat smaller than that of the UK, economic order quantities for all but the most basic materiel are impossible. The Japanese government accepts this fact, and it is widely recognized that Japanese-built versions of US aircraft, jet engines, missiles, etc., are more than twice as expensive as their US-made counterparts. Japanese-designed aircraft and missiles are often produced in smaller quantities yet (one to two aircraft per year, for example) at staggering costs. Thus, the indigenously designed, developed, and built Kawasaki C-1 twin jet tactical transport had a production run of just 21 aircraft.

TABLE 5-1. MAJOR JAPANESE DEFENSE CONTRACTORS

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MITSUBISHI HEAVY INDUSTRIES  
MITSUBISHI ELECTRIC CORPORATION  
KAWASAKI HEAVY INDUSTRIES  
ISHIKAWAJIMA-HARIMA HEAVY INDUSTRIES  
TOSHIBA CORPORATION  
NIPPON ELECTRIC  
NIPPON NOKAN KABUSHIKI KAISHA  
MITSUI SHIPBUILDING AND ENGINEERING  
KOMATSU

---

Throughout Japan's defense industries, the investment in facilities, tooling and test equipment would support far greater production levels than any yet achieved or projected. The national policy of indigenous production at any cost can only be justified on the basis of the technology transfer involved, mainly from the US, and the maintenance of surplus capacity for potential mobilization purposes. In this regard, it should be noted that Japan is second only to Italy as a user of licensed production.

The long standing Japanese prohibition of Foreign Military Sales (FMS) is, like the reluctance to exceed one percent of the GNP in defense expenditures, only the result of cabinet guidelines; neither is enshrined in law. For many years, Japan refused to reciprocate with the US in transferring defense technology on the basis that to do so would violate their no-FMS policy. Only US threats to reduce or suspend licensed co-production agreements forced the Japanese government, in November 1983, to sign an agreement permitting the export of military technology to the United States and the joint development of new systems. The agreement, however, does not contain provisions to force sales by the private Japanese concerns who effectively control the relevant technology.

Any consideration of Japan's defense industries must take into account the fact that Japan does not have a ministry of national defense. There is a subministerial Director General of

Defense Agency, to whom the Chairman of the Joint Staff Council and the Chiefs-of-Staff of the Ground, Maritime, and Air Self Defense Forces report. Major issues of defense production are resolved by the Ministry of Finance and Ministry of International Trade and Industry, which are significantly influenced by the Defense Production Committee of the Keidanren (The Federation of Economic Organizations) a uniquely Japanese association of the manufacturing sector. The representatives of the major defense contractors who make up the Defense Production Committee are invariably retired senior officers from the Self Defense Forces.

Major items produced by Japanese defense industries, and their manufacturers, are indicated in Table 5-2.

### REPUBLIC OF KOREA

Unlike Japan, the ROK has but a short history as an industrialized nation and a shorter one yet as a major defense producer. Like Japan, however, defense industries are largely divisions of major industrial firms, and there is great reliance on licensed production.

Living under the direct threat of invasion from a militarily superior North Korea, the ROK maintains active armed forces of some 600,000 men as well as a reserve structure in excess of four million. This provides a significant home market on which to base weapons production. Until the mid 1970s, however, ROK defense industries accounted for only a small portion of their armed forces materiel requirements (uniforms, small arms and ammunition, trucks, small radios, etc.). Since then, there has been almost exponential growth, to the point where virtually all new equipment for the ROK's armed forces is now domestically produced and the ROK has become an arms exporter on a par with Israel.

The reasons for this dramatic increase are strategic, political, and economic. The strategic component is, of course, the ever-present threat of invasion from North Korea. The fragility of the 25-year cease fire, the overwhelming strength of the perpetually mobilized North, the presence of a third of the ROK population and industrial infrastructure in close proximity to the Demilitarized Zone (DMZ), and dependence upon rapid reinforcement from the US should invasion occur drive all ROK strategic thinking. The possibility of invasion must always be under consideration, and the need to contain any invasion north of Seoul until reinforcements arrive is paramount. In this regard, the fact that the US may not always be there, should invasion

**TABLE 5-2. SELECTED MAJOR JAPANESE WEAPON SYSTEMS**

<b>ITEM</b>	<b>MANUFACTURER</b>	<b>LICENSOR (IF APPLICABLE)</b>
PC-3C PATROL PLANE	KAWASAKI HEAVY INDUSTRIES (H.I.)	LOCKHEED
F-15J FIGHTER	MITSUBISHI HEAVY INDUSTRIES	MCDONNELL-DOUGLAS
F-1 FIGHTER	MITSUBISHI HEAVY INDUSTRIES	NONE *
F-100 JET ENGINE	ISHIKAWAJIMA HARIMA H.I.	UNITED TECHNOLOGIES
ATTACK SUBMARINES	MITSUBISHI H.I. KAWASAKI H.I.	NONE *
GUIDED MISSILE DESTROYERS (DDG)	MITSUBISHI H.I.	NONE *
GUIDED MISSILE FRIGATES (DEG)	SUMITOMO JUKIKAI KOGYO	NONE *
HSS-2B ASW HELICOPTER	MITSUBISHI H.I.	SIKORSKY
TYPE 73 APC	KOMATSU MFG.	NONE
TYPE 74 TANK	MITSUBISHI H.I. NIPPON SEIKOSHO	NONE
* MANY COMPONENTS BUILT UNDER LICENSE		

occur, must be recognized. This creates the perpetual need for a large force in readiness, forward deployed, and supportable with indigenous resources if necessary.

Before the late 1960s, the ROK's armed forces were very much the junior partner of the US. Equipped with World War II and Korean War vintage planes, tanks, and ships, they were totally dependent on American supplies and other logistic support. The Vietnam War, however, did much for the ROK what the Korean War did for Japan, although in a different form. A multidivision ROK expeditionary force deployed to Vietnam. It was equipped with first-line US weaponry and acquitted itself magnificently in

battle. When this force returned to the ROK in 1972-73, it brought its equipment home as well. The need to similarly upgrade the rest of the active Army then became readily apparent. ROK contractors also came to Vietnam to construct facilities, maintain equipment, and operate substantial segments of the logistic infrastructure for large elements of the US forces. The revenues and technology gained in Vietnam was soon employed world-wide, and the ROK suddenly had the financial resources and trained manpower to develop an industrial base. Given the military background of Korean leadership, and the preeminence of the Ministry of National Defense, much of this development was directed toward defense production.

Concern over US steadfastness had been growing since the minimal American response to the North Korean capture of the USS Pueblo and shooting down of a USAF EC-121. The US withdrawal from South East Asia, the declaration of the Nixon Doctrine, the Carter administration's initiation of troop withdrawals from Korea, and the near abandonment of Taiwan further sensitized the ROK's concerns over US intentions. At each step, the recognition grew that the ROK had to modernize its forces and develop a defense industrial base, not only to produce weapons, but to maintain and support them with ammunition and other consumable supplies as well. Through the Force Modernization Plan (1971-75), Force Improvement Plan (1976-81), and Second Force Improvement Plan (1982-86), a defense industrial base was constructed.

Several changes became immediately apparent. The new industrial facilities of the 1970s and 1980s were not located in the existing industrial areas near Seoul but far to the south, where they would be more secure. New industrial areas grew in central (Taegu) and southeast Korea (Ulsan, Pusan, Masan), where they were supported by an expanding rail, highway, and port network. In many cases, work forces had to be recruited and relocated from other population areas. Construction was on a grand scale. The world's largest shipyard was built by Hyundai Heavy Industries at Ulsan in the late 1970s, and, by 1980, Dae Woo Heavy Industries had a similar shipyard at Okpo. Over 70 factories were built at the Changwon Industrial Complex near Masan, where entire mountains were leveled to produce building sites. At Changwon, Hyundai builds tanks and locomotives, while Samsung Precision Industries assembles General Electric J-85 engines. An aerospace center has been established at Kimhae, where Han Jin assembles McDonnell-Douglas 500MD helicopters and Northrop F-5E and F-16 jet fighters. Dae Woo is building F-16 structural components for General Dynamics. The electronics and missile center is near Taegu. The largest ROK defense contractors are listed in Table 5-3 below.



**TABLE 5-3. MAJOR REPUBLIC OF KOREA DEFENSE CONTRACTORS**

<b>COMPANY</b>	<b>MAJOR PRODUCTS</b>
<b>HYUNDAI</b>	<b>TANKS, TRUCKS, SHIPS, FIRE CONTROL SYSTEMS, ENGINES</b>
<b>DAEWOO</b>	<b>TANKS, WEAPONS, SHIPS</b>
<b>SAMSUNG</b>	<b>JET ENGINES</b>
<b>LUCKY-GOLD STAR</b>	<b>TELECOMMUNICATIONS, RADAR, FIRE CONTROL SYSTEMS, MISSILE SYSTEMS</b>
<b>SANGYONG</b>	<b>HEAVY EQUIPMENT, ENGINES</b>
<b>HAN JIN</b>	<b>AIRCRAFT</b>
<b>KOREA EXPLOSIVE</b>	<b>MUNITIONS</b>
<b>KIA</b>	<b>MILITARY VEHICLES</b>

One of the negative impacts of the rapid expansion of the ROK's defense industries has been the emergence of significant overcapacity in the 1980s. Many early licensing agreements were signed without regard to the fact that they did not provide authority for third country sales. When domestic requirements were filled, approvals for third country sales were not forthcoming. Since virtually all of the ROK's licensing agreements are with the United States Government or US firms, the ROK foreign military sales are heavily circumscribed by US laws, regulations, and policy. Since 1982, the percentage of the ROK export requests approved by the US has ranged only from 3 percent to 8 percent. As a result, the ROK defense industries are only operating at about 50 percent capacity, and there have been a number of bankruptcies and forced consolidations. The continuing growth in non-defense industrial exports, however, is gradually reducing the importance of defense sales to the largest firms, such as Hyundai, Dae Woo, and Samsung. Fortunately, government industrialization policies had limited the percentage of capital investment that any firm could dedicate to defense production to 30 percent, which limited the extent of subsequent losses of many who had over expanded.

The ROK response to this crisis has been to encourage diversification and to develop indigenous defense systems that can be

sold freely. Many of these are reverse-engineered variants of US systems, or are being developed with the assistance of European firms. There is also a widening use of offset agreements, for systems being purchased from the US, that guarantee Korean defense industry participation. Dae Woo's involvement in the F-16 program, mentioned earlier, is an example of this. There also have been apparent unlicensed exports, particularly to the Middle East, which have caused some strain in relations with the US.

In sum, the ROK's defense industries are large, diverse, and highly capable of competing in world markets. Reliance on these industries for a substantial contribution to overseas earnings is declining in face of the realities of having relied too heavily on US technology, with all of the economic and political constraints that this entails. These industries are, however, vital to the ROK national security, and there is no doubt that the ROK will use all means to ensure their survival, although in a rationalized form.

## BRAZIL

Brazil represents the prime case of a nation whose defense industries have grown primarily as a response to economic need, the need to earn foreign exchange to fund continued national development and maintain payments on a massive external debt.

Until the post-World War II era, Brazil's strategic concerns revolved primarily around Argentina, a nation that, although smaller, was wealthier and more developed than Brazil. In fact, by 1930, Argentina was the tenth wealthiest nation in the world, with a GNP triple that of Japan! Over the next 50 years, constant political instability caused a long-term decline that gradually settled Argentina into the Third World and essentially removed it as a threat to Brazil. Brazil, in the meantime, had actively fought for the allies in World War II, for which it received large quantities of military equipment from the United States. Brazil also maintained very close military bilateral ties with the United States.

The origins of Brazil's modern defense industries dates from 1964, when a military coup ended more than a decade of political instability. The new military government wanted to simultaneously re-equip the armed forces, whose World War II equipment was wearing out, and put the nation firmly on the track of industrialization. Since the mid 1950s, the National War College in Rio de Janeiro, had been the center of thought on the interre-

relationships between national security and economic as well as social development. This doctrine postulated that national security had to be established first in order for development to occur, but, once that level of security had been achieved, national development took precedence. The advent of the new military government permitted this theory to be put into practice. At this time, a group of Sao Paulo industrialists formed the Permanent Group for Industrialization (Grupo Permanente de Mobilizacao Industrial), which advised the new government on ways in which Brazilian private industry could re-equip and modernize the armed forces, rather than relying on inefficient government run arsenals and foreign producers. Their proposals were accepted, and the government began to contract with indigenous firms such as Engesa (heavy equipment), Avibras (aircraft) and Vasconcellos (optical equipment) to repair, upgrade, and replace the obsolescent Brazilian arsenal. From the beginning, these firms and others launched into a series of licensing, technology transfer, and coproduction agreements with a broad range of US and European manufacturers. As US restrictions became more pervasive in the late 1960s and 1970s (no jet aircraft, no submarines, etc.), Brazil turned almost totally to Europe for technology. By March 1977, when the Carter administration's human rights and nuclear energy concerns forced Brazil to terminate its military aid agreements with the US, a domestic defense industrial base was in place that had no reliance on the US whatsoever. That same year, the first foreign military sale of Engesa Cascavel and Urutu light armored vehicles was made to Bolivia.

Today, Brazil sells military equipment to some 28 nations worldwide at an estimated value of \$2.4 billion per year, second only to coffee as a source of foreign exchange. Brazil is the world's largest producer of wheeled armored vehicles, provides trainer aircraft to the air forces of both France and the United Kingdom, is under contract to build main battle tanks for Saudi Arabia and is jointly developing a tactical jet fighter with Italy. An amazing record in only 20 years.

Major Brazilian defense contractors are indicated in Table 5-4. Brazilian defense products have a reputation for good performance, with relative ease of operations and maintenance. They are competitively priced and can be purchased by virtually any nation able to pay for them in cash or trade. In this respect, Brazil makes a most attractive arms supplier, and, as the sophistication of their products increase, so will the size of their market.

TABLE 5-4. MAJOR BRAZILIAN DEFENSE CONTRACTORS

COMPANY	MAJOR PRODUCTS
ENGESA	WHEELED AND TRACKED VEHICLES, ARTILLERY, AMMUNITION, ELECTRONICS
EMBRAER	AIRCRAFT
AVIABRAS	AIRCRAFT, ROCKETS, AIR DEFENSE
BERNARDINI	TRACKED VEHICLES
D.F. VASCONCELLOS	OPTICAL EQUIPMENT
IMBEL	AMMUNITION

#### CONCLUSION

The worldwide diffusion of defense industries is a fact of life and must be taken into account by US defense planners. The day is past when a major power can control the actions of small and regional powers through withholding defense materiel or technology. There is always a supplier who will step in to fill the vacuum, particularly in weapon systems of low to moderate sophistication. The United States, however, retains some leverage in the control of highly desirable technology in areas such as jet engines and fire control systems. This leverage, however, is eroding as other nations improve their technological base. As US industrial firms increase the size and scope of their interactions with their emerging counterparts in Asia and Latin America, we should search out areas in which cooperative programs could be developed to enhance the capabilities of all the free world's defense industries.

## **CHAPTER 6**

### **ACQUISITION STRATEGY**

#### **INTRODUCTION**

To understand Acquisition Strategy (AS) and place it in proper perspective at the program level, the Program Manager (PM) should have an appreciation for the relationship between national security strategic planning and the acquisition of major defense systems in the context of the international acquisition environment. The international acquisition environment is a major influencing factor in selecting the important issues and alternatives of AS development. The Department of Defense (DoD) and military Service policies, processes, and participants are important, as is the contribution of industry. The roles, concerns, and possible actions of participants in the Executive and Legislative Branches are critical to any program's success. All inputs must receive appropriate attention in the development and execution of an acquisition strategy.

#### **CONCEPT**

The AS has been defined as a "master plan, road map, blueprint, and plan to plan by"--but perhaps most appropriately as "the conceptual basis of the overall plan that a PM follows in program execution." The AS encompasses program objectives, direction, and control through the integration of strategic, technical, and resource concerns. Ideally, it is structured at the outset of the program to provide an organized and consistent approach to meeting program objectives within known constraints. It is later modified as more information is acquired. Each strategy is, of course, tailored to the specific program. Throughout the program's life, the strategy evolves as the various aspects interact with each other to accommodate change and reduce risk. The AS can never be regarded as a rigid plan but must change to meet the program goals, particularly in the international arena.

The primary purpose of an AS is to prioritize and integrate many diverse functional requirements, to evaluate and select from among the important issue alternatives, to identify the opportunities and times for critical decisions, and to provide a coordinated approach to achieving program objectives economically and effectively. In domestic programs, the PM follows the United States (US) way of doing business. In the international arena, all participants must agree on what makes good business sense. What is attractive nationally may not be viable internationally.

The AS is the baseline for preparing other plans and activities. It can become a contract between the PM and the military Service head. The PM should be involved from the outset and ideally should participate in the Memorandum of Understanding (MOU) negotiations, as was the case in the Army's Multiple Launch Rocket System (MLRS) program. Early PM involvement builds commitment to the program and fosters an understanding of what must be done to make the international program a success. Figure 6-1 provides a conceptual approach to developing an AS and will form the basis for guiding much of the subsequent discussion.

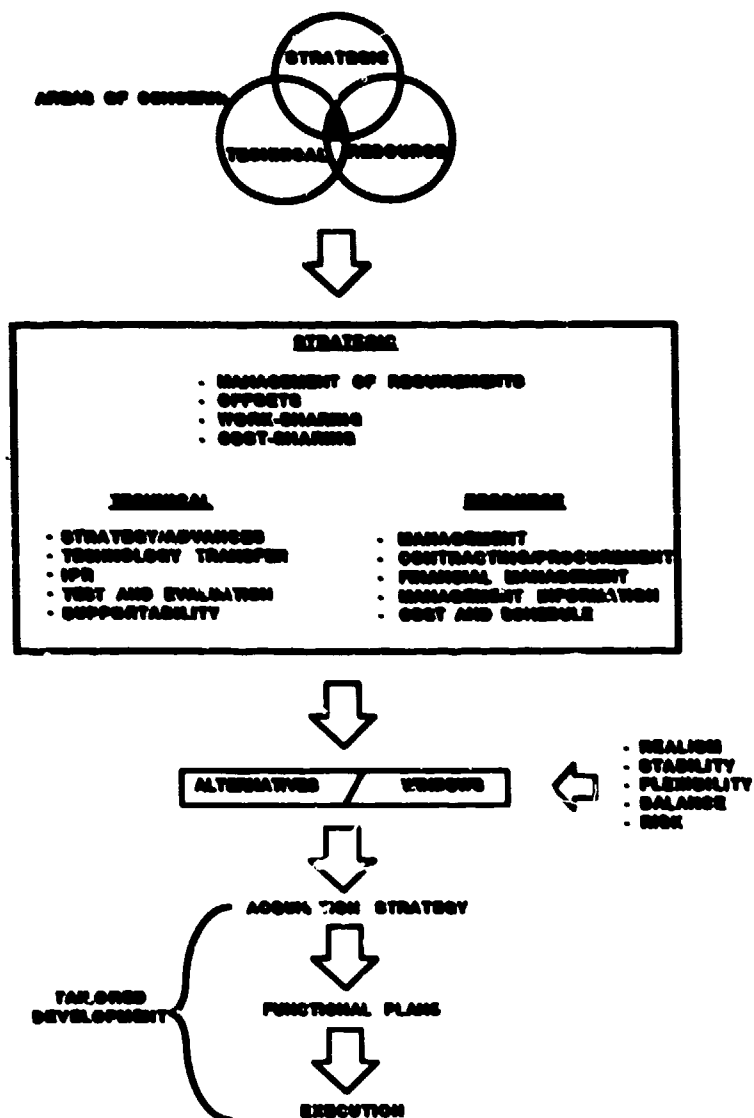


FIGURE 6-1. OVERVIEW OF THE CONCEPTUAL BASIS FOR DEVELOPING AN ACQUISITION STRATEGY

Development of an AS requires the assistance of many organizations. In both the national and the international arena, it may involve sensitive or difficult political, military, economic, industrial, and technological issues; consequently, an ad hoc group of international acquisition experts may be required to assist in its development. Membership should be drawn from DoD personnel who have had direct experience in previous such efforts or who otherwise have recognized expertise in the principal issues involved. The completed document is coordinated in accordance with the applicable Service regulations.

The AS defines the interrelationships among the participating countries' management, technical, business, resource, military force structure, support, and testing aspects of the program. It must also address typical management issues, assess the impact of different levels of funding, and consider problems in testing, changes in requirements, control of engineering changes, and length of the development cycle. The plan should suggest preferred responses to program problems disruptive of progress.

In the international arena, various approaches to armaments collaboration exist. There will be AS content differences, depending upon the approach being pursued. The buying of an item of foreign equipment off the shelf, i.e., opening defense markets, versus cooperative development of an item, such as the Terminal Guidance Warhead (TGW) for the MLRS, certainly introduces a broad range of AS issues. Further, complications arise, inasmuch as most international acquisitions involve a program-specific MOU. Consequently, MOU and AS preparation in many cases run on parallel yet interwoven paths. The intent of this chapter is to focus on the macro view identifying the international issues that the PM must be aware of as he formulates the AS. The remainder of this chapter will focus on various strategic, technical, and resource concerns; management information considerations; schedule and cost development; acquisition strategy criteria; and an overview of acquisition processes in selected allied countries.

### STRATEGIC CONCERNS

Ideally, the PM should be the program strategist; however, in many programs, AS or aspects of AS are dictated by higher authority. The PM must be fully aware of the elements of strategic concern and must make every effort to change a dictated AS that pushes the program beyond the bounds of a feasible, appropriate approach. This section will address management of requirements as well as other strategic concerns.

## MANAGEMENT OF THE REQUIREMENTS FOR COLLABORATIVE PROGRAMS

A multinational program offers an international dimension to the AS for management consideration. A multinational program AS can be structured from the beginning if proper bilateral or multilateral requirements can be determined. Programs in which participants' requirements and goals are carefully harmonized at the outset are more likely to be successful than those in which they are not as well coordinated. The MLRS and Tornado programs are examples of well-harmonized goals and requirements being meshed to produce the needed weapon system. A built-in mechanism exists in international programs for proliferation of technical complexity, which results from the necessity to satisfy a diverse set of goals and requirements. The risk of failing to successfully integrate the myriad of technical components in the product can prove to be major impediments to program success. Meaningful early involvement among participants is better than later involvement.

The user community must perceive a real need for the product. The push by political proponents and technical specialists may well run counter to the users' desires, thus causing lack of support on the part of the latter community. There is also substantial support in the commercial literature, according to the Farr thesis (Appendix F), that "need-pull" innovations more often result in success than do "technology-push" innovations.

In the European environment, considerable emphasis has been placed by the Conference of National Armament Directors (CNAD) on identifying and agreeing upon the common threat. The US Emerging Technologies (ET) program has identified possible avenues of approach to be applied in developing systems to counter the threat. In addition, the recent Congressional initiatives have placed dollars behind various codevelopment initiatives. The above portrays the essence of managing requirements in that there is a common threat and requirement identification.

When the early stages of the acquisition process are conducted properly, the following goals should be achieved:

- o The system's performance specifications match its mission requirements.
- o Alternate ways of performing the mission are explored before systems are actually selected.
- o A variety of associated technologies and subsystems are



considered, and the development effort is initiated so that the technology will be available to meet threats and needs.

- o Cost, performance, and schedule trade-offs will be properly balanced.

The Phased Armaments Programming System (PAPS) process, discussed in Chapter 3, allows for developing competing alternative technology approaches by the participating countries, with the MND procedure making the requirements process more orderly. The agreements reached at the end of selected PAPS phases signifies the agreement to support the requirement through specific bilateral or multilateral arrangements. The PAPS/MOU process tends to reduce the influence of national and contractor advocacy in deciding what systems are to be acquired and helps ensure that alternatives for satisfying the need are considered.

The PM should also be aware of environmental uncertainties. Programs in which there is less environmental uncertainty will more likely be successful than programs that experience more uncertainty. Vulnerability to a host of environmental uncertainties ranks high among contributors to cost and schedule overruns. Changing conditions (such as increased threat or perceived military imbalance) can alter demand for the product, thereby changing planned production volumes, which, in turn, invalidates previous "per unit" cost estimates. Externally imposed budget changes, reflecting political uncertainty in any one of the participating governments, may increase unit costs, force schedule changes, and/or alter technical performance goals.

Other contributors to environmental uncertainty include currency fluctuations, inflation, protective legislation, socioeconomic policies, and differing management philosophies. The US propensity to undertake larger risk, to micro-manage and second-guess private industry, and to continually change the program as it proceeds are irritants to our foreign partners. Although some of these influences may be unavoidable, successful programs have avoided arbitrary change and have structured effective methods to deal with conflict when it arises.

#### ADDITIONAL AS STRATEGIC CONCERNS

The PM must be aware of additional issues that have been collectively placed under the strategic concerns umbrella. Once again these are topics that the PM must be concerned with in the international arena and which directly affect the program as the AS is developed.

## Offsets

Offsets and work-sharing, to be discussed later, are related to cost-sharing aspects of collaborative programs, which must consider both program efficiency and equity. The issue is to determine a balance that maximizes efficient use of participating countries' resources, subject to the minimum equity constraints needed to ensure appropriate foreign participation and still promote US interests. The work-sharing and offset issues, along with the technology transfer issue to be discussed later, have the greatest potential for creating political and economic problems and must, therefore, be handled with great care. Chapter 7 of this Guide discusses details of the offset/countertrade issue.

Government negotiation of offsets has been increasingly discouraged by DoD policy, because such offsets are likely (1) to create inefficiencies and thereby possibly obligate the US and its allies to spend more than would otherwise be needed or (2) to cause political friction among allies when offset goals or targets are not met. In May 1978, the Deputy Secretary of Defense stated in a memorandum that the "DoD shall not normally enter into such offset agreements." The evolving policy against DoD's making offset commitments reflects DoD experience that offsets are costly to fulfill and conflicts with the increasing pressure from foreign governments to accede to such arrangements.

Offsets can take many forms. They are commonly used as compensating purchases that the seller must make from the buyer. The United States Government (USG) has had this type of offset arrangement with Switzerland as a result of the sale of F-5 aircraft to Switzerland in 1975 and with Australia following Australia's procurement of US ships in 1973. Nations have also demanded offsets in the form of production work in defense items being procured by them. The share of the European Participating Governments (EPGs) in F-16 coproduction is an example of such production offsets. Development work can also be demanded by a country to offset its contribution to the funding of development for a cooperative weapon system. Finally, future production work can become an offset to current development contributions. European demands for development offsets and future production work shares in the MLRS program are examples of the latter two types of offsets.

Offsets can be demanded in commercial arrangements as well as in government-to-government negotiations. Because it is DoD policy not to interfere with commercial arrangements so long as they do not impose higher costs on DoD, commercial off-

sets are not yet the subject of DoD policy. Nevertheless, US participants in collaborative activities should be sensitive to the potential costs to the USG of commercial offsets. In particular, they may lead to transfers of technologies that could subsequently reach unfriendly hands or that could be commercially exploited by Western competitors and weaken US industrial strength in areas where there are defense mobilization or surge requirements for a minimum level of US production capability. Commercial offsets have also been increasingly criticized by some Congressmen and industry spokesmen as "exporting jobs" and by the US Treasury as weakening the US balance of payments posture. In international economic theory, they have long been considered to be economically inefficient and distorting.

### Work-Sharing

The concept of work-sharing was established to form the basis for industrial participation when dollar fluctuations began to make wide swings. These dollar-to-franc, -pound, etc., swings affected offsets through the exchange rates. As an example, a dollar-to-guilder rate of 1:5 may change to 1:2.5 over time. If the offsets were based on the first ratio, when the dollar fluctuation occurred, then the offset rate would be cut in half. The absence of a stable exchange rate caused a search for a new mechanism--work-sharing.

Work-sharing arrangements should focus on the efficient use of the participating nations' resources. Equity considerations, as contrasted with efficiency considerations, deal with the "fair" distribution of costs and benefits resulting from a program. The next section of this chapter on "Cost-Sharing" describes how efficiency and equity considerations may be balanced in arriving at a reasonably efficient, cost-sharing arrangement. Briefly stated, cost-sharing arrangements should be used to balance deviations from efficient work-sharing arrangements so that each participant pays for the value of benefits it receives from the program activities. Cost-sharing arrangements should also take unusual financial conditions of participants into consideration. The applicable MOU should tie together the relationships between cost-sharing and work-sharing arrangements.

Work shares for a participant are to be considered offsets only when: (1) they are inefficient (i.e., they do not minimize the costs of the proposed activity), (2) the receiving participant is not willing to cover the resulting higher costs and (3) the resulting higher costs (which must be shared by the USG) lower US net gains below the gains received if the defense requirement were met from within its own budget. In other words, work shares become offsets when the costs of the compensa-

tory arrangements needed for foreign participation exceed the net gains the USG would realize within the program itself. At this point, the Secretary of Defense must decide whether any other gains to the USG outside of the program (e.g., accessions by allies to other programs or activities desirable to the USG) are worth the extra cost.

### Cost-Sharing

Partners in international armaments cooperation programs have different views on how the costs and funding of such programs should be shared, particularly in relation to how the work is contracted for and shared among the industries of the participating countries. In general, DoD policy is that cost- and work-sharing are entirely different issues and should be resolved on their separate merits. Cost-sharing should be resolved on the basis of equity through negotiations to ensure that all partners bear equal or fair costs for the benefits received. Work-shares should be resolved on the basis of competition to ensure that the greatest efficiency is achieved in the use of the committed resources and that all partners get the best value for their expenditures. Historically, European partners have tended to allocate work among their respective industries in proportion to the cost shares underwritten by their governments.

Cost-sharing is a function of the following two sets of criteria:

- o Program benefits such as operational effectiveness, operational necessity, and industrial participation; and
- o Affordability.

There are several ways to arrive at how costs should be equally shared such as during cooperative development projects in which all participants have equal access to the results, which are generally a design technology rather than a product. They can be borne on the basis of procurement shares, as an example, in coproduction programs in which each government pays fully for that portion of the production that it procures. Costs could be allocated based on each nation is contributing the amount necessary to fund the work which will be performed by its own industry. Lastly, cost-sharing in proportion to work-sharing should be rejected as the worst alternative and accepted only, if at all, when the cost-sharing is correlated after the fact to a structure of work that has been determined by fair and open competition.

The MLRS is a good example of the differences between cost share and work share. The cost share is broken down as follows:

- o 40 percent of the costs are borne by the US.
- o 60 percent of the costs are borne equally by France, the UK, and the Federal Republic of Germany (FRG).

The work share, however, is split as follows:

- o 33 percent of the work belongs to the US.
- o 66 percent of the work is split equally between France, the UK, and the FRG.

### TECHNICAL CONCERNS

The extent to which the mission requirements and program objectives, i.e., AS strategic concerns, can be met by existing technology will directly determine program risk and resource needs. Each technical element will require the development of nonconflicting strategies that must be integrated into the overall acquisition strategy. This section will discuss technical strategy and advances, test and evaluation, and supportability.

### TECHNICAL STRATEGY

The technical strategy is the approach for achieving the program's system performance, design, and reliability goals. Unlike a domestic program, where technology to optimize system performance may be pursued, the PM might have to attempt to integrate the technological capabilities of several different national economies. Programs should be tailored by partitioning the standards and systems specifications to suit that program's complexity. A key consideration in the technical strategy is the degree to which the participating nations will share technology transfer.

The difficulties of developing and/or producing a system within the boundaries of the US technological environment become even more complex when it is necessary to use and integrate several foreign technologies. Problems inevitably occur when the technical strategy involves integrating subsystems or components which are products of different countries, and therefore derived from different technological approaches. In these situations, the cultural differences that influence the way that participants deal with problems may also impact on arriving at a

workable technical strategy. These cultural differences, however minor in nature, are discussed in Chapters 4 and 5.

A major consideration of any technical strategy is the selection of alternative concepts, approaches, or systems to fill the mission need. It is policy, under a domestic program, to maintain alternatives, commensurate with the risk and technological uncertainty, so that existing or maturing systems are considered, as well as state-of-the-art technical approaches. In an international program, political factors complicate these considerations, as participating governments may dictate that their specific systems or technical approach be used. PMs must, therefore, walk a narrow path in trying to maximize the effectiveness of the selected technical approach, while meeting the conditions imposed by the participating governments. This necessitates a well planned examination of alternatives through trade-off studies--a subject that the US PM normally is familiar with in national acquisitions.

Other factors to be considered in the technical strategy include such items as licensing procedures in coproduction programs, transfer of the Technical Data Package (TDP), if applicable, and US legislative restrictions. As an example, US legislative restrictions prohibit the transfer of any TDP from any arsenal that produces cannon; specifically the Stratton Amendment, which places the US Army Watervliet Arsenal in a position of supplying large-caliber tubes. The net result of this action becomes a determination as to what components must be bought in the US.

#### TECHNICAL ADVANCES

The technical strategy should include a listing of critical pacing technology advances required to satisfy the program thresholds. The initial AS may only contain a few of the pacing technology advances required, because not all weapon system alternatives have yet been explored; however, as phases proceed, necessary advances become more defined through study of the preferred alternatives. The kind of pacing technology advances required for each alternative system determines the technology risk used in the analysis of the alternative concepts. Once the preferred system is chosen, the technology advances required should be well defined, and the risks for developing those supportability thresholds. The PM must then assess these risks in following his program AS by assigning and controlling critical resources (time, money, personnel) appropriately, with special attention to the critical pacing technologies.

When technical risk and progress are acceptable, paral-

1e1, short-term, fixed-price contracts are sometimes used to evaluate and explore selected concepts. This can aid in reducing technical uncertainties for alternative approaches. Unsuccessful approaches are eliminated by continuous evaluation of contractor/in-house laboratory efforts. Figure 6-2 is an idealized example of parallel development efforts to maintain competition. Two government laboratories, three US industry participants, and one foreign contractor develop and investigate the feasibility of various concepts. The successful feasibility study done by one government laboratory is provided to the two selected US and one foreign participant for the Demonstration and Validation phase. A flyoff competition among the three participants' prototypes results in selection of one full-scale development approach, with a team arrangement consisting of the foreign industrial partner and the remaining US industry participant, resulting in a dual production agreement.

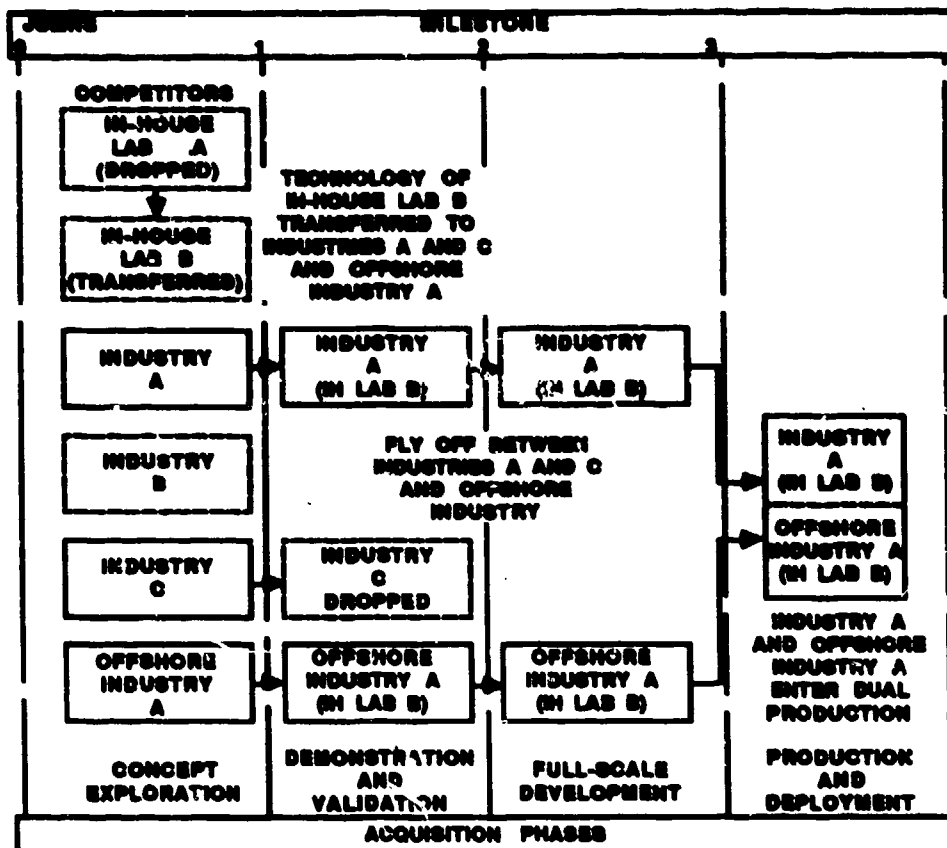


FIGURE 6-2. METHODS TO MAINTAIN COMPETITION DURING THE LIFE CYCLE

Competitive demonstrations are effective for evaluating alternative system designs. They must include a reaffirmation

that the alternative is satisfying the mission need and program objectives and a verification that the chosen concepts are sound and can perform in the intended operational environment. Competitive demonstrations can provide an effective basis for selection of the systems or critical subsystems to be continued through full-scale development.

Chapter 15 covers the various aspects of manufacturing and production management. This chapter discusses translation of technical data packages, differences in engineering practices, training of production personnel, and a host of issues that need to be considered in collaborative programs.

### RELATED TECHNICAL CONCERNS

Two related issues of importance to the technical concerns arena are technology transfer and intellectual property rights. These will be discussed in the following sections.

#### Technology Transfer

International codevelopment, coproduction, and other armaments cooperation agreements inevitably involve transfer of US-developed technology to allied and friendly partners to the agreements. Sometimes technology is transferred on a reciprocal basis, particularly in codevelopment programs. Defense-related technologies in the form of know-how, or embodied in goods, are valuable national security assets. Whether the AS is intended for a development activity, which will generate new technology, or for a production or sales arrangement involving "old" technology, protection of US technology needs to be planned for before discussing arrangements with foreigners. This planning should address the protection of two kinds of technology: that which is Classified Military Information (CMI) and that which is unclassified. The inappropriate transfer of some unclassified technology can be as harmful to US national security as the unauthorized disclosure of classified information. The issues of technology transfer and disclosure of military information are discussed in Chapters 8 and 17, respectively.

#### Classified Military Information

The USG policy is to treat classified military information as a national security asset that must be conserved and protected. It may be disclosed to foreign governments and international organizations only when there is a clearly defined advantage to the United States. Such disclosures



must be consistent with US foreign policy objectives and military security requirements and be confined to information necessary to the purpose of the disclosure. No foreign government is automatically entitled to receive US classified military information or material.

### Unclassified Information

Unclassified technological information valuable to US national security includes commercial technology that is critical to maintaining US military superiority and technology that allows US industry to maintain an effective industrial base for surge or mobilization purposes. The Export Administration Act of 1979 provides some controls designed primarily to protect the former -- although it also provides controls for items of "short supply," some of which may be of importance to the defense industrial base, such as Alaskan oil and refined petroleum products. The export control system's three principal functions are to (1) identify technologies and products that need to be controlled, (2) review and evaluate export license applications, and (3) enforce export controls.

### Intellectual Property Ownership and Rights

The ownership of specific Intellectual Property (IP) or the rights to use any of it to manufacture a weapon system or any part thereof are critical issues in collaborative armaments programs. In particular, coproduction and dual production depend on the willingness and the ability of the industrial parties to the collaboration to make available or to receive the IP or Intellectual Property Rights (IPR) that are specific to the system in question. IP for weapon systems is voluminous and complex, and there may be considerable difficulty for any given program in determining precisely who owns what IP or has the rights under what conditions to use IP "owned" by someone else. Consideration must be given to the potential difficulties involved in the requirement to be able to exchange or transfer IP for purposes of coproduction or dual production. Specifically, governments will want to ensure the availability of the IP or IPR that must be transferred, provide for their protection from misuse or unauthorized dissemination when transferred, and guarantee fair compensation to the originator or initial holder of the IP or IPR being transferred.

The ability of governments to ensure transfer, provide protection, and guarantee compensation for the necessary IP and IPR depends significantly on the distinction between "background" and "foreground" IP and how each is handled in

national procurement practices. Foreground IP refers to IP that can be identified as being generated in the course of a specific contract or procurement -- usually a development program or a program involving on going development or product improvement of a system already in production. Governments generally pay for and acquire some rights in or ownership of foreground IP. But in the FRG, e.g., the government does not automatically become the owner of IPR generated by a government contract (as is the case in the US). The FRG has only the use right. This difference in legal treatment of IPR between the two countries had caused a delay in IPR transfer from the FRG to the US for US-licensed production of the FRG 120mm tank gun. The delay could have been avoided had that difference been adequately considered early in AS. Background IP, on the other hand, is all the rest of the IP necessary for production of the system or end item that is associated with the developer/producer's prior experience and activities outside the scope of the specific contract or procurement. Foreground IP and IPR are, thus, generally more directly disposable by contracting governments, depending on their contracting practices. The ability to acquire or to effect the disposition of all necessary background IP and IPR may be prohibitively difficult or expensive for any contracting government, depending on the complexity of the system in question.

In summary, part of an early AS requires a carefully structured approach to IPR that is agreed to by all participants, including industry. This approach is especially necessary to allow competition throughout the program and must recognize that there is a large gray area in IPR, and that a TDP exchange alone is not enough. There must be an early agreement for exchange of know-how and special processes. It should be noted that North Atlantic Treaty Organization (NATO)/Conference of National Armaments Directors (CNAD) AC 313 contains a body of knowledge on this subject. IP and IPR is discussed in detail in Chapter 11.

### TEST AND EVALUATION

The test and evaluation strategy is concerned with the type, amount, and timing of testing. Testing could include components, subsystems, and systems for both hardware and software. European emphasis on extensive prototype testing should also be taken into consideration. In many cases, the limited availability of test resources necessitates some form of combined testing. One of the larger contributors to the testing area, in international armaments collaboration, is the Foreign Weapons Evaluation (FWE) program and the Nunn side-by-side testing concept as discussed in Chapter 14. The primary objective of the test and evaluation program is to discover significant technical

and operating deficiencies that can affect the acquisition of reliable, effective, and supportable weapon systems. Data should be included from our allies' test and evaluation programs, that are useful to evaluate the system suitability for the intended mission, for force structure planning, for definition of needs, and for weapons improvement, if appropriate. In side-by-side testing, binding agreement on common or joint evaluation of test results is necessary to avoid disagreements in evaluation and interpretation that surfaced as an example during the US/FRG side-by-side testing of the M-1 and Leopard 2 tanks.

### SUPPORTABILITY

Logistics planning strategy will be directed toward avoiding significant reliability and durability problems by stressing early planning. System readiness--including, especially, system Reliability and Maintainability (R&M)--has taken its place alongside system performance, cost, and schedule as a major criterion of weapon system evaluation. One of the principal means of assuring system readiness is to build R&M and other aspects of logistics supportability into the design of the system. The anticipated problems are to be identified as critical technology advances when they are significant enough to affect performance thresholds for the system. In addition, industry capacity to produce critical components, long subcontractor lead-times, use of commercial systems and components, and use of commercial logistics support should be considered by the PM.

A DoD task group (the Denoon Report) that reviewed international coproduction and industrial participation agreements strongly recommended that DoD "establish policy and increase efforts to consider principles for operations and logistics support early in collaborative program formulation." The rationale for this recommendation was that:

Some of the greatest payoffs from collaborative programs are efficiencies and savings which may accrue to all participating nations through joint operations and logistics support agreements. Frequently, however, logistical concepts for these are not prepared until sometime after development or production commitments are made. Furthermore, when allied governments procure a system on a direct commercial basis, there may be even more compelling need for them and the US to explore cooperative configuration control and other logistic arrangements. These steps will contribute to greater joint cost savings and readiness.

The development of Integrated Logistic Support (ILS) plans in a cooperative program is complicated by the differing

characteristics of the participating nations' logistics systems. For instance, the three levels of maintenance in the US military --depot, intermediate, and organizational--will not necessarily be paralleled in other countries. In addition, the capabilities of other nations' logistics systems may well be more limited. In NATO, as an example, a centralized NATO Maintenance and Supply Agency (NAMSA) exists which can facilitate cooperative logistics support.

One element that can serve to simplify supportability planning is thorough Configuration Management (CM). For multinational collaborative projects--whether codevelopment or coproduction--maintenance of CM discipline, especially Configuration Control (CC), is additionally important to ensure desired degrees of standardization and interoperability. However, national CM practices vary widely, and multinational approaches to CM and CC evolve only slowly. Standardization Agreement (STANAG) 4159 and 4188 covering CM policy and procedures respectively, apply to cooperation with European countries.

The approach followed in STANAG 4159 and 4188 is modeled on US policy as outlined in DoD Directive (DoDD) 5010.19 and is broadly consistent with its implementation in DoD-STD-480A and MIL-STD-419A. The STANAGs are anticipated to be incorporated in a collaborative project. They provide considerable flexibility for acceptance of or adaptation to national CM and CC procedures of the participating nations, depending especially on the system's life-cycle phase when collaboration is initiated, as well as on the nature of the collaboration.

STANAG 4159 and, to a lesser extent, STANAG 4188 represent combined allied judgments and points of reference for requirements with respect to CM and CC in cooperative arms programs. They are not so detailed and relatively fixed in procedures and prescribed formats as are DoD-STD-480A and MIL-STD-481A, but neither are they inconsistent with them. In one essential respect, of course, the STANAGs explicitly do what the national standards were not intended to do--namely, provide for joint configuration management and control procedures and joint CM authority.

The MLRS, as an example, utilizes these procedures. It has a Joint Configuration Control Committee (JCCC) from all participating countries. It established a common data base and utilizes drawings and planning documents all of which are on a common scale to facilitate CM and CC. All these considerations have been coordinated and are embodied in a jointly approved Multinational Configuration Management Plan and Handbook.

The acquisition of modern weapon systems--especially if

they embody complex or advanced technologies--requires cost-effective means of inspecting them, their components, and/or the processes of manufacturing them, along with other activities to assure their quality prior to acceptance. Codevelopment and coproduction programs involving contractors from several countries and/or acquisition by several governments present special problems for the PM in developing an acquisition quality program. While virtually all modern manufacturers have developed quality control programs for any significant production line and most governments have come to require inspection and Quality Assurance (QA) functions prior to acceptance for their own acquisitions, QA policies and procedures have varied significantly from country to country. To minimize the impact of such variance on allied codevelopment and coproduction programs, the NATO countries have made steady efforts in recent years to more effectively harmonize and align QA policies and procedures for collaborative acquisitions.

NATO itself has issued two key STANAGs in the area of quality assurance. The first--STANAG No. 4107--provides for "Mutual Acceptance of Government Quality Assurance." The second--STANAG No. 4108--provides for harmonization of QA policies and procedures through preparation and dissemination of Allied Quality Assurance Publications (AQAPs), which are issued as annexes to this STANAG. AQAP-10 is the umbrella AQAP for NATO countries. It is generally accepted that these STANAGs and the AQAP provide a basis for exchange of reasonable and standardized QA services.

Producibility is affected by the accuracy of the technical data package. An accurate TDP ensures that the item can be produced as designed and further allows for accurate documentation, thus enhancing supportability. Contractors should warrant that any TDP called for in the contract is accurate and complete and that it conforms with the specifications and other requirements of the contract.

The issues associated with logistics supportability are discussed in detail in Chapter 16. Related issues associated with technical management are furnished in Chapter 12.

### RESOURCE CONCERNS

Resource concerns encompass all aspects of the program pertaining to funding and budgeting, utilization/organization of personnel, schedule management, financial management, and contracting/procurement. This section addresses a variety of these issues which are pertinent to the AS.

## MANAGEMENT OF THE PROGRAM

The management structure is directly related to acquisition strategy. The management organization and procedures appropriate to any particular multinational program will depend on several key considerations: security of classified information and the protection of sensitive technology, the size and life cycle phase of the weapon system program, the number and industrial capabilities of the participants, the nation designated as the lead nation, the relative priority or urgency assigned to the program, and the degree of physical complexity, and technical sophistication of the system. Such considerations have led to a wide variety in the form, size, complexity, and degree of formality of management organizations and procedures for cooperative programs.

A recent study, conducted by Dr. Charles Farr, found the following basic tenets to be valid in structuring an international armaments collaboration program:

- o Programs guided by steering groups are more likely to be successful than programs guided by parent bureaucracies or ad hoc organizations.
- o Programs in which PMs are granted high levels of authority are more likely to be successful than programs in which PM authority is more limited.
- o PMs and team members having a more program-oriented vice parent government oriented view are more successful.
- o Minimization of uniquely international concerns, such as geographical separation, cultural differences, etc., will aid in making a more successful program.

Recognizing the above considerations, participants in a cooperative multinational weapon system acquisition effort will want to ensure both that the program is managed efficiently, effectively, and competently from a technical viewpoint and that their own national interests in the cost-sharing and work-sharing aspects of the program are fairly represented and managed at all stages. Particularly for cooperative NATO programs, participants generally desire relationships of true partnership in which they have decision-making roles commensurate with their financial, technical, and industrial contributions to the program. The program management organization and procedures that are established should be designed to accomplish the dual objectives of ensuring sound technical management and fair treatment of the interests of all participants.

The structure that is established must also provide for the management of jointly owned or used program assets. In general, program assets can be categorized as (1) intellectual property; (2) software; (3) government-furnished equipment, material and facilities; and (4) other hardware, including high-value, low-usage spare parts. A general framework for asset management and guidance for the subsequent development of detailed implementing instructions is required.

Several additional issues arising from MOU discussions may also affect the management organization. Participation of additional nations and providing for their equitable and efficient accession is a significant issue in larger programs. The amendment, extension, or other modification of an MOU may also impact the organization structure and should be considered. Details on structuring a management organization are contained in Chapter 9.

### CONTRACTING/PROCUREMENT ISSUES

One of the key decisions in the program's business strategy is the selection of the prime contractor, associate contractors, and subcontractors. These decisions are obviously affected by political considerations required by offsets to the participating countries. The program manager must assess and evaluate each participant's defense and commercial industrial base. Extensive research may be required by either the program office personnel in liaison with the participant's Ministry of Defense or by the US contractors. The PM must develop an understanding of the capabilities of the industrial base to structure the program under the political constraints. The intent of this subsection on contracting/procurement issues is to provide a general overview. Chapter 10 discusses contracting environment specifics.

#### Contracting Approach

The program may frequently be constrained by contracts or other commitments made before the current acquisition life cycle phase. For example, technology developed by a contractor under his independent research and development program or from a foreign developer holding intellectual property rights may be available to the government only if his participation in the program continues. The PM should identify all such contracts or commitments and understand their influence on his program. Elements in other contracts that affect the program, such as related

platforms and subsystems, should be identified. Many programs depend upon other projects and government agencies for their subsystems or components. An example is the MLRS project. The derivative vehicle used as the basic carrier is the responsibility of the US Army Tank-Automotive Command. The project manager's office for selected ammunition at Picatinny Arsenal was responsible for modifying and supplying the M-42 submunitions. Harry Diamond Laboratories developed the M445 electronic fuse for the MLRS, while the FRG is developing the TGV in collaboration with the three other countries. Most large programs are broken up into manageable project offices and integrated through development and production schedules.

The PM can make use of different types of contracts that have evolved and survived the test of time; were developed to fit particular circumstances; and, insofar as possible, provided a fair and equitable legal relationship for participants. Each major system acquisition program has unique features. Differences in the contracting approach can be expected to harmonize time, cost, technology, and the management environment considerations. The AS allows innovative contracting approaches. Through consideration of program goals and objectives, the PM should be able to develop a compatible contracting schedule and select a contracting strategy that maintains competition, when practical, so as to utilize resources effectively and reduce development approaches. Contracting is a tool in the acquisition process, not a substitute for management. The contracting strategy must consider the impact of procurement lead times, preclude "technical leveling" between competing contractors, and encourage innovation in proposal submittals for the next planned increment.

### Competition

For domestic programs, Office of Management and Budget (OMB) Circular A-109 emphasizes the use of strategies that will maximize competition throughout a program's life cycle. Figure 6-3 displays the types of competition that can apply to an international acquisition. When several foreign countries are participating in a program, options on competition may be limited to the early developmental stages of a program, or for a particular subsystem/component within one of the participating nations. Competition may be limited because of offset requirements, intellectual property rights, or many other possible conditions/decisions incorporated into the acquisition as a result of agreements in the MOU or by individual national economic interests. The PM's task remains, however, to obtain the best possible benefits within the conditions imposed by the governments. The PM should continually consider the use of competition to obtain trade-



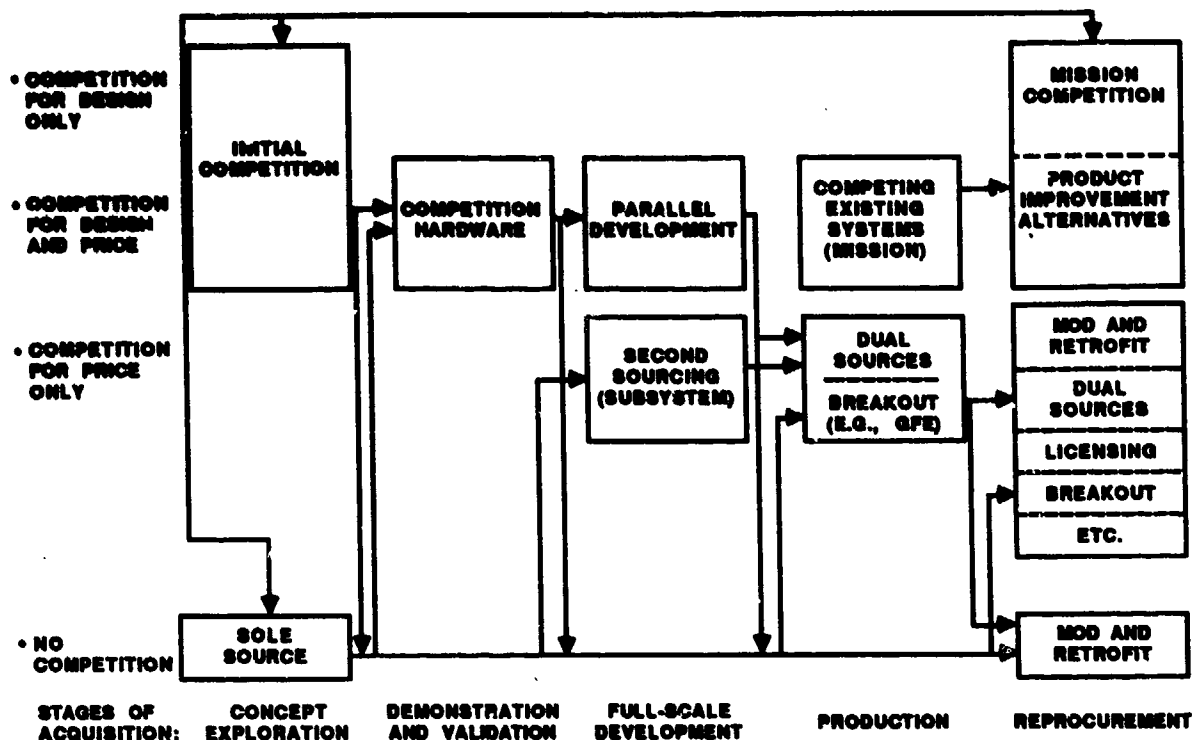


FIGURE 6-3. TYPES OF COMPETITION

offs among cost, performance, supportability, and schedule to the best advantage of his program when there is a net benefit to the participants.

There are two generic forms of competition that are recognized in military acquisition:

- o Design Competition. Two or more companies develop conceptual or design approaches, one or more of which will be used for the production contract. The competition can be extended through the Demonstration and Validation phase and into the Full-Scale Development (FSD) phase to obtain prototype performance verification and to provide a natural competition for the production contract. Typically, in large programs, design competition ceases at FSD.
- o Production Competition. Two or more companies bid to secure all or part of a production contract. Thus, there may be a winner-take-all competition or, the production may be split between two contractors. The competitors may have participated in the program prior to the first production contract, or one or more may have been brought in through a second-sourcing strategy.

Enhancement of competition can be accomplished by a variety of methods. Some of these are teaming, second sourcing, leader-follower, and breakouts.

Teaming of domestic and foreign contractors provides benefits in terms of price and technical competition. In fact, the early-on involvement of industry is desired. Teaming, in particular during the developmental process, is encouraged. It is particularly useful when one contractor does not have all the resources to accomplish development and production. At some point in time, teams may be used to compete the production contract.

US firms may decide to team with foreign firms to facilitate the transfer of technology for business reasons. This arrangement may also result in certain competitive advantages for the contractor where standardization and interoperability are at issue. Teaming allows the US firm to operate overseas on its own terms, and several of the problems of legal rights in invention, data, and software disappear if the foreign firm also is involved throughout the development process. The teaming mode is expected to be a preferred manner for penetrating the overseas defense markets because it facilitates dealing in foreign countries since one of the team is located there and technology transfer is simplified. Teaming may well restrict competition in the US because of its private nature, thereby reducing the options open to the PM. The USG may then desire to buy an assignable license from the team in order to compete the US procurement.

Leader-follower procurement establishes contractual arrangements during the development phase for the lead contractor to transfer technology to other firms for establishment of production lines. This strategy has been used extensively in naval shipbuilding programs, the TOW missile system, and for transferring certain production capabilities to our NATO allies. The leader-follower concept has more often been used to obtain increased production capacity rather than increased competition, partly because of the difficulty in motivating contractors to transfer technical expertise if there is a threat of losing future contracts.

Under second sourcing, firms performing development provide the government a complete TDP. The DoD normally validates the drawings, specifications, and other technical information before it transfers the TDP to other suppliers to establish one or more production lines. This method can be used only with comparatively large programs because of the cost involved in setting up duplicate production lines; however, second sourcing or threat of second sourcing can be helpful in reducing

costs through creating competition. It has been used successfully for small missiles, target drones, aircraft engines, and torpedoes.

The competition-tailored AS may permit component/module product improvements for breakout to second sources or they may be provided as Government-Furnished Equipment (GFE) in the form of standardized modules. Breakouts involve competitive reprocurement of spare parts and components for weapon systems. Breakout has been especially cost-effective when the weapon system producer is an assembler and piece parts are available from other vendors.

These techniques for competition require the PM to possess an adequate data base, a knowledgeable in-house team, and a detailed definition of the objectives of the contracting strategy. Patent and data rights must belong to the government, or equivalent products be available from other contractors for competition to be effective. Specific clauses for technology transfer must be inserted into the original developer's contract early in the development to ensure that proprietary rights are not a roadblock to competition. The contractor should at least be required to list all proprietary rights prior to the contract initiation. It is well recognized that a technical data package is rarely adequate for recompetition; some form of technology transfer is normally required between contractors.

In considering the above techniques to enhance competition in development and production phases, an economic analysis is required to estimate net long-term savings and impact of technical competition. Nonrecurring and start-up costs, learning-curve effects, technology transfer costs, inflation effects, and hardware costs must be considered. The government administrative personnel burden and costs for additional engineering, contracting, and testing support should also be included. In addition, DoDD 2010.6, states that "Commercial implications of technology transfers proposed in support of a collaborative project should be considered when weighing the costs and benefits of that project. These considerations should include an estimate of how the commercial applications of the technology transfer might affect US commercial competitiveness in future international markets." The Secretaries of the military Services are responsible to "prepare the technical positions on individual exchanges of technology and prepare a statement of the potential impact of impending technology transfers on the US economy when such transfers can be identified as having significant commercial implication. The military Services are encouraged to consult with industry and knowledgeable USG agencies to assess commercial implications of technology transfers." These concerns should be included in the MOU.

Using competition to drive research and development may result in shortening the acquisition cycle by allowing "doubling up" involving substitution of a shorter maturation phase with parallel completion of research and development, and Low-Rate Initial Production (LRIP) for full-scale development. This meets the challenge to shorten the acquisition cycle time to field a system. Doubling up can be most effectively used on low-technology systems where high schedule and cost risks are acceptable due to urgency of the requirement to meet critical threats or needed capabilities. The MLRS used this technique, known as planned concurrency, to reduce the time required to develop and field the system. It consisted of an enhanced validation phase and concurrent maturation/LRIP phase, which reduced the time normally consumed in the FSD phase followed by a low-rate production phase.

### Applicability of National Laws and Regulations

Considerable debate has occurred over the issue of whose acquisition laws and regulations will be used in multinational weapon programs, particularly in jointly funded codevelopment and/or coproduction programs. Two separate rules have been discussed--the "Local Rule" and the "Golden Rule."

European countries favor the usage of the "Local Rule," which argues for usage of the acquisition laws and regulations of the place where the work occurs. US policy, on the other hand, which has been named the "Golden Rule," has been to apply US acquisition laws and regulations to US purchases, no matter what the contractual source, and to have the foreign government apply its acquisition laws and regulations to a commercial contract with a US contractual source for its purchase, even though the primary place of business would be within the US. In effect, the Golden Rule provides for always using the acquisition laws and regulations of the purchasing party, independent of the location of the contractual sources, while the Local Rule provides for always using the acquisition laws and regulations of the contractual sources, independent of the location of the purchasing government.

A recent DoD study group acknowledged that jointly funded codevelopment and coproduction programs present a more complex situation. If the European partners have argued for some predetermined work-sharing arrangement based on the cost shares, they may also argue that the work shares that go to industries in their countries ought to be contracted for under local acquisition laws and regulations. Since the several partners are all involved in purchasing, the Golden Rule and the Local Rule seem

to converge, and both require a mix of national acquisition laws and regulations. In these circumstances, DoD policy as recommended by the task group is to avoid using such a mix. It recommended negotiating a "pilot nation" concept, e.g., such as in the MLRS program, in which one of the partners would be selected to act as the procuring party for all the participants in any particular collaboration. The pilot nation's acquisition laws and regulations would be used for all contracts and subcontracts placed in behalf of the collaboration.

If the US contracting laws are to apply, then some additional actions should occur. Prior to negotiating a contract with a US prime contractor requiring foreign subcontractors or directly with a foreign contractor, it is essential that the following be accomplished:

- o A review by DoD of mandatory flow-down provisions must be undertaken for the purpose of deleting or diluting those requirements that are unworkable or not applicable to foreign procurements.
- o Solicitation review panels must review requests for proposals for proposed contract provisions prior to instituting discussions with foreign suppliers or governments to determine the necessity/desirability for inclusion of each clause. Results of this review must be made available to the negotiating team, whether from DoD or industry.
- o Government/industry teams should be tasked to document difficulties in imposing mandatory flow-down provisions on foreign suppliers. This documentation should be made available to DoD personnel and participating countries for review with the goal of deleting or diluting those deemed to be unworkable or not applicable to foreign suppliers.
- o The Quayle Amendment allows waiver of any provision of law except the Arms Export Control Act (AECA) in NATO cooperative projects. Part 25 of the DoD Federal Acquisition Regulation Supplement is being amended to provide information on how these waivers will be accomplished. The intent of the DoD FAR Supplement change will be to explain organizational delegations and what is allowed to be waived by the various delegated authorities.

Preceding this review, it is also essential that the relationship between the prime contractor and the governments be addressed in the MOU. In the NATO E-3A program, for example,

contractual terms and conditions relating to indemnification, pricing rules, taxes, technical data, and patents became problems for the prime contractor because the MOU did not properly address these issues. The USG should make an effort to involve US industry in MOU activities as an advisor/consultant but should recognize the possibility of differing government-industry objectives.

### Source Selection and Contracting

Contracting for major defense systems in NATO is accomplished through methods similar to those in the US negotiation or formal advertising. However, since there are generally far fewer potential domestic suppliers for major systems in all other NATO nations than in the US, other NATO nations' procedures are less formalized and less oriented toward fostering competition than those of the US. Contractor source selection by European NATO governments is typically limited to a few well known and often "chosen" instruments for any type of major weapon system. This contrasts with DoD policy and presents a major issue in collaborative weapons development or production programs that must select contractor sources for joint or common acquisition.

The problem emerges in a cooperative weapon system program when the parties to the collaboration decide to contract jointly with a common source or set of sources for system development and/or production. Typically in such circumstances, one of the parties would be designated to contract with the selected sources on behalf of all the parties with funds contributed by all. Under the US-preferred "Golden Rule" concerning the applicability of national acquisition laws and regulations, contracts would be administered under the contracting party's laws and regulations no matter what the nationality or location of the contractors. Nonetheless, each of the parties would have a vital interest in how the contractual sources are selected and whether their selection is determined competitively to maximize the probability of obtaining the most advantageous arrangement technically and financially, or whether the selection is determined by other considerations to distribute the industrial work more equitably among the parties to the collaboration.

European nations generally and understandably argue for a source selection process that would ensure that their industries receive a fair share of the development and/or production work. Moreover, they frequently wish to designate the particular contractors to accomplish the work allocated to their industry under a cooperative program. As often as not for a high-technology system or component, there may be only one qualified supplier in their industry. The United States--arguing,

rather, that competition is necessary to ensure efficiency in the use of alliance resources and to accomplish selection of the contractor or set of contractors who can offer the "best system"-would advocate a source selection process such as that prescribed in DoDD 4105.62 on "Selection of Contractual Sources for Major Defense Systems." The issue of selecting contractors extends down to the subcontractors also. The subcontractors could be selected by the foreign government, the prime contractor or on the basis of competition. Since the issue affects work share and offsets it becomes an involved subject. As an example, in the NATO AWACS program, the prime selected all of the subcontractors. In fact, several countries increased their contribution to the program in order to obtain more in offset value. Consequently, these two converging views must be considered in both MOU and AS development and what compromise, if any, between the two broad approaches can be accepted for the particular program.

The actual process of source selection varies between the US and Europe. The US rests the sole decision as to choice of contractor in the Source Selection Authority (SSA). Acquisitions involving Europeans use a Source Selection Advisory Council (SSAC) composed of senior representatives from each country. In their view, the SSA may not disagree with the advice of the SSAC; consequently, when issues arise, they must be resolved to all parties' satisfaction. The MLRS TGN program has successfully used an international selection process. MLRS convened an international Source Selection Evaluation Board (SSEB) to evaluate proposals submitted in response to a multinationally agreed-upon request for proposals. The award was successfully made to a joint venture among industry within the four countries involved in the TGN development.

#### Contract Administration (CA)

The administration of contracts or subcontracts to be performed by foreign sources can be assigned to:

- o The CA service of the nation in which the source is located.
- o The US Contract Administration Service (CAS) component assigned to that area.
- o A separately constituted organization such as the office called "Contract Administration Service, Europe" (CASEUR) established for the F-16 program.

The choice among these approaches would be heavily influenced by the technical and organizational capacity of the other party to

perform contract administration services to US standards and to meet US legal requirements. This can prove to be a difficult determination to make. DoD 4105.59-H is a "DoD Directory of Contract Administration Services Components," which identifies contract administration services components worldwide. These components should be consulted to aid in evaluation of relevant foreign countries' capabilities in the various functional elements of CA. The US policy is to utilize the existing and in-place personnel as much as possible. If a specific program requires it, the existing CAS staff can be augmented to meet the program needs.

#### Control/Management of Prime and Subcontractors

Prime/subcontract structure should be clearly defined. Government direction should flow through the prime with established clear lines of control and authority. Program organization should be structured to reflect these lines of control and management.

One method sometimes employed by program offices to reduce the number and frequency of contract actions they manage is to use an integrating contractor. In this case, a major contractor is selected essentially to coordinate activities of a family of other contractors working on various parts of the program. This may be accomplished in two ways. One method places a prime contract with a firm which then subcontracts for the various parts of the program. In another method, the project places the contracts, but employs a single contractor to provide technical coordination of the work of the other contractors. If resources available within the program office are inadequate to manage a multitude of contracts, either of these methods is a viable way of reducing the workload.

#### Amendments to Contracts

A strong contract change control organization with clear responsibilities and authority should be established early in the program. The change control organization should include representatives of all participating governments. Amendments to contracts should only be approved after full visibility of the program impact caused by the change.

#### Taxes and Customs Duties

Governments do not normally intend to collect taxes or customs duties on purchases and imports of weapons and



other defense items for their own use. However, the tax structures of nations--including the United States--are highly complex and present an array of levies imposed by various levels of government on income, on property, and on forms of activity that include manufacture, sale, use, transport, export, and import of particular commodities or of goods in general. To avoid collection of taxes and duties on government purchases and imports, a specific statement of waiver or exemption respecting particular tax codes is generally required.

An important question for the governments participating in multinational collaborative weapon system projects is the extent to which they can grant tax and customs-duty exemptions to one another, to their contractors, and/or to components and end items that are produced and transferred in the project. Because individual country tax and duty structures are so complex and so varied, great care must be exercised in developing reciprocal expectations and agreements for any specific project. PMS should consult US experts on the laws and regulations of the countries involved as well as several types of international agreements that establish a framework for specific agreements.

#### Defense Materials/Defense Priorities Systems

The Defense Materials System (DMS) and the Defense Priorities System (DPS) are allocation and priorities systems authorized under Title 1 of the Defense Production Act of 1950, as amended. They are complementary systems, consisting of certain USG regulations and orders promulgated to accomplish two main purposes. First, in peacetime, the systems help to maintain defense systems on schedule by providing priority treatment in commerce conducted under jurisdiction of the US for the purchase of materials and products by defense agencies, contractors, subcontractors, and suppliers. Second, their operation in peacetime establishes the administrative means by which the total economic resources of the country could be mobilized should the need arise.

A principal difference between the two systems is that the DMS--as the name implies--deals with certain critical materials identified as "controlled materials" and indirectly with products embodying them, while the DPS deals directly with products generally related to national defense, independent of whether they embody critical, controlled materials. Both the DMS and the DPS require that any contractor or supplier who receives from a defense agency a "rated" contract or order under the systems must employ the priority powers of the Defense Production Act in obtaining materials, products, or services needed to com-

plete production, construction, research, and development projects for defense programs.

Basically the two systems, which are administered by the Department of Commerce, operate by causing a "priority rating" or "order" to be inserted as a mandatory condition into any contract or purchase order that is accepted by a source or supplier at any level for a program specifically identified as qualifying by a claimant agency. While the DMS and DPS are designed to satisfy US defense needs, and therefore, apply principally to domestic programs, the two basic regulations identify several cooperative programs with Canada or with friendly foreign governments. Obviously, DMS and DPS issues must be examined in AS development and appropriate discussions must occur with the participating countries.

### FINANCIAL MANAGEMENT

Affordability is another topic to be addressed by the PM in the resource arena. The requirements document should include an analysis of the overall requirement's priority of need and resources required. Affordability, in this sense, is what each participant can bear for a weapons system. What each country can afford to pay may well restrict the number of participants or the approaches taken. As an example, several advanced industrial countries may desire competitive flyoffs to enhance competition and obtain the best possible product. Other, less economically endowed countries may not be able to afford such an approach. Consequently tradeoffs must be made and the approach adopted which makes the best business sense.

### Currency Exchange

Fluctuating currency exchange rates can present serious problems in codevelopment or coproduction programs. If not managed properly, they can lead to significant distortions in planned and negotiated cost shares and to overruns of cost estimates. A recent NATO study on currency exchange established five objectives to be pursued for financial management of currency exchange problems applicable to multinational programs. The objectives are (1) to reduce the likelihood of significant gain or loss to any government or contractor resulting from currency exchange fluctuations, (2) to minimize contract costs by making it unnecessary for contractors to pad their prices to protect against loss from currency exchange fluctuations, (3) to minimize program costs by avoiding administratively complex systems and excessive financial transactions, (4) to stabilize each government's program costs by ensuring that no one bears extreme

risks of loss, and (5) to ensure that the possibility or even the appearance of the possibility for currency speculation by any participant does not exist.

The three primary approaches to currency exchange management to meet these objectives are described as: (1) the "Market Basket" approach, (2) the "National Funding" approach, and (3) a "Contractor Implemented" approach. The first approach requires that each participant supply its cost share in the same mix of all the currencies as required by the overall program. The distribution of work among the industries of the participants will determine the mix of the "market basket," and the division of cost shares among them will determine the size of each participant's contribution. The second approach says that each participant will supply funds in its own national currency up to the total of its cost share, or to the total of its work share, if the latter is smaller, and will supply only the remaining obligation in the latter case in the currencies of other participants. The last approach places responsibility for currency exchanges on the prime contractor for a multinational program. PMs must be aware of and plan for currency exchange problems in light of the above issues. Currency exchange management can work to the satisfaction of all parties as was used in the NATO AWACS, F-16, and MLRS programs.

### Auditing

Auditing is unique and is often treated separately from other contracting/financial management issues. Even if the bulk of CA services are being performed by an entity or party other than a US agency, the US must be able to assure itself that the contractor costs being billed or quoted are fair and reasonable and that certain practices and procedures were followed by the contractor. The standard method for accomplishing this is through the audit of a foreign contractor. This is particularly difficult because European industry generally regards most of their financial information as proprietary except when government contracts are involved. Europeans tend to feel that the market place should determine the price of a product and that the manufacturers' costs and expenses are secondary in establishing the price. This, of course, cannot be accepted by the USG for cost-reimbursement types of contracts nor for initial price acceptance in most other negotiated contracts. In international programs, the European governments desire to audit their own contractors.

Essential questions which must be addressed and answered are (1) Who will be responsible for the audits? (2) Is dual participation desirable? (3) What are the rights of the

parties to examination of records? (4) What are the cost accounting standards that apply to the contractor's record-keeping system?

Additional issues relative to pricing, recoupment of nonrecurring costs and similar financial topics are discussed in Chapter 13. It should be noted that financial and contract management are closely related; therefore, the reader should remember to correlate these topics.

### MANAGEMENT INFORMATION CONSIDERATIONS

Information and reporting requirements should be tailored to the particular program. Consultation should occur between industry and the applicable governments, under the PM's supervision, to develop agreed-upon, integrated management information requirements. Excessive requirements add costs to the program. A balance must be made between timely visibility on program status and excessive reporting that detracts from productive efforts.

### SCHEDULE AND COST DEVELOPMENT

Development of a schedule must recognize that collaboration with allied partners introduces a variety of factors not present in a US-only acquisition. Generally speaking the US will want to proceed faster than our allies in many cases. European participation in the F-16 program introduced scheduling considerations that influenced all program phases. Some of the more important were:

- o Early delivery requirements.
- o Start-up delays associated with resolving differences in acquisition procedures, finding qualified contractors, and negotiating the division of work.
- o Longer lead times. European work force policies discouraging surges in labor contributed to longer lead times for European parts. The longer lead times pushed the US to an earlier than usual production decision, causing considerable concurrency in the schedule.

Additional considerations such as those discussed in Chapters 4 and 5 may also add cost and schedule delays; however, the central objective of greater interoperability and standardization of weapon systems and the increased quantity of systems procured must receive prime consideration. As an example, coproduction of

the Patriot system resulted in a greater number of US missiles being procured at a lesser cost to the US taxpayer.

Cost growth and drivers must be considered in AS development. The PM should identify readiness, operation and support, and manpower cost drivers in predecessor international programs. As an example, ambiguous or insufficient descriptions of work and specifications can cause cost increases. Contract clauses that are not understood may also add to costs. A recent symposium between the US and the FRG identified various factors considered to have a cost increasing influence in international programs as follows:

- o Currency exchange rates
- o Pricing procedures
- o Differing requirements among participants
- o Differing budgeting procedures/cycles
- o Increasing technical requirements
- o Poor cost estimating, planning, and monitoring procedures
- o Overstated specifications
- o Taxes and duties
- o Industrial benefits
- o Capital investment strategy.

#### ACQUISITION STRATEGY CRITERIA/ALTERNATIVES

For an AS to provide the basis for meeting program objectives and to aid in gaining international program acceptance and support, it must meet certain criteria as follows:

- o Realism
- c Stability
- o Flexibility
- o Resource balance
- o Controlled risk.

The actual AS which is developed includes the applicable strategic, technical, and resource factors and uses combinations of various alternatives to result in the final product. These alternatives/issues are as follows:

- o Competition
- o Concurrency or time phasing
- o Data rights
- o Incentives
- o Make-or-buy
- o Multiyear procurement
- o Phased acquisition
- o Source selection
- o Warranties or guarantees
- o Pre-planned product improvement
- o Test and evaluation.

#### MODES OF WEAPONS COLLABORATION IN NATO

This section is concerned with observed modes for international weapons development and production. These modes are provided only to give the PM an appreciation for the manner in which NATO has acquired weapons in the past. The current approaches to armaments collaboration are discussed in Chapter 2. The PM should be aware of these modes as the various issues discussed above will all apply in greater or lesser degree depending upon the acquisition approach that is chosen. Eight different modes have been identified by Robert Foxcurran as follows:

- o Mode 1 Licensed production of a US-developed system in one European nation
- o Mode 2 Licensed production in Europe by a multinational consortium of a system developed in the US
- o Mode 3 Codevelopment and coproduction among European nations

- o Mode 4 Licensed production in the US of a system developed in Europe
- o Mode 5 Transatlantic multinational development
- o Mode 6 Bilateral offset arrangements
- o Mode 7 Transatlantic multinational production or systems integration by a US-led consortium
- o Mode 8 Multisystem packages.

### COMPARISON OF THE US VERSUS ALLIES ACQUISITION MANAGEMENT

Some broad comparisons can be made with representative allies on the philosophy for managing the acquisition of defense equipment. Acquisition management control runs the gamut from departmental autonomy in some countries after the program is funded for production, to management by the executive and legislative branches of government through the annual authorization and appropriation process in the US.

Each country follows roughly the same general acquisition phases for its major weapon system. These phases include (1) identifying the requirement, (2) defining alternative weapon systems, (3) conducting feasibility studies, and (4) designing, developing, testing, producing, and fielding systems. Table 6-1 illustrates the fundamental differences in how various countries manage defense acquisition.

### CONCLUSION

In summary, during the acquisition program, efforts should be directed to meet the mission need while reducing risk to an acceptable level. Since that is the fundamental purpose of research, development, test and evaluation, much of the AS will depend on what the PM determines to be the major remaining uncertainties about cost, schedule, performance, and supportability. These uncertainties will change, as the program progresses, forcing AS reassessment and revision. The AS should specify those major problem or risk areas to be overcome to achieve the overall program objectives and goals and help in the selection of the most appropriate approach.

In the day-to-day business of managing the program, the PM should reserve for himself the opportunity to reassess his strategy. The PM will want to verify that assumptions continue to be valid, that results of decisions have not taken the program in an

**TABLE 6-1. MANAGEMENT AND FUNDING OF REPRESENTATIVE COUNTRIES**

COUNTRY	MANAGEMENT OF THE PROGRAM	DEFENSE FUNDING OF PRODUCTION PROGRAMS
CANADA	DEPARTMENT OF NATIONAL DEFENCE (DND)	ANNUAL EXPENDITURES (CASH FLOW) APPROVED BY PARLIA- MENT TO SUPPORT CURRENT YEAR TOTAL OF THE DND 10- YEAR DEFENSE SERVICES PRO- GRAM
UNITED KINGDOM	MINISTRY OF DEFENCE (MOD)	ANNUAL EXPENDITURES (CASH FLOW) APPROVED BY PARLIA- MENT TO SUPPORT CURRENT YEAR TOTAL OF THE MOD 10- YEAR LONG-TERM EQUIPMENT PLAN
FEDERAL REPUBLIC OF GERMANY	MINISTRY OF DEFENSE WITH SOME BUNDESTAG REVIEW OF SELECTED PROGRAMS	MULTI-YEAR PROGRAMMING. ANNUAL EXPENDITURES (CASH FLOW) REVIEWED BY BUNDESTAG TO SUPPORT CURRENT YEAR TOTAL OF THE MOD 5-YEAR PLAN. MAJOR SYSTEMS, OVER \$50 MILLION DM, REQUIRE PARLIAMENTARY APPROVAL
UNITED STATES	DEPARTMENT OF DEFENSE WITH CLOSE OVERSIGHT BY CONGRESS	ANNUAL AUTHORIZATIONS AND APPROPRIATIONS BY CURRENT LINE ITEM AND PROGRAM ELEMENT UNDER 5-YEAR DEFENSE PLAN
FRANCE	GENERAL DIRECTORATE FOR ARMAMENTS IN THE MINISTRY OF DEFENSE	ANNUAL AUTHORIZATIONS AP- PROVED BY PARLIAMENT TO SUPPORT CURRENT YEAR REQUI- REMENTS IN THE DEFENSE PRO- GRAMMING LAW (5-YEAR PER- IOD)
ISRAEL	DIRECTOR GENERAL IN THE MOD	ANNUAL EXPENDITURES APROVED BY KNESSET TO SUPPORT CUR- RENT YEAR TOTAL OF THE MOD 10-YEAR PLAN



unanticipated direction, and that the selected course of action continues to be directed toward accomplishment of the program goals. The four keys to a successful collaborative program are a recognized mulilateral need, an AS that makes good business sense, management commitment via the MOU to include financial management considerations including funding stability, and program follow-through by the participants.

## **CHAPTER 7**

### **OFFSETS/COUNTERTRADE**

#### **INTRODUCTION**

Offsets, coproduction, barter, and countertrade are fast becoming common words in the lexicon of the arms trade. As the number and variety of programs have increased, so has the concern of many government agencies, private industries, labor officials, and the press. Their concern relates to the impact of these trade practices on American jobs, the United States (US) balance of payments position, technology transfer policy as well as long term consequences for the world economy and the place of the US in it.

The terms offsets, coproduction, buy backs, barter, counterpurchase, compensation, countertrade and licensed production are often used interchangeably. Before further discussion of these programs and related policies, a review of definitions is appropriate.

#### **DEFINITIONS**

Certain definitions are important to an understanding of this chapter. These definitions are provided below.

- o Offsets--Refers to a usage of industrial and commercial compensation practices required as a condition of sale for military-related exports, i.e., either Foreign Military Sales (FMS) or commercial sales of defense articles and defense services, as defined by the Arms Export Control Act (AECA) and the International Traffic in Arms Regulations (ITARs).
- Direct offsets allow for compensation in related goods, permitting a foreign country to produce in-country certain components or subsystems of a weapon system it is buying from a US supplier as a condition of the sale.
- Indirect offsets are associated with goods unrelated to the defense item sold. The supplier agrees to purchase a certain dollar value of the buyer's manufactured products, raw materials, or services as a condition of the sale, usually over an extended, open-ended period.

- o Subcontractor Production--Overseas production of a part or component of a US origin defense article. The subcontract does not necessarily involve license of technical information. This type of production is usually a direct commercial arrangement between a US manufacturer and a foreign producer, and often takes the form of a joint venture or subsidiary.
- o Overseas Investment--Investment arising from the offset agreement, taking the form of capital invested to establish or expand a subsidiary or joint venture in the foreign country.
- o Technology Transfer--Transfer of technology that occurs as a result of an offset agreement (other than coproduction and licensed production) that may take the form of research and development conducted in the buyer country, technical assistance provided to the subsidiary or joint venture in the foreign country, or other activities under direct commercial arrangement between the US manufacturer and the foreign entity.
- o Countertrade--The term is used here to describe all agreements involving the reciprocal purchase of civil or defense goods and services from the foreign entity as a condition of sale of military-related exports. The principals in these arrangements usually are a firm in a developed country and a foreign government or company. Countertrade agreements take the same general form in both the civilian and the military sectors. However, civilian countertrade contracts always incorporate penalties for nonperformance within a specified time period, whereas some military-related countertrade arrangements are best effort agreements and may have more open-ended timeframes. The most common forms of countertrade in the military sector are outlined in Figure 7-1.
- o Barter--A one-time transaction, bound under a single contract that specifies the exchange of selected goods or services of equivalent value without the use of currencies. In other words, barter agreements stipulate the quantity rather than the dollar value of goods to be traded, and only goods, not cash change, hands. When negotiated, "clearing accounts" are established to keep track of the amounts traded. At the end of the period, a tally is made, and imbalances are adjusted.
- o Counterpurchase--An agreement by the initial exporter to buy (or to find a buyer for) a specified value of

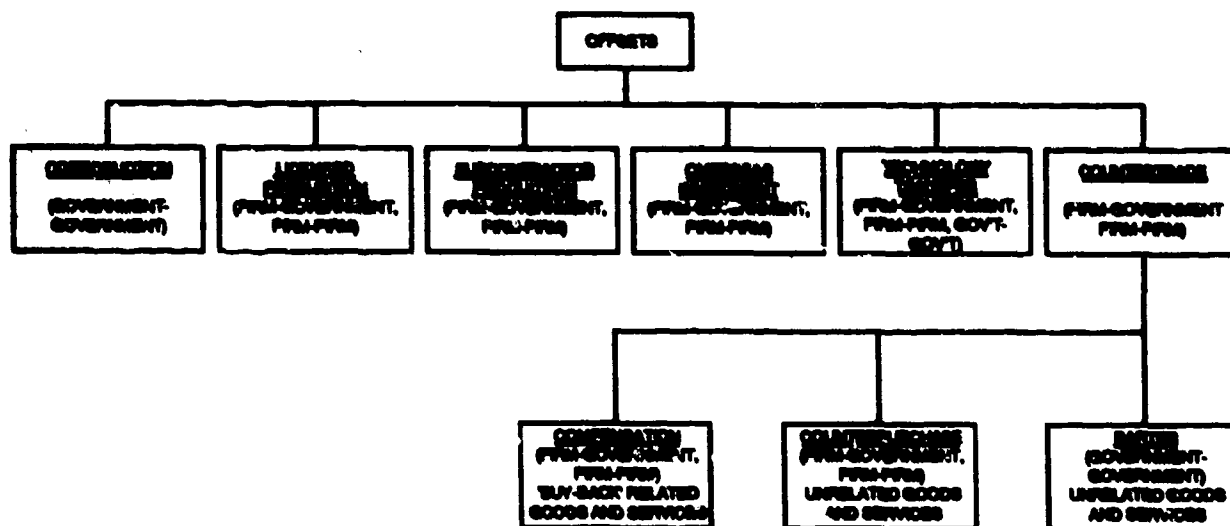


FIGURE 7-1. MILITARY OFFSETS

unrelated goods from the original importer during a specified time period. In this form of reciprocal trade, a company sells military equipment or services to another country for cash plus products. Counterpurchases are conducted under separate contract, each of which provides for an exchange of goods for hard currency.

- o Compensation--An agreement by the original exporter to accept as full or partial repayment goods derived from the original exported product (e.g., a turnkey factory, machinery, or equipment used to produce military articles). Agreements for repayment in related goods, are often referred to as "buy-backs." They are generally included in the original contract as a condition of sale.

#### BACKGROUND AND FUTURE TRENDS

Since World War II, the US has served as a major supplier of arms to allies and friends throughout the world. The basic policy of the US has been, and continues to be, that US arms are supplied to those nations that can use the weapons to bolster a military capability in which the US has interest, either directly or through regional arrangements. In general, the US has not funded or encouraged the development of weapons primarily for

export purposes. Arms exported are normally those that have been developed for the US military Services.

Production in foreign countries of portions of US systems (coproduction) began in the late 1950s and early 1960s. This trend originated in Europe and Japan but has spread geographically to include not only the economically more developed countries of the world (North Atlantic Treaty Organization (NATO) countries), Japan, Australia, Switzerland) but also many developing countries (the Republic of Korea (ROK), Israel, Taiwan, Singapore, India, Pakistan, Thailand, the Philippines, Iran, Argentina, and Brazil). Originally, the desire of the Europeans to produce portions of US systems was based on their needs to maintain domestic employment, create national defense industrial bases, acquire modern technology and management techniques, and improve their balance of payments. In the process, European industries were also made more competitive in the international arms market. In addition, any one weapon system could have spillover effects for the design and production of related weapon systems and for overall improvement of the efficiency and competitiveness of related commercial sectors of the national economies. When the process started, it was clearly in the US interest to meet some of these European needs: bolstering their defense and our defense, improving their defense industrial capability, and strengthening their overall economies. Now, with some of the concomitant effects such as increased competitiveness on the part of European and Japanese industry, these programs are often a challenge to US interests.

The US began authorizing the coproduction of US equipment with the F-104 aircraft and HAWK air defense system being the first major cases. In the early 1960s, these programs answered the Europeans' requirements/needs quite well. From 1960 to 1975, a number of other significant major coproduction programs were undertaken within NATO and with Japan, the ROK, and Taiwan.

The largest of these programs was the purchase of the F-16 by Norway, Denmark, Belgium, and the Netherlands (known collectively as the European Participating Governments (EPGs)). In a program valued at \$2.8 billion (January 1975 dollars), the EPGs are coproducing 10 percent of the value of the initial US aircraft, 15 percent of the value of all third-country aircraft, and 40 percent of the value of their own aircraft. They are guaranteed a minimum offset level of 58 percent of their initial F-16 purchase, while the US Government (USG) is committed to seeking 100 percent offset by using third-country sales aircraft and, to the extent possible, other offset work of a comparable technological level.

While meeting the European needs listed above, these pro-

grams also were of benefit to the US. They increased sales of the US systems, enhanced standardisation in the region, established second sources with potential applications for follow-on logistic support, provided relatively modern, top performance systems to US allies, and generally enhanced US ties with the coproducing nations.

From the European nations' perspectives, there were, nevertheless, drawbacks to coproduction of US systems. Program costs could be high. Even with coproduction, a significant amount of orders (such as piece parts) still went to US industries, either because it was more price-competitive or because it was not economically efficient for the coproducing nation to qualify domestic industries to the specification criteria. The technology transferred was not always the most recent, and European design and development capabilities were not being used. In addition, the Europeans were not involved in the original definition of the weapon systems capabilities and design; as a result, US weapons characteristics were not necessarily congruent with European operational requirements. Moreover, to the Europeans, the process seemed one-sided, since the US was neither procuring nor coproducing European-designed systems.

#### OFFSETS AND CODEVELOPMENT

Recognition of these drawbacks led the European nations, when procuring weapon systems from the US, to articulate the additional requirement for offsets over and above the coproduction of systems intended for their own forces. This offset might be either direct or indirect including the production of portions of systems intended for US forces or for US FMS sales, bidding on other Department of Defense (DoD) procurements, or sales to the US of other unrelated defense items or services.

For the Europeans, offsets serve to relieve the various economic strains associated with weapons procurement. Their acquisition of US technology improves their long-range competitiveness. The production work itself leads to job creation and import substitution. In addition, and to a greater extent in recent years, the US and its NATO allies have indicated a desire for codevelopment, in which the European nations and the US jointly define system requirements and jointly perform system engineering with eventual arrangements for production in both the US and Europe. Europeans see codevelopment as a means to involve their own engineering and research resources in modern technology and their armed forces in systems definition.

One of the first government-to-government programs involving offsets (with no coproduction) was that of Norway for an FMS

purchase of TOW missile systems and tracked vehicles in 1968. The Memorandum of Understanding (MOU) placed the primary burden on DoD to offset 25 percent (\$50 million) of Norway's \$200 million purchase. Similar agreements were reached with the United Kingdom (UK), in 1971, for a DoD offset target of about \$37 million against the UK. FMS purchases of \$134 million and with Australia, in 1973, for DoD to supplement US contractor efforts to provide no more than 25 percent offset for significant Australian purchases.

In 1975, the US and Swiss governments signed an MOU in which the US agreed to seek a minimum of 30 percent combined industry and government offset in connection with the Swiss FMS purchase of 72 F-5 aircraft. Against a total program value of \$400 million, the minimum offset agreed to was \$120 million with July 1983 as the completion date. At present, \$209 million has been offset largely through industry efforts, and the minimum target, has therefore, been met. However, intense Swiss pressure on the USG during the early years of the program, as well as previous USG experience with the difficulties of administering offset programs, led to a policy, reflected in the 1978 Duncan Memorandum, that DoD would not obligate itself to satisfy commitments for offsets or compensatory coproduction. The burden was to be passed to US industries making the sales. Because of the 1978 Office of the Secretary of Defense (OSD) policy, for their follow-on buy of F-5s in 1980, the Swiss had to reach an offset agreement directly with US industry. One of the main reasons given by the Swiss for an offset agreement was that large-scale coproduction was not feasible because of the high costs of the Swiss aircraft industry. The Swiss thus used their leverage to get additional offsets outside of coproduction.

A relatively recent offset program that was concluded on a strictly US industry-foreign government basis was the Canadian F-18 procurement. For this program, the contractor (McDonnell Douglas) granted about 100 percent offsets including coproduction, establishment of non-F-18-related industrial capabilities in Canada, and marketing of Canadian goods and services. Even though the DoD was not involved in the offset package, it has become involved with regard to Navy F-18 subcontracting and through responding to Canadian requests for waiver of nonrecurring charges and for follow-on support, training, etc. US security interests were strongly served by Canadian acquisition of this high-performance aircraft for use in North American air defense. Nevertheless, the extremely large value of this offset agreement has caused concern.

A limited number of development programs involving various degrees of European participation with the US in the development of systems themselves or major modifications to a nationally

designed systems have been initiated. The primary examples of these programs are the Rolling Airframe Missile (the Federal Republic of Germany (FRG) and Denmark), NATO Seasparrow, the CFM-56 engine (France), the Multiple Launch Rocket System (MLRS) Terminal Guidance Warhead (the UK, the FRG, France, and perhaps Italy), the canceled Explosion Resistant Multi-Influence Sweep System (ERMIS) (the UK), and the recently canceled JP233 (the UK) and LOCUST (the FRG).

Almost every significant arms producer in the world has licensed another country to perform coproduction on various weapon systems. France, the UK, and the FRG have also been willing to accept significant offset demands in order to sell systems.

There is, moreover, the growing area of codevelopment in which nations agree to jointly perform the Research and Development (R&D) on a system. An extensive list of bilateral and multilateral codevelopment programs between European nations exists and appears to be growing as shown in Figure 7-2. Associated with this, some of our NATO allies (Canada, for example) are seeking guaranteed production of at least the initial production contract in return for their investment in codeveloping a system. Other NATO allies are seeking some extent of guaranteed subcontracting to reflect a return on their investments in codevelopment.

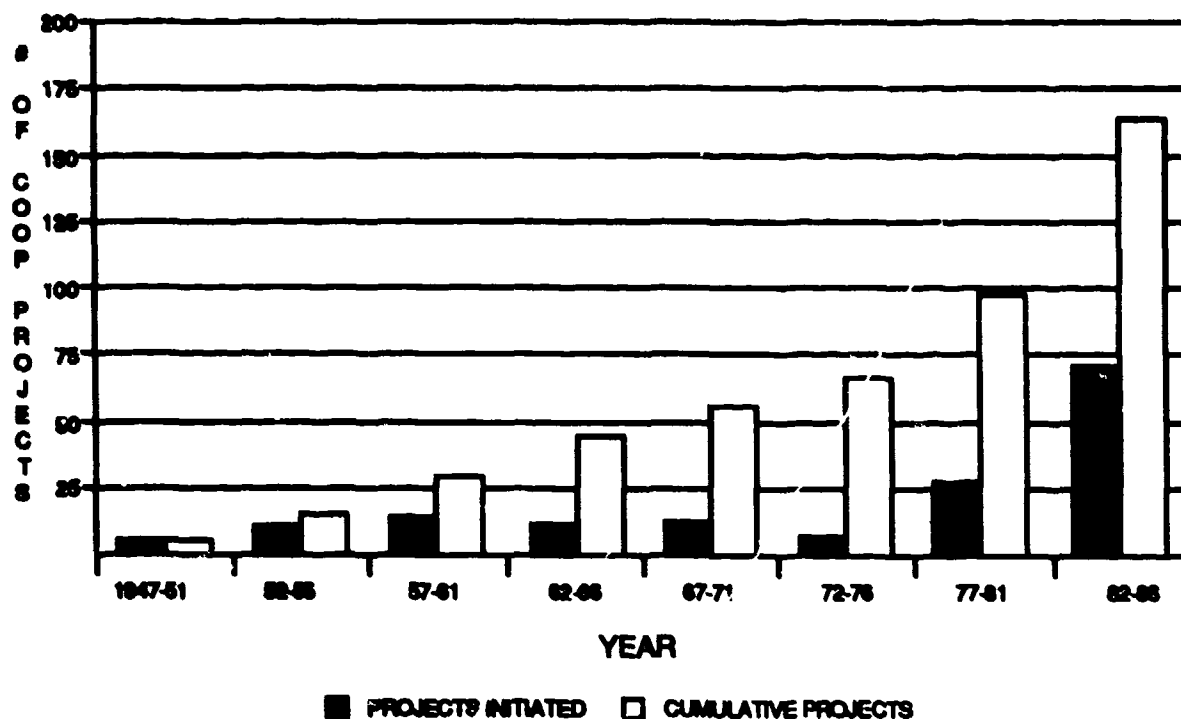


FIGURE 7-2. COOPERATIVE PROJECT TRENDS



The increase in quality and price competitiveness of foreign-developed weapon systems, combined with the willingness of the foreign supplier to offer extensive inducements, can make for a significant, head-on competitive environment when a third country is trying to decide between a system of foreign suppliers and a system of the US. The inducements offered often go beyond "offsets" that include government-subsidized financing. Some recent examples of this competition in which the US was involved are the EPG F-16, Canada's F-18, and the Netherlands' Leopard tank decisions, as well as Austria's F-16/Mirage competition.

Two other trends of note are referred to by the Defense Marketing Services (DMS) as a growing worldwide "industrial base" and growing "subterranean market." The creation of the "industrial base" results from an expansion and accompanying diffusion of the capability to produce arms throughout the world and can be expected to result in increased competition for the making of sales to third parties. The "subterranean" market is the market created by possessors of equipment who desire to improve or modify that equipment. Arrangements are made on a primarily commercial basis to perform the modifications on that equipment, and it is the opinion of the DMS that hardly any of these arrangements are made without offsets.

It can be expected that every potential arms customer who has a need and desire to develop its indigenous industry, or to offset the economic impact of arms imports, will insist on some degree of local production or other offsets; as the nation expands its capabilities, it will want to become more involved in developing weapons and finding external markets. The US is not alone in being able to offer much of what these potential customers desire. The competition has been, and will continue to be, based increasingly on a total package of price/performance/schedule/industrial participation/offsets.

#### DEFENSE COLLABORATION

The overall objective of the US international cooperation and technology transfer program is to develop, field, and support--through equitable burdensharing--the most effective and interoperable conventional military equipment for our forces and those of our allies and friends. This requires international cooperation and the exchange of military technologies and goods (when it is in the US national interest to do so) and the denial of militarily critical technologies and goods to our potential adversaries.

For some time, the US has had defense trade agreements with various nations of a more general, nonweapon system-specific

nature. The first was a production sharing program with Canada initiated in 1956; this is a long-term commitment to seek a balance of defense trade. The US-UK agreement of 1975, as well as "general and reciprocal MOUs" with other NATO nations, sets no offset targets or targets for balance of trade, but does lead to joint reviews of progress on defense trade balances. These agreements waive "buy national" requirements and establish climates conducive to the encouragement of two-way defense trade.

NATO's European members have pursued vigorous and important joint defense modernization efforts in recent years to improve their military forces, especially in the conventional arena. The impressive list of collaborative efforts constitutes important but often unrecognized progress toward more common programs and the efficiency of large-scale production, common logistic support in the field, and, of course, increased economic and military interdependence. In the whole field of armaments in Europe today, very few, if any, programs begin without cooperation among several nations. These programs develop through a natural process, in which nations and their industries determine how to work together to their mutual advantage to meet military needs.

The NATO Conference of National Armaments Directors (CNADs) is following up the 1982 Emerging Technologies initiatives by focusing attention on the development of specific force multiplier systems. Initial projects may achieve early 1990s in-service dates; longer-term development projects are also being undertaken. The US Congress mandated strong support for US-allied arms cooperation in FY 1986 by earmarking \$200 million for NATO cooperative R&D programs, appropriating \$100 million in new funding for these efforts, establishing a program for side-by-side comparative testing, and passing enabling legislation for flexibility in contracting.

For example, collaborative efforts by NATO nations that have been successful in naval armaments include the following systems:

- o NATO MK 44 torpedo
- o NATO MPA aircraft (Atlantic)
- o NATO Azores Fixed Acoustic Range (AFAR)
- o NATO acoustic communication with submarines
- o NATO Seasparrow
- o NATO helicopters Lynx, Puma, and Gazelle
- o NATO Patrol Craft Hydrofoil Missile (PHM)

- o NATO naval Forces Sensor and Weapon Accuracy Check Sites (FORACS)
- o NATO frigate
- o NATO Sea Gnat system
- o NATO conventionally powered submarine for employment in European waters
- o Very short range air defense weapon system
- o Explosion resistant, multi-influence sweep system for mines
- o Electro optical devices
- o NATO Anti-Surface Ship Missile (ASSM)
- o NATO Small Surface-to-air Ship Self-defense System for the post 1985 timeframe (NATO "6S" system).

Other collaborative efforts by NATO nations that have been successful in areas other than naval armaments are as follows:

- o F104G Starfighter
- o Fiat G91 strike fighter
- o Hawk missile
- o Sidewinder missile
- o Bullpup missile
- o Jaguar tactical and training aircraft
- o Multirole Combat Aircraft (MRCA)
- o NADGE air defense system (80 sites)
- o NATO multinational F-16 air combat fighter
- o 220 NATO airfields with common communications and pipeline links for support
- o AS-30 missile

- o 28 Allied Tactical Publications (ATPs) containing common doctrine
- o 53 Allied Communications Publications (ACPs) containing common communications procedures and doctrine.

Also, nearly 900 standardization agreements have been made between NATO nations to enable their forces to operate together in the most effective manner.

Other beneficial bilateral or multilateral projects between NATO nations, established outside the NATO framework for cooperation, are:

- o Harpoon missile
- o 3 inch/76mm OTO Melara gun
- o Terrier missile
- o Olympus/Tyne engines
- o M20 series fire control systems
- o Tri-partite Mine Counter Measures (MCM) vessel
- o Exocet missile.

Appendix C provides additional detail on major collaborative programs involving the US and European nations. This listing demonstrates the extent to which the arms transfer relationship between the US and Europe has evolved from the relatively simple supplying of US arms after World War II to a complex network of arms trade involving development, production, and procurement efforts on both sides. Similar relationships have been evolving between the US and other allied or friendly nations (such as Australia, the ROK, Japan, and Israel), as well as between other arms suppliers and their customers.

#### CONGRESSIONAL CONCERNS--IMPACT OF OFFSETS

The significance of countertrade and offset arrangements, in regard to foreign purchase of American goods and services and the political impact of this phenomenon on the competitive position of US industries, has resulted in considerable congressional interest. In a July 1985 report on this issue, following hearings held by the Subcommittee on Economic Stabilization of the House Committee on Banking, Finance, and Urban Affairs, the following concerns were registered:

Increasingly, such arrangements are required by foreign buyers as a condition of the sale in order to counter or offset the economic impact of the sale on the purchasing country. These arrangements take many specific forms, including requiring subcontracting to firms in the purchasing country, coproduction of certain items, technology transfer, or the purchase of goods from the buyer country by the US seller.

While the specific mechanisms differ, the purpose is the same to help the economy of the purchasing country, its industrial base, its employment, and its balance of payments. It is increasingly apparent that the impact on our own industrial base, our own employment, our own balance of payments, and ultimately, the competitive position of our industries is substantial.

The report goes on to say, "As demands increase, the impact on our own industrial base and the future competitive position of our industries could be profound and irrevocable. Our Government must be concerned about whether we are inappropriately shipping American technology and American jobs overseas."

In 1984, Congress passed legislation (Section 309 at the Defense Production Act-PL 98-265) requiring the President to report annually on the impact of offsets on US defense preparedness, industrial competitiveness, employment, and trade. Section 309 of the Defense Production Act (DPA) amendments of 1984 (PL 98-265) approved April 17, 1984, reads:

Not later than 18 months after the date of the enactment of the Defense Production Act amendments of 1984, and annually thereafter, the President shall submit ... a report on the impact of offsets on the defense preparedness, industrial competitiveness, employment, and trade of the United States. Such report also shall include a discussion of bilateral and multilateral negotiations on offsets in international procurement and provide information on the types, terms, and magnitude of the offsets.

The conference report on the DPA amendments of 1984 (House Report 98-651) dated April 5, 1984, adds an additional requirement:

The conferees intend that information provided on the types, terms, and magnitude of the offsets in each report shall include the number of relevant offset agreements required by contracts, the total dollar amount of value of offsets required by such contracts, a breakdown of offsets by cate-

gory of defense material or defense services involved in such contracts, and a breakdown of such offsets by recipient countries.

In addition, each report shall contain a summary of relevant Memoranda of Understanding between the United States and foreign countries which provide the official framework within which foreign offset commitments incurred in private sales can be fulfilled. Copies of actual Memoranda of Understanding involving such offsets shall be made available to the House and Senate Banking Committees upon request, after each report has been submitted by the President.

The effort to prepare a response to Section 309 was begun in April 1984. As a result of discussion within the Interagency Groups in International Economic Policy, a separate staff level committee, chaired by the Office of Management and Budget (OMB) was formed. Members of the working group represented the Departments of State, Treasury, Defense, Commerce, and Labor; the Federal Emergency Management Agency (FEMA); the Arms Control and Disarmament Agency (ACDA); the Central Intelligence Agency (CIA); the United States Trade Representative (USTR); and the National Security Council (NSC) Staff. They met under the unofficial title of Coordinating Committee on DPA 309 Reports. The Council of Economic Advisers (CEA) assisted by reviewing the draft report.

The following definition of offsets was adopted for this report:

Offsets include a range of industrial and commercial compensation practices required as a condition of purchase of military-related exports, i.e., either foreign military sales or commercial sales of defense articles and defense services, as defined by the Arms Export Control Act and the International Traffic in Arms Regulations.

The various types of offsets are: coproduction, licensed production, subcontractor production, overseas investment, technology transfer, and countertrade (which includes barter, counter-purchase, or buy-back). Coproduction is included because the conference report listed it as a form of offset even though activities in this category are not classified as offsets in present administrative usage. Offsets in defense-related exports are frequently divided into direct and indirect classes. Direct offsets are contractual arrangements that involve goods and services addressed in the sales agreement for military exports. Included among direct offsets are coproduction, licensed production, subcontractor production, overseas investment, and technology transfer. Indirect offsets are contractual arrange-

ments that involve goods and services unrelated to the exports referenced in the sales agreement. Some forms of foreign investment, technology transfer, and countertrade are included among indirect offsets.

A database for this report was developed from responses to a questionnaire sent to US industry. The list of questions, which was developed by the Coordinating Committee on DPA 309 Reports, after extensive consultation with industry groups and formal public comment, was sent to 212 US corporate entities including subsidiaries and subcontractors. The database covers calendar years 1980-1984 and consists of four major elements: narrative responses to selected questions, sales information concerning the respondents, information on sales with offset obligations of over \$2 million, and summary information on offsets of up to \$2 million. The database also includes a breakdown of offset contracts executed during the reporting period.

For the defense-related exports covered by this database, offsets totaled \$12 billion, and sales totaled \$22 billion. From 1980 to 1984, about \$2.4 billion, or about 20 percent of the offset obligations, were implemented. Nearly 90 percent of the respondents to the survey stated that offsets were a necessary condition for the sale. Most of the offset obligations occurred in three product areas; namely, aircraft, engines, and electronics. Most of the sales and related offset obligations were with either NATO countries or other countries with whom the US has special defense security arrangements. Finally, the overall magnitude of offset obligations does not appear large in the context of the value of either total exports of the companies reporting or total military production of the companies reporting.

World macroeconomic conditions make it difficult to isolate and measure the precise impacts of offsets on US trade, employment, competitiveness, and defense preparedness. The size of defense-related offsets relative to the US economy and relative to various sectors of the economy must be taken into consideration in any analysis of offsets. In this regard, the importance of defense-related offsets depends upon the frame of reference. The average annual value of defense-related offset obligations between 1980 and 1984 (\$2.4 billion) is trivial relative to the US Gross National Product (GNP) (\$3,125 billion), total US exports (\$127 billion), or exports of US manufactured goods (\$143 billion).

The workings of the international arms trade market are governed more by the objectives and policies of purchasing and selling governments than by traditionally defined market influences. This unique situation highlights the difficulties asso-

ciated with trying to analyze international arms trade from a traditional "market economics" orientation. For this reason, the international arms market may be more accurately characterized as an arena of managed trade than as a true market in which economic influences are the primary determinants of the terms a seller must offer to remain competitive.

### REPORT FINDINGS

The following findings resulted from the OMB-chaired committee that reported to Congress in 1985 (see Appendix F):

- o Defense-related industries are characterized by a small number of government buyers who exert a disproportionate influence on the institutionalized market for defense products. Due to the buyers'-market situation, producers may have no choice but to accept offset requirements when demanded in order to obtain sales contracts. Consequently, policy alternatives typically used for industries that are closer to perfect competition may not be applicable to this case.
- o Government-mandated offsets may introduce inefficiencies since the most efficient producer may not be the one to win a given contract. Rather, the producer who offers the best offset package may win the foreign business, despite the producer's efficiency or the appropriateness of its weapon system.
- o Inefficiencies caused by offsets may also be passed to producer levels below prime contractors (i.e., to subcontractors) and could result in a multiplied effect.
- o To the extent that arms sales would not take place in the absence of offsets, sales with offsets have net economic benefits for the US as compared with no sale at all.
- o Offsets apply two opposing forces to short-run production costs (and, hence, weapon systems prices): (1) costs may be lowered by the increased size of production runs due to increased sales (assuming economies of scale exist), and (2) costs may be increased due to the expenses of countertrade commodity liquidation, foreign research and development investments, and higher foreign subcontracting prices.
- o Long-run production costs are faced with opposing forces: (1) costs may be lowered by an increased number



of producers, both here and abroad (particularly in the case of rationalization, standardization, and interoperability goals among NATO members), and (2) costs may increase if the amount and complexity of offsets demanded by purchasing nations increase over time.

- o Offsets can be effective foreign policy tools for both producing and purchasing nations. Consequently, the topic is both economically and politically sensitive.
- o Concerning the impact of offsets on US defense preparedness:
  - Coproduction and some forms of offsets contribute to obtaining rationalization, standardization, and interoperability of US forces with those of its allies.
  - US defense and foreign policy interests are served by arms transfers to allies and friends. To the extent that arms transfers would not take place in the absence of offset arrangements, some forms of offsets have positive influences on US national security interests.
  - Available evidence suggests that the profitability of defense-related industries has not been damaged by offsets.
  - Available evidence suggests that no serious capacity problems are present. Surge difficulties that do exist can be traced to a number of causes, but generally not to offsets.
  - Evaluation of the impact of offsets on subcontractors is difficult because data regarding both the negative effects (business lost due to offsets) and the positive effects (business that would have been lost had the offset not been offered to close the deal) are generally not known to the subcontractors.
- o Concerning the impact of offsets on US industrial competitiveness:
  - American defense base industries are often obligated to offer offsets in order to participate in and remain competitive in the international marketplace.

- Offsets are a factor in the competition for international defense sales and are being used by foreign purchasing governments as trade management tools for the purposes of preserving foreign exchange, targeting development of selected industrial sectors, and enhancing the capability of domestic industries through technology transfer.
  - Offsets are increasing foreign competition, particularly at the subcontractor level. However, without offsets, US industry faces the prospect of losing business.
  - While offset-related sales of defense systems contribute to the marginal income of defense firms, the health of the industry depends primarily upon USG purchases.
- o Concerning the impact of offsets on US employment:
- The employment effects of the sales by far exceed the adverse effects of offsets. Even when one considers the upper bound estimates, the study finds that the positive effects of sales exceed the adverse effects of offsets by about 62,000 job opportunities.
  - The effects to both sales and offsets are felt principally in the aerospace and avionics industries, which are fairly healthy by most standards.
  - The above-named industries aside, the effects of offsets, although widespread, are small relative to total employment in any individual industry. This conclusion holds notwithstanding the fact that the study included under adverse effects offset arrangements that cannot realistically reduce domestic production and employment.
- o Concerning the impact of offsets on the US trade position:
- The effects of military trade on the US economy as a whole are likely to be close to zero because any imbalances in such trade are likely to be counterbalanced by capital flows that affect both interest rates and exchange rates, thereby generating changes in domestic production and flows of goods and services.

- Under partial equilibrium analysis, the effect of sales and offsets is a net positive effect on the US trade position in each of the 5 years covered by the DPA 309 survey.
- Under general equilibrium analysis, the US trade balance is unaffected by defense-related offsets.

The 1986 report to Congress on the Impact of Offsets in Defense Related Exports, dated December 1986, contained the following principal findings:

- o The effects of offsets on total US employment are minor, if not actually positive. That is to say, military sales abroad without contractually required offsets are likely to reduce domestic employment somewhat more than do comparable sales with offsets. This finding holds for all of our sales combined, not for the specific sales to several of the most economically advanced individual countries in our study.
- o Though the effect of offsets on overall US employment is negligible, such offsets are inefficient, for both the US and the countries that demand them. These inefficiencies, however, are reflected more in the distribution of US employment across industries than in the level of total employment. Specifically, relative to normal trade, offsets reduce employment in industries in which the US has a comparative advantage and increase employment in industries in which the US has a comparative disadvantage. This shift in employment reduces real income, both here and abroad.
- o Independent of their effect on total US employment, the magnitude of the distortions and therefore inefficiencies introduced by offsets is positively related to their size and to the degree of their concentration in industries in which the US has a comparative advantage. As a consequence, the offsets associated with US sales to the more economically advanced countries, such as Canada and Belgium, introduce greater inefficiencies than do the offsets that are linked to the sales to the less developed countries, such as Spain and Turkey, with the effects of the offsets required by other countries generally falling in between these two extremes.

In addition, the 1986 report to Congress on offsets concluded that,

Offsets are a major factor in the competition for international defense sales, even in the sale of systems such as the Patriot missile which has no competitors. Foreign purchasing governments use offsets as a trade management tool for the purposes of preservation of foreign exchange, the targeted development of selected industrial sectors, and the enhancement of the capability of domestic industries through technology transfer. In the future, we can expect increased numbers of foreign competitors for both complete and partial weapon systems as well as commercial products because of arrangements such as the Patriot deals.

### CURRENT US GOVERNMENT POLICY

Until the mid-1970s, almost all programs involving foreign production of US defense items occurred within the context of the Security Assistance Program. In almost all cases, requests for coproduction or offsets were presented in connection with a foreign government request to acquire a US weapon system. As a result, almost all such agreements were negotiated and implemented within the Security Assistance community. Responsibilities were well understood, and channels for obtaining approval and effecting implementation were clear. Within the Department of State, the focal point for basic program approval actions rested with the Bureau of Politico-Military Affairs. Within OSD, the focal point was in Defense Security Assistance Agency (DSAA) in coordination with the country regions in USDP (ISA) and the International Affairs Counsel in the General Counsel. Within the military Services, it was located in each of the Security Assistance offices at the headquarters staff level. Interagency guidelines regulated the interface between State and Defense. Security assistance directives regulated the handling of coproduction questions within DoD.

Beginning in the mid-1970s, this picture began to change. First, a legislative mandate was issued from the Defense appropriations committees in Congress to undertake actions in support of NATO standardization. Concurrently, greater recognition was given to the interaction of foreign production capabilities and foreign sales with US acquisition strategies and the industrial base. Implementation within the DoD was through the USDRE channel, with responsibility at the OSD level vested in the Deputy USDRE for International Programs. This office initiated a large range of US initiatives with our NATO partners in support of increased standardization. In most cases, these new programs involved proposals by the US that involved European industry participation. Agreements were undertaken that combined cooperative development and acquisition of new defense items. Other agreements were proposed that involved European production of US

items and US acquisition of European systems.

Current US policy (as stated in the Denoon Report) on world-wide arms collaboration follows these precepts:

- o With all friendly nations--to encourage the strengthening of their defense forces; to improve our ties and influence with them; and to enhance standardization and interoperability with US forces.
- o Within NATO and with Japan, New Zealand, and Australia--to implement standardization and interoperability to the maximum extent feasible.
- o Within NATO--to maintain a technologically advanced and economically viable defense industrial base on both sides of the Atlantic.
- o With selected nations--to assist them in strengthening their defense industrial bases or in improving their general economies by means of collaborative defense programs.
- o The US will do its part to ensure increased two-way defense trade and aggressive, open collaborative development activities.
- o The transfer of US arms is to be done judiciously, with effective USG control and direction, to further US interests.
- o USG approval of coproduction or transfer of sensitive or advanced technology will be done only after careful scrutiny.
- o The USG remains opposed to any form of mandatory offset requirements on the part of foreign governments and to the imposition of unrelated offset restrictions on our own industries.

Specific USG guidelines on offsets are stated in the 1978 Duncan Memorandum. In brief, this memorandum established the following guidance:

- o Because of the inherent difficulties in negotiating and implementing compensatory coproduction and offset agreements, and the economic inefficiencies they often entail, DoD shall not normally enter into such agreements.

- o An exception will be made only when there is no feasible alternative to ensure the successful completion of transactions considered to be of significant importance to US national security interests.
- o When compensatory agreements are necessary:
  - They should be as broad as possible to obtain maximum credit for US purchases.
  - Specific offset targets should be avoided.
  - Agreements should be used to reduce administrative barriers to defense trade.
  - The burden of fulfilling any commitment rests with the US defense firms directly benefiting from the sale.

The AECA and DSAA guidelines on FMS credit state that the intent of Congress is that appropriated funds be spent in the US unless specific exception is approved. The DSAA, which controls and manages the FMS accounts, has, therefore, established a policy that is reflected in offset guidelines, which are stringent. A significant portion of any item sold through the FMS credit (loan or grant) program must be of US origin unless otherwise approved by DSAA on the basis of carefully proscribed circumstances. Any such determination requires interagency review before DoD proceeds. Those parts of the FMS credit guidelines that concern offsets are summarized below:

- o Credit financing is discouraged for purchases containing offset provisions as a condition for securing the purchase.
- o No FMS credit funds will be authorized or disbursed to pay for mandatory direct offsets.
- o Although FMS credit funds will not be authorized for foreign-produced content resulting from mandatory direct offset, such funding can be authorized for the US content.
- o Section 42(b) of the AECA prescribes that direct credits and guaranteed loans may not be used to finance coproduction or licensed production of any defense article of US origin outside the US unless the Secretary of State notifies Congress in advance of the effects of the proposed transaction on employment and production within the US.

## CONCLUSIONS

Coproduction and offsets are important instruments to be used, along with other elements of foreign policy, in pursuit of the national objectives of the US. Cooperative weapons construction programs give our major alliance partners the necessary defense base to provide an equitable share of the defense of the alliance to which all are members.

Most indirect offsets occur in non-NATO countries, while most cooperative efforts and direct offsets occur in the NATO region. NATO countries have the infrastructure necessary to absorb offsets. As a result, the impact of offsets toward achieving our national goals is felt to the largest extent within NATO.

Concurrent with this, the US has maintained a policy of establishing domestic production capabilities for any major weapon system it purchases overseas. This policy has been used to keep our industrial base capable of supporting the weapons we use, but the practical effect of this rule is that the US essentially creates a 100 percent offset on any major weapon system it purchases overseas. In addition, the two-way flow of trade, stemming in part from direct offsets, has been used to build a base in foreign nations. This base is often capable of sustaining the projection of US power.

These benefits must be balanced against the economic consequences of offset deals and against potential industrial base erosion arising from offsets. While the USG has been careful to monitor the health of the defense industrial base, a decision made in 1978 has left the economic consequences of offsets in the hands of private enterprise. Deciding whether this was a wise decision is essentially a two-part problem. First, it must be shown that these offsets have caused a problem that has seriously affected the defense industrial base. Second, if a problem is discovered, it must be demonstrated that some other form of control of offsets, instead of the private sector approach that now dominates, would do more to solve the problem. The history of USG intervention in areas such as this is not one that inspires confidence in this alternative.

Everyone recognizes that offsets can have both positive and negative effects. In the defense arena, the major negative effect may be the loss of subcontractor work through the granting of offsets for overseas production. However, this potential loss must be weighed against the benefits of being able to sell the weapon in the first place (which usually would not have been possible without offsets) and against the alliance and foreign policy objectives that offsets fulfill.

## **CHAPTER 8**

### **TECHNOLOGY TRANSFER**

#### **INTRODUCTION**

The national security of the United States (US) is dependent upon our continued ability to offset, with superior technological capability, the greater numbers of systems fielded by the Soviet Union and its allies. To attain this objective, defense-related technology must be managed as a valuable and limited resource. Active participation in international programs leads to the inevitable transfer of technology from one country to another. Concurrently, the US Government (USG) is becoming more and more concerned that the US is losing its lead in technology. Consequently, control of technology transfer has been given increased emphasis over the last 5 years. Today, there is a need for the Program Manager (PM) to (1) understand the process by which technology flows from one partner to another; and (2) recognize the need for adequate assessment of all technology required for program implementation in order to permit decision makers to assess the US investment against the desired objectives. Before any agreement is made or negotiation begins to transfer technology, the USG must decide (1) whether or not the technological information should be shared, and if so with whom; and (2) how the information to be transferred and/or collaboratively developed should be protected.

Evidence of the need for a strong, well-implemented technology protection program is found in the 1985 report, "Soviet Acquisition of Militarily Significant Western Technology - An Update." According to the Soviets' own assessment contained in that report, over 5,000 of their military research projects benefit each year from technical documents and hardware obtained from the West. Their goals are to raise the technical level of their military systems and supporting manufacturing processes, and to acquire dual-use manufacturing and test equipment for direct use in their production lines.

There are significant cost savings to the taxpayer associated with the Department of Defense (DoD) Technology Security Program. If DoD controls had been less effective in the last few years and a number of significant technologies had been acquired by the Soviets, US and allied defense expenditures would have had to have been increased by \$5 billion to \$13.2 billion. This and other data are contained in the DoD Report to the 99th Congress entitled "The Technology Security Program." In addition, we would



have suffered a considerable degradation in the North Atlantic Treaty Organization (NATO)/Warsaw Pact military balance.

Soviet Bloc countries have stepped up illegal attempts to divert strategic commodities denied them through the licensing process. Such attempts leave little doubt as to what the Soviet Bloc is targeting for military use. To obtain these commodities, they have established an elaborate array of front companies, principally in the Coordinating Committee for Multilateral Export Control countries, with routings through transit zones of neutral nations. Various innovative programs are underway in the US Government to protect sensitive technologies. For example, DoD successfully integrated technology security with technology cooperation objectives at the outset of a major program--the allied Strategic Defense Initiative (SDI). US negotiators have succeeded not only in furthering allied participation in SDI research, but also in ensuring that the critical technologies being researched can be protected from Soviet acquisition efforts.

#### DEPARTMENT OF DEFENSE POLICY ON TECHNOLOGY TRANSFER

The primary policy governing the process of technology transfer is contained in DoD Directive (DoDD) 2040.2, "International Transfer of Technology, Goods, Services and Munitions." The directive institutionalized, for the first time, technology security responsibilities within DoD. The Directive establishes working relationships among the Offices of the Under Secretary for Policy, the Under Secretary for Research and Engineering, the Organization of the Joint Chiefs of Staff, the Services, and the Defense agencies. DoDD 5105.51 further refined this process by establishing the Defense Technology Security Administration (DTSA). The unification of the Office of the Secretary of Defense's export control effort under DTSA has enabled DoD to develop a more coherent technology security program based on national security considerations and more efficient, predictable, and transparent procedures for reviewing export licenses. DoDD 2040.2 sets forth the technology transfer policy in rather strong terms and states:

It shall be DoD policy to treat defense-related technology as a valuable, limited national security resource, to be husbanded and invested in pursuit of national security objectives. Consistent with this policy and in recognition of the importance of international trade to a strong US defense industrial base, the Department of Defense shall apply export controls in a way that minimally interferes with the conduct of legitimate trade and scientific endeavor. Accordingly, DoD Components shall:

- o Manage transfers of technology, goods, services, and munitions consistent with US foreign policy and national security objectives.
- o Control the export of technology, goods, services, and munitions that contribute to the military potential of any country or combination of countries that could prove detrimental to US security interests.
- o Limit the transfer to any country or international organization of advanced design and manufacturing know-how regarding technology, goods, services, and munitions to those transfers that support specific national security or foreign policy objectives.
- o Facilitate the sharing of military technology only with allies and other nations that cooperate effectively in safeguarding technology, goods, services, and munitions from transfer to nations whose interests are inimical to the United States.
- o Give special attention to rapidly emerging and changing technologies to protect against the possibility that militarily useful technology might be conveyed to potential adversaries before adequate safeguards can be implemented.
- o Seek, through improved international cooperation, to strengthen foreign procedures for protecting sensitive and defense-related technology.
- o Strive, before transferring valuable defense-related technology, to ensure that such technology is shared reciprocally.

Although DTSA is the focal point of DoD's Technology Security Program, other DoD components also play a role in accordance with DoDDs 2040.2 and 5205.51. The USDRE is directed to provide advice on the technical aspects of technology security. In addition to furnishing the Deputy Director of DTSA, USDRE is responsible for developing the Military Critical Technologies List (MCTL); overseeing implementation of DoD technology transfer policy for all research, development, and acquisition matters; and providing and coordinating technical support for DoD's participation in the Coordinating Committee (COCOM). This latter responsibility includes management of DoD's support to the inter-agency Technical Task Groups (TTGs), which develop technical proposals for COCOM controls. USDRE also plays an important role in the International Technology Transfer (IT2) Panel, which is discussed below.

The Services support DTSA with technical, acquisition, intelligence, and operational information. Each Service designates a full-time liaison officer to DTSA to assist in coordinating Service inputs. The Services also provide DTSA with recommendations on proposed export licenses.

DoDD 5105.51 directs the Assistant Secretary of Defense for International Security Policy (ASD/ISP) to play a role in technology security functions as well. The ASD/ISP represents DoD in technology security matters before several interagency committees including the Advisory Committee on Export Policy (ACEP); the Economic Defense Advisory Committee (EDAC), which administers COCOM cases; and the Committee on Foreign Investment in the United States (CFIUS), which monitors the impact and significance of foreign ownership of US-based companies. The ASD/ISP also continues to serve as chairman of the IT2 Panel, which resolves differences within DoD concerning technology transfer policy implementation.

The Office of the Joint Chiefs of Staff (OJCS) continues to provide support in accordance with DoDD 2040.2. This support includes conducting operational and military mission impact assessments on technology, goods, services, and munitions transfer issues, as requested.

Finally, DTSA is supported by the Defense Intelligence Agency (DIA). DIA provides the support in accordance with DoDD 2040.2 and 5105.51. Under 2040.2, DIA is directed to (1) provide assessments of the types and numbers of illegal transfers of technology, goods, services, and munitions, and the associated transfer mechanisms; (2) assess foreign availability; (3) conduct end-user checks, and intelligence reviews of export applications; (4) provide intelligence concerning the total effect of transfers of technology, goods, services, and munitions on US security; (5) assess the reliability of recipient nations to protect technology, goods, services and munitions that originate in the US; (6) assist in identifying technologies critical to potential adversaries; and (7) support export control and enforcement agencies.

#### THE EXPORT LICENSING PROCESS

The export licensing process at DoD continues to be guided by the desire to reduce the potential for competitive disadvantage to the US industry while safeguarding national security under existing regulations. Through automation and streamlining of procedures, the US has consistently reduced the length of time it takes to process an export license to an average of 20 working days for all munitions and for West-to-East, dual-use applications. West-to-West, dual-use application reviews are completed

in only a few days. DoD is a pioneer in extensive use of automation in export licensing and has plans underway to make even better use of this valuable tool.

For example, to further assist export license review officials, DoD is developing an export case precedent decision-aid system based on an export case history/policy database. The database will contain policy guidance enabling identification of key current export control policy considerations relevant to applications in process. New rules can be integrated into the system, new policy direction can be quickly disseminated to system users, policy guidance and licensing criteria can be kept current, and the historical licensing information in the database will ensure consistent treatment of like exports to the same destinations.

Another means of increasing the predictability of export licensing is the SOCRATES foreign availability assessment system currently under development. The system is designed to track the technological capability of all technologically significant countries in terms of years-ahead or years-behind the US.

Of immediate benefit to exporters is the remote electronic bulletin board known as the Export License Status Advisor (ELISA). ELISA allows exporters to check on the status of their applications on a 24-hour basis. ELISA is updated automatically each day and can be accessed from anywhere in the world by any other computer and a modem. ELISA is also used to transmit a variety of both general export control information to all users and messages accessible only to specific users.

As a part of DoD's goal of complete transparency in export control operations, DTSA and its operations are open to the exporting community and other interested parties.

DTSA recognized early on that one of the most important steps in slowing the Western technological subsidy of the Soviet military is to increase both government and private sector awareness of the problem. Many briefings have been presented to industry, government officials (US and foreign), and the general public, covering the following: national security importance of the West's technological lead; Soviet threat to the Western technological lead; USG program to counter the threat; and the need for industrial/public commitment to a technology security effort.

There are a number of major goals that are being pursued in the COCOM list review. Efforts are underway to maintain the vigor of the process by means of technically sound and thorough evaluation of other members' proposals. When they have merit,

and when changes can be made in controls that accommodate other members' concerns at no loss to our national security, the US has tended to accept them or modify them to make them acceptable. Efforts are also underway to strengthen the existing controls on items such as superconducting materials and metals, computer software, super-precision measuring equipment, photosensitive devices, acoustic wave devices, electronic materials, lasers, recording equipment, power sources, and microwave components. We have an additional goal of securing control of other sensitive technology, such as coating processes, substrates, and coating materials of a strategic nature by introducing new list items.

Efforts to modernize COCOM operations have resulted in an enhanced and formally organized Secretariat staff including newly authorized positions for database management, translation, and security. DoD has provided funds for COCOM to purchase a special computer room, a new computer system with terminals, two large memory storage disk drives, and customized software.

The USG's evolving policy toward the People's Republic of China (PRC) has resulted in DoD's participation in the negotiation of a China Control List in COCOM. This agreement places China in an extremely favorable position, compared with the Warsaw Pact countries, for receiving high technology exports from the West and Japan. These exports will be subjected to national licensing with only statistical reporting to COCOM. Chinese importers are required to provide Western exporters with a written import certificate verifying that the government of China has authorized the import. This is to ensure that the goods are not diverted.

DoD has an integral role in the administration of Section 5, National Security Controls and related sections of the Export Administration Act of 1979, as amended (in 1985). Amendments supported by DoD include provisions strengthening enforcement, increasing penalties for violations, upgrading COCOM operations, and streamlining the licensing process.

Congress reaffirmed the need for, and the role of, the MCTL in amendments to the Export Administration Act. Each item must be reviewed in terms of foreign availability; control of technology is to be accompanied by a reduction in control of product; a new of keystone equipment is to be developed; and an assessment is to be made of the impact of listing items on the MCTL. Steps are being taken to assist with implementation of the MCTL into the Commodity Control List (CCL) and the Munitions List, as required by law.

### WEST-TO-EAST APPLICATIONS

West-to-East applications are submitted to the Department of Commerce by US companies who want to export controlled commodities to proscribed destinations. After registration and review by the Department of Commerce, these cases are referred to other government agencies as required, including DoD.

Upon receipt, DoD logs the case into the Foreign Disclosure and Information System (FORDTIS) system, capturing pertinent information including dates, applicant name, consignee, key words, and commodities involved. The case is then assigned to a technical expert who assesses the impact of the proposed export on national security. The export regulations, COCOM agreements, technical data, personal knowledge, recommendations on previous cases, intelligence reports, and consultations with the military Services and/or the applicant are all used in this assessment. The results are then documented in FORDTIS for reference and use in reviewing future cases for the same or similar commodities.

The case then undergoes a policy review which considers the technical assessment as well as other pertinent information on which a final DoD position is based. This position is also documented in FORDTIS and transmitted by written memorandum to the Department of Commerce.

### WEST-TO-WEST APPLICATIONS

On January 4, 1935, the President acted to limit the illegal diversion of militarily sensitive technology and equipment through Free World countries by directing the DoD to review applications for some categories of exports to certain Free World countries targeted by the Soviet Bloc for illegal acquisitions. The Presidential Directive is selective. It limits DoD review to applications for export to 15 countries of eight categories of critical commodities known to be of particular interest to the Soviet military.

Under terms of a Memorandum of Agreement (MOU) between the DoD and the Department of Commerce, the DoD has 7 days to review electronically transmitted license applications. If, during this time, it wishes to review the complete file, it must complete its examination within 15 working days of referral by the Department of Commerce. DoD review takes place simultaneously with the review in the Department of Commerce. In almost all cases, this review does not imply that a country is engaged in illegal activity as a government policy. It does mean, how-

ever, that the Soviets have targeted that country for illegal acquisition. A number of these countries are cooperating with the US on a bilateral basis to provide enhanced protection of sensitive US exports.

DoD began receiving its first cases for review electronically from the Commerce Department under this agreement on February 15, 1985. A prototype case processing system has been designed and developed for this purpose under a contract with American Management Systems. The Defense Automated Cases Review System (DACRS) receives, stores, and processes cases transmitted via telephone line from the Commerce License Access Review System (LARS). By the first anniversary of DACRS operations, 15,478 cases with a total value of \$7.6 billion had been reviewed and processed within the established deadlines of the Presidential Directive. Presently, DoD's initial case review time averages less than 2 days. This means that simple cases, in which there are no questions on the commodities to be exported, are taking less than 48 hours to clear the DACRS system. In instances for which DoD has asked for the complete file, the more complicated review is taking less than 10 days after receipt of complete case files.

From its inception, the DACRS system has proved to be flexible in operation. As the data base has grown and the DoD has added administrative, technical, and intelligence filters, it has also become an analytical tool for case processors.

This system has demonstrated that an automated case review system can speed the process of export licenses. This success under DoD leadership has resulted in studies by the two departments on areas in which the process can be speeded further through automation.

Defense review has resulted in a reduction in the improper use of the Individual Validated License (IVL) as a multiple or bulk license. Early in its review of Free World export license applications under the Presidential Directive, DoD began to be concerned about the large number of items being considered on license applications with a vague or "for resale" end use. Bulk shipments of computers and related equipment valued at several million dollars were common. In particular, one application to export to a neutral country was for computers valued at over \$156 million that exceeded even the limits of distribution licenses for COCOM countries. In another instance, DoD identified a license application that grossly exceeded annual sales projections for the applicant and ultimate consignee. Furthermore, DoD determined that the consignee had given written assurances that items could not be used for defense purposes, but intelligence data revealed the principal business of the

consignee was with military organizations. Upon further analysis of the data readily available on DACRS, DoD found that this type of license submission was typical for a company that could not qualify for a distribution license. DoD immediately returned these cases to the Department of Commerce, requesting specific end-user and end-use information.

To allay concerns for diversion through the misuse of the IVL and still remain sensitive to the needs of the exporters, DoD is working with both the Department of Commerce and the exporters to plug this loophole in our licensing system. Since the DoD initiative began, the number of bulk IVL license submissions has declined.

In two major instances, DoD review resulted in the denial of over 200 licenses to questionable end-users at Pacific Basin country destinations. One involved 119 cases totaling \$7 million consisting almost entirely of computer accessories for networking or Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) applications. The other involved over 100 cases totaling more than \$80 million. DoD's recommendations for denial were sustained by post-license checks on the ultimate consignees, several of whom are now under indictment or investigation. At the suggestion of DoD, a joint US Defense/Commerce/Customs study team will soon visit selected Pacific Basin countries on a fact-finding mission.

A general tightening up of foreign policy review to such destinations as Libya, Syria, and Iran has been effected. Using its technical and intelligence resources, DoD has recommended denials of sensitive technology to such destinations for national security reasons. DoD continues to work with the Departments of State and Commerce to define and establish more effective controls in these areas.

#### HOW EXPORT LICENSE APPLICATIONS FLOW THROUGH THE DEPARTMENT OF DEFENSE

##### Munitions

Under the authority of the Arms Export Control Act (AECA), the Department of State has statutory responsibility for administration of munition items export licensing. DoD, following its national security mandate, reviews approximately 20 percent of these export license requests and renders its positions to the Department of State.

The Munitions Directorate of DTSA is the entry



point for export requests from the Department of State. It is the technical responsibility of this directorate's staff to ensure that the military Services, appropriate DoD agencies, and the technical staff of the Office of the Under Secretary of Defense for Research and Engineering review these export requests or munitions cases in a timely manner (concurrent review). To save time, the Department of State delivers these cases concurrently to the military Services and DoD agencies and components it believes have interest in the case. The Munitions Directorate then assures that the appropriate staffing has been made and the DoD position is formulated and sent to the Department of State.

Figure 8-1 depicts both the input and the output license flow within the DoD. After receiving recommendations from the DoD elements tasked to review a particular license request, the Munitions Directorate studies these recommendations and develops the DoD position which is sent to the Department of State. Most differences within DoD are resolved at the working level. Those that cannot be so resolved are referred to the International Technology Transfer Panel for resolution.

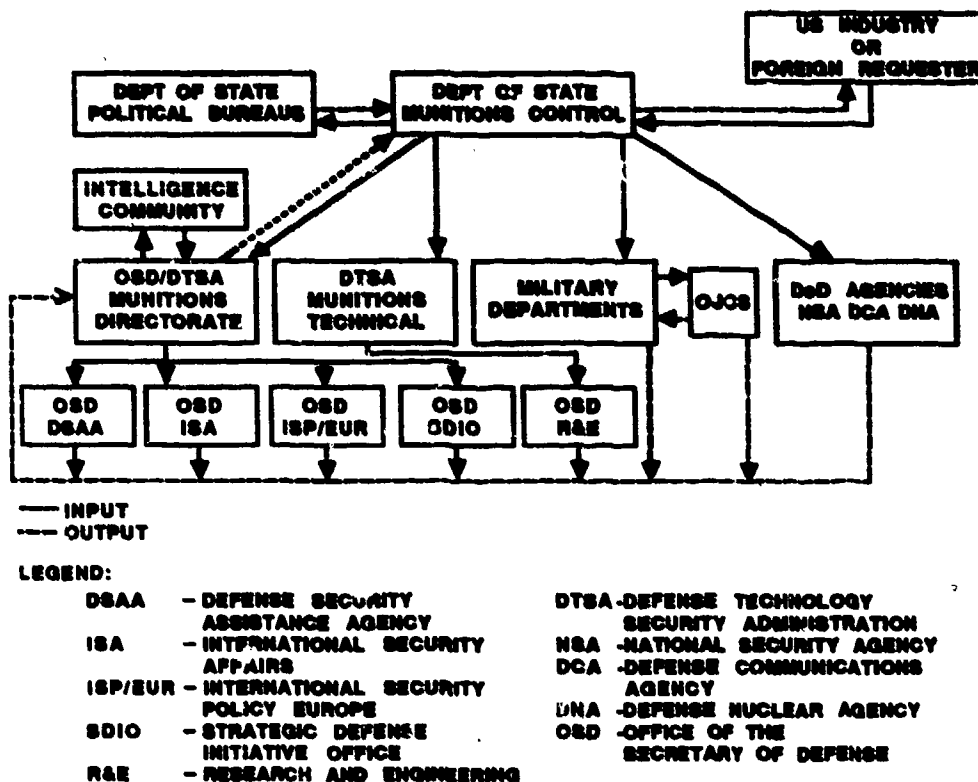


FIGURE 8-1. MUNITIONS LICENSE FLOW

In working to meet the objective of interfering as little as possible with legitimate, nonstrategic trade, DoD

recently added the capability to electronically return the results of its review to the Department of Commerce. This reduced processing time considerably. DTSA is hoping that experience gained through the electronically supported processing of these license applications can be translated into further improvements in the process throughout the government.

DoD's updated review efforts have resulted in following improvements in the export licensing process:

- o Greater care is being taken in the front-end of processing to ensure that information entered into the system is accurate.
- o Applications are being returned to the applicant via the Department of Commerce when there is insufficient end-use or end-user information.
- o Ways are being examined to implement distribution license recordkeeping controls on individual licenses when the end-use is for resale.

#### Foreign COCOM Cases

COCOM procedures require member governments to submit, for unanimous approval by the Committee, those export licenses issued by national licensing authorities involving embargoed items proposed for export to proscribed destinations. These COCOM export licenses are classified into seven types of cases and are provided to each country delegation represented at COCOM headquarters. Upon receipt by the US delegation, the COCOM cases are sent to Washington, DC, and copies are provided to DTSA, the Department of State (Office of East-West Trade), and the Department of Commerce for review under US technical and policy guidelines under the aegis of the EDAC.

Once a case is received at DTSA, a case folder is prepared, and a case description (including case number, type of case, assigned analyst, deadline dates) is entered by the DTSA COCOM coordinator into the automated FORDTIS for on-line tracking, position recording, and historical record purposes. A duplicate folder that includes the technical brochures is then submitted to the DTSA technical case coordinator for staffing to the technical support team for review and evaluation. If the technical support team determines that the case requires review by the Services and/or DoD agencies, immediate tasking is made. The Services' and components' inputs contribute to development of the DoD-recommended position, which is based upon US DoD technology export control guidelines. The recommended position is

entered into FORDTIS and reviewed for consistency with DoD and COCOM policy guidance before a DoD position is made final.

The final position is then submitted to EDAC working Group 3, chaired by the Department of State and composed of representatives from DTSA, the Department of Commerce, and other US agencies involved in export control. If this working group reaches a consensus, the position is then submitted to the US delegation in Paris for further communication to the COCOM Secretariat and, finally, to the appropriate COCOM delegation. If the working group does not reach a consensus on a case, it is referred to the Executive Committee, which operates at the Office Director level. Cases not resolved by the Executive Committee are referred to the Sub-EDAC, which operates at the Deputy Under Secretary level. The next referral levels are the EDAC (at the Assistant Secretary level), the National Security Council, and the President.

Foreign cases that proceed through the EDAC structure must meet a 60-day deadline for PRC cases, and a 90-day deadline for all other proscribed destinations. If no objections to an export are raised within the time limit, the case is automatically approved by COCOM. Currently, the average age of a COCOM case within the DoD is 16 days, and the vast majority of positions taken by EDAC reflect DoD recommendations.

#### Role of the Operating Committee

The Operating Committee is the first step in the interagency review process of contentious US export applications. The committee, chaired by the Department of Commerce, is a working-level group that attempts to reach agreement on major export issues, usually involving proscribed destinations. Recent Committee resolutions have involved transfer of seismic data acquisition systems to the PRC.

The DoD frequently finds itself advocating its position on specific export license applications in isolation. Often, the other participating agencies will challenge DoD's national security-based objections with arguments of foreign policy or commercial competitiveness. DoD positions, therefore, require the greatest possible degree of cogency and logical exposition buttressed by persuasive technical arguments.

Additional cooperation among policy-level decision makers at all participating agencies is needed to resolve these cases expeditiously.

### International Technology Transfer Panel

The DoD-wide International Technology Transfer Panel continues its work under the provisions of DoDD 2040.2. Subpanel A, which deals with export control policy, was the most active in recent times.

The first sales of major defense equipment to the PRC, based on the 1984 Subpanel A's policy regarding the releasability of dual-use and military goods, services, and technology to that country, were concluded in 1985. Exports of a US small arms munitions facility and torpedoes were approved through the interagency process, in consultation with European and Pacific allies. That policy remains the authoritative guide for technology transfer to the PRC.

Another example of Subpanel A's role in successfully coordinating export control policy issues among various players lies in the development of special security procedures for the export of "trusted" computers. Trusted computers are those into which security features are built to guard against break-ins by "hackers" and to allow for compartmentalized access to the computer's stored data.

Subpanel A was convened to establish an efficient technical review procedure for proposed exports of trusted computers. An agreement was reached in Subpanel A whereby DoD obtains technical review from the National Security Agency. This agreement has resulted in establishment of a predictable threshold of trusted computer security capability under which these computers are exportable to certain destinations.

### Foreign Disclosure and Technical Information System

The FORDTIS provides DoD users with access to information needed in the technology transfer/technology security via an interactive, secure communications network. The primary function of FORDTIS is to assist DoD decision-makers and analysts in the processing of export license applications and requests for foreign disclosure of classified information.

With greater DTSA management attention to the technology transfer/technology security case process, analyst efficiency and control over outstanding cases have been improved significantly. Also, better case decisions are made because the system provides a consistent frame of reference with respect to policy, technology, and historical precedence.

The final significant capability that FORDTIS

accomplished in 1985 is the addition of an Foreign Military Sales (FMS) history database. This database, updated monthly, consists of major items that the US has agreed to sell to foreign countries under the FMS program since 1982. This information is useful to munitions case analysts.

#### FOREIGN GOVERNMENT-TO-US GOVERNMENT LICENSING AGREEMENTS

Before entering into foreign contractor-to-USG agreements, the USG must determine whether some or all of the information and support necessary for technology transfer is already available from the foreign government under an existing agreement. The new agreement should specify that the contractor will not restrict the foreign government from furnishing data in its possession to the USG. This provision is needed since foreign countries generally do not acquire a right to pass their contractors' data rights to third parties, such as the USG. For instance, the Federal Republic of Germany (FRG) reserves the right to use only resulting work, and allows the contractor to retain proprietary rights.

Government-to-government licensing agreements are appropriate for government-developed systems that are produced at government-owned facilities. Such agreements may not be sufficient if the manufacturer has proprietary data for the required system. Since the data must ultimately be obtained from the developing contractor, entering into an agreement with the foreign government introduces a third-party communication problem, thus resulting in greater difficulty in understanding what is required and how changes will be handled.

Some MOUs have required each of the participating countries to provide license rights to the others. For instance, an addendum to a government-to-government MOU for the ASRAAM/AMRAAM program specified that it is the intention of both parties to exchange data and license rights on standardized items under fair and reasonable conditions. To accomplish this, the MOU states that each government, in its contracts, will include provisions requiring its contractors to enter into agreements to transfer such technical data expeditiously under fair and reasonable terms and conditions. The MOU also recognizes that such data should be obtained by either the US or the foreign government or its contractors directly from the foreign or US developing contractors.

#### FOREIGN CONTRACTOR-TO-US GOVERNMENT LICENSING AGREEMENTS

Such agreements prevent a foreign contractor from establishing a "sole source" US manufacturer of the required

system, as may happen under a contractor-to-contractor agreement between foreign and US contractors. These agreements often specify that the licensee was granted the exclusive right to manufacture the system, and the right, to the exclusion of all others except the licensor, to sell the system to the US. Thus, the USG may lose control over the selection if its contractor can be obliged to contract with a US company selected by a foreign entity. One advantage is that only one party, the USG, is seeking manufacturing rights. This eliminates the possibility of a competitive auction, which might occur if several firms were competing. Depending on the eagerness of firms to obtain the rights, such auctions could result in very unfavorable terms to the US, because the foreign firm is likely to grant rights to the US manufacturer who is offering higher royalty payments, the cost of which will be passed to the USG. Another of the primary advantages of such agreements is that the USG is contracting directly with the developing contractor rather than indirectly through a foreign government. This helps eliminate misunderstandings regarding what data are required, how changes will be handled, and the desired sequence of delivery of data. Also, the USG is fully cognizant of the program objectives, such as (1) third-country sales; (2) configuration management plans; (3) the USG ability to acquire data rights at no cost based on a separate MOU with the other government that has the necessary data rights; and (4) any existing resolution of US Government data rights.

The disadvantage of this licensing arrangement is that the US becomes a third party in the data transfer to the US contractor; hence, the US must rely on the licensor's certification that the Technical Data Package (TDP) is adequate for competition. To "prove" the TDP for initial production contracts, either limited production runs, Preproduction Proposal Evaluation (PPE) or foreign contractor support requirements may be needed, which could increase the overall cost of the program. However, the cost increases may be less than those associated with contract modification resulting from TDP deficiencies discovered after contract award.

#### FOREIGN CONTRACTOR-TO-US CONTRACTOR LICENSING AGREEMENTS

The primary advantage in this approach is that the two contractors are responsible for ironing out problems associated with the technology transfer necessary for the achievement of standardization and interoperability objectives. The working relationship established between two or more contractors can be extremely important to the successful completion of a cooperative Research and Development (R&D) or production effort. One disadvantage is that the lack of USG input or influence may require

costly modifications. A second is that the licensee may not be able to conduct an in-depth analysis of the TDP before entering into the agreement because money is not available to purchase information from the licensor. Another is that the US firm may encounter more difficulties than the USG in making known US specifications to a foreign contractor because of the security classification. Also, there is no incentive for US contractors to negotiate royalty provisions vigorously since royalty costs normally pass on to the USG.

A final disadvantage is similar to one described for the foreign contractor-to-USG agreements. Certain program cost increases are likely to occur regardless of whether the foreign manufacturer enters into a licensing agreement with the USG or a US contractor. An example is the area of data transfer problems associated with verification of the TDP. Although the US manufacturer is responsible for solving these problems, it must be recognized that the USG will be liable for the additional program cost if the prime contract is cost reimbursable. On the other hand, for fixed-price contracts, the contractor will be reimbursed only for the portion of his efforts on those data transfer problems whose costs were originally reflected in his contract price.

#### THE TECHNOLOGY TRANSFER IMPLICATIONS ON MULTINATIONAL PROGRAMS

The design process is an economic and culturally derived process that reflects the military, economic, industrial, and engineering environment of the society. Consequently, it is natural to expect that there will be differences between the process as practiced within the United States defense community and in collaborating countries. The material items that are the end product of the process are designed to meet the foreign combat needs and reflect the philosophies, industrial capacities, and capabilities of foreign industry. An example may be France/Brazil, where equipment must also be designed for Third World requirements.

In some cases, foreign designs and end items, while exhibiting excellent performance and acquisition cost characteristics, display a variety of technical, software, safety, and logistics deficiencies due to different concepts of design control. During the technology transfer and critical design review processes, continued emphasis will be required to ensure the following:

- o Design and equipment have a baseline management and configuration control system in place. If they do not, configuration control must be established at the start of the transfer process.

- o Software programs have a baseline management and configuration control system instituted early on. The languages used must be acceptable to the program manager, and the software programs must be fully documented and meet standards for quality, terminology, and symbology.
- o Trade-off analyses are conducted as part of the assessment of the baseline system to ensure producibility of the equipment, human factors engineering for operator interface and maintainability, reliability of critical components, and logistics supportability.
- o Interoperability/standardization is maintained at the level required. The discipline imposed by the logistic support analysis process is appropriate for structuring this assessment and providing a baseline management and configuration control system.

Foreign contractors, who generally are allowed by their governments to retain the intellectual property rights, must be required as part of the licensing agreement to deliver sufficient documentation of the equipment for production engineering to be accomplished and for support purposes. The licensor may be financially motivated to ensure a thorough and efficient flow of data and successful technology transfer by coupling license payments to major program milestones such as the successful completion of Development Testing/Operational Testing (DT/OT), award of LRIP contract, and award of full production contract. Alternatively, the bulk of licensor's compensation could be in royalty payments on units produced so that the licensor, as well as the licensee, works for a successful production program. The intellectual property rights issues are discussed in Chapter 11 of this Guide. The importance of ensuring that adequate rights have been defined and acquired cannot be overemphasized. When the technical information is to flow from the US to another country, the impact of the critical technologies must be taken into consideration, as well as any export clearances that may be required.

The licensing agreement can take many forms. If a US system is a candidate, the USG or US manufacturer may be the licensor and the foreign government or a selected foreign contractor, the licensee (coproduction). Conversely, if a foreign system is the candidate, either the USG or a proposed contractor can enter into negotiations for license rights (licensed production). The terms of licensing agreements proposed between the US and foreign firms or governments should be coordinated with those agencies of the USG that may be involved with such issues as export licenses and



release of classified information. If the agreement will involve intellectual property rights, the owner of those rights--either in government or in industry--should be consulted before the agreement is signed. These actions can prevent the PM from promising, in the licensing agreement, things that cannot be delivered or that will require long flow times for approval.

Action on the licensing agreement should start early. Negotiating the agreement and obtaining necessary approvals may take months. The PM is responsible for furnishing complete information and advice to the negotiating team regarding desired license terms and provisions. Costly program delays and modifications are likely to occur if the proposed agreement must be modified to incorporate additional terms. Although the terms and conditions included in licensing agreements will vary, some are required in all agreements. The information that is presented below can be used as a basis for gathering information or forming a position on issues relating to engineering management and technology transfer to be communicated to the negotiating team. There should be consultation with USG export licensing officials in the early stages to ensure that agreements are not made for transfers that cannot legally take place.

Because of language differences, problems can arise in interpretation of the agreement. Different meanings are often given to well-defined words and phrases that may even have legal definitions. For instance, there is no legal definition of the term "know how" in Italy. To avoid misunderstandings, common terms should be defined. Appendix G contains definitions of many of the significant terms used in this Guide.

When the United States views a foreign-developed item or portion of a defense item and determines that the equipment is basically desirable and fulfills a genuine US need, it will have evolved in a completely different military, cultural, and social environment. As a consequence, it will contain significant differences in approach to utilization, maintenance, logistics, part selection, and the like. For desirable military, economic, and political reasons, full adherence to US military specifications and US military regulations should not be expected. Military specifications and regulations have been evolved to aid in the US development of new weapon systems for the US military. Their general use is effective in that environment. Other nations have evolved procedures that are also adequate for the development of useful, new hardware; however, these procedures are considerably different from those used in the United States. We cannot reasonably expect that a foreign developer would use US military specifications and regulations exclusively in the development of a system. It should be noted that many foreign national specifications and standards have been derived from US

military specifications; therefore, at least a limited application of US military specifications and regulations can be expected.

Military specifications and military standards generally fall into two broad categories: those that impose requirements on the design or the design process and those that impose requirements on the test process. Specifications controlling the design can be divided into the following major categories:

- o System performance
- o Safety
- o Parts, materials, and processes
- o Environmental requirements
- o Maintainability
- o Reliability
- o Availability
- o Human factors
- o Durability
- o Physical properties
- o Economic considerations.

Considerable care must be exercised in applying these specifications to a technology transfer program. To apply design requirements that are different from those used in developing the existing foreign design, or which cannot be conveniently and inexpensively obtained, defeats one of the primary purposes of technology transfer. On items such as system performance and safety, at best, the design can be analyzed to determine the extent the European or other foreign design meets the US requirement. The PM must be extremely careful in this area, particularly on specifications that relate to personnel safety. It must be recognized from the outset of the program that certain US safety standards must be applied to the system (e.g., no-fire current rating for electro-explosive devices, the use of carcinogenic materials in manufacturing processes, noise environment during operation), and that a certain amount of redesign may be required to meet these statutory requirements.

In the general coproduction and licensed manufacturing proc-

ess, essentially no changes are made in the design. The only differences result from the conversion of the parts, materials, and processes. Any changes to these can influence such items as system performance or reliability. Therefore, specifications that deal with system characteristics that can be influenced by the selection of parts, materials, and processes are appropriate to require in the contract, but only to the extent that no redesign is required. These specifications could cover such items as corrosion prevention, reliability, and national standardization. On the other hand, applying specifications on maintainability, when the maintainability aspects of the system are already defined in the design, are of little value.

DoD normally performs hardware validation and verification through an extensive test program. Service regulations require this on every weapon system procurement. In a technology transfer situation, however, some performance testing may already have been conducted in a foreign nation and some of the design verification and validation completed. Therefore, considerable time and money could be saved if a particular development or operational test in the United States is not required when the equivalent of that test has already been performed in a foreign country. It is important that both the development test agency and the operational test agency participate in the review of testing that has already been conducted by the foreign developer/user to ensure that the results will be accepted as a part of the US data base. Also, limited performance testing and environmental verification tests should be accomplished to amplify the foreign testing and to verify that the technology was completely transferred so that the hardware as constructed in the US contractor's manufacturing facility performs as the hardware constructed in the foreign nation. In addition, the US logistics and personnel subsystems must also be tested with the US-built equipment to ensure compatibility.

A study should be performed on each program to outline the applicability of military regulations and specifications to the technology transfer program considering the above factors. Procedures for executing a technology transfer program should be defined and applied. These procedures should consist of the adaptation of existing military procedures, specifications, and requirements to maximize the utilization of the foreign technology and the foreign test experience. This will reduce the cost of weapon system procurement by the US military. Foreign governments have used such a system in the procurement of US-supplied weapon systems in the past, and a great deal could be learned from them. The objective of these procedures should be to provide the military with a system that is substantially in its present form. This would minimize the cost associated with revalidation and redundant testing.

The PM should determine the degree of international standardization to be obtained vis-a-vis the degree of national standardization among other US military weapon systems. At the present time, foreign and US standardization practices are not the same. Therefore, the US program manager must be prepared to accept some increases in life-cycle costs in order to obtain international interoperability. The PM must reflect on the need to achieve interoperability and interchangeability of critical modules before complete standardization, especially if standardization would raise life-cycle costs significantly.

### REQUIREMENTS DEFINITION

As the PM evaluates designs, it is also important to recognize that the design for a weapon system evolved by a particular country is driven by a number of issues including the threat, the national tactics, the expected time available to counter the threat during battle, the philosophy of equipping defender forces, and the capability of the national industry that will develop and produce the system. Although different equipment requirements do not necessarily preclude multinational cooperation in weapons development, they can have detrimental effects on collaborative projects and may reduce the participation in such projects. In certain cases, joint development projects result in more expensive equipment because of the need to accommodate multiple national preferences. The result may be a more complex piece of hardware than any single nation desired.

The process of requirements definition requires reconciliation and compromise. In the multinational environment, there may be a need for compromise in requirements in order to secure program approval. In a great many instances, the agreed technical specifications for specific codevelopment systems are compromised to a greater or lesser extent in order to secure the participation and approval of the prospective collaborators. The Transall transport represented a compromise of the French need for a cargo aircraft capable of supplying remote Asian or African stations occupied by the French in the late 1950s and an FRG perception of need for an aircraft to carry dense military cargoes to the FRG forces positioned to defend Western Europe. The product was a transport that only with great difficulty could operate in the close confines anticipated by the FRG, and which was incapable of carrying useful military loads over the ranges desired by the French. It is also important to know that many issues outside typical cost-effectiveness concerns may control the choice of subsystem options. This may result in a certain inhibition of later product improvements since one country's perception of an improvement may be seen by another as "gold

plating." Another area in which performance may be impacted proceeds from the interrelationship of commercial and military technology. In order to maintain a commercial edge, companies may withhold from multinational ventures advanced technology and use it only in their national programs.

The appropriate international forums for the discussion of differences in requirements doctrine, tactics, and threat include the Phased Armaments Programming System, the NATO main armament groups, and various bilateral staff talks. These forums provide a systematic means for converting national military mission needs into harmonized equipment requirements. The essential ingredient in this process is assurance that frank discussions and understandings on requirements take place early enough to learn if there really are differences that cannot be reconciled.

In negotiating the weapon system requirement, agreement must be obtained on the threat scenario and on the mechanism to translate that scenario into an operational concept for the weapon system. Often, nations are reluctant to discuss fully the threat because of the intelligence implications. When more than one country is involved with the development of the system, the mechanism for communication of the interface requirements must be clearly described, and it must represent a workable concept.

There also needs to be specific agreement on the management concept to be utilized. If there is to be an integrating contractor, what will be his responsibility and how will he be selected? There needs to be a clear description of the relationship between the governments involved and the industry that will develop the system. When technical data must flow across national borders, there needs to be a clear specification of the types of data and rights to be transferred, the process by which they will be transferred, and the responsibility of both parties.

#### PROBLEMS IN TECHNOLOGY TRANSFER

This final major section of the chapter will focus on problems that may arise in the areas of engineering management and technology transfer. When possible, some suggestions are given or experience related that may be of value to the PM in avoiding or minimizing similar problems. Additional guidance may be obtained from lessons learned prepared on programs that have developed experience and understanding of this relatively new area of DoD involvement.

## TECHNICAL DATA

The importance of technical data considerations cannot be overemphasized. Among the factors that require coverage in the agreement are the following:

- o Identification of specifications, drawings, and other data.
- o Delivery of data--Failure to deliver data in proper sequence can result in wasted effort and expense. A provision to correct and/or compensate for late or improperly sequenced delivery of data or incorrect data may be considered. Additionally, the licensor is normally responsible for obtaining clearances for export of data.
- o Warranty of data--The licensor's liability should be specified if the data are not sufficient to enable the licensee to produce the item.
- o Payment for other technical data costs--Since the royalty payments may cover only data rights, the licensor should be separately reimbursed for document-handling and delivery costs.
- o Protection of technical data--The licensor may require limited or nondisclosure of proprietary data; if so, duration of limited disclosure or nondisclosure of data should be specified. The rights of support contractors to use data for analysis of tasks such as program planning and management risk analysis must be specified.
- o Technical support terms--The types of terms that may be included are required access to licensor and licensee manufacturing plants; estimated and maximum technical assistance required; responsibilities for negotiation, and payment for technical assistance costs; agreement as to payable costs such as travel, per diem, and salary; and identification of personnel visiting each other's plants.
- o Engineering changes and improvements--Provisions should be included that specify the obligation of each party to furnish all information and data relating to changes and improvements to the licensed item, the time period for acceptance or rejection of the licensed item, the time period for acceptance or rejection of change, the royalty rights, and the payment provisions associated

with the changes. Such provisions help ensure the maintenance of standardized or interoperable items, since both parties are aware of the changes and can implement them in their production lines.

- o Licensors assistance--It is advisable to include provisions that the licensor will, as requested, use his influence to obtain required licensing agreements from his contractors, procure components and purchase parts from his normal subcontractors, and provide parts and materials he normally produces.

As data flow from the developer to the user, there is a need to manage carefully the flow and use of the data on the part of the receiving company. Figure 8-2 shows a part of the mechanism used within the Roland program to assemble the received technical data for release to the manufacturing functions, but which is generally applicable to any foreign to US technology transfer. At each step in the process, it is necessary to review the data received to ensure that they provide an adequate basis for manufacture. When this does not hold true, the "pull" of additional supporting documentation is required.

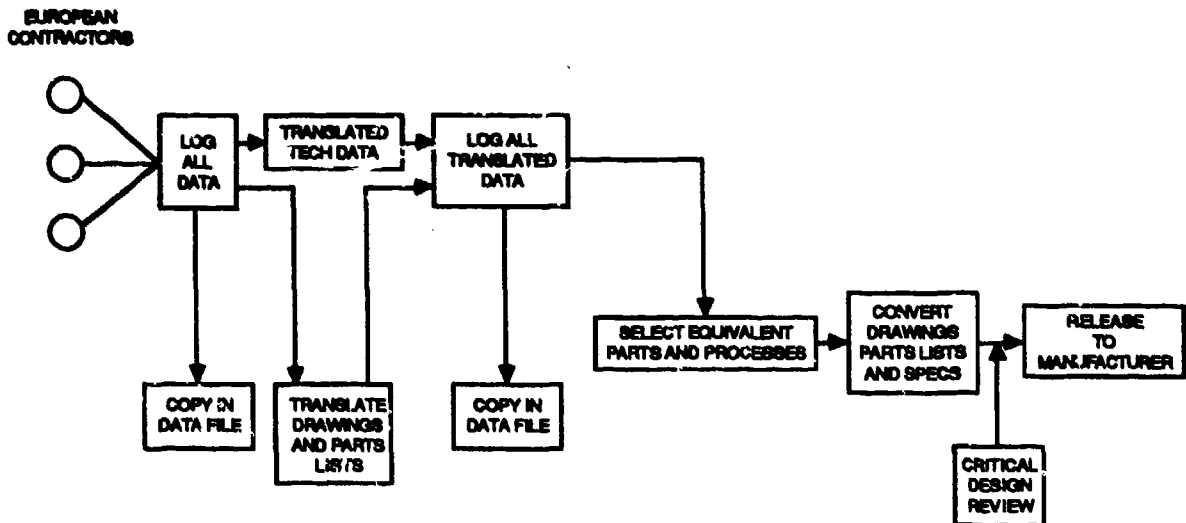


FIGURE 8-2. DATA TRANSFER, TRANSLATION, AND CONVERSION

### CRITICAL TECHNOLOGIES

Licensing agreements, whether involving the export or import of hardware and technology, may require approval by appropriate government agencies. Three acts that pertain to this area

are discussed below. The Mutual Security Act of 1954 deals with both the export and the import of ammunition and implements of war. The Export Administration Act's (EAA) of 1965 and 1979 as amended in 1985 apply to exports only. Further, they pertain only to exports not covered by the Mutual Security Act.

The International Traffic in Arms Regulations (ITARs) are the State Department regulations that implemented the Mutual Security Act of 1954. Section 414 of the act provides that the President is authorized to control, in furtherance of world peace and security and foreign policy of the United States, the export and import of arms, ammunitions and implements of war, including the technical data relating thereto. The Mutual Security Act's provision related to imports and exports of munition items were transferred to the Arms Export Control Act (AECA) of 1976. The AECA further specifies that all persons engaged in such trade must register with the appropriate USG agency. These functions were delegated to the Department of Treasury for import of munitions list items including technical data relating thereto and to the State Department by Executive Order 11958 (18 January 1977) for export of such items. The munitions list is contained in the ITAR and includes 22 categories of articles such as firearms, artillery and projectiles, and ammunition. If an item is on the munitions list, an export license is required for its sale, for the granting of the right to manufacture the item and technical assistance pertaining to it, and for the export of technical data related to it. An export license may cover all or some of these categories. The export licensing on a particular program may, therefore, involve a single license or a series of licenses.

The EAA of 1979 (as amended in 1985) required that the DoD develop and maintain a MCTL. Specifically, DoD is required to:

- o Establish a dynamic procedure for adding to the newly identified MCTL technologies requiring protection and for deleting such technologies that no longer need to be protected.
- o Develop a keystone equipment list to identify equipment that would reveal or give insight into the design and manufacture of a US military system.
- o In cooperation with the Department of Commerce, incorporate protection for technologies on the MCTL into export control lists, taking into account foreign availability of such technologies. The establishment of adequate export controls on militarily critical technology and keystone equipment is to be accompanied



by suitable reductions in the controls on that technology and equipment no longer requiring protection.

- o Report to the Congress on the impact that the transfer to controlled destinations (countries) of goods or technologies on the MCTL has had, or will have, on the military capabilities of those countries.

Since its inception, the MCTL project has systematically refined its definitions of technologies crucial for maintaining a military balance against the quantitatively larger forces of the Soviet Union and the Warsaw Pact. As a result, the MCTL has been an increasingly important factor in all aspects of the technology security program of the United States, and specifically in the following ways:

- o COCOM List Review--The MCTL has become a vehicle for stimulating proposals to add to or modify existing multilateral agreements for the control of exports (the COCOM List). Specific proposals for negotiations in COCOM have been drafted based on language embodied in the MCTL. The credibility and timeliness of the MCTL process is evidenced by the acceptance such proposals have achieved in this multilateral forum.
- o Export Case Licensing--On a less formal basis, the MCTL contributes to the timeliness and consistency of export case technical review. In areas where clear definition or guidance is not provided by the control lists, the MCTL is a major reference regarding the military criticality of technical data and related know-how.
- o Other Technology Transfer Assessments--As a comprehensive compendium of technical descriptions down to the level of the specific arrays of know-how and keystone equipment required for technology application, the MCTL is a valuable source document for policy decisions regarding technology transfer mechanisms. Specifically the MCTL has been used for:
  - Review of scientific papers for determinations on release of unclassified sensitive information
  - Guidance for custom agents in performance of their duties
  - Assessment and structuring of proposed foreign military sales
  - Foreign disclosure determinations

- Evaluation of international agreements of scientific and technical exchanges with potential adversaries

Defining Military Critical Technology (MCT) was not, however, an easy task, since many of the militarily significant technologies already in use, had by that time also found important applications in the commercial world. There was an understandable concern, one which still persists, that control of technology in the international marketplace could hurt US exports. From the beginning, technology security has necessarily been a process aimed at meeting national security requirements as well as ensuring a healthy economy through a robust position in international trade.

By 1977, DoD, with significant inputs from other government agencies and defense industries, had put together a list of 138 technologies considered to be militarily critical. This candidate list was then subjected to intense review by industry representatives organized into Critical Technologies Evaluation Groups. These groups prepared unclassified reports on major areas covered by DoD's list of 138 technologies. From the outset, such cooperation between private industry and government agencies was central to establishing effective export controls. Meanwhile, independent studies were also being performed by both the Navy and the Air Force to develop suggestions for additional items or other modifications to the existing list.

In 1979, the new approach to critical technologies was reaffirmed in the EAA of that year. The language of the statute recognized the dynamic tension existing between the need to export and the need to control the flow of militarily critical technology. This reinforced the new philosophy that control should focus on technologies and not hinder the sale of products which, in and of themselves, would not substantially benefit the military capabilities of potential adversaries.

In 1980, DoD, under the direction of USDRE(IE&T), merged much of the work previously done by the Services and industry into a consolidated list. Technical Working Groups (TWGs), supported by representatives from both industry and government, reviewed previously drafted materials, consolidated inputs under 17 major headings (Table 8-1), and recorded the rationale for the inclusion of the specified technologies in the 1980 MCTL.

Since much of the material supporting the definition of the MCTL was classified, only the list of unclassified technology titles was published in the Federal Register in October 1980. This constituted, in essence, the table of contents to the more

**TABLE 8-1. MAJOR TECHNOLOGY CATEGORIES INCLUDED  
IN THE MCT PROGRAM**

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COMPUTER NETWORK TECHNOLOGY	TELECOMMUNICATIONS TECHNOLOGY
COMPUTER TECHNOLOGY	COMMUNICATION, NAVIGATION, GUIDANCE, AND CONTROL TECH- NOLOGY
COMPUTER SOFTWARE TECHNOLOGY	MICROWAVE TECHNOLOGY
AUTOMATED REAL-TIME CONTROL TECHNOLOGY	VEHICULAR TECHNOLOGY
MATERIALS TECHNOLOGY	OPTICAL AND LASER TECHNOLOGY
DIRECTED ENERGY TECHNOLOGY	SENSOR TECHNOLOGY
SEMICONDUCTOR AND ELECTRONIC COMPONENT TECHNOLOGY	CHEMICAL TECHNOLOGY
INSTRUMENTATION TECHNOLOGY	NUCLEAR SPECIFIC TECHNOLOGY

---

detailed technology descriptions that had been generated by the previous year's work. The following year, 1981, a revised classified list was produced, this time including inputs from the Department of Energy. In 1982, a major industry review of the existing list was undertaken in cooperation with the Multi-Association Policy Advisory Group. The results of this critique were used by the TWGs to make appropriate revisions to the list.

Since publication of the first list in 1980, there has been a continual revision and updating of the MCTL's contents. The basic structure has, however, remained fairly stable. Major headings have in essence been retained, but with changes in emphasis, the addition of three major areas: "Cryptologic Technology," "Energy Systems," and "Energetic Materials" to reflect the evolution of technologies and their critical military applications. This combination of stable organization and structure with the flexibility to continually update and refine the detailed contents has worked well. The rapid evolution of pertinent technology has been accommodated, as has timely deletion from the MCTL of technologies no longer meeting the criteria for inclusion. The result has been maintenance of the credibility and usefulness of the MCTL in its successive versions.

The objectives of the MCTL analytical process are to:

- o Collect and analyze data needed to understand and correlate:
  - The state of the art in each technology (research product development, and production)
  - The comparative status of US, Soviet, COCOM, and other national capabilities in each technology
  - The military use of technologies
  - The criticality of the technology to a superiority of US military capability
- o Analyze and develop the distinction between merely useful and militarily critical technologies.
- o Identify the potential directions and progress in new technology areas that may overtake currently controlled technologies.

The participation of private industry experts is of vital importance to the MCTL process. The USDRE(IP&T), which manages the MCTL project through the Institute for Defense Analyses, encourages the participation of industry as full members of the 12 TWGs responsible for analysis, review, and revision of the MCTL.

Some 80 industrial firms have reviewed versions of the MCTL in the past, and industry representatives continued to participate in activities of the TWGs during their preparation of the 1986 edition. This continuing industry input is necessary to help identify nonstrategic items, provide information on foreign capabilities, and identify critical technology elements.

For each of the technology areas included in the list, there is provided a general description, the military rationale for control and a list of critical elements, described under the following general categories:

- o Arrays of Know-How--Limited to the know-how and related technical information (including design and manufacturing know-how), which are not in the public domain and which are required to achieve a significant development, production, or utilization purpose. Such know-how includes services, processes, procedures, specific-

cations, design data and criteria, and testing techniques.

- o Keystone Equipment--That equipment (including manufacturing, inspection, or test equipment) specifically necessary for the effective application of significant arrays of technical information and know-how.
- o Keystone Materials--Materials specifically necessary for the effective application of a significant array of technical information and know-how.
- o Goods Accompanied by Sophisticated Know-How--Goods the use of which requires the provision (disclosure) of significant arrays of technical information and know-how (including operation, application, or maintenance know-how); and keystone equipment and material for which embedded know-how is inherently derivable by reverse engineering, or is revealed by use of the goods.

Criteria for inclusion of items on the MCTL stem from the EAA of 1979 (as amended in 1985). The first criterion (Section 5(d)(2)(c)) is that the technology in question may not already be possessed by, or be otherwise available to, Warsaw Pact countries. Such consideration, now formally required by the 1985 amendment, is an integral part of the MCTL process. Initial emphasis was placed on identifying and removing technologies for which Warsaw Pact countries were determined to have indigenous capabilities. A more comprehensive assessment of foreign technological capability in MCTL items is currently underway to determine those technologies that are available from other unrestricted sources. This determination will be the basis of US action to secure control agreements with such sources. In the absence of such agreements, certain technologies may be considered for deletion from the MCTL.

Assuming the lack of availability to Warsaw Pact countries is established, the selected technology must also satisfy the criterion (Section 3(2)(A)) of supporting a significant military capability, the availability of which would be detrimental to US national security. One or more of the following factors are generally considered in assessing the extent to which a given technology meets this criterion:

- o The technology is used in US military systems, either deployed or scheduled for deployment in the near term, and contributes significantly to the performance of such systems in a primary mission area.

- o The technology will contribute significantly to Warsaw Pact capabilities in primary mission areas. Such determinations may often be inferred from Intelligence Community projections of Warsaw Pact acquisition targets. (In most instances, such technology may be the same as that identified by application of the first criterion. It is conceivable, however, that a technology no longer critical to the performance of US systems could be of considerable importance to those under development by the Warsaw Pact countries.)
- o The technology, although not currently embedded in a US system, is a leading edge technology with high potential for having an impact in advanced military applications.

Evidence of the MCTL's technical validity is found in the extent of agreement between its coverage and areas of technology identified by other independent analyses. The USDRE has, in his annual report to the Congress, identified the 20 basic technology areas considered most important in the competition with the Soviet Union (see Figure 8-3). These were selected to provide a basis for comparing US and USSR technology bases. Technologies identified were not necessarily limited to those in deployed military systems, but included those having the potential for significantly changing the military capabilities of either side over the next 10 to 20 years.

## CONCLUSION

MOUs inherently deal with technology transfer issues--the most fundamental of which is striking a balance between the need to contribute national technological assets to a collaborative defense activity and the need to protect those assets. Before any agreement is made or negotiations are begun to transfer technology, the USG must decide (1) whether or not the technological information should be shared, and if so with whom; and (2) how the information to be transferred and/or collaboratively developed should be protected. Technology information as valuable as national security assets includes Classified Military Information (CMI) and unclassified information of various degrees of economic value to the defense industrial base.

The problem of balancing the need for national security export controls with the interests of nonstrategic commercial trade and open scientific exchange continues to be both challenging and difficult. Successful balancing of these competing interests has been enhanced by emergence of the MCTL as the first

BASIC TECHNOLOGIES	US SUPERIOR	US/USSR EQUAL	USSR SUPERIOR
AERODYNAMICS/FLUID DYNAMICS		X	
COMPUTER AND SOFTWARE	<--X		
CONVENTIONAL WARHEADS (INCLUDING ALL CHEMICAL EXPLOSIVES)		X	
DIRECTED ENERGY (LASER)		X	
ELECTRO-OPTICAL SENSOR (INCLUDING INFRARED)	X		
GUIDANCE AND NAVIGATION	X		
LIFE SCIENCE (HUMAN FACTORS/ BIOTECHNOLOGY)	X		
MATERIALS (LIGHTWEIGHT, HIGH STRENGTH, HIGH TEMPERATURE)	X-->		
MICRO-ELECTRONIC MATERIALS AND INTEGRATED CIRCUIT MANUFACTURING	X		
NUCLEAR WARHEADS			X
OPTICS			X
POWER SOURCES (MOBILE) (INCLUDES ENERGY STORAGE)			X
PRODUCTION/MANUFACTURING (INCLUDES AUTOMATED CONTROL)	X		
PROPULSION (AEROSPACE AND GROUND VEHICLES)	X-->		
RADAR SENSOR	X-->		
ROBOTICS AND MACHINE INTELLIGENCE	X		
SIGNAL PROCESSING	X		
SIGNATURE REDUCTION	X		
SUBMARINE DETECTION	X-->		
TELECOMMUNICATIONS (INCLUDES FIBER OPTICS)	X		

NOTE: Arrows indicate that the relative technology level is changing significantly in the direction indicated.

FIGURE 8-3. RELATIVE US/USSR STANDING IN THE 20 MOST IMPORTANT BASIC TECHNOLOGY AREAS

genuine, comprehensive effort to separate what is critical from what is merely useful.

A quote from the foreword to the 1986 Report to Congress on the Technology Security Program summarizes the direction taken over the last several years on technology transfer and the con-

trol measures taken to protect this valuable national resource. In his foreword, the Honorable Fred C. Ikle, Under Secretary of Defense for Policy stated:

Over the past year the Department of Defense has taken major steps to increase the efficiency and effectiveness of the technology security program. The new Defense Technology Security Administration has eliminated previous redundancies, improved day-to-day coordination, and ensured that both technical and policy considerations are introduced into export control cases at the outset. The DTSA has undertaken an ambitious program of automation that is speeding up the completion of routine administrative tasks and opening new possibilities for government-wide cooperation. Throughout, we are sharpening our focus on protecting those technologies which give our country the greatest advantages over its adversaries and our citizens the greatest return on their defense dollar. The Department of Defense has reduced substantially the time it takes to review export license cases. The average time has now been cut to about 15 days for both dual-use and munitions cases. That will cut administrative costs for US firms. It also will greatly increase their chance to outsell firms from foreign countries, where export licenses often are granted very quickly.



## CHAPTER 9

### MULTINATIONAL PROGRAM MANAGEMENT STRUCTURE

#### INTRODUCTION

The Program Manager (PM) of a multinational program office has management authority over all the technical and business aspects of a program. His role is to tie together, manage, and direct the development and production of a system, while meeting performance, schedule, supportability, and cost objectives that are defined by his charter, Memoranda of Understanding (MOUs), and other promulgating documents initiated by the multinational steering (or control) group, Department of Defense (DoD), and his parent Service. Essentially, he serves as the agent of the multinational steering group, DoD, and his Service in the performance of the multinational system acquisition process, and he is armed with authority and responsibility given him by the steering committee, DoD, and his Service for running the program. From his vantage point as PM, he possesses a wide perspective of the program and the interrelationships among its elements. He must be the major motivating force for propelling the system through its evolution. Management techniques of the specific functional specialties (e.g., contracting, engineering, production, financial management, test management, logistics) are described in other chapters in this Guide.

The position of a military PM is unique in the managerial world. Unlike most managers, a PM is largely dependent on outsiders to get his work done. The PM's tasks are much more complicated when the program involves a multinational effort. Although the PM has some staff of his own, for the most part, the real work of the program is usually performed by personnel outside his immediate office, including individuals from his parent organization or Service, and other governments, as well as contractors from his country and overseas.

In the past, few major systems acquisition programs started as multinational efforts. Most were preceded by individual or joint Service efforts, often after much research and development, both by the military and by individual contractors. The reasons for advocating a multinational development effort are many and varied, but they are ultimately reducible to certain operational, economic, or political considerations by all parties involved--the US Government (USG), DoD, individual US military Services, our allies and their military Services, US defense contractors, and foreign defense contractors, among others.

Typically, several of the following goals are paramount:

- o Improved national and collective defense
- o Reduced development and production costs
- o Improved armaments cooperation
- o Enhanced interoperability of equipment
- o Improved standardization and reduced logistics requirements
- o Enhanced technology and information exchange.

### PROGRAM OFFICE STRUCTURES

This chapter describes the major factors and policies associated with the tailoring of a program office to manage a multinational project. There are no standard structures for multinational programs. Each is an ad hoc arrangement. The program structure depends upon the size and goals of the program, the phase of the program in the acquisition process, the desired cooperative arrangements among the countries, and the role of the Office of the Secretary of Defense (OSD) and the Services in the program. A 1985 U.S./Federal Republic of Germany (FRG) Program Management Symposium discussed the organizational options shown in Figure 9-1. The diagram identifies some of the management as well as contracting alternatives. Although many variations exist, multinational programs can be broadly classified into three categories: single-country managed program offices, multinationalally staffed program offices, and multiple program offices.

### SINGLE-COUNTRY MANAGED PROGRAM OFFICE

A single-country managed program office is sometimes referred to as a "pilot nation approach." Most multinational programs begin as single-country developments, such as the AV-8 Harrier. Many bilateral programs, especially small programs, are single-country managed to satisfy bilateral requirements. For the most part, these programs are structured and managed as they would be if they were single-country programs. The participating country may assign a liaison officer or representative to the program office, or it may simply monitor the program. Normally, the policies and procedures of the lead country dominate the program.

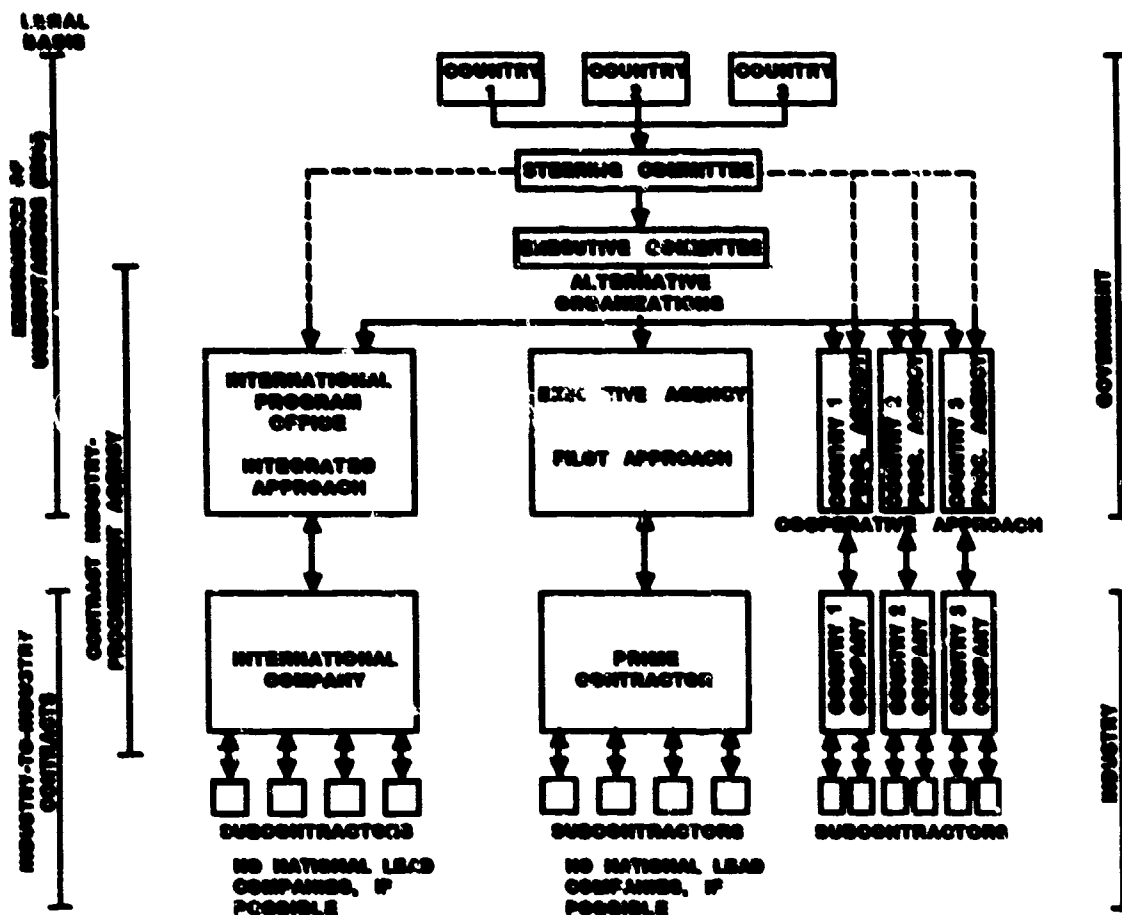


FIGURE 9-1. ORGANIZATIONS FOR MULTINATIONAL COOPERATION

### MULTINATIONALLY STAFFED PROGRAM OFFICE

A multinationally staffed program is one in which the personnel from several participating countries work under one PM. The lead country provides the PM, most of the program management staff, and the administrative support. The participating countries each contribute a deputy PM and other military officers to the program management staff. This practice is becoming more common and seems to be the multinational program structure preferred by our North Atlantic Treaty Organization (NATO) allies for larger programs. The central program direction comes from a Multinational Steering Committee.

### MULTIPLE PROGRAM OFFICE

A number of multinational Research and Development (R&D) programs are, in fact, multiple programs or projects whose activities are coordinated. The degree and method of coordination

tion vary from program to program, as does the principal source of program direction. Frequently, a NATO subgroup plays a direct role in the program's execution. A participating nation may insist on forming its own program office for a program involving a large financial outlay, involving a complex development, or having a high degree of risk associated with it. The relationships between the national offices and the overall multinational program office would be detailed in an MOU and other coordinating documents. Central program direction comes from a multinational steering or control committee.

### ATTRIBUTES OF SUCCESSFUL PROGRAMS

In a 1985 research effort, Charles Farr investigated 10 hypotheses that were believed to contribute to the success of international programs. His findings are summarized below.

#### HYPOTHESIS 1:

Multinational cooperative programs guided by steering groups are more likely to be successful than multinational programs guided by parent bureaucracies or other ad hoc organizations.

This hypothesis was supported by the research effort. A high-level forum, such as a steering committee, should be used to guide every international program, regardless of its size. Steering committee members should be of higher rank and status than the full-time PM. The steering committee representative from the PM's country should also be the PM's superior in the parent government hierarchy so that the multinational decisions of the project are more likely to also be supported at home in the parent hierarchy. Steering committees should meet at least semiannually, or they run the risk of failing to keep abreast of program events and to demonstrate the necessary high-level support.

#### HYPOTHESIS 2:

International cooperative programs in which PMs are granted high levels of authority are more likely to be successful than programs in which PM authority is more limited.

The research effort supported this hypothesis. The international principals of a cooperative project should grant a high level of authority to a single PM, who directs an internationally staffed, colocated project team. The PM and the project team members should have the authority to participate in devel-

oping the MOU. The colocation of managers from all participating countries in a single project office is also beneficial to the program. The colocated members should have specific functional responsibilities, and their performance should be subject to the review and control of a single designated PM. This manager should be carefully chosen on the basis of attributes such as previous international experience; previous management experience; personal leadership qualities; and, to a lesser extent, technical knowledge of the program. Although technical expertise is important, the PM must understand the financial, contractual, managerial, and political ramifications of his decisions. The project office should be intimately involved in writing and negotiating the MOU. This involvement will reduce the possibility of making promises to international partners that cannot be fulfilled. In addition, the project team members will become believers in the project tasks and objectives.

### **HYPOTHESIS 3:**

International cooperative programs of larger size are more likely to be successful than projects of smaller size.

This hypothesis was supported. For relatively small programs, extra effort must be expended to ensure that there is adequate support for the program. Large programs tend to attract managers of higher rank and greater experience and ability. The large resource investments that typically accompany large projects also increase program visibility. It is important to ensure that small programs employ the fundamentals of good management. Since the "system" may not always support the interests of smaller programs, it is important for those programs to have experienced, full-time managers who are well qualified in management skills.

### **HYPOTHESIS 4:**

Programs in which the participants' requirements and goals are carefully harmonized at the outset are more likely to be successful than those in which requirements and goals are not harmonized.

This hypothesis was supported by the research effort. The goals and objectives of each international participant must be clearly identified, and formal mechanisms must be structured at the outset so that the various goals can be achieved. Farr's interviews with managers of both successful and unsuccessful programs revealed the unanimous view that requirements and objectives must be: (1) clear, (2) supported by the user community,

and (3) harmonized among all participating countries at the outset of the program. The MOU should avoid vague phrases such as "best efforts" and "to the maximum extent possible" and should, instead, be precise about important issues such as who does what, how funding is shared, and how benefits are shared. Additionally, there are a number of reasons for initiating an international program. These include the need to respond to a recognized threat, the desire to satisfy a political goal, and the desire to use a new technological capability. It has been the experience in numerous programs that political and technological "push" is a precarious basis for the initiation of an international program unless there is also clear support from the user community as well.

#### HYPOTHESIS 5:

International cooperative programs that attempt few and modest advances in the state of the art are more likely to be successful than programs that attempt multiple and major advances.

This hypothesis was not supported. There may not be a need to attempt technological advances in an evolutionary, incremental fashion; however, it was found that a number of programs and defense contractors explicitly try to approach technological advances in evolutionary, incremental fashions. This approach, which is facilitated by the use of applied research and development and the use of prototypes, is recommended by the research effort.

#### HYPOTHESIS 6:

International cooperative programs in which each partner's share of technological benefits is perceived as being in proportion to its contribution are more likely to be successful than programs in which shares are not so perceived.

The research findings supported this hypothesis. Extra care should be taken to structure a program in which benefits are equitably distributed and all participants are "equally happy or unhappy" with the results. A sense of fair play should prevail among the participants in an international cooperative project. An excellent start in that direction is to ensure that clear, unambiguous expectations are set at the beginning of the program. Each participant country should understand what it is expected to contribute and what it can expect to receive in return. The MOU should clearly address the method for adjusting funding and work shares if the scope of the program changes in any way (increased

or reduced production volume, altered schedule, third country sales, etc.). Further, formal mechanisms for tying the success of all the participants together are recommended. An example is the joint venture corporation formed by the industrial partners of the Multiple Launch Rocket System (MLRS) program.

#### HYPOTHESIS 7:

Programs in which participants have relatively more experience with international programs and with the relevant technology are more likely to be successful than those in which participants have less experience.

This hypothesis was supported. Government and industry personnel on the project team must be carefully chosen to maximize experience in the following dimensions: managerial skills, international experience, and familiarity with the relevant technologies. The dimensions of experience that were found to be relevant by this research were previous international experience, managerial experience, and experience with the relevant technology and situational factors. Based on the research, the single most important dimension of experience was the management experience of key project members. Managers with both management and technical expertise were highly desirable but not always available. When forced to choose, management experience should be the first priority.

#### HYPOTHESIS 8:

International programs whose PMs and team members are more program oriented than parent-command oriented are more likely to be successful.

This hypothesis was supported. There have been occasions in most programs when national interests conflict with the best interests of the program. In the F-16 program, for example, some European countries did not wish to accept certain changes to the aircraft. The US devised a plan in which nonrecurring costs for the change were waived and the Europeans paid only recurring costs, if they did not intend to use the new capability. Obviously, this sort of solution requires some trust. The F-16 program office has been effective in promoting this kind of cooperative spirit in the interest of "getting things done." The steering committee has further facilitated this cooperative project orientation by acting as an effective forum for the resolution of difficult issues.

A strong project orientation was also reported on the

Seasparrow program. Several examples of cooperative spirit were cited: the placement of configuration management under the control of the steering committee, the acceptance by participating countries of modifications they did not favor so that a common configuration could be maintained, cooperative staffing of the project office, and a willingness to meet on short notice for the resolution of important problems that arise.

#### HYPOTHESIS 9:

Programs that have less environmental uncertainty are more likely to be successful than programs with more uncertainty.

The research supported this hypothesis. There should be active planning for and anticipation of various environmental and other external influences such as inflation; unplanned changes in cost, schedule, and production volume; and increased threat of war. Although much environmental uncertainty occurs "to" the program and cannot be influenced directly by program management, each program can minimize these effects by anticipating the sources of external uncertainty. Careful construction of the MOU should establish agreed-upon procedures for responding to cost and schedule changes, changes in intended production volume, and criteria for the accession of other nations to the program.

The MOU and any contractual documents should anticipate as much as possible. Otherwise, management may be forced to deal with an untenable situation well into the program, for which no agreed-upon procedures have been established.

#### HYPOTHESIS 10:

Programs that are structured to minimize uniquely international concerns such as geographical separation, cultural differences, and language barriers, are more likely to be successful than other programs.

The research efforts supported this hypothesis, although problems with geographical, cultural, and language barriers are far less significant than are different technological capacities and managerial practices. The multinational program management arena is very political, and differences of opinion are a constant way of life. The measure of program success is the ability to effectively resolve these differences through commitment to the project, the harmonization of goals so that the success of one participant depends on the success of the other participants, and the granting of sufficient management authority to the PM.



## CONSIDERATIONS IN ORGANIZATIONAL STRUCTURE

As one might suspect, many multinational programs have unique management structures. For effective and efficient technology transfer, which is normally a major objective of a multinational program management office, the management structure should be developed to meet the needs of the acquisition strategy. There is a range of organizational structures that may be used. The participation of countries and firms in a dual or coproduction arrangement often requires a participative management approach with multinational government leadership of the efforts of a consortium of industrial firms.

The organizational structure must provide the decision-making and operational levels required to carry out the acquisition strategy and communications/liaison functions. The assigned PM for a multinational acquisition must communicate with a wide variety of organizations. Some are internal to his parent organization and others are external to the program. These contacts require the personal attention of the PM during the initial establishment of formal lines of communication, as well as subsequent follow-up, to keep all program participants informed of progress, problems, and changes to established program thresholds, constraints, and plans.

The organizational structure exists to provide a disciplined, stable, but flexible approach to dealing with the legal, administrative, and technical requirements of the acquisition process. The organization established by the assigned PM to carry out program objectives must be adequate to get the job done. If the organizational structure proves unsatisfactory, changes should be made without delay.

The organizational structure for multinational acquisition is complicated by laws, language, and customs that may require a need for special staffing. Program office responsibilities often overlap and are not clearly defined, guidelines are frequently vague or in the process of being changed, and even ordinary speech contacts are often difficult. The assigned PM must establish communications along three general lines: (1) with those organizations external to control and direction but with influence over the program, (2) with those organizations that are external to program control but responsible to its direction, and (3) with those internal organizations over which the PM exerts direct control.

Several management structures are presented in the following discussion. The Patriot organization that is shown illus-

brates a program in the MOU negotiation stage in which discussion and negotiation are the objectives, rather than program control. The Explosion Resistant Multi-Influence Sweep System (ERMIS) is representative of a NATO-sponsored program that is run by a foreign PM. The NATO Airborne Early Warning and Control (AEW&C) program involved the procurement of a major system by NATO that is owned by the 13 NATO countries participating in the program, with the US System Program Office acting as the agent for NATO. The F-16 program represents coproduction of a US-developed system in the US, Europe, and Israel by a consortium of contractors with strong US management influence. The NATO Seasparrow Surface Missile System (NSSMS) is a transatlantic multinational development program. The system was developed and is now supported through multinational efforts. The MLRS Terminal Guidance Warhead (TGW) is a multinational codevelopment program that is managing a consortium of contractors.

### PATRIOT

Within NATO, the management organization to facilitate an international program may consist initially of a part-time NATO program steering committee and a multinational full-time management group for MOU negotiation. The steering committee controls the program by providing guidance and direction to the management group. A high-level representative from each participating NATO country sits on the steering committee. Meeting as necessary to make decisions, the committee issues regular reports about program status and is responsible for liaison with NATO military authorities for planning the integration of the system into the participating countries' inventories. Each representative to the steering committee provides his country's policy and position guidance. An initial MOU specifies the form and structure of the management group responsible for detailed management, evaluation of alternatives, and planning.

The Patriot organization shown in Figure 9-2 was used during the MOU negotiation phase, and is shown here as a typical example. This strawman organizational structure depicts the model for most current NATO programs, but it requires tailoring to the particular program. The depicted structure is typical for planning or initial concept development and would change considerably depending upon the acquisition option chosen. Different managerial organizations would, of necessity, replace the steering committee entirely or expand it and the project office. For example, a consortium of government, industrial groups, or teaming arrangements in functional areas such as logistics, configuration management, operational control, and contract management could be established to implement fully the MOU for the procurement phase and to develop future agreements in accordance with programmed



## EXPLOSION RESISTANT MULTI-INFLUENCE SWEEP SYSTEM

9-11

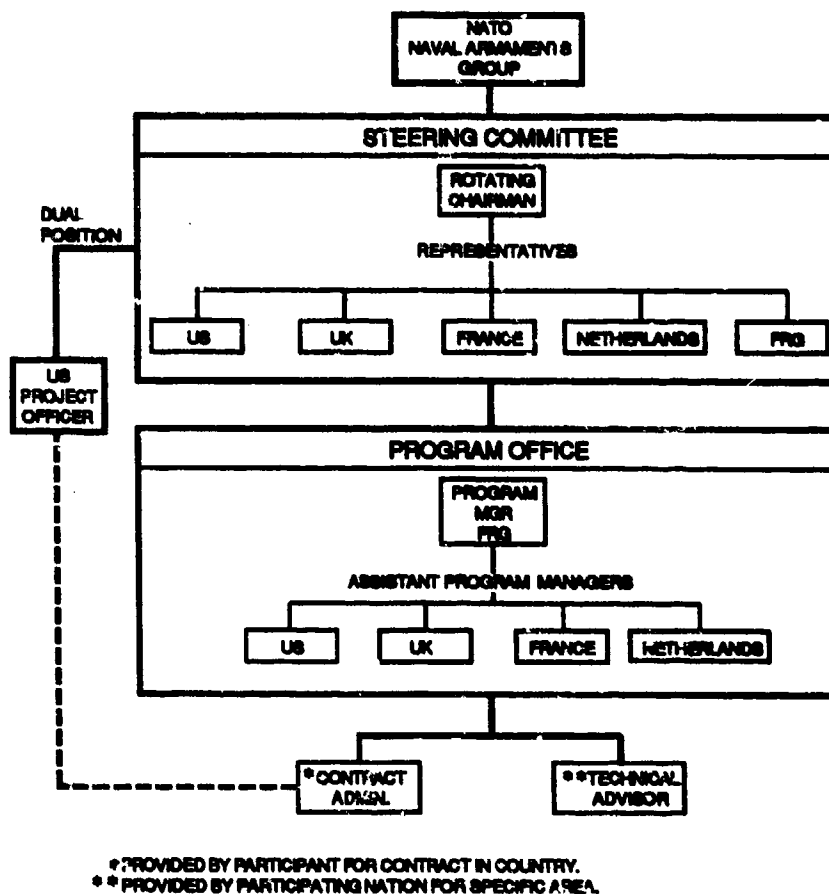


FIGURE 9-3. ERMIS PROGRAM MANAGEMENT ORGANIZATION

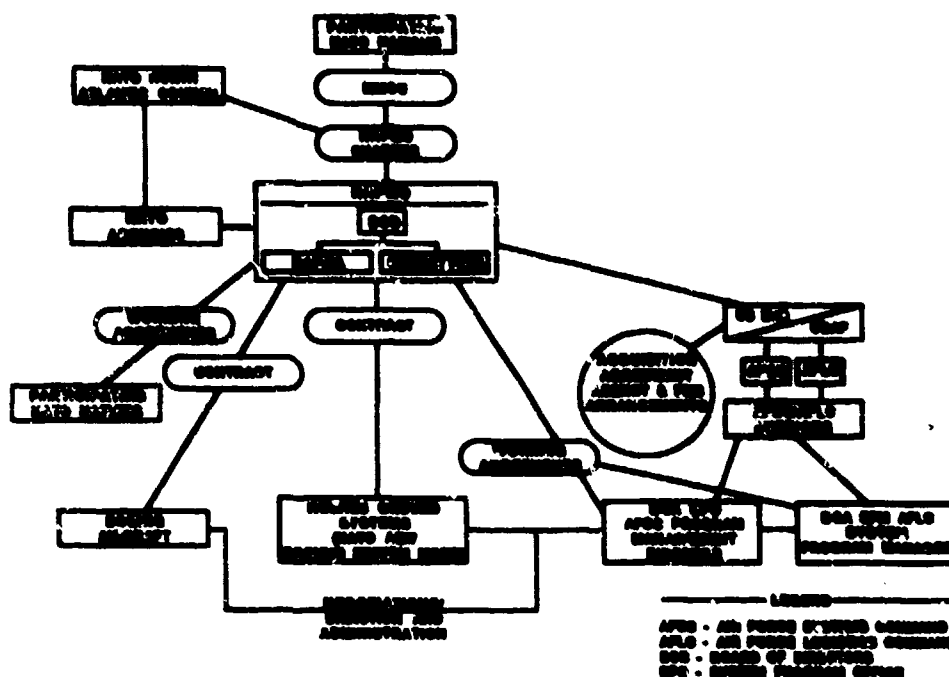
The relatively simple ERMIS organization was consistent with the modest size of the R&D program. The steering committee comprised one voting member from each participating country. The position of chairman rotated annually among the representatives. The MOU identified decisions that required unanimous approval of the steering committee. In the absence of unanimity, committee members sought additional guidance from their governments. Other decisions could be reached by majority vote; in the event of a tie, the chairman of the steering committee had one extra vote. Contractor performance monitoring and audit support were provided by the nation in which the contract was awarded. Both the steering committee and the program office were augmented by ad hoc working groups, as required, to address specific issues as they arose.

The program office, as the execution level of the organization, worked within general policy guidelines established by the steering committee. It was responsible for advising the steering committee on program requirements and progress. The

program office semiannually reported technical progress and fund status to the steering committee.

# NATO AIRBORNE EARLY WARNING AND CONTROL (AEW&C) PROGRAM

The NATO AEW&C program (an airborne detection and tracking system for aircraft and maritime targets) is the largest all-NATO system. The NATO AEW&C program has adopted the US-developed Airborne Warning and Control System (AWACS), designated E-3A, a derivative of the commercial Boeing 707 airframe as the air vehicle. Figure 9-4 presents the organizational structure used for the NATO AEW&C Program.



**FIGURE 9-4. NATO AEWMC PROGRAM MANAGEMENT ORGANIZATION (NAPMO)**

In December 1978, the NATO defense ministers signed a multilateral MOU on the acquisition and cost-sharing arrangement for the NATO-owned AEW&C system. The NATO AEW&C Program Management Organization (NAPMO) was chartered by the North Atlantic Council to direct, coordinate, and execute the acquisition of the NATO AEW&C system, including the development and acquisition of 18 NATO E-3A aircraft, modifications to the European ground environment, facilities construction, and program administration.

The NAPMO consists of a Board of Directors (BOD) composed of a voting member from each of the nations participating in NATO (less France, Spain, and Iceland); committees to advise

the BOD; and the NATO AEW&C Program Management Agency (NAPMA). The various committees are Technical and Configuration (T&C), Legal, Contracts, and Finance (LCF), Operation and Support (O&S), and Administration, Personnel, and Security (APS). (In 1983, LCF and APS were combined into LCF, and O&S and T&C were combined into OTS.) Currently, the general manager of the NAPMA is a German General officer, and his deputy is a USAF General officer. Senior positions within the NAPMA are held by senior officers and civil servants from participating nations. NAPMA has a contract with Hughes Ground Systems Division for 41 ground sites in Europe. NAPMA has a contract with the FRG for Main Operating Bases (MOBs). NAPMA has host-country contracts with Norway, Greece, and Turkey for Forward Operating Bases (FOBs). The contract for the aircraft is between the NAPMO and Boeing and several other contractors not shown in Figure 9-4. The USAF is the agent to purchase 18 E-3A aircraft. Additional NAPMO responsibilities include: NATO air-defense ground-environment system modifications necessary to provide data exchange and interoperability, activation of the MOB in the FRG, and other operating facilities in Northern- and Southern-flank nations, construction of maintenance and repair facilities at the MOB, and establishment of a NATO training center to assist the multinational force of 2,400 people that will operate and maintain the NATO E-3A.

The US Air Force (USAF) acts as general agent for the NAPMO through USAF Headquarters, Air Force Systems Command (AFSC) and Air Force Logistics Command (AFLC) to the NATO E-3A System Program Office (SPO) and other AFSC/AFLC divisions, and related support services in accordance with an acquisition agreement. Foreign military sales arrangements provide for USG support, government-furnished equipment and services, and common spares. The NAPMO has a working agreement with the E-3A SPO to conduct contract negotiations and procure the aircraft. This agreement requires NAPMO to retain funding responsibilities, make payments in the national currencies, retain liability for all costs and stop-work orders, protect USG security requirements, and approve changes.

#### F-16 MULTINATIONAL FIGHTER PROGRAM (MNFP)

The F-16 MNFP was the product of intense competition between the YF-16 (US), YF-17 (US), Mirage F1E (France), and the Viggen (Sweden). The USG and the European Participating Governments (EPGs) (Belgium, Denmark, the Netherlands, and Norway) agreed to coproduce the F-16. During initial consortium negotiations for the 998 aircraft program, a 58 percent offset commitment to the EPGs was established. This value was equivalent to 58 percent of the EPG's 348 aircraft procurement value.

Additionally, for each third country sale a 15 percent offset commitment was agreed upon.

The USG assumes program management responsibility for the multinational F-16 program. A Multinational Steering Committee (see Figure 9-5) serves to act as an advisory body for the F-16 program, with each member nation providing one representative and one alternate. The US System Program Director manages the contracts for the largest US prime contractors--General Dynamics, Pratt and Whitney, General Electric, and Westinghouse. For every third country sale beyond the 998 program, the US primes have contractual responsibility to provide offset through purchase orders and technology transfer to the European Participating Industries (EPIs) for airframe and engine fabrication and assembly.

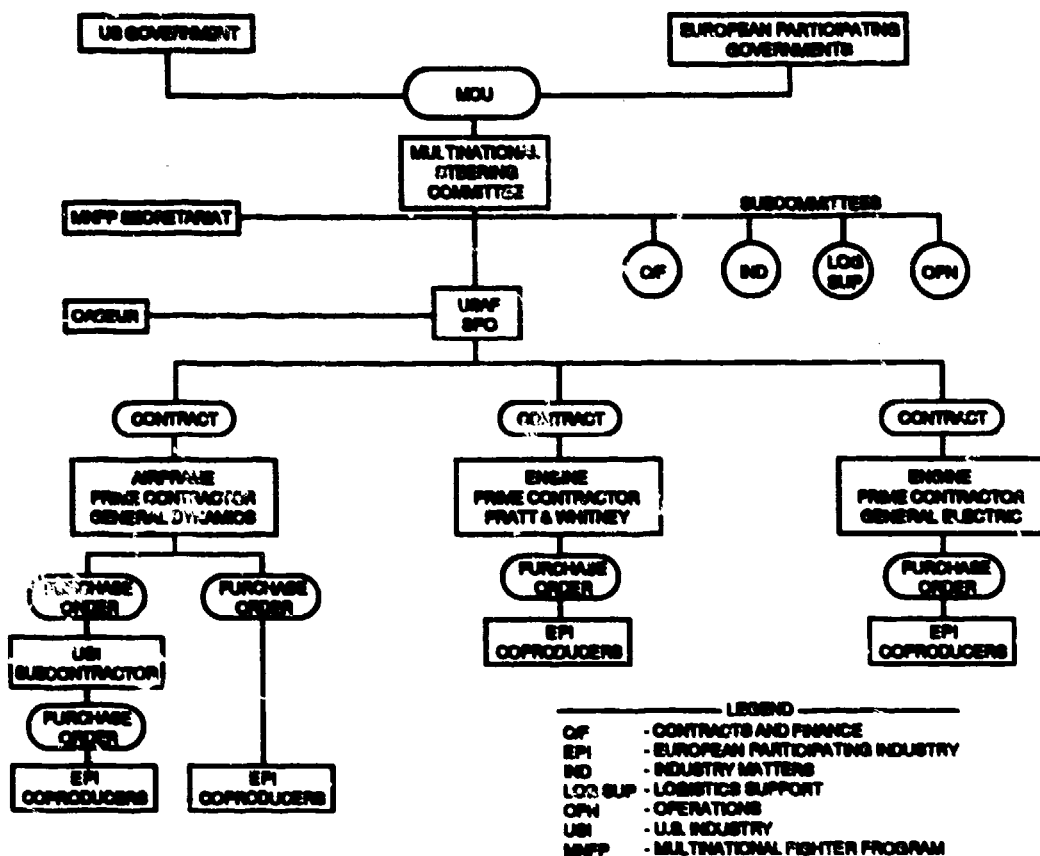


FIGURE 9-5. F-16 MULTINATIONAL FIGHTER PROGRAM MANAGEMENT ORGANIZATION

Currently, coproduction of the F-16 is being accomplished at all the EPI nations, the Republic of Korea (ROK), and

Israel. Future coproduction plans call for manufacturing and assembly in Turkey, Egypt, Singapore, Greece, and Indonesia.

#### NATO SEASPARROW SURFACE MISSILE SYSTEM (NSSMS)

The NSSMS is a multinational program for cooperative development, production, and follow-on support of a ship self defense missile system. The program was initiated in 1968, has now fielded over 150 systems, and is continuing production and maintaining cooperation in support. The program includes the governments of Norway, Denmark, Italy, the Netherlands, Belgium, the FRG, Canada, Greece, Turkey, and the US. The NSSMS program has a single line of authority. The NATO Seasparrow Project Steering Committee (NSPSC) acts as a board of directors. Under the NSPSC is the NATO Seasparrow Project Office (NSPO), located in Washington. The NSPO receives administrative and contracting support from the Naval Sea Systems Command (NAVSEA). NAVSEA contracts with a single prime contractor, Raytheon Co., on behalf of the NSPO. Other technical and logistics support to the program is arranged by the NSPO using NAVSEA as the administrative agent. The prime contractor is responsible for the subcontractors located in various participating countries. As shown in Figure 9-6, the NSPO is headed by a PM (US Navy Captain) answerable to the NSPSC. The composition of the NSPO is determined by the PM and approved by the NSPSC based upon program requirements and military representatives, who act as national deputies for their respective countries, and a US civilian staff. The PM has two deputies: one military, who is the senior national deputy, and a civilian, who manages the civilian staff.

#### MLRS TERMINAL GUIDANCE WARHEAD

Phase 3 of the MLRS program is the TGW project, which is a multinational codevelopment effort. The development of the TGW is managed within the management structure set forth in the basic MCU for the MLRS. The MLRS project management office, headed by the program coordinator and staffed by personnel of the participants, acts as the focal point for all actions. Figure 9-7 shows the TGW government program management structure. The principal industrial interface is MDTT, an international joint venture, and its partner industries, Martin Marietta Corporation of the US, Diehl GmbH and Co. of the FRG, Thomson-Brandt Armaments of France, and Thorn EMI Electronics, Ltd., of the UK. All five of these companies are signatories to the development contract, with the MDTT consortium in a role analogous to that of a prime contractor. LTV Aerospace and Defense (LTVAD) Company is the System Integration Contractor (SIC). LTVAD and MDTT have



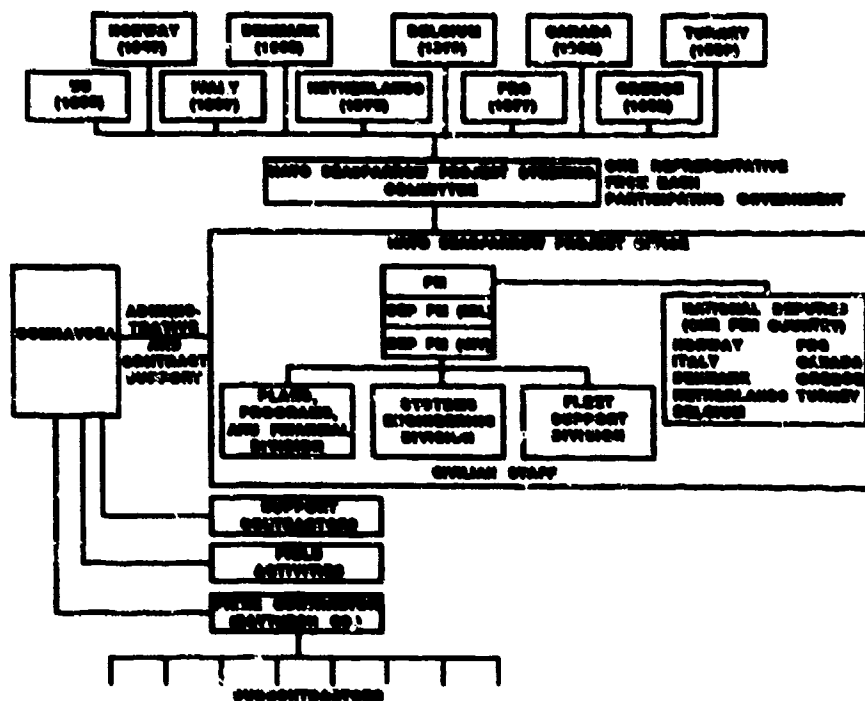


FIGURE 9-6. NSSMS PROGRAM

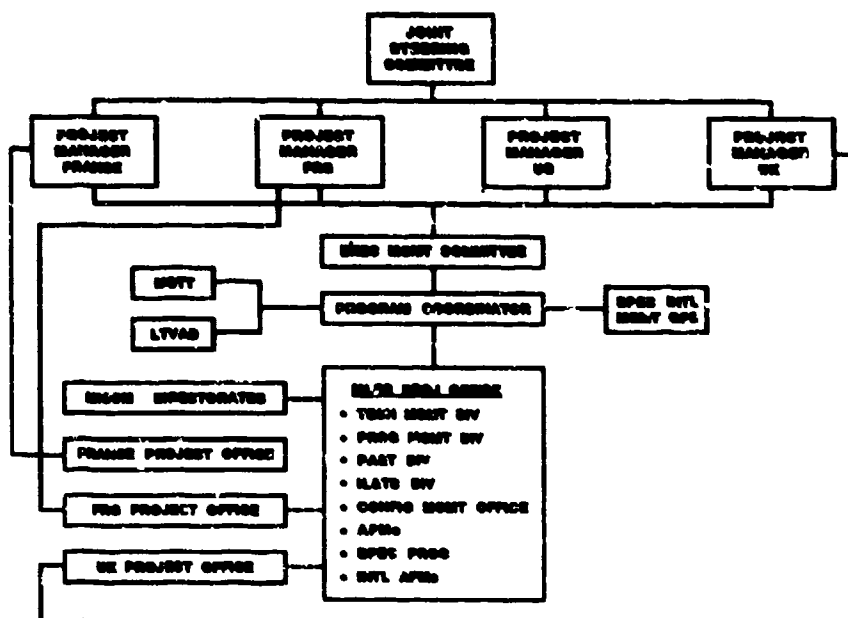


FIGURE 9-7. TGW (MLRS PHASE II) MANAGEMENT STRUCTURE

negotiated an associate relationship in consonance with their contracts with the government.

The Joint Steering Committee (JSC) consists of senior

national representatives at the two-star level from each of the participants. The functions of the committee are to give guidance and basic instructions to the Executive Management Committee (EMC) and to monitor and approve the implementation of the program decisions in accordance with the terms of the NOU. The JSC makes its decisions by unanimous agreement to prevent any country from being overruled on an issue concerning the internal management of tasks.

The EMC is composed of the national PM and a representative of the operational user from each participant. The committee is chaired by the US PM, who acts as overall program coordinator. The committee implements the tasks specified in the NOU and the instructions issued by the JSC, and provides overall coordination of the development and production planning activities. The EMC makes its decisions by unanimous vote. The EMC has the authority to establish and dissolve groups. Each participant has a national PM with authority to coordinate and direct the national activities required to support this cooperative project. Each serves on the EMC.

#### FOREIGN MILITARY SALES (FMS)

With FMS, the organizational approach normally used in is to have a program office in the US with a division or field office located in-country, especially for direct lines of communication with the customer government or business. The US program office, however, is responsible for development, production, qualification, configuration control, delivery of equipment, and follow-on support. The in-country field office may be responsible for establishing a training and logistics system.

#### SPECIAL OPERATIONAL CONSIDERATIONS

The following depicts how some of the operational considerations and policy factors can affect or influence the way a multinational PM office is organized. Operational considerations are:

- o Service-Peculiar Organizational Characteristics--Traditionally, the Services organize PM offices differently.
- o Major Program Changes/Configuration Management--The PM must be constantly alert for major changes in program direction or design that will necessitate organizational changes.
- o Type/Nature/Extent of Cooperative Effort--The degree and level of cooperation between nations must be con-

sidered when organizing the PM office. High levels of participation require correspondingly high levels of representation.

- o Phase of the Program--Early in a program, the PM office may require more technical and engineering staff, while a mature program requires more Integrated Logistic Support (ILS) and production staff.

Other operational considerations include:

- o Technical Management Process and Controls--The approach to the technical management of the program could dictate the special skills required for staffing the PM office.
- o Financial Management Process and Controls--The more nations involved, the more complex are the financial management problems, which are compounded by varying exchange rates and balance of trade, among other issues. The complexity of financial management requires a specialized financial staff.
- o Government/Industry Roles and Participation--The roles, relationships, and degrees of participation by both the government and industry could have significant influence on how the multinational PM office is structured. A private contractor with extensive contacts and experience in the international marketplace will require less specialized attention on the part of the PM than a contractor that has not had that experience.
- o Structure of Non-US PMOs and Their Modus Operandi--The US PM, when tailoring his office, must give careful consideration to how the participating allied nations have organized their efforts to accomplish the program. How participating allies operate can also affect the US PM organization.

#### SYSTEM PROGRAM OFFICE ORGANIZATION

There are two basic alternatives for program office organization. One is to include on the program management staff all functional specialists needed for program execution, essentially establishing a self-contained organization. The other is to restrict the program management staff to a cadre of managers who draw functional support from the parent command organization. This is commonly called a matrix organization. Most program management organizations are neither completely self-contained

nor completely matrix, but a mixture of the two. Large, high-priority programs, especially in the Air Force, and, to a lesser degree, in the Navy, tend more toward the self-contained program office organization. Small, low-priority programs in all Services tend more toward the matrix type.

Multinational programs normally follow the organization practice of the lead Service but require a larger, more experienced staff than a national program. Moreover, in a multinational staffed program office, it is normally desirable to include on the program management staff as much functional expertise as practicable. Supporting a multinational program that has the active participation of two or more countries is an extraordinary task. It is time consuming. In addition, it requires 6 to 8 months for an individual who is knowledgeable in his own Service's procedures to adapt to the multinational environment. Many of the Services' normal procedures must be modified or abandoned in favor of procedures better suited to the program's needs. A functional specialist who is assigned full-time to the program management staff is more likely to share fully in the spirit and objectives of the program and to cling less fervently to Service-peculiar procedures than is one who is working part-time for the program.

An analysis of the requirements for contracting and contracts administration, engineering, quality assurance, test and evaluation, and administration of the program provides the PM with a basis for identifying personnel and staffing needs. Although the US Services approach the organization of the PM office somewhat differently, they generally agree on having a "core" of functional staff in the areas of program and resources management, procurement and production, technical management, quality or product assurance, financial and contract administration, and logistics management or ILS. The need for supplementing this core functional staff with standardization experts, liaison officers, administrative people, contractor representatives, field office personnel, legal advisors, translators, and the like is very real.

The program management organizational structure exists to provide a disciplined, stable, but flexible approach to dealing with legal, administrative, and technical requirements of the acquisition process. When operating in the international arena, the organization is complicated by the introduction of many new factors--laws, language, protocols, customs, monetary differences, measurement standards, and management techniques, to name a few--that are often unfamiliar and may require special staffing.

A complicating factor in the organization of a multinational-

ally staffed program office is the assignment of responsibilities to personnel from the participating countries. The fact that the program office is multinationally staffed is evidence of the participating countries' desires to influence the program. However, it should be clear from the organization of the program office, as well as stated in the charter, that the participating countries' representatives share responsibility for success of the multinational program; they are not merely representing their countries' interests. To accomplish this purpose, the multinational PM should organize his staff and allocate key positions among the countries so that a balance of responsibility, authority, and influence is maintained. The senior representatives from the participating countries must be in the chain of command, directly subordinate to the PM. Sometimes this requires creating one or more positions for principal deputy PMs. Creating extra positions is preferable to rotating one position among the participating countries or to slight the interests of one by subordinating its representative.

When a program office requires multinational staffing, each country's responsibilities for providing personnel should be delineated in the weapons-specific MOU. The MOU should state the numbers and grades of personnel provided by each country, their specialties, whether they are to be military or civilian, and the minimum duration of their assignments. The weapons-specific MOU should also specify a target date for complete staffing of the office, but keep in mind that filling an approved billet, especially a civilian one, may take from 6 to 12 months.

## PERSONNEL

### SELECTION

One of the multinational PM's greatest challenges is creating an esprit de corps within the program office. Situations are bound to arise in which the countries' interests conflict. Success of the program then depends on having program management staff personnel who are committed to resolving the problems rather than provoking confrontations. Representatives from the participating countries must be expected to guard their countries' interests; that is why they are assigned to the program office. But their attitudes and approaches must be dedicated to success of the program.

The multinational PM wants on his staff the same type people who are desirable for every staff: knowledgeable, hard-working, efficient, and loyal. More than other programs, however, the multinational PM needs people who can work well with

each other and who are willing to explore unique solutions to management problems. The multinational program staff must be creative, flexible, and determined.

Selection of the deputy PMs, especially those from the participating countries, is particularly important to the multinational PM. Not only must he have confidence in the abilities of his deputies, he must be able to develop good working relationships with them. Personality conflicts, even among people who are otherwise competent, can undermine a multinational program. Before accepting assignments of key personnel, the PM should interview them, discuss program objectives, management approach, and management philosophy, and satisfy himself that each will become part of a good management team.

### EVALUATION

As a general rule, each person's performance should be evaluated by his supervisor. In multinational programs, this rule can be followed for most personnel. The common exception is for military officers assigned by a participating country to a multinationally staffed program office. It is normally considered important to an officer's career for his performance to be evaluated by an officer of his own country and Service. Therefore, a participating country's senior representative should be responsible for evaluating the performance of officers from his country. The PM, however, should always evaluate the performance of the participating countries' senior representatives, even if they are evaluated also by representatives of the participating countries.

### US CONTRACTOR MULTINATIONAL PROGRAM MANAGEMENT ORGANIZATION

The same basic organizational alternatives--functional and matrix--are also employed by industry. Most are neither completely self-contained nor completely matrix, but a mixture of the two. Some contractors tend to "shadow" or have a mirror-image of the government's PM organization, while others organize differently, often along the lines that have proved successful for them in past programs. Elements of marketing (or sales), engineering (or manufacturing) and budget (or finance) can usually be found in most contractor PM organizations.

The MLRS/TGW effort is being conducted by MDTT, Inc., a joint venture among industry within the four countries involved in the TGW development. MDTT is a consortium of elements from Martin Marietta Corporation of the US, Diehl GmbH & Co. of the FRG, THORN EMI Electronics, Ltd., of the UK, and Thomson-Brandt

Armaments of France (see Figure 9-8). This development contract consists of a Validation Stage and a Maturation Stage (MS). There is also an associate contractor agreement with LTVAD for integration of the TGW with the MLRS. When the consortium organization (Figure 9-8) is compared with the PM organization (Figure 9-7), comparable elements can be seen, suggesting the "shadow" tendency.

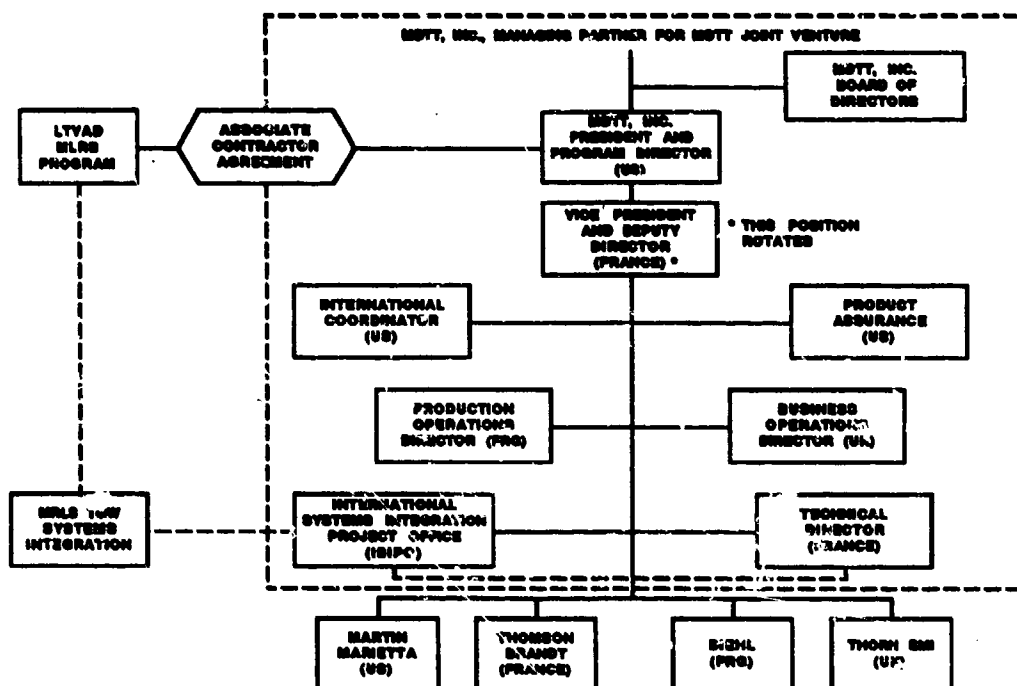


FIGURE 9-8. MDTT JOINT VENTURE ORGANIZATION

The contractor plays an important role in the development and acquisition phases of the multinational program management system. He must have the organizational flexibility that tailoring can provide. For example, in the F-16 multinational program, General Dynamics, with no prior experience abroad, has had one of the most complex and frustrating managerial tasks of any defense contractor. Under a unique arrangement, the fighter is being produced simultaneously on both sides of the Atlantic. General Dynamics has had to overcome different philosophical approaches to management by foreign governments and businessmen, and to improvise entirely new ways of doing things because of the project's enormous scope. Through a determined effort and strong management, the company has persevered.

## THE ROLE OF THE MULTINATIONAL PROGRAM MANAGEMENT CHARTER

The charter (used by US Army and Navy) or Program Management Directive (PMD) (used by US Air Force) is the instrument that identifies the mission, responsibilities, authority, and the special instructions for the US PM in order to facilitate the development and acquisition of a specified system. It is normally prepared and staffed by the PM while he is organizing his office. A similar document is applicable to multinational PM offices. A charter usually contains the following elements:

- o Purpose of the charter
- o Designation of the PM (by name)
- o References
- o Mission
- o Charter authority and responsibility
- o RSI requirements
- o Resource control
- o Chain of command
- o Communications channels
- o Coordination channels
- o Location and supporting organizations
- o Test and evaluation
- o Logistics
- o Implementing instructions
- o Program termination or disestablishment
- c Other details.

A clear and concise charter can be an effective working document. It charts the course for the multinational PM and serves as a vehicle for implementing the directions contained in the multinational MOU, international coordinating papers, DoD and Service directives and regulations, and other documents.



## CHAPTER 10 CONTRACT MANAGEMENT

### INTRODUCTION

It is clear that the intent of the Congress and Executive Branch is to foster standardization and interoperability by permitting foreign competition in the Department of Defense (DoD) marketplace. In spite of these intentions, the proportion of DoD procurements that are from outside the United States (US) has been decreasing slightly (see Table 10-1). The reasons for this are varied. Perhaps no other country in the world has as structured and complex a contracting system as does the US. Moreover, some market segments are protected either by statute or by national policy from foreign source participation. Nevertheless, foreign sources have competed more effectively over the past few years for DoD prime contracts due both to lessened "buy national" constraints and to general economic conditions. The bases for their participation and the results obtained are examined in the next section.

TABLE 10-1. DoD CONTRACTING

FISCAL YEARS  
(MILLIONS OF DOLLARS)

YEAR	1981	1982	1983	1984	1985
TOTAL AWARDS	\$105,223	\$124,725	\$140,483	\$146,032	\$163,725
PERFORMANCE OUTSIDE US	6,559	7,522	7,236	8,311	8,611
PERCENT OF TOTAL	6.0%	6.0%	5.2%	5.7%	5.3%

The degree to which foreign sources have been performing as DoD subcontractors is less clear. The subcontract market is an important and large one. Estimates indicate that over 60 percent of the value of major weapons programs are subcontracted. Limited data exist on how much of the subcontract work is performed overseas. Data collected from US primes in FY 1985 through contractual reporting requirements reflected total foreign subcontracts valued at approximately \$1.3 billion; however, this figure is considered to be low because primes were required to report down to only the second tier of subcontractors.

Achieving greater multinational cooperation requires that the Program Manager (PM) develop an acquisition strategy that will allow for a level of involvement by foreign sources that is appropriate for the specific program. Since there is a great variety in potential program structures in the multinational environment, specific attention must be directed to contracting approaches during the early program planning.

It should be noted that most of the DoD contracting procedure has its roots in public law and that the growth of laws covering this function has resulted in a complex and often rigidly prescribed set of procedures. It is essential that the PM obtain early involvement from the contracting officer assigned to the program. His counsel and advice during preparation and execution of acquisition plans can ensure that contracting plans are attainable and realistic within the scope of the overall program objectives.

Multinational PM sensitivity to contract management considerations is essential to the successful achievement of the goals and concepts discussed in Chapter 6 on Acquisition Strategy. These contractual considerations can have broad program management impact and can exert fundamental influence on the success of the acquisition process. How does the PM select from the myriad of contracting approaches available to achieve program objectives? What legal relationships are involved? How can contract management affirmatively support PM objectives? This chapter will focus on these issues and the significant elements in multinational programs that affect contract management. Contracting issues emanating both from regulatory procedures and constraints and from the results of experience gained in multinational programs will be presented. This information should provide a basis for PM sensitivity to contract management issues in the multinational acquisition environment. The chapter also contains a section on the important General Agreement on Tariffs and Trade, which was implemented in January 1981. The effect of the act is to expand the range of competitive procurements in the US available to foreign contractors, as well as to make foreign markets more open to US industry.

#### APPLICABILITY OF NATIONAL CONTRACTING REGULATIONS

The US Government (USG) recognizes two fundamental principles that determine which nation's contracting rules and regulations apply. The two principles are known as the "Golden Rule Principle" and the "Pilot Nation Approach."

### GOLDEN RULE PRINCIPLE

European governments frequently ask that their national procurement regulations be followed for USG DoD contracts awarded to their industries, even though the contracts may be solely for US defense needs as opposed to multinational programs. In the Report of the DoD task group for International Coproduction/Industrial Participation Agreements (otherwise known as the Denoon Report), the DoD affirmed its advocacy of the Golden Rule Principle, which holds that the purchasing nation establishes the procurement rules. If, for US contracts, the USG were to accept the procurement regulations of the foreign nations of the bidding firms, many problems would arise, including:

- o Competition would be unfair if the US had to evaluate proposals from two or three different countries with different procurement practices.
- o Training of the contracting work force would be impossible if expertise were required in the procurement regulations of 15 nations.

For these and other reasons, the USG favors using the procurement regulations of the country paying for the effort.

### PILOT NATION APPROACH

Multinational programs receive multinational funding, and subcontracts may be awarded to industries in the funding nations. A problem arises in which procurement rules to follow. European governments frequently ask that their national procurement regulations be followed on contracts awarded to their industries. However, this often results in a mix of national practices, with the program office being unable to hold the prime contractor responsible for the effort, when the terms and conditions of the subcontracts are determined by many local governments. The pilot nation concept, which was recommended by the Denoon Report and approved by DoD, requires that a single nation's procurement rules shall apply for a multinationally funded program.

### INTERNATIONAL AGREEMENTS

Various treaties and international agreements in effect between the US and foreign governments, especially those receiving military and economic aid under the Foreign Assistance Act of 1961, affect acquisition in foreign countries. Particular attention should be given to the provisions in these agreements

that pertain to purchase procedures, contract forms and clauses, taxes, patents, technical information, facilities, and other matters relating to acquisition.

Copies of existing international agreements with countries in Western Europe, North Africa, and the Middle East are filed with the United States European Command (APO New York 09128). Agreements with countries in the Pacific and Far East are filed with the United States Commander in Chief for the Pacific Command (CINCPAC). Many of the agreements are compiled in the "United States Treaties and Other International Agreements" series (TIAS), which is published by the Department of State. Copies of this publication are normally available in overseas legal offices and US diplomatic missions. In addition, Military Assistance Advisory Groups, Naval Missions, and Joint United States Military Air Groups normally have copies of the agreements applicable to the countries concerned.

In placing contracts with contractors outside the US for performance outside the US, contracting officers, including those in the US, should ascertain the existence and applicability of any international agreements and comply with those agreements.

When it has been determined that an acquisition will be made from a foreign contractor, overseas contracting offices may be used. A contracting office not within the command jurisdiction of a unified or specified command that is anticipating placement of a contract with a foreign contractor should maintain liaison with the appropriate component commander during preaward negotiations and postaward administration. When an acquisition may result in a requirement for logistical support of contractor employees or additional government employees in an overseas location, the contracting officer should ensure that the contract file includes documentation reflecting specific advance approval for such commitment from the appropriate component commander.

#### DOD RECIPROCAL DEFENSE PROCUREMENT AGREEMENTS

A significant current underlying policy of DoD international procurement is the desire to promote the rationalization, standardization, and interoperability of defense equipment within the North Atlantic Treaty Organization (NATO) alliance. The Congressional affirmation of this policy is popularly known as the Culver-Nunn Amendment to the 1977 Defense Authorization Act (PL 94-361). This amendment has since been enacted into positive law at 10 USC 2457. This amendment recognized as appropriate the use of the public interest exception to the Buy American Act in order to promote a "two-way street" concept of cooperation in defense procurement among the NATO allies. A second amendment, the Roth-

Glenn-Nunn Amendment to the FY 83 Authorization Act (PL 97-252), reaffirmed the US commitment to NATO cooperation. The FY 86 Authorization Act (PL 99-145) contained the Quayle Amendment and the Nunn Amendment, both of which significantly strengthened the multinational direction of DoD.

Based upon these statutory expressions of national policy, DoD has entered into reciprocal Memoranda of Understanding (MOUs) with Canada, the Federal Republic of Germany (FRG), Italy, the United Kingdom (UK), Norway, the Netherlands, Portugal, Belgium, Denmark, France, Turkey, Luxembourg, and Spain.

There are more limited agreements in place with:

- o Caribbean Basin Initiative countries
- o Israel and Egypt, with whom the US has Defense Cooperation Country Agreements that provide for Buy American exceptions for products listed in Annex B of the agreements. (These agreements are under reconsideration, and it is likely that annexes will be dropped in favor of blanket exceptions to Buy American, as with NATO.)
- o Australia and Switzerland (Foreign Military Sales (FMS) Offset Agreements that provide for case-by-case determinations to exercise exceptions to the Buy American Act/Balance of Payments (BOP) program).

All of the countries in the above paragraphs are referred to as qualifying countries. Procedures for evaluating offers of qualifying country products are found in DoD Federal Acquisition Regulation Supplement (DFARS) 25.7. (The Caribbean Basin Initiative is not yet (1987) in DFARS.) The procedures embody four fundamental principles: (1) offers are evaluated without applying artificial price differentials pursuant to the Buy American Act or the Balance of Payments program; (2) offers are evaluated without the cost of import duties, and provision for duty-free entry certificates is made; (3) solicitations are made in accordance with the normal policies and criteria of DoD purchasing offices; and (4) offers must satisfy all solicitation requirements.

Thus, the agreements do not guarantee placement of DoD contracts with firms located in qualifying countries; rather, they offer an opportunity to compete. Moreover, other statutory restrictions are still applicable; i.e., small-business set-asides are still reserved for US small businesses; mobilization base procurements are exempt from foreign participation, except in most cases for Canada, which can be considered part of the

North American Defense Mobilization Base; and the Appropriations act restrictions such as the Berry Amendment (prohibits an expenditure over \$10,000 for food, clothing, and other items) apply, except for chemical warfare protective clothing and specialty metals, for which there is a special statutory exception for qualifying countries. Finally, the fact that there is a reciprocal procurement agreement with a particular government does not entitle the government or its contractors to have access to US classified information. Disclosure must always be consistent with US national laws and policies.

#### GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT)

The GATT provides a framework for reducing tariffs and other trade barriers through a series of multinational negotiations that have been ongoing for over 15 years. Fourteen specific agreements and codes have resulted from the Kennedy and Tokyo rounds of these multinational trade negotiations. Some examples are:

- o Countervailing Measures and Antidumping Codes
- o Agreement on Implementation of Art VII (Customs Valuation)
- o Agreement on Government Procurement
- o Agreement on Trade in Civil Aircraft
- o Agreement on Import Licensing Procedures
- o International Dairy Agreement.

The GATT was implemented in the US by PL 96-39, "Trade Agreements Act of 1979," and became effective in 1981. Of specific interest to the DoD is the Agreement on Government Procurement. Figure 10-1 lists the designated countries (aside from the US). The significant features of the agreement are:

- o Article I--applies to government procurement of supplies and their incidental services on any contract of "Special Drawing Rights" (SDR) 150,000 (valued at approximately \$149,000 in 1986) or more.
- o Article II--waives discrimination barriers.
- o Article III--specifies special treatment of developing countries.

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Austria	France	Niger
Bangladesh	Gambia	Norway
Belgium	Guinea	Rwanda
Benin	Haiti	Singapore
Bhutan	Hong Kong	Somalia
Botswana	Ireland	Sweden
Burundi	Israel	Switzerland
Canada	Italy	Western Samoa
Cape Verde	Japan	Sudan
Caribbean Basin Countries	Lesotho	Tanzania
Central African Republic	Luxembourg	Uganda
Chad	Malawi	United Kingdom
Comoros	Maldives	Upper Volta
Denmark	Mali	Yemen AR
Federal Republic of Germany	Nepal	
Finland	Netherlands	

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FIGURE 10-1. LIST OF DESIGNATED COUNTRIES

- o Article IV--requires preparation of technical specifications in a way that is not an obstacle to internal trade.
- o Article V--defines tendering procedures--general rule is open tendering but exceptions for selective tendering.
- o Article VI--requires use of procurement regulations publicly available.
- o Article VII--provides for enforcement of obligations.
- o Article VIII--specifies exceptions to agreement--Does not preclude actions "necessary for the protection of its essential security interests relating to the procurement of arms, ammunition or war materials, or to procurement indispensable for national security or for national defense purposes." (For DoD, the agreement is applicable only to the product categories listed in DFARS 25.403 (70).)
- o Article IX--contains final provisions--acceptance; amendments; withdrawal, etc.

## NATO RSI CONTRACTING ENVIRONMENT

As discussed earlier in Chapter 6, Foxcurran has categorized eight modes of NATO systems development at the transnational level as follows:

<u>Description</u>	<u>Program</u>
o Licensed production of a US-developed system in one European nation (Mode 1)	M-113 CH-53G CH-47 Noratlas F-5
o Licensed production in Europe by a multinational consortium of a system developed in the US (Mode 2)	Hawk F-104G Bullpup Patriot MLRS Sidewinder M-483 155mm Maverick
o Codevelopment and coproduction among European nations (Mode 3)	MRCA AlphaJet Roland
o Licensed production in the US of a system developed in Europe (Mode 4)	Mk92 PCS Mk75 76mm Gun Canberra AV-8A Roland II VTX-TS B-57 Mk87 RATAC Squad Automatic Weapon 120mm Tank Gun I-81 Mortar
o Transatlantic multinational development (Mode 5)	V/STOL PHM Seasparrow MBT-70



- |   |   |  |
|---|---|--|
| o | Transatlantic multinational development<br>(Mode 5 continued)   | AVS<br>Fighter<br>Mallard<br>SRARM<br>MSOW   |
| o | Bilateral offset arrangements (Mode 6)  | F-4<br>F-5<br>Leopard 2<br>CP-140<br>MAG 58<br>Improved<br>Hawk<br>CH-47<br>F-111<br>Patriot |
| o | Transatlantic multinational production<br>and/or systems integration by a US-led<br>consortium (Mode 7) | HELIP<br>F-16<br>AEN&C<br>Ribbon<br>Bridge<br>JTIDS<br>NAVSTAR<br>GPS                        |
| o | Multisystem packages (Mode 8)   | Jaguar<br>Puma-<br>Gazelle-<br>Lynx<br>Family of<br>Weapons                                  |

These modes are evolutionary in nature. Until very recently, by far the greatest amount of activity was in those business categories in which US technology and corresponding systems migrated eastward across the Atlantic. Increasingly, some emphasis is being directed toward providing a measure of parity relative to the procurement of systems from the NATO European members. More recently, coproduction arrangements have been emphasized.

In the past, licensed production in the US of a system developed in Europe (Mode 4), for example, has been a very narrow street, as compared to the considerable flow of goods to NATO partners (Modes 1 and 2). Recent emphasis has been directed at those arrangements providing for a share of the work effort to be performed in the country buying the weapon system (Modes 6 and 7). Another approach has been to harmonize procurement requirements into a multisystem approach that satisfies the needs of

several countries while sharing the workload and the technology, as well as national prestige (Mode 8).

### GOVERNMENT-INDUSTRY RELATIONSHIP

Throughout this discussion Rationalization, Standardization, and Interoperability (RSI) program objectives, from a contract management standpoint, can be viewed in terms of transnational ventures. These ventures involve the alignment of procuring governments and their industrial counterparts, contractors, or consortia. This buyer-seller relationship can be viewed three ways: government and consortia, intraconsortia, and intra-country. These relationships may be constraints to successful program management and a source of potential conflict. This is especially true since defense acquisition strategy and attendant contract management relationships may be considered instruments of national economic development policies. Each of the NATO contracting environments is unique. Thus, it is necessary for the PM and the supporting contracting officer to understand clearly the specific rules and contracting customs in the particular participating countries.

This understanding of the country-unique requirements is especially significant since European NATO governments and industries appear to prefer that the USG contract directly with European industries rather than with European governments in FMS-type arrangements. The Europeans do not actually have FMS-type procedures. (Exceptions include programs such as RAPIER, in which the UK government is involved because of support arrangements.) In contrast, the US prefers to channel its military industry exports to NATO Europe through the USG. This difference in approach results from European and US procurement policies and practices that may affect the PM's ability to promote smooth and economical cooperation in military Research and Development (R&D) and production with NATO allies.

### EUROPEAN DISADVANTAGE IN US MARKETS

There are significant segments of the DoD contract market that are either entirely closed to foreign participation or at a severe competitive disadvantage to foreign sources. One restriction involves the place of contract performance. There is currently very little difference in treatment of firms based upon place of ownership. (One notable exception pertains to the access to classified information. The extent of foreign ownership, control, and influence affects a company's access to classified data, and thus its access to that segment of the DoD market.) Traditionally, however, contracting requirements have

focused upon place of contract performance rather than place of ownership, except for requirements to qualify as a small disadvantaged business under the Small Business Administration 8(a) program. This is true in the implementation of major statutes that affect foreign access to the USG market, such as the Buy American Act and the Trade Agreements Act. For this reason, a foreign vendor is considered as one whose principal place of performance is outside the US (including US-owned companies).

### DIFFERENCES IN PROCUREMENT REGULATIONS

One difference between US and European procurement practices that is likely to impact on the ability of the PM to promote international cooperation in military R&D and production is that US procurement regulations are typically more highly detailed in specific statutory requirements than are European ones. A recent study on "NATO Standardization and Defense Procurement Statutes" by the Library of Congress, Congressional Research Service, suggests that many of these US statutory requirements give rise to "boilerplate" clauses in US contracts that are unfamiliar to Europeans or represent requirements with which the Europeans could not or would not comply. The contracting staff of a PM should contact the US Army Contracting Agency, Europe, Box 49, APO New York 09710, to acquire current boilerplate content to be included in DoD contracts with European companies. Appendix D is a compilation of the solicitation provisions and contract clauses that are the vehicles for implementing statutes and national policies.

### MISPERCEPTION OF EUROPEAN INDUSTRY

The European industrial base is fragmented and much smaller than the US market and is developing along cooperative (i.e., consortia), as opposed to integrative lines (i.e., merger). A 1977 study of Western Europe's aerospace industry by Euro Economics (an economic research organization) concluded that, although collectively still much smaller than the US industry (1976 European sales equaled 38 percent of US sales, compared with 19 percent in 1970 and 13 percent in 1960), European industry is not lagging in global competition or financial performance nearly to the extent popularly believed. The report states that the statistical record stands at odds with generally pessimistic European assessments. This may be due to the European viewpoint of focusing only on particular markets (sales of commercial transports) or isolated problem areas (the need for greater coordination of national procurement policies). Since the study was published, even those two areas of concern have been somewhat modified, as evidenced by the Eastern Airlines and the recent

Northwest Airlines purchase of the A-300 Airbus and the 1977 record-breaking export performance of the French and UK aerospace industries of around \$5 billion and \$2 billion, respectively. In addition to implications for NATO standardization efforts, this development is also important as US foreign military sales decrease and new concepts emerge.

### EVOLUTION OF EUROPEAN BUSINESS PRACTICES

In parallel with the continued development of European defense/aerospace industries, a new form of business organization and management has developed in Europe. This involves both business and government centered around an entity previously mentioned as the "transnational venture." This new management approach has grown out of the unique circumstances of Europe and the cooperative direction of the European industrial evolution. Meanwhile, US industry has been dealing primarily within one large integrated defense market created by the USG. When US firms ventured outside this national market in the past, it was generally for direct sales purposes or to be a licensor. The US is aware of this evolution in Europe and has been moving over the last five years toward bridging the gap. This has and will continue to involve the increased participation of US firms in industrial collaboration through bilateral and multinational development projects, manufacturing as licensee for European-developed systems, and the continued assorted production offsets and coproduction of US-developed systems.

The international approaches discussed in Chapter 2 represent a significant evolution toward greater collaboration. In the past, US efforts at collaboration were primarily targeted toward obtaining developed European systems, which basically satisfied military requirements for operational hardware in less time or at lower cost than would be expected from the normal R&D cycle. This evolutionary change can be seen in reviewing appropriate portions of the Federal Acquisition Regulation (FAR) and the DFARS. Today, foreign firms from qualified countries have a more competitive standing with US firms, except for certain restrictions such as national security needs and mobilization planning requirements. Moreover, US prime contractors are required to consider qualified country sources competing for the considerable subcontract dollar share of US defense business.

Identification as a qualified country carries important waiver and solicitation benefits. In the area of solicitations, aside from statutory restrictions, identification as a qualified country simply means access to the US defense market with country classification as to the type of agreement--participating, FMS/offset, or defense cooperation. Thus, the DoD, along with NATO

nations, in particular, and other allies and friendly nations, is expanding the collaborative arrangements for the research, development, production, and support of complex weapon systems in furtherance of standardization objectives.

With this background, we will discuss specific observations concerning the contract management challenges facing the multinational PM in dealing with US/qualified country firms.

### CONTRACTING PROCESS

Some of the problems and differences in approach that will affect a foreign-involved program may be highlighted through reference to the contracting sequence shown in Figure 10-2. The contracting process is based upon and initiated by receipt of a program approval document. These documents are normally well defined for purely US acquisitions. For foreign-involved programs, the form of the program approval document will depend upon the mode of acquisition strategy employed. The process for the development and approval of these documents, particularly memoranda of understanding, is described in Chapter 2 on Major International Arms Collaboration Approaches and can be a long drawn-out effort. Often these MOUs and other documents contain qualifications or reservations on the commitment level of both the US and the foreign participants. The PM must ensure that the acquisition strategy and contracting approach reflect the various objectives, restrictions, and constraints specified in these formal government-to-government arrangements.

### REQUIREMENTS DOCUMENT

A major element is the specification of the requirement. The requirements document is an output of the requirements planning harmonization process described in Chapter 3. Some difficulties arise in the process of communicating the requirement, due to differences in language and syntax. The objective from the contracting standpoint is to get a clear expression of the requirement, which can then be communicated to potential sources. When there are specific business requirements, such as a defined distribution of program purchase dollars among countries or directed sources for certain portions of the equipment, they must be clearly specified.

### PURCHASE REQUEST

The purchase request combines the Statement of Work

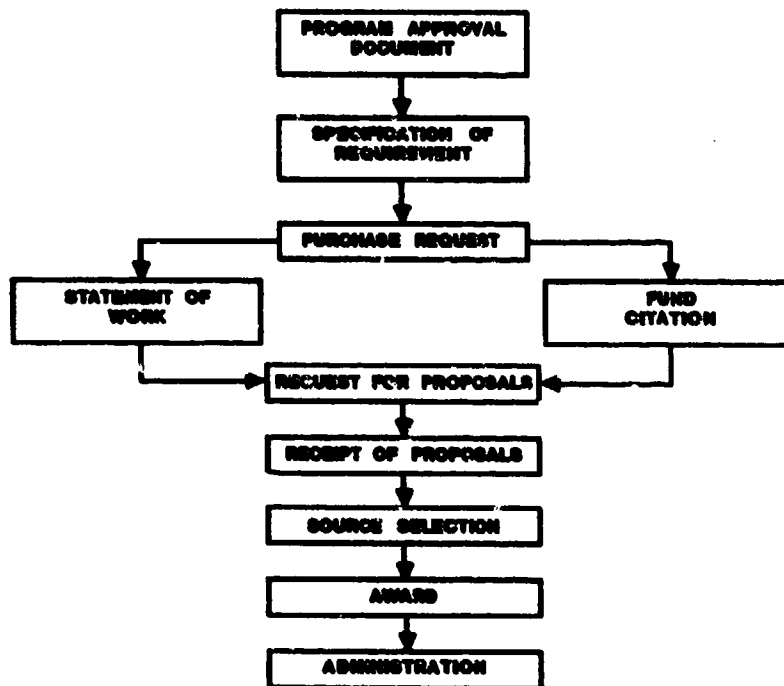


FIGURE 10-2. CONTRACTING SEQUENCE

(SOW) and the fund citation. The SOW communicates what the contractor is to do in meeting the requirements of the proposed contract. It must reflect both the unique efforts required to provide the required hardware (including such elements as international standardization) and the economic participation (e.g., offset) requirements, if any. If foreign standards are to be used in place of US standards, they also must be identified. The SOW must accurately reflect the requirements of the MOU or other authorizing document in terms of business structures.

The fund citation can be expected to contain constraints covering such things as:

- o Level and timing of national contributions
- o Provisions on currency exchange
- o Incremental funding plan.

The financial constraints and government commitment must be communicated to the potential offerors so that they are aware of the level of risks inherent in the acquisition.

#### REQUEST FOR PROPOSALS (RFP)

The document providing the mechanism for industry par-

ticipation is the solicitation, which is usually in the form of an RFP. The RFP must communicate the requirement in a clear and understandable fashion. Some elements that must be precisely described in the RFP are:

- o Definition of program objectives
- o Relative importance of goals
- o Acceptable design tradeoffs between objectives and cost
- o Specific legal basis for interpretation of terms and adjudication of differences
- o Requirements for data disclosure.

The uniform contract format described in the FAR is the required structure for the RFP and the resulting contract, but there is still a need for careful drafting of RFP provisions to overcome differences in language, business approach, and conceptual understanding among the potential participants. Although contract type is usually determined before the RFP is released, it may be negotiable until the source selection is made.

The boilerplate provisions normally included by reference in US acquisitions must be analyzed for applicability and acceptability to the foreign sources. As noted elsewhere in this chapter, many of the standard US contract provisions are viewed by foreign industry and governments as unacceptable intrusions. Reference should be made to the MOUs signed and the FAR and DFARS clauses that have been waived. For an RFP soliciting European bidders, the US European Command supplement to the FAR includes many general provisions that have been "Europeanized." Those provisions that require flow down to subcontractors may cause delay due to disagreement over language. In this regard, the provisions of the governing MOU may provide guidance or emphasis on the approach to the flow down of provisions.

Although it is the responsibility of foreign sources to make themselves aware of contracting opportunities available from DoD, the PM/contracting officer, with few exceptions, is required to make public announcement of the solicitation and is encouraged to conduct presolicitation conferences to help identify qualified sources, both foreign and domestic. The FAR requires that all contemplated acquisitions be published in the Commerce Business Daily (CBD), and it is DoD policy that acquisitions be competitive. For domestic RFPs, the release must follow the CBD notice by at least 30 days. (The Defense Acquisition Regulatory (DAR) Council is currently (1987) reviewing another change that would extend this time to 45 days if foreign interest is anticipated.)

The contract items acquired must satisfy DoD requirements fully as to performance, quality, and delivery schedule, and must cost DoD no more than comparable items of other manufacturers who are eligible for award. If unusual technical or security requirements would preclude the acquisition of otherwise acceptable defense equipment from participating country sources, the need for such requirements should be specifically reviewed. In some cases, it may also be appropriate to consummate agreements covering payment for costs of developing proposals incurred by foreign sources. This may overcome their reluctance to release data to potential US collaborators before a licensing agreement is executed. The MOU may contain specific procedures for, or constraints on, the solicitation process.

Normally, a US-managed acquisition will follow the basic solicitation and source selection process of the managing Service. For multinational programs, there are a number of issues that must be specifically addressed in the source selection plan:

- o What non-US input to the source selection team will be obtained and how will it be integrated into the evaluation process?
- o How will technical competence, capability, and price realism be evaluated for the foreign content?
- o What is an appropriate evaluation/decision schedule, based upon the expected complexity of the proposals?
- o How will US pricing policies from the FAR be applied or will there be any deviations?

It is important to note that each proposal received may reflect both a different product (the solution for the requirement) and a different business structure. The evaluation procedure must reflect the importance of those business structure elements that may bear on the success of the US in achieving goals established in the MOU.

As the acquisition process proceeds toward award, a series of negotiations normally takes place. During contractual negotiations, the general guidance on negotiation with foreign entities, as discussed in Chapter 18 on Modes of Communication, is significant. For the specific case of contract negotiation, it is also important to make allowance for support in the form of assistance (including audits) from the government of the foreign offeror. When foreign contractors or subcontractors are to be involved, there must be advance agreement between the US and the involved foreign governments covering the audit of foreign con-



tract proposals. Other questions that must be answered include:

- o What will the US audit agencies be allowed to audit?
- o Who is going to do the audits?
- o How much participation by US audit agencies will be allowed in the foreign audits?
- o What information is needed by foreign audit agencies if they are to perform the audits?

Failure to clarify these issues was cited by the F-16 program as a potential impact on the award of contracts and, therefore, on the delivery schedules and cost. There also must be a recognition that the subcontractor structure may not be as clearly specified as in a purely US acquisition, since foreign sources may be unwilling to make a full commitment before the award of the contract.

#### APPLICATION OF COST ACCOUNTING STANDARDS (CAS)

DFARS Part 30 discusses CAS. DFARS Appendix O contains the standards, regulations, and interpretations pertaining to CAS. The cost accounting practices of foreign business firms vary substantially from country to country and from contractor to contractor. A review by the CAS board disclosed that, as a result of these wide variations, the application of certain accounting standards and rules could cause significant administrative problems. Thus, in November 1978, the Board exempted foreign firms from each cost accounting standard other than Standard 401, "Consistency in Estimating, Accumulating and Reporting Costs," and Standard 402, "Consistency in Allocating Costs Incurred for the Same Purpose." Foreign concerns are still required to file Disclosure Statements, which provide details on the concerns' cost accounting practices. Contracts and subcontracts awarded to foreign governments and their agencies are exempt from all standards and rules of the Board.

By law, the US Congress requires the use of CAS and the disclosure of cost accounting practices in connection with negotiated national defense contracts. Noncompliance with the provisions of the standards or a contractor's disclosed cost accounting practices may result in a contract price adjustment determination by the contracting officer. Additionally, CAS places certain restrictions on the application of costs to contracts from an accounting standpoint.

The CAS Board is no longer in existence; however, DoD may establish its own board to monitor the application of CAS.

### CONTRACT ADMINISTRATION

There are a number of options available to the procurement contracting officer for administration of the contract after award. For the US sources, administration is accomplished by the Contract Administration Service office identified in DoD Directory of Contract Administration Services component (DoD 4105.59H). When foreign sources are involved, the administration can be assigned to:

- o The CAS service of the specific nation (if the nation involved has signed a Contract Administration Annex to the General Reciprocal MOU, which is the case with most of our NATO allies)
- o The US CAS assigned to that area
- o A separately constituted organization, such as the CASEUR office established for the F-16 program.

When the US program office determines that in-plant verification of foreign prime or subcontractor performance is required, the PM must evaluate the nature of the government contract administration activity performed by the foreign country. The F-16 System Program Office (SPO) found this was highly variable on a country-to-country basis. It may be necessary to collocate USG contract administration personnel at those facilities that produce critical components of the weapon system under development to provide acceptable visibility of prime and subcontractor conformance to contractual requirements. In addition, the interface and relative responsibilities of the PM office must be specifically defined. Each of the approaches to administration has benefits and the choice should be made in consultation with the Contracting Officer. Chapter 13, Financial Management, provides more details on the audit process for international programs required to satisfy US standards.

### DISPUTES

Special emphasis must be given to the disputes and change provisions in DoD contracts. Since issues of jurisdiction appeal require expert legal counsel, the PM should make maximum use of the experience gained by DoD attorneys in previous bilateral and multinational programs. It is critical that all the parties to the contract have a complete and similar understanding of all the

terms and conditions of the contract to preclude future noncompliance or misinterpretation of the requirements.

Though contractual disputes are seldom resolved easily, the procedures for effecting resolution are, in the case of domestic contracts, delineated clearly and made binding on the parties. This is not necessarily true of foreign acquisitions.

Most typically, a multinational program steering committee is established by the MOU as the body with final authority and responsibility at the program level to make decisions and to commit the participating governments to those decisions. The multinational program office and PM report to the steering committee and operate under its general supervision. The steering committee, in effect, operates as a board of directors for the program and the program office. In the case of the NATO AEW&C program, the multinational body with supervisory authority and responsibility is, in fact, called a board of directors rather than a steering committee.

For some disputes, however, the only practical remedy may lie in diplomatic negotiations between the governments concerned. A different situation, but still a difficult legal hurdle, exists when the foreign host nation effects a contract with a foreign supplier on behalf of the US. In the event of a suit involving a contract between the host nation and the supplier, settlement is generally made in the courts of the host country.

When a contract is awarded by a DoD buying agency under foreign acquisition procedures, a foreign contractor is entitled to the same administrative remedies available to US contractors. Such remedies are contained in the Contract Disputes Act of 1978 (PL 95-563), which provides a comprehensive procedure for resolving disputed contractor claims arising under the contract. This procedure permits contractors to appeal matters that cannot be agreed upon to the Armed Services Board of Contract Appeals (ASBCA) or the US Court of Claims. It should be noted that a Secretary of Defense Determination on 26 December 1979 exempted contracts with NATO governments from the provisions of the Contract Disputes Act.

### THE FEDERAL ACQUISITION REGULATION

The FAR and DFARS contain direction to DoD contracting personnel on (1) what provisions, clauses, and cost principles are authorized for DoD contracts and (2) what other procedures and actions must be followed in awarding and administering DoD contracts. The DFARS numbering system parallels the FAR, which makes it easy to use. The DFARS contains material that imple-

ments the FAR, as well as supplementary material that is unique to the DoD. The supplement is not a stand-alone document and must be used in conjunction with the FAR. FAR and DFARS Parts 25 deal with foreign acquisition and are especially applicable to multinational programs.

Nearly all FAR and DFARS contractual provisions were developed in contemplation of US-only sources. When the DoD is contracting in an international environment (either for itself or on behalf of a foreign government), a number of these standard provisions are self-deleting or inappropriate, and therefore confusing to foreign sources. In some cases, when a DoD contract is placed with a foreign government, statutorily required clauses have offended the integrity and sovereignty of that foreign government. Appendix D provides several lists that may assist the PM in determining which elements may or may not be applicable. The Denoon Report in 1983 recognized this problem, and DoD has approved the development of an annotated FAR that indicates which clauses are appropriate under which conditions.

The FAR and DFARS establish uniform contracting policies and procedures for the acquisition of supplies and services by DoD. Although the elements of contract law permeate the contract environment, specific contract management considerations involving contract principles, accounting, pricing, finance, subcontracting, terminations, and contract administration are detailed in the FAR and DFARS. In accounting, for example, FAR and DFARS Parts 31 (Contract Cost Principles) contain detailed guidance on the treatment of costs, such as advertising, bid and proposal, and depreciation, for use in evaluating contractors' proposals--whether from domestic or foreign firms--as well as negotiating change order costs subsequent to award. Additionally, the very complex area of Cost Accounting Standards, FAR and DFARS Parts 30, which are subsets of accounting, interface with these cost principles. This considerable body of guidance and direction must be considered in dealing with armaments cooperation contract management issues. The following sections discuss several FAR and DFARS areas of interest.

### COMPETITION

Although the DoD contracting system has always embraced the objective of achieving competition to the maximum practical extent, the level of emphasis in today's contracting environment is unprecedented. In 1984, Congress enacted the Competition in Contracting Act, which restricts the use of other than full and open competitive acquisition procedures. The act requires the use of full and open competition, except in seven limited circumstances:

- o Only one responsible source
- o Unusual and compelling urgency
- o Industrial mobilization or experimental, developmental, or research work
- o Required by an international agreement
- o Authorized or required by statute
- o National security
- o Public interest.

FAR and DFARS Subparts 6.3 describe each of these exceptions and provide examples of instances in which they are used appropriately. For each exception, and depending on the dollar value of the proposed acquisition, there are specific justification and approval requirements that are also described in Subparts 6.3.

Significant steps have been taken over the last several years to ensure that the contracting process is open and transparent. For example, requirements for synopsis normally require that a notice be placed in the CBD 15 days before the issuance of a solicitation and that the solicitation provide at least 30 days response time for offers for all acquisitions over \$10,000. As stated earlier, the DAR council may require this time to be extended to 45 days when foreign interest is anticipated.

#### FAR ON FOREIGN ACQUISITION

Of particular interest to PMs is Defense Acquisition Circular (DAC) 76-25, which was first printed in October 1980. The issues addressed in this circular are now found in FAR Part 25 and DFARS Part 25, which incorporate the acquisition objectives and initiatives of the USG in the armaments cooperation arena. The following discussion provides an outline of this revision as well as treatment of areas that may be of specific interest to the PM of a multinational effort.

Foreign acquisition can be defined as the acquisition of defense equipment from foreign sources for use by US forces. Terms such as "foreign acquisition" and "offshore procurement" are often used interchangeably; however, offshore procurement can be defined as the acquisition of products from foreign countries for consumption by US forces in foreign countries. In other

words, offshore procurement means items purchased outside the US for use outside the US. This chapter limits the term "offshore procurement" to this concept.

As shown in Figure 10-3, there are three types of international agreements that apply to foreign acquisition: reciprocal agreements, FMS/offsets agreements, and treaty/international agreements. Reciprocal agreements include MOUs or similar agreements between the US and foreign countries. These agreements are printed in full in FAR Appendix T. These countries are identified as participating countries and are covered by a blanket Secretary of Defense waiver of the Buy American Act restrictions. An offset agreement is identified as an arrangement between the US and a foreign country that includes an offset negotiated in conjunction with an FMS case, and the arrangement includes a waiver of Buy American Act restrictions. Lastly, treaty/international agreements cover those foreign countries having defense cooperation agreements, such as Israel or Egypt, and for which the Secretary of Defense has waived the Buy American Act restrictions for a list of mutually agreed-upon items. These types of countries are extremely important relative to contracting policy since they define the population of what is now termed "qualified countries," as discussed earlier.

With this background, let us review the pertinent FAR and DFARS Parts 25 regulatory coverage areas listed in Figure 10-4. These areas incorporate the agreements entered into between the US and other nations, particularly NATO countries. These agreements include waivers of the Buy American Act, as well as agreements to solicit defense products from those countries. As currently structured, FAR Part 25 and DFARS Part 25 apply to the acquisition of weapon systems and spare parts for supply system inventory, as well as to the support of US military forces in foreign countries.

The PM will recognize that any particular project may have considerably different relationships or certain portions of a project such as those involving sensitive types of equipment may follow government-to-government guidelines; however, whenever purely contractual matters are involved, our basic model clearly portrays current acquisition policy as embodied in the FAR and DFARS. Additionally, it should be noted that the concept is embryonic, and several concerns may be voiced: What number and types of foreign firms will be found on the bidders' mailing lists of various defense agencies? What dollar value of awards will flow to foreign firms? The following discussion of individual areas, several of which are listed in Figure 10-4, will not answer fully these questions, but it suggests the type of impacts that they may have on program strategy.

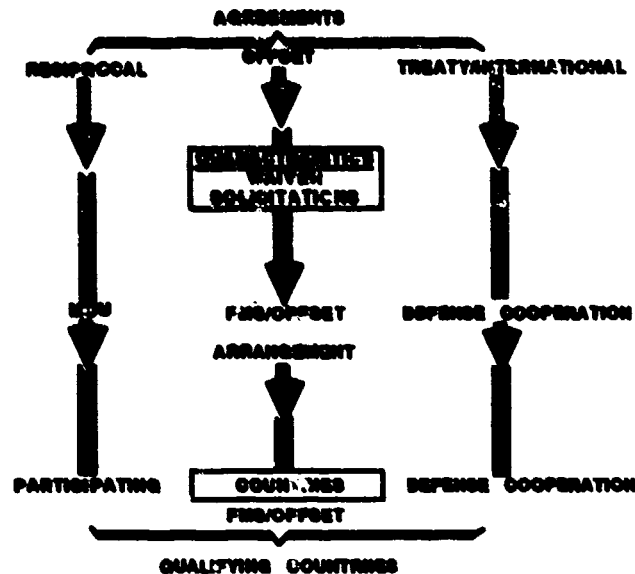


FIGURE 10-3. FOREIGN AGREEMENTS CLASSIFICATION

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- o Buy American Act and Balance of Payments Program (25.1, 25.2, 25.3)
  - o Trade Agreements Act (25.4)
  - o Payment in Local Foreign Currency (25.5)
  - o Customs and Duties (25.6)
  - o International Agreements (25.8)
  - o Examination of Records (25.9)
  - o Appropriations Act Restrictions (25.70)
  - o Canadian Purchases (25.71)
- 

FIGURE 10-4. SELECTED FAR AND DFARS PARTS 25 REGULATORY COVERAGE

#### BUY AMERICAN ACT AND THE BALANCE OF PAYMENTS PROGRAM

The Buy American Act (41 USC 10a-d) gives preference to domestic end products for public use in the US. The following discussion is confined to its applicability to supply contracts; however, the act also singles out construction materials for use in construction contracts in the US for special domestic preference treatment. No comparable statutory coverage giving preference to domestic firms exists in the area of service contracts.

The Balance of Payments program is an ancillary program that was implemented by DoD in 1964 to alleviate the impact of

DoD expenditures on the US balance of international payments. The BOP program provides preference to domestic products purchased for use outside the US. The implementation of the preference for domestic products affects the proposal evaluation process.

The implementing regulations are found in FAR and DFARS Subparts 25.1 and 25.3. It should be noted that there are some distinctions between DoD's implementation and the civil agencies' implementation. These differences may be discerned only by reviewing both the FAR and the DFARS. In order to qualify as a domestic end product under the regulations, a product must satisfy a two-part test: (1) it must be manufactured in the US; and (2) more than half of the cost of its components (including transportation costs to the place of incorporation into the end product, and US duty) must be from the US and qualifying countries.

Products that do not meet this definition are considered foreign end products from nonqualifying countries. To these offers, DoD generally adds a 50 percent evaluation factor to the offered price, exclusive of duty, when that foreign product is competing against a domestic one. Thus, in a competitive acquisition, if the lowest offered domestic price is \$15.00, a foreign product would have to be priced at less than \$10.00 to win the competition on a price basis. This is significantly different from civil agencies, which use a 6 percent factor, unless the foreign product is competing against a small business or labor surplus concern, in which case a 12 percent factor is used (prices inclusive of duty).

There are some exceptions to this evaluation process. The exceptions include, for example, products that are not available in the US, purchases for commissary resale, and purchases for which an agency head determines that domestic preference would be inconsistent with the public interest.

#### TRADE AGREEMENTS ACT OF 1979

As discussed previously, the Trade Agreements Act of 1979 is the Congressional affirmation of the Agreement of Government Procurement negotiated through the Tokyo Round of the Multilateral Trade Negotiations. The agreement opened our government procurement market to international competition by signatory countries and essentially closed it to competition by nonsignatory nations.

There is a prohibition in Section 302 of the act against purchasing eligible products from nondesignated countries.



The agreement opens the market to signatory countries by eliminating the application of the Buy American/BOP disadvantage to offers of certain items from signatory countries. The signatory countries to the agreement are identified in FAR 25.401 and are referred to as designated countries. Recently, the FAR coverage was amended essentially to extend the benefits of the agreement to Caribbean Basin countries.

The scope of applicability of the Trade Agreements Act is subject to some limits. It applies only to acquisitions above a threshold of 150,000 special drawing rights, which presently (1987) has a dollar value of \$149,000. Further, the coverage extends only to categories of eligible products for DoD that are generally of a commercial nature and exclude national security items. The list of eligible products is published in DFARS Subpart 25.403(d)(70). Further exceptions to the applicability of the Trade Agreements Act include small-business set-asides, Appropriations Act restrictions, and mobilization base restrictions (characterized as national security exceptions in the Agreement) as discussed above. The Trade Agreements Act does not provide any relief for foreign sources from these restrictions. Subpart 25.403 provides a list of items that, under some conditions, may be excepted.

#### PAYMENT IN LOCAL FOREIGN CURRENCY

These FAR and DFARS sections provide for US payments to be priced and paid for in local currencies.

#### CUSTOMS AND DUTIES

It is DoD policy to obtain the issuance of duty-free entry certificates covering end items acquired through the foreign acquisition process. DFARS Subpart 25.603 requires that duty-free entry clauses as contained in DFARS 25.602 be included in: all negotiated contracts in excess of \$100,000; and all contracts involving the furnishing of supplies, except for small purchases and contracts for supplies exclusively for use outside the US. This includes FMS contracts. When the clauses are included, both the clauses themselves and DFARS 25.602 require that duty-free entry certificates be issued. Such certificates must be limited to carefully selected situations, since they could result in unanticipated profits to contractors, especially under fixed-price-type contracts, and could involve administrative expenses far outweighing any possible savings to military appropriations. Thus, DoD policy encompasses the use of such duty-free entry certificates whenever there is reasonable assurance that advantages such as cost savings will outweigh the

administrative and other costs of processing duty-free certificates and of maintaining controls to verify that full benefit of the certificates passes to the USG. For example, a contractor awarded a fixed-price-type contract based on providing a domestic end product or component cannot subsequently furnish a foreign end product/component and receive a duty-free entry certificate without an appropriate reduction in price.

DoD policy is carried out by including in the contract one or more of the appropriate FAR and DFARS clauses. When a prime contract involving foreign supplies contains the appropriate clause, the contractor must notify the Contract Administration Office (CAO), designated in the contract, of a purchase of foreign supplies under the contract. The CAO verifies that the prime contract includes the appropriate duty-free entry for imports--possible duty-free entry clause; and, in the latter case, the contracting officer has agreed to furnish a duty-free entry certificate for the items identified in exchange for a reduction in contract price, in the amount of duty that would be payable if duty-free entry certificates were not issued pursuant to the provisions of this clause. The CAO then forwards the notification to Commander, Defense Contract Administration Services Management Area, New York.

When the USG agrees to execute duty-free entry certificates for supplies, the contractor is notified that the foreign supplier is to include on the bill of lading (or other shipping document) the information required to be inserted on such documents as provided in the clause. Failure to include such information on the bill of lading (or other shipping document) will result in the shipment being treated as a shipment without benefit of free entry under Schedule 8, Part 3, Item Number 832.00, Tariff Schedules of the US.

Upon receipt of a request for duty-free entry, the designated USG representative prepares the required customs forms, executes the duty-free entry certificate, and forwards two copies of Customs Form 7501A to the District Director of Customs submitting the request.

Immediate release permits, executed on Customs Form 3461 (Application for Special Permit for Delivery of Perishable and Other Articles, Immediate Delivery of Which is Necessary), entitles all shipments qualifying as "emergency purchases" of war material abroad to be released immediately by the District Directors of Customs at the various ports of entry, before and following the filing of Customs Forms 7501 and 7501A and duty-free entry certificates. The existence of an immediate release permit on file at a port of entry does not dispense with the

necessity of filing Customs Forms 7501 and 7501A and appropriate duty-free entry certificates.

Customs and duties should not be confused with exemptions available regarding foreign taxes. Tax agreements have been executed on government-to-government bases with a number of nations. Under these agreements, US defense expenditures are exempted from certain specified taxes of the countries in which the expenditures occur. Nevertheless, countries that have not executed a tax agreement with the US may grant relief from internal taxes in order to promote or subsidize exports. Again, the contracting officer must be aware of or explore methods of avoiding windfall profits and other disadvantageous conditions. Whatever the situation, appropriate tax clauses should be included in all contracts to be performed in foreign countries so that national interests are protected.

It should be pointed out, however, that contracting officers may not demand relief from taxes, and the US is not exempted specifically by applicable agreements. In this regard, the terms and provisions of the various bilateral tax agreements to which the US is a party in the North Atlantic-Mediterranean area are included in the US European Command Supplement to the FAR.

#### APPROPRIATION ACT RESTRICTIONS

This segment of DFARS Part 25 contains specific restrictions on the use of appropriated funds for the acquisition of certain supplies such as food, clothing, and specialty metals. Additionally, certain restrictions contained in various public laws and directed toward the acquisition of foreign buses, R&D contracting with foreign sources, and naval vessel construction in foreign shipyards are delineated.

Contracts obligate appropriated funds within the authorization (in the form of the annual authorization act) and limitations (as, for example, in public laws) imposed by Congress. It is not uncommon for Congress to attach "riders" to appropriations acts restricting the use of monies appropriated. In addition to establishing specific restraints on how appropriated money will be spent, the Congress establishes some of the policies on how USG contractors may receive financial assistance on contracts. The General Accounting Office (GAO), as an agency of Congress, watches over executive branch expenditures of the appropriations provided to ensure compliance with the restrictions placed on the use of these funds.

In the PM's domain, there is a clear division of re-

sponsibility between the budgeting, the controlling, and the accounting of monies provided, as contrasted with the contractual obligation of the funds. The former is a function of the comptroller, while the latter is the responsibility of the contracting officer. The contracting officer is directly involved in the area of obligations and contract funding. Understanding the limitations on, as well as the impact of, obligations is a key to successful contract management. This understanding is important to program control, as well as knowledge of the fact that personal liability in the form of the Anti-Deficiency Act (31 USC 665a) accompanies budgetary and contractual authority.

The Anti-Deficiency Act provides that no government officer or employee shall authorize or create any obligation, or make any expenditure, in excess of an apportionment (the Office of Management and Budget's distribution of amounts available in an appropriation fund account) or administrative subdivision of appropriated funds. Contracting officers face Anti-Deficiency Act penalties by establishing obligations (awarding contracts) without a commitment (a funded purchase request) or by exceeding the monetary limits of their individual contracting officer warrants.

Another way the Anti-Deficiency Act may become operative involves cases in which the foreign contract is priced and paid in the local currency. Exchange rate fluctuations in favor of the local currency, when the local currency appreciates in value in relation to the dollar, can result in violation of the Anti-Deficiency Act. The contracting officer must take special precautions to avoid this possibility. It must be made certain that adequate dollar funds are available to cover any purchases of foreign currency that may be needed from time to time for purposes of making payments under the contract, even though the value of the currency may have risen appreciably in relation to the dollar. More specific discussion of financial management issues is found in Chapter 13.

One other appropriations area should be mentioned. Congressional limitations on the use of appropriated funds have either time restrictions or subject-matter (use) restrictions. Time restrictions (annual, continuing, or multiple-year appropriations) limit the time during which funds may be obligated, expended, or both. Subject-matter restrictions (R&D, individual programs) limit the use to which money may be spent for accomplishing specific purposes.

The PM generally will have considerable flexibility in the management of the funds provided through the appropriations process. Those restrictions found in the FAR are targeted at specific markets. For example, notwithstanding the restrictions

mentioned earlier, purchases of specialty metals or chemical warfare protective clothing are exempted from appropriations act restrictions when such acquisitions are necessary to comply with foreign governments requiring the US to purchase supplies from foreign sources for the purposes of offsetting sales made to the USG or domestic concerns under approved programs serving defense requirements. The exemption also applies when such acquisition is in furtherance of an agreement with a qualifying country. Other specific markets covered in the FAR include:

- o Acquisition of Foreign Buses

Public Law 90-400, Fiscal Year 1968. This law provides that appropriated funds will not be used for the purchase, lease, rental, or other acquisition of buses, other than those manufactured in the US, except as may be authorized by the Secretary of Defense.

- o R&D Contracting with Foreign Concerns

Public Law 92-570, Fiscal Year 1973. This law provides that no funds appropriated for the DoD are available for entering into any contract or agreement with any foreign corporation, organization, person, or other entity for the performance of research and development in connection with any weapon system or other military equipment for the DoD when there is a US corporation, organization, person, or other entity equally competent to carry out such research and development and willing to do so at a lower cost.

- o Hull, Midbody, and Superstructure of Naval Vessels

The Byrnes-Tollefson Amendment, now codified in 10 USC 7309, reads in part: "Provided, That none of the funds herein provided for the construction or conversion of any naval vessel to be constructed in shipyards in the United States shall be expended in foreign shipyards for the construction of major components of the hull or superstructure of such vessel: Provided further, That none of the funds herein provided shall be used for the construction of any naval vessel in foreign shipyards."

### CANADIAN PURCHASES

The governments of the US and Canada have a long history of mutual cooperation aimed at the coordination of economic efforts to achieve integration of military production, standardization of military equipment, dispersal of production facilities,

establishment of supplemental sources of supply, and greater flow of defense supplies/equipment between the two countries. In fact, Canadian-US agreements have served as the forerunners of the current DoD qualifying-country agreements. As part of the DoD policy to ensure the best possible coordination of the above efforts, purchases from Canadian sources are exempt from both the Buy American Act and the BOP program. Such purchases are accomplished through the Canadian Commercial Corporation (CCC), an agency of the Government of Canada.

Centralization of contractual activity through the CCC represents a unique arrangement between the US and Canada and is described as follows (see DFARS Subpart 25.71). Contracts with Canadian firms are normally made with and through the CCC. The CCC coordinates the placing of Canadian firms on individual contracting office bidders' mailing and comparable source lists. A bidders' list application is forwarded directly by the contracting activity to each appropriate Canadian firm, and a copy is sent to the CCC.

Canadian firms prepare offers that are then submitted to the CCC. This is significant in that the ultimate contract, if awarded to a Canadian source, is between the contracting activity representing the USG and the CCC. On receipt of the Canadian firm's response, the CCC prepares a letter to the US contracting activity. This letter supports the Canadian firm's offer, confirms and endorses the offer in the name of the CCC, and states that the CCC will subcontract 100 percent with the offeror. This procedure is similar to that used in domestic contracts under the Section 8(a), Small Disadvantaged Business Concerns program, in which contracting activities award contracts directly to the Small Business Administration (SBA), which, in turn, subcontracts with 8(a) firms.

A number of other features of the US-Canada arrangement are worth mentioning. The Department of Supply and Services (Canada) under the Canadian Department of Industry, Trade and Commerce, provides, without charge, contract administration services for all contracts placed with the CCC. These services include cost and price analysis, industrial security, accountability and disposal of USG property, production expediting, assurance of compliance with Canadian labor laws, processing of termination claims and disposal of termination inventory, customs documentation, processing of disputes and appeals, and other related contract administration functions that may be required with respect to the CCC contract with the Canadian supplier. Further, the Canadian government guarantees to the USG all commitments, obligations, and covenants of the CCC in connection with any contract or order issued to the CCC by any contracting activity of the USG. Recently, Canada has begun levying fees for

servicing contracts awarded to the CCC. This levy is the subject of ongoing negotiations between Canada and DoD.

#### SMALL BUSINESS/LABOR SURPLUS AREA SET-ASIDES

It is US policy to limit certain contracts to small businesses (as defined in FAR and DFARS Parts 19), so as to provide a fair share of USG contracts to small US firms that have the capacity to produce the required goods or provide necessary services. FAR Part 19 directs contracting officers to set aside acquisitions for exclusive small business participation if there is a reasonable expectation of receiving offers at reasonable prices from at least two responsible small business concerns. Preferential treatment is also sometimes accorded to firms located in areas of high unemployment in the US. These two programs eliminate the opportunity for potential nondomestic firms to compete for a contract that has been set aside. Small-business set-asides are frequently cited as one of the major impediments that foreign firms encounter in trying to penetrate the DoD market.

#### MOBILIZATION BASE RESTRICTED ACQUISITIONS

A DoD component may determine that it is necessary to restrict a particular acquisition in the interest of establishing or maintaining an industrial mobilization base that is capable of furnishing supplies in the event of a national emergency. These restricted acquisitions are open only to industrial preparedness planned producers in the US and Canada. Products that have been restricted in the past are listed in the DFARS Subpart 25.7405. In some cases, there has been a DoD-wide determination to restrict certain acquisitions to domestic and Canadian sources. These restricted items are identified in DFARS Subparts 8.73 through 8.78 and include items such as miniature and instrument ball bearings, precision components for mechanical time devices, high-purity silicon, and high carbon ferrochrome.

#### TECHNOLOGY TRANSFER

Some DoD contracts require access to US classified military information. There are specific policies governing the release of the information. The policy governing release to foreign governments is the National Disclosure Policy. A recipient foreign government may be allowed to release US classified information to its contractors, provided it is not released to third country persons without USG permission, and provided the recipient government assumes certain other responsibilities for

its protection (accomplished by a government-to-government security agreement). In order for a foreign contractor to receive information necessary to bid on or perform a classified contract, the contractor must be sponsored by its government. The US contracting agency must make a determination that the classified information is releasable to the government of the prospective recipient. In some cases, DoD obtains release authority from another responsible US agency. If the classified information is determined to be releasable, it must be transferred through government-to-government channels.

#### PREFERENCE FOR US FLAG CARRIERS

A competitive disadvantage is incurred generally by foreign sources on contracts that call for delivery of products to US destinations. This obviously results in increased transportation costs for foreign sources in comparison to domestic sources. That competitive disadvantage is magnified by US statutes that express a preference for the use of US flag air carriers and US flag vessels.

#### COMPLIANCE AND ENFORCEMENT OF CONTRACTUAL REQUIREMENTS FOR FOREIGN AND DOMESTIC SOURCES

##### EXAMINATION OF RECORDS

In accordance with 10 USC 2313(c), the Examination of Records by Comptroller General clause may be excluded from negotiated contracts and subcontracts with foreign contractors and foreign subcontractors when:

1. the Secretary of Defense or his designee determines, with the concurrence of the Comptroller General or his designee, that the inclusion of the clause would not be in public interest; or
2. when:
  - a. the contractor or subcontractor is a foreign government or agency thereof, or, because of the laws of the country involved, the contractor or subcontractor is precluded from making its books, documents, papers, or records available for examination, and
  - b. the Secretary determines, after taking into account the price and availability of the property



or services from US sources, that the public interest would be best served by exclusion of the clause.

A determination of the Secretary of Defense under paragraph 2 above does not require the concurrence of the Comptroller General; however, when a determination by the Secretary under 2(b) is the basis for exclusion of the Examination of Records by Comptroller General clause, the statute requires that a written report be furnished to the Congress. This report, which explains the reasons for the determination, is submitted in triplicate by the Service concerned, to the Office of the Assistant Secretary of Defense (Comptroller).

The Examination of Records by Comptroller General clause is included in contracts whenever possible. Exclusion of the clause is allowed only after the contracting officer has made all reasonable efforts to include the clause and has considered such factors as alternate sources of supply, additional cost, and time of delivery. A "foreign contractor," for Examination of Records purposes, is defined as "one that is organized or existing under the laws of a country other than the United States, its territories, or possessions."

#### RECIPROCAL SERVICES AGREEMENTS

There is no differentiation between foreign and domestic sources in applicable regulations with regard to the requirement to execute contract administration properly and enforce applicable contract requirements. The only difference that exists may be the agency that is assigned responsibility for monitoring compliance and the procedures used to achieve that objective. The following discussion elaborates on arrangements for Quality Assurance (QA) services, audits, and qualification of products.

All DoD contracts are assigned a cognizant DoD contract administration office responsible for ensuring satisfactory contract performance. In the course of administering a contract, or even in the pre-award stage, DoD may elect to rely on the services of foreign government components to perform certain functions based upon government-to-government agreement. For example, many of the reciprocal defense procurement agreements contain annexes that provide for reciprocal QA services, contract administration services, or audit services. The NATO agreements provide for reciprocal no-cost services. Table 10-2 contains a listing of the agreements currently in effect.

**TABLE 10-2. RECIPROCAL SERVICES AGREEMENTS IN EFFECT**

<b>COUNTRY</b>	<b>QUALITY ASSURANCE/ CONTRACT ADMINISTRATION SERVICES AGREEMENT</b>	<b>AUDIT SERVICES AGREEMENT</b>
* AUSTRALIA	X	
CANADA	X	X
UNITED KINGDOM	X	X
NETHERLANDS	X	X
FRG	X	X
BELGIUM	X	
DENMARK	X	
FRANCE	X	X
ITALY	X	
NORWAY	X	

\* AGREEMENT INCLUDES REIMBURSEMENT OF SERVICES

The QA/contract administration services agreements set forth procedures for rendering support as requested by the other governments at no charge. The QA services are performed in accordance with NATO Standardization Agreements (STANAGs) 4107 and AQAP 10 to the extent consistent with the laws of both governments. The agreements generally provide for a flexible arrangement for which, on a case-by-case basis, the purchasing government may request full QA support or specified services only. Requested services may encompass a pre-award task, such as a pre-award survey of a prospective contractor's capability or a final acceptance inspection after contract award. Some of the agreements cover contract administration services beyond the QA area, such as: conducting production surveillance and progress reporting to alert the contracting officer of any potential or actual slippages in contract delivery schedules; evaluating the propriety of any restrictive markings on technical data offered for delivery under the contract; and monitoring contractor costs under cost-reimbursement contracts.

Audit arrangements likewise embrace both pre-award and post-award tasks. Audit services such as the evaluation of proposed prices or costs during negotiations; examination of contractor accounting records to determine accuracy, currency, completeness, and compliance with contract requirements; and monitoring of compliance with disclosed accounting practices and

contractual accounting requirements during contract performance are performed at no cost to the requesting government.

Although QA and audit procedures vary somewhat among the countries with which the US has entered into these arrangements, those differences do not provide foreign vendors with an unfair competitive advantage. The arrangements indicate that applicable statutory provisions of the purchasing government shall prevail. Further, it is US practice to have its technical experts in the area of QA and auditing review an ally's system and procedures before entering into such a reciprocal arrangement to ensure there is a level of comparability. There are established channels in place for either party to surface any dissatisfaction with the services rendered and to obtain resolution.

The third major area of a reciprocal arrangements for services relating to technical contract requirements is in reciprocal qualification procedures. The original edition of NATO STANAG 4093 relating to qualification of electronic and electrical products was ratified by the US and most other NATO nations in 1968. This STANAG was developed to avoid unnecessary duplication of costly testing of one nation's qualified product each time another nation finds a need for that product for defense purposes. The STANAG is in the process of being revised and may be applicable to other products as well. It designates national qualification authorities that will verify that the necessary qualification testing has been completed before that product is listed on another nation's qualified products list. Here again, although DoD may rely on another competent authority to monitor qualification testing, the applicable specification test requirements for a foreign firm are the same as those faced by a US firm.

## CHAPTER 11 INTELLECTUAL PROPERTY

### INTRODUCTION

This chapter explores the subject of Intellectual Property (IP) transfer, including the roles of the industrial and DoD Program Managers (PMs), legal and economic environment constraining transfer, and possible techniques for such transfer.

By common agreement among the North Atlantic Treaty Organization (NATO) countries, the term "Intellectual Property" includes inventions (patented or not), trademarks, industrial designs, copyrights, and technical information including software, data, designs, technical know-how, manufacturing information and know-how, techniques, technical data packages, manufacturing data packages, and trade secrets. The rights to use IP are termed Intellectual Property Rights (IPR) and include rights derived from patents, trademarks, copyrights, industrial designs, contract clauses, disclosure in confidence techniques, or other means of control of IP.

The ownership of specific IP and the IPR to use any of it to manufacture a weapon system or any part of it are critical issues in collaborative armaments programs. In particular, codevelopment, coproduction, and dual production depend on the willingness and the ability of the industrial parties to the collaborative armaments programs to make available or to receive the IP or IPR that are specific to the system in question. Program participants may have difficulty in determining precisely who owns what IP or who has the rights under what conditions to use IP owned by someone else. The IP or IPR section(s) of the Memorandum of Understanding (MOU) must deal carefully and clearly with the potential difficulties involved in the requirement to be able to exchange or transfer IP. Specifically, governments, as the parties to the MOU, should ensure the availability of the IP or IPR that must be transferred, provide for their protection from misuse or unauthorized dissemination when transferred, and guarantee fair compensation to the originator or initial holder of the IP or IPR being transferred; however, this is difficult because the laws of our European allies in NATO covering rights in inventions, data, and software are substantially different from those of the US. European inventors usually maintain ownership of inventions with rights to use the inventions. IP/IPR is usually owned by a firm or an individual; however, provisions committing a contractor to enter license agreements are part of the Federal Republic of Germany's (FRG) development contract

regulations and the United Kingdom's (UK) regulations in the "International Collaboration Clause." The reasonableness of the licensing fee is addressed in the FRG regulations.

In recent years, NATO has shown increasing interest in this area and has published some guidance, including: Intellectual Principles and Guidelines in the Field of Licensing and Co-production for the Purpose of Armaments Standardization or Interoperability, AC/259-D/700 (final), 21 September 1979; pamphlet on NATO Agreement on the Communication of Technical Information for Defense Purposes, April 1971; Military Equipment and Industrial Property Legislation, Vol 1, November 1976; and Liability for Patent Infringement in Cooperative Programs, AACP-I, Supplement II, March 1984.

#### DEFINITION OF TERMS

Clear, intelligible, and mutually understood terms should be used in the text of the MOU IP clause. This will minimize misunderstandings between parties. Whenever possible, standardized terms and their definitions (preferably previously agreed-upon examples) should be used to provide a continuity between agreements. The following definitions are used commonly in MOUs or have been defined by NATO:

- o Technical information means recorded information, regardless of form or characteristics, of a scientific nature and may be, for example, experimental and test data, specifications, designs, processes, techniques, inventions whether patentable or not, technical writings, sound recordings, pictorial reproductions, drawings and other graphic representations, magnetic tapes, computer memory printouts or data retained in computer memory, and any other relevant technical data, in whatever form presented and whether or not copyrighted.
- o Defense purposes refers to the manufacture and use in any part of the world by or for the military Services of a participating government.
- o Defense sales refers to sales by a participating government or its contractors to a nonparticipating government for their mutual defense purposes.
- o Foreground IP is generated in the course of the project. Governments generally pay for and acquire some rights in, or ownership of, foreground IP.
- o Background IP is all the rest of the IP necessary for

production of the system or end item. It is associated with the developer/producer's (or a third party's) prior experience and activities outside the scope of the specific contract or procurement.

- o Know-how is a generic term that includes any formula, device, drawing, or trade secret possessed by a business that gives it an advantage over another business.

Foreground IP and IPR are generally more directly disposable by contracting governments, depending on their contracting practices. The ability to acquire or to effect the disposition of all necessary background IP and IPR may be prohibitively difficult or expensive for any contracting government, depending on the complexity of the system in question. The ability of foreign governments to ensure transfer, provide protection, and guarantee compensation for the necessary IP and IPR depends significantly on the distinction between background and foreground IP and how each is handled in national procurement practices, which vary considerably from country to country.

During 1977-1978, at the initiation of the US, the NATO Group on Intellectual Property (AC/94--now replaced by AC/313 with an enlarged charter), prepared and issued NATO-agreed-upon principles and guidelines for transferring and protecting IF and IPR. The main thrust of this effort was to ensure that each country be in a position to guarantee that all necessary IP and IPR can be transferred to other NATO members for any given collaboration. To accomplish this each government must either:

- o Own the IP that is generated in a program
- o Ensure that the government is in a legal position to grant, or cause to be granted, on fair and reasonable terms, licenses that transfer the IP and IPR to other NATO governments or their designated contractors, as may be required under existing or future cooperative agreements.

Total ownership by the US Government (USG) of all of the component parts of IP, including background IP, for any specific weapon system is not feasible. Current Federal Acquisition Regulation (FAR) policy addresses only foreground patents and foreground data. The USG usually does not acquire rights to background patents, data, or know-how, and DoD normally does not acquire any know-how that exceeds contract data requirements. In addition, the staggering cost and administrative and bureaucratic burdens of taking title to and cataloging all background IP for major systems prohibits government ownership as a precondition

for ensuring availability of IP and IPR for collaboration.

Thus, although the USG generally acquires rights in foreground patents and data, it normally does not possess sufficient rights to enable another party to produce a given system. Other NATO governments generally acquire even fewer IPRs from their contractors. Therefore, NATO governments need "otherwise" to be in a position to "cause to be granted" licenses to transfer IP and IPR. This can be accomplished by requiring their contractors to be willing to transfer IP and IPR by license to other governments or their designated contractors. This is essentially the method employed by the FRG and the UK. Both of these countries include clauses in their contracts that require the contractor to be prepared to license its IP to a licensee named by the government. The resulting license agreement may be either firm-to-firm, government-to-firm, or government-to-government, depending on who owns the relevant IP. As a contractual document carrying out the intent of the MOU, the license agreement should stipulate the terms of the IP or IPR transfer, and should include, among other things, definitions of the IP or IPR transferred, provisions for protection of the transferred IP and IPR, and the "consideration" or compensation for the transfer.

#### MAJOR CONSIDERATIONS

The major substantive issues treated in the IP section of the MOU are usually considered under five headings: Disclosure of IP, Authorized and Unauthorized Use of IP, Protection of IP, Availability of Rights in IP and Disputes Involving IP, and Accountability of Parties. Despite variations between types of MOUs, each IP section should address these major issues.

The Disclosure provisions define the types of information to be exchanged and provide the guidelines that will govern the exchange of IP generated both within and without the program. These provisions identify the types of IP affected and establish the channels and means of transfer or communication of IP to the parties involved. Authorized and unauthorized uses of IP provisions specify how the various types of IP received under the project may be used. Drafters should distinguish between project-generated, government/contractor-owned, and third party IP. Types of use designations are essential if the parties desire to constrain the overflow of technology beyond the particular project or beyond each government's defense industry.

The Availability of Rights provisions ensure that parties to the agreement will make available any government-owned rights in IP to other parties, as called for in the agreement. These provisions further establish the policy with which the parties

will ensure, through individual efforts, the availability of rights in the IP now owned by the government. This section is critical to the successful functioning of the entire clause because (1) normally, IP cannot be used legally without express legal rights, and (2) third party IP may be essential to the project, and the parties must agree to use their best offices to secure the rights to such IP.

Provisions for the protection of owner's rights in IP are necessary to facilitate willingness to exchange IP. Such provisions should restrict further disclosure of IP beyond the parties authorized in the text and their authorized subcontractors. In addition, that IP subject to limited or restricted rights use or proprietary IP must be clearly marked as such by the originating party. Without proper marking, recipients are under no special restrictions on the use of the IP and incur no liability for misuse. Provisions for misuse and disputes resolution establish the policy that will govern the determination of liability under the arrangement.

#### DISCLOSURE OF IP

The disclosure provisions in this section identify the types of IP subject to exchange and provide the guidance and mechanisms that govern the actual disclosure among the parties. Normally, these provisions distinguish between foreground and background IP. The MOU should:

- o Specify the type of information to be disclosed
  - Non-IP information
  - All IP or specified type of IP
  - Background IP
  - Foreground IP
- o Establish the requirements for disclosure
- o Establish the procedures for disclosure
  - Determine reporting requirements
    - Designate appropriate points of contact for IP exchange
    - Specify the frequency of reports



--- Periodic

--- As developed.

#### AUTHORIZED AND UNAUTHORIZED USE OF IP

These provisions specify the precise guidelines that will govern the use of any IP exchanged or produced under the MOU. It is essential that the parties fully understand the limitations that may accompany the use of IP under different projects. Those purposes not expressly stated in the text should be considered to be beyond the authorization of the text and are, therefore, prohibited. The MOU should:

##### Establish Guidelines for Authorized Use of IP

Specify the guidelines that are to be used for defense purposes:

- o Information only
- o Evaluation and testing
- o Manufacturing
- o Project only.

In addition, guidelines must be specified for government purposes. If no limitations exist, then so specify.

##### Protect Owner's Rights in IP Under the Arrangement

The success of the IP disclosure and sharing provisions will depend upon corollary provisions that provide safeguards for owner's rights. The provisions should also establish detailed guidelines and procedures for further disclosure. The control of IP disclosure should include the following:

- o Prohibition of further disclosure to nonparticipants without express authorization. Provide for the exemption of national contractors and subcontractors in specific cases
- o Consent requirements for disclosure to nonparticipants, including when each of the following is required:
  - Unanimous consent

- Consent of original providing party
- Consent by owner
- o Rules for the force and effect of restrictive legends on the use of proprietary or security information:
  - It is the responsibility of the providing party to mark the material at the time of initial disclosure. Failure to mark properly relieves the recipient of any liability for misuse.
  - The first recipient is liable in the event of further disclosure.
- o Procedures for obtaining patents for foreground inventions, including:
  - Referring to the Patent Cooperation Treaty and the International Convention for the Protection of Industrial Property
  - Designating who files for patents
  - Defining the rights of nonfiling parties
- o A "reach back" clause to reaffirm or validate any pre-MOU project IP exchanges or understandings
- o "Reach forward" provisions to provide guidelines for use of IP in subsequent activity related to the program.

#### AVAILABILITY OF RIGHTS IN IP

Implicit in the ownership of IP is the possession of certain exclusionary rights that prevent or prohibit the unauthorized use of the IP. Before an individual other than the owner may use the IP, he must secure the express consent of the owner or incur a liability for unauthorized use. Normally, the rights to use IP are transferred by a licensing agreement. The parties to a license may be private individuals or governments. The license defines the IP in question and the limits of its use, and confers the rights necessary for the licensee to use the IP without incurring a liability.

Often, licenses for background IP owned by the parties or their contractors are necessary for the furtherance of the

cooperative project, for the use of the results of the project, or for standardization/interoperability purposes. Accordingly, the arrangement should provide for securing the availability of such licenses on fair and reasonable terms to be subsequently negotiated with the IP owner. Governments should stipulate in their contracts implementing the MOU that contractors will make available on reasonable terms any IP generated or required in a specific project to other designated parties for the purpose of furthering standardization. A mandatory licensing provision in the defense contract provides a good tool for this purpose. The contracts should:

- o Stipulate the range of rights accruing to the recipient of government-owned IP, both foreground and background, for IP that will be used for:
  - Defense purposes
  - Nondefense purposes
  - Manufacturing or other use
  - Information only
- o Stipulate those restrictions on the use of third-party/proprietary IP that will be used for:
  - Defense purposes
  - Project use only
  - Information only
- o Stipulate the financial terms of IPR transfer. Proprietary IP should be licensed on fair and reasonable terms. The home government of the owner of proprietary IP should take the necessary steps to ensure that required proprietary IP and rights to it will be made available and negotiated on fair and reasonable terms.
- o Specify the rights in background IP. The governments must be able to obtain (for themselves, their contractors, and other parties and their contractors) the rights to use background IP on fair and reasonable terms negotiated with the IP owner.
- o Specify the appropriate reporting requirements for foreground and background IP that is known to the parties or their contractors.

## DISPUTES INVOLVING IP AND THE ACCOUNTABILITY OF THE PARTIES

The MOU should establish the following with respect to disputes and accountability problems:

- o Policy and procedures to govern the settlement of IP disputes involving:
  - Disputes between parties
  - Claims against parties by third-party owners of IP or IP rights
- o Policy that will determine the accountability and liability in disputes arising over IP misuse by:
  - Governments (governments can be held responsible for actions of their contractors involving IP misuse)
  - Designated contractors
- o The definition of the contractor's scope of action:
  - Designated national contractors are normally constrained by the same terms as their respective governments
- o Procedures for resolving third-party misuse of IP:
  - Determine which party will pursue the case, where the case will be resolved, and who will pay the administrative and legal costs
- o Procedures for compensation:
  - Establish a claims policy and procedures for compensating damaged parties in the event of IP misuse.

## CONTRACTING

It is essential to realize that, without the cooperation of the holder of the IP rights, IP transfer cannot take place. Firm-to-firm exchanges without interference of third parties are essential to a successful IP transfer, particularly in the key area of know-how and technical assistance. The same problem exists in the transfer of manufacturing drawings in competitive

procurements, because the firms that actually expect to follow the drawings, rather than convert the drawings to suit their own shop processes and practices, rarely possess the technology capabilities and the processing know-how.

At the earliest stage of a program and at each subsequent stage, steps should be taken to ensure, through appropriate contractual arrangements or options, that nations be permitted to participate in research, development, or production. This applies whether the program is carried out on a national or collaborative basis. If the program is collaborative from the outset, an MOU will normally be in effect. As mentioned previously, the MOU will address IPR, and the contract must be constructed so as to conform to the terms of the MOU. If the program is a national program and not the subject of an MOU, a different problem exists. Care must be taken so that, if the program becomes collaborative at a later date, the IPR will be available to future partners. As a minimum, all contracts should include provisions committing each contractor to transfer, as necessary for the success of the cooperative program, portions of the IP developed for, or used in, performance of the contract, under license at a fair and reasonable price.

This procedure is the cornerstone of the implementation of the NATO AC/313 IP Guidelines. When a provision committing a contractor to enter a license is included in a USG contract, the government can ensure the availability of the IP for NATO cooperative programs. This practice is used in the US long before cooperative programs are well defined. It is also a requirement in the development contract regulations of the FRG, and has been successful, according to the FRG Ministry of Defense personnel. A similar contract commitment is in use in the UK, under the "International Collaboration Clause." In each of these instances, the government selects the licensee. In the FRG, the contractor is normally consulted, and he may veto, (but allegedly rarely does) the first choice if it is a severe threat to his competitive position. There are also criteria for establishing the reasonableness of the license fee in the FRG regulations.

Under the FRG's policy, the contractor retains all IPR but commits to license all necessary IP to a second source at a fair and reasonable price, as specified by the FRG. In practice, the government's choice of a second source is subject to a de facto veto by the primary source contractor. The few times the veto has been exercised have been when the primary contractor regarded the second source as a head-to-head competitor. The license fee is effectively paid by the government and usually includes some (relatively small) payment for foreground information. Typically, license fees under such an arrangement are 3 to 5 percent plus front-end money when warranted.

Implementation takes the form of a contract option that can be exercised by the government. When the option is exercised, the contractor enters into negotiation for a license with a licensee for all or part of a system or item. Normally, a licensee requires enough IP transfer so that he can produce as does his licensor; the needed patents, data, know-how, and technical assistance, as required, are provided in exchange for money. Although the licensee usually pays, payment by a licensee government is a possible alternative.

Provisions for multiple licensees may be considered. Limitations on the time allowed for exercise of the option and on the scope of the subject to be transferred must be defined. Protection of the transferred IP may be guaranteed by licensor and licensee governments. The issue of ongoing use of the IP, i.e., whether it is permitted or not, must be addressed. Retransfer to a second tier must be agreed to or prohibited. A mechanism to resolve disputes must be included. The mechanism of configuration control and capacity to accommodate a technical change or a prohibition of technical change must be addressed. The "level" of IP regarding piece parts and vendor-supplied material, their specifications, and the like cannot be omitted. The clause committing the contractor to license should probably contain an outline of, or suggest a minimum set of clauses for, the resultant license.

Contractor transfer of IPR simplifies government IP management. It reduces the magnitude of the problem of leaking of government-owned unlimited rights data under the Freedom of Information Act, but clearly only for data falling under NATO-related acquisitions. This problem will remain unresolved for DoD unlimited rights data at large, at least until its designation as "agency records" versus "valuable property" is legally resolved.

## LICENSING AGREEMENTS

Traditionally, the subject matter of licensing agreements in Research and Development (R&D) has included three distinct categories of rights in IP: patents, trademarks, and know-how. Only patents and know-how are discussed here, because trademarks have little significance in military procurement.

## PATENTS

A patent is a grant of certain monopoly rights conferred by a government to an inventor because of his invention. It is enforceable for a certain period of time, and only within

the territorial limits of the country in which it was granted. The monopoly granted to the patentee excludes others from making or using the invention by enabling the patentee to bring suit for infringement. In this sense, a patent cannot prevent infringement, but it does provide for redress.

### KNOW-HOW

The other major right usually granted in a license is know-how. Know-how is a peculiarly US term that is receiving growing acceptance in international contracts. It is a generic term, embracing everything necessary to implement the licensing objective exclusive of patents and trademarks. Included may be trade secrets, manufacturing processes and techniques, specifications, charts, formulae, drawings and blueprints, marketing techniques, and professional advice. The list is nonexhaustive. Essential to the value of know-how is that it not be readily known or available to the public.

Know-how is a critical component in most licensing agreements because it is generally necessary in order to use the patents licensed in the agreement. It has become increasingly common for licensing agreements to contain only know-how without patents.

The Restatement of Torts defines know-how as "any formula, device or compilation of information which is used in one's business and which gives an opportunity to gain an advantage over competitors who do not know or use it." Thus, know-how is exclusionary like a patent, granting a type of monopoly in that those who do not possess its knowledge cannot use it; however, know-how differs from patents in three significant respects:

- o The monopoly is de facto, as opposed to de jure
- o The monopoly is maintained indefinitely, as long as the know-how remains generally unknown
- o Some degree of secrecy is essential to the value of know-how, but once commonly known, its value is destroyed.

The importance of know-how in licensing cannot be overstated. It is often essential to permit the use of any patents licensed under an agreement. Moreover, with companies turning away from the patent system and relying increasingly upon know-how, licensing can be the only means of transferring certain technologies.

## KNOW-HOW AND DoD POLICIES

Technical data and assistance, including drawings, specifications, and personnel training, are normally classified generically as know-how under foreign licensing agreements; however, DoD defines know-how more narrowly and distinguishes it generally from technical data and assistance.

Know-how for the DoD is generally restricted to knowledge of an intangible nature; e.g., managerial competence, engineering expertise, or company experience. DoD usually does not, and, in most cases, is constrained from, acquiring know-how that exceeds contract data requirements. This is primarily a factor of the intangible nature of certain know-how.

Though FAR 27-4 defines data broadly as "recorded information, regardless of form or characteristic," the definition acts to restrict DoD's acquisition of know-how to recorded information. Unrecorded know-how is generally beyond DoD's reach, because, in most cases, it does not possess an industrial or manufacturing infrastructure capable of absorbing and retaining the information. Such a capability is usually not a part of the DoD's mission. In addition, the very intangibility of the know-how often prevents specific identification of needed know-how.

## THE LICENSE

The legal vehicle of the licensing agreement is the license itself. An IP license is a contract in which the owner of IP--the licensor--agrees to make available his IP, along with the specific rights required for its use, to another entity--the licensee--for the specified purposes set out in the license, subject to any restrictions, and for a consideration. Foreign licenses invariably are written documents, due to the complexity of the issues and relationships involved, language barriers, and the statutory mandates in certain jurisdictions.

Although there is no formal, required list of clauses necessary to a license, the following clauses are typical of US-European Economic Community (EEC) license agreements:

- o Identity and legal address of parties
- o "Whereas" clause identifying licensor as owner of IP
- o Definitions of key words
- o Grant clauses



- Scope
- Definition of IP involved
- Sublicense rights, if any
- Degree of exclusivity
- Territorial limitations, if any
- o Technical assistance
- o Consideration
  - 7 Down payment, front end payment
  - Royalties, base, computation, and duration
- o Exchange of related IP developed during the license period by either party
- o Patent infringement
  - Third-party infringement - action to be taken by which party to the license
  - Licensor/licensee as defendants - liability of parties
  - Initial fee
  - Royalties, base, and computation
- o Confidential information, terms of protection
- o Term of patent protection
- o Term of license
- o Termination provisions
- o Audit rights of licensor
- o Warranty of utility of IP
- o Reporting requirements
- o Arbitration
- o Governing law and language
- o Force majeure, protecting both parties from liability for breach when an independent force prevents fulfillment of license terms; e.g., labor strike, expropriation
- o Commitment of licensee to exploit license

- o Other clauses that may address unique aspects of the relationship or serve to define further the understanding; e.g., separability waiver
- o Name and address for official notices.

Whenever the USG holds a royalty-free license, has unlimited data rights, and pays for technical assistance to be provided to a second source, the primary source and his sub-contractors are barred from charging the second source. In such cases, the price paid by the government is limited to the actual cost of providing data, personnel, manufacturing aids, samples, spare parts, and the like; royalties are not an allowed cost.

Foreign license and technical assistance between US and foreign contractors (including foreign governments) must meet the requirements of Section 124.04 of the International Traffic in Arms Regulations.

#### TECHNIQUES OF IPR TRANSFER

The main obstacle to the effective transfer of IPR is that the USG does not normally "own" enough rights to enable a second source to be able to produce the product. The USG will usually own a royalty-free license for any patent that results from work that it funds, but this, in and of itself, is rarely sufficient to enable second source production.

Foreground information, foreground patents, and know-how are all necessary elements to the successful transfer of IP. Because the USG does not acquire these rights by law, they must be expressly addressed in the various documents mentioned previously. In essence, there are two generic ways to ensure that adequate IPR can be transferred to another firm. Either the government can acquire all necessary IPR, or the government can be in a position to enforce a transfer of all necessary IPR to an entity of its choice (e.g., another firm or a government).

For the first method, the USG acquires a stand-alone technical data package (reprocurement data package) from the designer/developer. The criteria for selection of data rights clauses are set forth in FAR Part 27. The data package is intended for use in solicitation of other qualified manufacturers. It is very difficult to transfer technology from the developer to another source simply by providing a technical data package. Consequently, this technique may not be appropriate for use with highly complex systems or items experiencing substantial technological uncertainty. Also, the reprocurement data package techniques

shall be used only when the conditions in FAR Part 27 are met and the following actions are completed:

- o A determination has been made by the Procurement Contracting Officer (PCO) that the government is able to obtain unlimited rights in technical data and computer software from the designer/developer to preclude future patent claims and/or copyright infringements.
- o A determination has been made by the PM that the items designated for competitive production are not so complex as to require extensive technical assistance from the developer and application of the leader-follower techniques.
- o A data package cost justification has been provided before full-scale development, the package must permit a comparison of the total data costs with the anticipated benefits to be received.

The second method is directed licensing. Directed licensing is accomplished through a special provision included in a contract with the developer source that specifies a firm requirement that the developer will license the production of later quantities to another source.

This method is similar to the data package technique in that it involves a transfer of technical data from the designer/developer to another manufacturer, but it also includes some transfer of manufacturing know-how. Under this approach, the developer is normally awarded the contract for first production; however, the requirement for alternate source licensing is included in the development and/or production contract(s). Also, the developer provides engineering and manufacturing liaison to the new production source and receives compensation for this service often in the form of royalty and/or technical assistance fee. The provisions of the licensing arrangement, including royalty and/or technical assistance fee should be made an evaluation factor during design selection. Those provisions (and the amount of fee) can then be taken into consideration later during selection of the alternate (licensee) source. Selection of the alternate source may be done either by the government or by the developer (licensor), depending upon the terms established in the initial contract. If selection is to be made by the developer, appropriate provisions shall be included for prior government approval, either of the source or of the selection criteria.

## PREVIOUS EXPERIENCE

There is great disparity in the manner in which IP and IPR have been addressed in past MOUs. The three cases presented below are representative of some of the methods that have proved successful.

### F-16 MULTINATIONAL FIGHTER PROGRAM (MNFP)

The conditions of IP transfer for this coproduction program are specified in the MOU of June 1975 between the US and Belgium, Denmark, the Netherlands, and Norway, which are known collectively as the European Participating Governments (EPGs). The key features of the MOU are paraphrased below:

- o The USG grants a royalty-free license to the EPGs for all IP generated under the General Dynamics contract (foreground information).
- o The EPGs grant a royalty-free license for all contract-generated IP (foreground information).
- o The USG agrees to assist the EPGs to obtain background information and technical assistance from US firms involved, as necessary.
- o Certain items of advanced technology (e.g., commercially sensitive items) are exempted from technology transfer.

These provisions are clearly in the spirit of existing DoD IP policy. Note that the USG is unable to guarantee the availability of certain background information and know-how, as called for in the AC/313 guidelines.

### MULTIPLE LAUNCH ROCKET SYSTEM (MLRS)

The MLRS MOU, which became effective 14 July 1979, describes a three-phased codevelopment and coproduction program among the governments of the US, the FRG, the UK, and France. Article VII (entitled "Exchange and Protection of Information and Industrial Property Rights") is comprehensive. Each country will be provided with an independent ability to produce the MLRS. It authorizes participants to negotiate directly with foreign industry to obtain IPR, and it requires that each participating country identify all necessary IPR that it does not own or control. Participants are requested to "use all reasonable efforts to secure or assist the requesting participants to secure, on fair

and reasonable terms, the disclosure of information owned or controlled by the third party."

The MOU requires that foreground information be exchanged promptly among the participants, including the filing of patent applications for foreground inventions. The use of disclosed information is limited to defense purposes, and re-transfers are restricted to other NATO countries. The responsibility for filing patents rests with the participant in whose country the work is being performed, but all background patents are unaffected by the MOU.

The most interesting feature of the IP section of this MOU is that it imposes a duty to "insert into all its MLRS contracts, and require its contractors to insert in corresponding subcontracts, clauses requiring its contractors (or subcontractors) to:

"7.8.1 Make available to the other Participants the rights and protections set forth in this MOU.

"7.8.2 Specify any established rights claimed in respect to information associated with the contract work.

"7.8.3 Insure the right of access in accordance with this MOU.

"7.8.4 Notify their government immediately if they are subject to any license or other agreement which will operate to restrict their government's freedom to disclose information or permit its use.

"7.8.5 Use all reasonable efforts, if requested, to secure the relaxation of any restrictions.

"7.8.6 Not to enter into any new agreement or arrangement which will result in restrictions on free use of system data by Participants without the consent of the contracting government acting with the approval of the other Participants."

These provisions ensure that the participants will be in a position to obtain license rights to all appropriate IP.

#### MODULAR THERMAL IMAGING SYSTEMS (MOD FLIR)

The MOU for coproduction and sale of MOD FLIR is between the US and the FRG and became effective on 20 April 1978. It provides that the US make available to the FRG a Production Technical Data Package (PTDP) for some of the modules but speci-

fically excludes other modules. With respect to the excluded modules, the US will make available only limited technical data pertaining to form, fit, and function.

Article IV of the MOU is entitled "Authorized Use of Documentation." It commits the USG to use its best efforts to provide a PTDP but specifically states that the USG does not guarantee the accuracy, adequacy, or completeness of any data provided to the FRG either by the USG or by a contractor. It limits the use of the restricted modules to evaluation, maintenance, and training.

Regarding reproduction rights, inventions, and licenses for technical data and other information that is not owned or controlled by the US, the USG is to use its best efforts to assist the FRG in identifying and negotiating production and license rights on fair and reasonable terms, to produce, or have produced by the FRG in accordance with this program, MOD FLIR systems including standard modules and parts.

The MOU contains a clause that specifically states that none of the authorizations for use of data shall be construed as a license to make, use, or sell any proprietary information that is owned by third parties. This statement is probably technically unnecessary, but it could prove invaluable if any dispute arose. All data provided must be used for the "purposes of this MOU." This stipulation allows the release of the data to the FRG contractors but prohibits further dissemination without the written approval of the USG.

Article V sets forth the provisions for the exchange of technical information and for the use of inventions. The FRG agrees to furnish to the USG, "insofar as it (the FRG) has the right to do so," technical information, data on inventions, etc., or MOD FLIR foreground information. Both signatories promise their "best efforts" in arranging licensing agreements for the other party if that party does not own or have rights to the information.

In 1981, a second MOD FLIR MOU among the US, the FRG, and the Netherlands was negotiated. The phraseology of this document was somewhat different, but it did not greatly alter the IP section of the MOU. It was intended to supplement, but not replace, the original MOU, which is still in effect.

#### NATO SEASPARROW SURFACE MISSILE SYSTEM (NSSMS)

The most recent MOU for the NSSMS is for the cooperative support phase. This particular MOU contains a paragraph

that requires all participant nations to insert a provision in all contracts and subcontracts for obtaining all information, rights, and assurances. Contracting governments must be notified immediately if a contractor or subcontractor is subject to any license or other agreement that might restrict the contracting government's freedom to disclose information. If there will be a problem in this regard, the contracting government must inform the project steering committee before placing the contract. In this way, the steering committee may suggest alternative rights to be sought, or it might approve the contract without securing the rights in question.

### CONCLUSION

The following points about IP/IPR transfer deserve emphasis:

- o Industrial involvement is critical to any IP transfer because, without the cooperation of the holder of IPR, IP transfer cannot take place.
- o Stated another way, licensing and disclosure of IP/IPR must be accomplished with the full participation of the owner of IP/IPR. Governments cannot legally transfer IP/IPR that is owned by industry unless this right is granted legally and contractually.
- o In the past, transfers have been primarily for mature equipment being produced in the US. Transfers at earlier phases of development or production create many different problems and concerns.
- o Because of a lack of fully defined policy and implementing instructions by DoD, it is apparent that past IP transfers have been arranged on case-by-case bases.
- o The PM and his team are the instruments for DoD to initiate IP transfers. If this team does not consider IP rights and the transfer mechanisms early on, IP transfer becomes much more difficult and expensive.

## CHAPTER 12 TECHNICAL AND BUSINESS MANAGEMENT

### INTRODUCTION

This chapter discusses many of the technical and business management considerations that must be addressed by multinational program offices. It also addresses selected topics that cross several chapter boundaries and which are collectively placed in this chapter for convenience.

### TECHNICAL CONSIDERATIONS

Several technical considerations concerning inspection and Quality Assurance (QA), configuration management, patent infringement, and warranties must become part of the knowledge base of a Program Manager (PM) operating in an international environment. These are discussed in the following sections.

### INSPECTION AND QUALITY ASSURANCE

Codevelopment and coproduction programs involving contractors from several countries, or other acquisition programs by several governments, present special problems for developing an acquisition quality program. Although virtually all modern manufacturers have developed quality control programs for any significant production effort, most governments have come to require inspection and QA procedures before acceptance; however, QA policies and procedures vary significantly from country to country. To minimize the impact of such variance on allied codevelopment and coproduction programs, the North Atlantic Treaty Organization (NATO) countries have made steady efforts to harmonize and align QA policies and procedures for collaborative acquisitions. The NATO Group of National Directors for Quality Assurance (AC/250) has been the principal forum for these efforts. Department of Defense (DoD) Instruction (DoDI) 4155.19 of 6 June 1978 on "NATO Quality Assurance" prescribes United States (US) policies and procedures for: (1) participating in NATO QA groups, (2) coordinating NATO Standardization Agreements (STANAGs) and Allied Quality Assurance Publications (AQAPs), and other joint QA documents; and (3) establishing and operating a central DoD file of NATO QA documents and correspondence.

NATO itself has issued two key QA STANAGs. The first, STANAG 4107, provides for "Mutual Acceptance of Government Qual-



ity Assurance." The second, STANAG 4108, provides for harmonization of QA policies and procedures through the preparation and dissemination of AQAPs, which are documents that government QA Representatives (QARs) use in the contractors' plants. Larger plants may have itinerant QARs that travel from plant to plant. US QARs work for the Defense Contract Audit Agency (DCAA), a branch of the Defense Logistics Agency (DLA). The largest US defense contractors have US Government (USG) on-site representatives in Plant Representative's Offices (PROs). With smaller programs, the USG on-site QA representatives work for DCAA. AQAP-10, "NATO Requirements for a Government Quality Assurance Program," has procedures for all NATO QARs to use on-site. AQAP-10 procedures represent the consensus of the NATO countries on the minimum requirements necessary for a comprehensive QA program. All NATO countries claim that they are implementing AQAP-10, either by adopting it as their own or by modifying their documents to conform to AQAP-10; however, the extent of each country's implementation varies considerably.

It is generally accepted that NATO STANAG 4107 and the AQAPs published under STANAG 4108 provide a basis for exchange of reasonably consistent and standardized QA services among NATO partners, particularly the industrialized partners; therefore, each program-specific Memorandum of Understanding (MOU) should have a section or article on inspection and QA and should reference these STANAGs and AQAPs and provide for the exchange of QA services under STANAG 4107.

STANAG 4108, developed by AC/250, presents guidelines for the types of QA provisions and requirements that should be included in contracts with NATO agencies. An MOU for collaborative codevelopment or coproduction should contain similar guidance about general contract provisions and requirements; however, since AQAPs are fairly general and the administration of QA services among NATO countries still varies considerably, each country should explicitly reserve the right to supplement the criteria used by the host country and to observe and participate in the host country's implementation of delegated QA services. This is especially true for programs with countries that the US does not have reciprocal, free-of-charge QA service agreements or MOUs. Reservations should also be included in the program-specific MOU for allocating costs of performing QA services, if they are likely to be unusually complex, costly, or one-sided.

In the course of administering a contract, or even in the pre-award stage, DoD may elect to rely on the services of foreign government components to perform certain functions based upon a government-to-government agreement. Many reciprocal defense procurement agreements provide for reciprocal QA services at no cost. The US currently has agreements with Canada, the

United Kingdom (UK), the Netherlands, the Federal Republic of Germany (FRG), Belgium, Denmark, France, Italy, and Norway. An agreement for reimbursement of QA services exists with Australia. QA services are performed in accordance with NATO STANAG 4107 and AQAP-10 to the extent consistent with the laws of both governments. The agreements generally provide for a flexible arrangement in which the purchasing government may request full QA support or specified services only. AQAP inspection and QA services are listed in Table 12-1.

### CONFIGURATION MANAGEMENT (CM)

DoD policy imposes CM on materiel systems at the earliest possible time in the acquisition process. CM encompasses Configuration Identification (CI), Configuration Control (CC), Configuration Status Accounting (CSA), and Configuration Audit (CA). All these functions are essential to ensure operational efficiency and to control life-cycle costs.

For multinational collaborative projects--whether codevelopment or coproduction, maintenance of CM discipline, especially CC, is important to ensure the desired degrees of standardization and interoperability; however, CM practices vary widely, and multinational approaches to CM and CC evolve slowly. The NATO Group on Materiel Standardization (ACSM) (AC/301) has developed a STANAG on CM policy and CM procedures.

The approach followed in STANAG 4159 and STANAG 4188 is modeled on US policy as outlined in DoD Directive (DoDD) 5010.19 and is broadly consistent with DoD-STD-480A and MIL-STD-481A. The STANAGs should to be incorporated by reference in MOUs governing collaborative projects. They provide considerable flexibility for acceptance of, or adaptation to, national CM and CC procedures of the participating nations, depending especially on the system's life-cycle phase, when collaboration is initiated, as well as on the nature of the collaboration.

STANAG 4159 assigns final authority and responsibility for CM to the joint program/project steering committee and calls for the creation of a Joint Configuration Control Committee (JCCC) as the working body reporting to the steering committee, with delegated authority and responsibility for all designated Joint Configuration Items (JCIs). The JCCC would consist of one senior permanent voting member from each participating nation and other specialists and temporary members as needed, depending on the phase of the system life cycle and the issues under consideration. Also depending on the nature of the system, the degree of collaboration and the need, the JCCC may create permanent or temporary subgroups such as an interface control group, change

TABLE 12-1. AQAP INSPECTION AND QA SERVICES

AQAP	TITLE
1	NATO Quality Control System Requirements for Industry (May 1984)
2	Guide for the Evaluation of a Contractor's Quality Control System for Compliance with AQAP-1 (May 1984)
3	List of Sampling Schemes Used in NATO Countries (January 1979)
4	NATO Inspection System Requirements for Industry (June 1976)
5	Guide for the Evaluation of a Contractor's Inspection System for Compliance with AQAP-4 (March 1976)
6	NATO Measurement and Calibration System Requirements for Industry (July 1976)
7	Guide for the Evaluation of a Contractor's Measurement and Calibration System for Compliance with AQAP-6 (October 1978)
8	NATO Guide to the Preparation of Specifications for the Procurement of Defence Material (September 1978)
9	NATO Basic Inspection Requirements for Industry (March 1976)
10	NATO Requirements for a Government Quality Assurance Programme (September 1979)
11	NATO Guideline for the Specification of Technical Publications (January 1979)
12	Canceled
13	NATO Software Quality Control System Requirements (August 1981)
14	Guide for the Evaluation of a Contractor's Software Quality Assurance System for Compliance with AQAP-13 (May 1984)
15	Glossary of Terms used in QA STANAGs and AQAPs (March 1986)

study teams, and configuration audit teams. Decisions of the JCCC would be by unanimous consent of the voting members; unresolved disputes within the JCCC would be referred to the program/project steering committee for resolution, preferably by unanimous vote. If unanimity is not possible, a participating nation dissenting from the majority would inform the other participating nations of its dissent and unilaterally bear the cost, if any, of the deviation.

The authority, responsibilities, and functions of the JCCC, according to STANAG 4159, are critical. Foremost among them are development, promulgation, updating, and implementation of a CM plan, covering configuration identification, control, accounting, and auditing for all acquisition phases. In keeping with the criticality of the JCCC's role, the STANAG suggests that its chairman be designated in the covering MOU, which should also specify the authority delegated to JCCC members to make national commitments.

STANAG 4159 and, to a lesser extent, STANAG 4188 represent combined allied judgments and points of reference for requirements with respect to CM and CC in cooperative aims programs. They are not as detailed and relatively fixed in procedures and prescribed formats as are DoD-STD-480A and MIL-STD-418A, but neither are they inconsistent with them; however, they provide joint CM and CC procedures and joint CM authority.

Several major programs illustrate CM approaches that are worthy of review.

#### NATO Airborne Early Warning and Control (AEW&C) Program

The Multilateral MOU (MMOU) of 6 December 1978, which established the program, created a NATO AEW&C Program Management Organization (NAPMO) consisting of (1) an international Board of Directors (BOD) composed of one member from each of the 13 participating nations (all of NATO at that time except France and Iceland), (2) various committees, and (3) an internationally staffed NATO AEW&C Program Management Agency (NAPMA) for day-to-day management under direction of a general manager. Under this complex arrangement, final authority to approve or disapprove configuration change proposals is vested in the BOD of the NAPMO. Section VI of the MMOU on "Structure, Configuration, and Interoperability" provides, among other things, that the NAPMA will control and manage the interface between the NATO E-3A aircraft and the AEW&C Ground Environment Integration Segment (AEGIS) and will establish a NAPMA Configuration Control Board (CCB). General CM for the NATO E-3A aircraft is provided for in a separate acquisition agreement under which the US Government

manages the acquisition of the aircraft on behalf of the NAPMO. US mechanisms and procedures are, of course, used in this arrangement and are coordinated with the NAPMA-CCB. Change proposals handled by the NAPMA-CCB are submitted to the NAPMO BOD for final decision.

#### F-16 Multinational Fighter Program (MNFP)

The MOU that created the F-16 MNFP on 10 June 1975 included a separate section devoted to CM (Section O). Since the MOU was signed by Belgium, Denmark, the Netherlands, and Norway as the European Participating Governments (EPGs) and the US when the system was in the Full-Scale Development (FSD) phase with first production still 3 years away, it was regarded as essential to establish adequate CM and CC mechanisms and procedures both to ensure that costs were "not to exceed" the agreed-upon estimate and to limit deviations and waivers. Section B of the MOU provided for the joint MNFP Steering Committee (similar in responsibilities and functions to the BOD of the NAPMO, although the steering committee concept is the more commonly used in multinational programs) to guide the cooperation, but it assigned "managerial responsibility" to the US Secretary of Defense, operating through the chain of command to the System Project Office (SPO).

Within this management framework, Section O on CM established the following guidelines:

- o It is the intent of all parties to avoid configuration changes.
- o The US Air Force (USAF) CCB, serving under the authority of the USAF System Program Director, includes one member from each of the EPGs.
- o The costs of all Engineering Change Proposals (ECPs) accepted by all participants are shared on a pro rata basis determined by the number of aircraft procured.
- o The US DoD is solely responsible for all ECPs necessary to meet the baseline specification related to completion of FSD.
- o Changes determined by the CCB to be necessary for safety reasons are incorporated in all aircraft.
- o The baseline configuration may be changed only in accordance with the MOU, and any party wishing a devia-

tion ensures minimal financial impact for other parties.

- o Deviations resulting in substantial financial impact are processed from the CCB to the System Project Director, to the HQ USAF Configuration Review Board, and simultaneously to the EPGs.

#### NATO Seasparrow Surface Missile System (NSSMS)

The MOU of 10 June 1968 for the "international development" of the NSSMS provided very little about CM and CC for development, other than a broad, functional identification of the baseline system in Section III. MOU Section IV (Management) established a NATO Seasparrow Project Steering Committee (NSPSC) of one member from each participating government to be responsible for "the implementation of the cooperative project within the terms of this MOU." Among the decisions of the NSPSC requiring unanimous agreement are "approval of fundamental configuration and configuration changes of the NSSMS and subsystems" as set forth in the applicable NATO performance and capability requirements documents.

The follow-on MOU of 1 December 1977 for "cooperative support" of the NSSMS was much more explicit about CM and CC. An entire section of the 1977 support MOU (Section V) was devoted to CM. Essentially, Section V identified the production data package as establishing the NSSMS standard configuration and adapted the ECP procedures of DoD-STD-480 to accommodate changes proposed by any participating government or the PM. Proposed changes from whatever source are submitted to the participating governments with the recommendation of the PM. Those that are accepted unanimously are paid for in proportion to each country's production requirements (i.e., procurement). Changes accepted by only some participating governments--a practice that is strongly discouraged--are paid for by those accepting governments.

#### Rolling Airframe Missile (RAM)

The MOU of 22 July 1976 (between the FRG and the US) for cooperative development of the 5-inch RAM system was supplemented by the MOU of 14 March 1979 (to which Denmark also acceded) for FSD. The 1979 RAM MOU identified a "System Baseline" in Section III and established arrangements in Section V for "management"--covering responsibilities of the PM, the program office, and a program steering committee. The MOU does not cover CM and CC to any depth, but the US program office indicates that US CM mechanisms and procedures are in effect. Pre-

sumably, as in Seasparrow and other similarly structured programs, the joint steering committee has the power to decide on any configuration changes, deviations, and waivers once the program enters the production phase.

### Multiple Launch Rocket System (MLRS)

The basic MOU for the MLRS was signed in July 1979 by France, the FRG, the UK, and the US. As an agreement among NATO's four largest industrial powers, this MOU numbered approximately 100 pages and included, in addition, three annexes as follows: A. Tactical and Operational Requirements for System Design; B. Design Criteria, Measurement Standards, and Configuration Management; and C. Logistic Support Principles. The critical Article VI of the MOU (Program Management) defined or established six key program management elements: (1) a policy-guidance Joint Steering Committee (JSC) consisting of one senior voting member from each participating government; (2) an implementing executive management committee consisting of a national PM and a representative of the user from each participating country; (3) an overall Program Coordinator who will be serving the US PM; (4) various working groups; (5) a multinationally staffed program management office; and (6) national implementing agencies, including contractors, supporting activities, and national PMs. One of the principal responsibilities assigned to the program coordinator in Article VI is "establishing a configuration management system and maintaining control of the MLRS baseline design configuration by approving all changes thereto throughout the program life cycle. In exercising this authority, the program coordinator will be guided by a Joint System Configuration Control Board (JCCB) that will contain a representative of each participant." Section 3 of Annex B on "Configuration Management" essentially repeats these statements of Article VI without elaborating or enlarging the functions of the program coordinator or the JCCB, except to make clear that the program coordinator is the CM single authority and that the JCCB is advisory. The principal objectives of the CM program are:

- o To develop a single MLRS technical data package, independent of where each configuration item was developed.
- o To describe the responsibilities for maintaining and funding the technical data package.
- o To develop a system for controlling, tracking, and funding ECPs, Request for Deviations (RFDs), and Request for Waivers (RFWs).

- o To develop procedures for auditing items produced by sources other than the prime and the designated subcontractors.

#### AV-8B/GR5 Arrangement

The MOU of July 1981 (between the UK and the US) "relating to AV-8B/Harrier GR5 development, production, and support" provided for the coordination of two parallel national programs in a kind of "leader/ follower" relationship, rather than full integration into one program. Section X of the MOU on "Management Arrangements" stated that "the governments recognize that the AV-8B/GR5 program is a collaborative program and that the (US) Naval Air Systems Command is the lead aircraft development agency...." However, stressing that "each government is solely responsible for the management of its own national program....," the section provided for "appropriate" consultation at the PM and higher levels, as well as exchanges of liaison personnel. Similarly, Section XI on "Configuration Control" identified parallel, coordinated systems of configuration control: DOD-STD-480A for the US Marine Corps (USMC) AV-8B, and the UK Ministry of Defence Procurement Executive Publication AVP 25 for the GR5. The section concluded that "each government will keep the other informed of prospective configuration changes during the course of its program and will offer the other government the opportunity to make representations with respect to such changes and to participate in those changes."

#### PATENT INFRINGEMENT

A patent is a legal instrument that grants to an inventor the exclusive right to use, manufacture, or sell his claimed invention. The invention can be a newly developed machine, a manufacturing process, or a unique configuration of existing elements. In the US, the inventor may protect his invention for 17 years from the date of the grant of the patent. Of particular significance is the fact that a US patent is effective only in the US. Patent infringement is the unauthorized use, sale, or manufacture of a patented item.

The USG policy with respect to infringement by a government contractor or subcontractor of a patent held by a third party was formulated to achieve two goals: (1) to avoid work stoppages on a government contract, and (2) to ensure that the USG can avail itself of American technology at a reasonable and fair cost.

An inventor who feels that his patent has been



infringed can seek a court injunction to halt the alleged infringement. In order to prevent vital government contracts from being halted while suits are litigated, 28 USC 1498, implemented in DoD Federal Acquisition Regulation (FAR) Supplement (DFARS) Part 27.70, provides that a suit by a patent holder for alleged patent infringement by a government contractor or subcontractor can be brought only against the US and only in the US Court of Claims when the US has "authorized or consented" to the alleged infringement of the third-party patent. In order to avail itself of the protection provided by this law, the USG is required to include a broad authorization and consent clause (FAR 52.227-1) in all contracts for "experimental, developmental, or research work where the latter is a primary purpose of the contract." However, if the contract is for supplies or services that are not experimental, a narrower clause is employed to limit the government's liability.

The rationale for allowing a government contractor to infringe US patents is that the US should have a right to the best technology available, and allowing the infringement is the easiest and most cost-efficient method of accomplishing this end. First, the USG has to pay only for an infringement that is discovered by the patent holder, and, second, any award rendered against the US in favor of a patent holder will usually be compensatory rather than punitive. This means that the award will compensate the patent owner for the misuse in an amount roughly equal to the royalties that the government would have had to pay if it had originally sought a license. Viewed in this light, an award for patent infringement is an acceptable and fair cost.

On the other hand, a "patent indemnification" clause is generally included in a contract when there is no legitimate reason to infringe a third party patent. In this case, the contractor has to reimburse (indemnify) the USG for any loss suffered by the USG in the Court of Claims. Such a clause is applicable primarily for supply and construction type contracts. It is inappropriate to include a patent indemnification clause in research and development contracts.

All of the foregoing FAR provisions and corresponding clauses flow down to subcontractors. An authorization and consent clause, however, is effective in stopping injunctions from being issued only for the infringement of US patents. If a US company files a patent application in the US and in the FRG, the FRG patent, if granted, is exactly that, an FRG patent. The country of the original inventor is no longer relevant. Consequently, the US does not have the power to authorize and consent to the infringement of a foreign patent. Therefore, if a foreign subcontractor of a US prime contractor infringes a third-party

patent that is registered in that foreign country, US law is ineffective in preventing an injunction.

All of the NATO nations claim to have laws that are analogous to 28 USC 1498, in that infringement claims can be brought only against the government under a government contract. To date, no collaboration project has been enjoined for patent infringement, but there are ongoing negotiations regarding possible injunctions that may result in work stoppages. If an injunction succeeds, it will be necessary to address this problem specifically in future MOUs. One method of doing so would be to have the host country contract with its own industry so that its national laws would apply and could be used to prevent any injunction.

Patent infringement suits often take a long time. It is not unusual to have suits in litigation for alleged infringements that occurred two decades earlier. The reasons for this are twofold: (1) it often takes a patent holder many years to discover that his patent has been infringed, and, (2) the litigation is complicated and lengthy.

The issue of patent infringement is extremely complex in an international setting. An infringement action can be brought for the sale, manufacture, or use of a protected item. Many NATO codevelopment and coproduction programs that involve production in different countries could give rise to suits in each country for the particular infringement in that country. For example, if an FRG program office contracted with an FRG company for a weapon system component and that weapon system was manufactured and sold by the FRG, the US could be guilty of infringement for using that system if it were otherwise protected by a US patent.

Because of the complexity of possible contractual relationships in multilateral programs and the number of multinational infringement suits that could arise, the issue of sharing liability for patent infringement must be handled with great care. In particular, if indemnification is considered, this should be addressed in macro form, i.e., by countries indemnifying other countries for any losses arising from infringement suits. The other main approach toward allocating the risk of patent infringement claims in cooperative programs would be to have each country assume its own risks and to defend and to be responsible only for claims against itself. If the MOU is silent on country-to-country patent indemnification, the latter approach applies and each country is essentially on its own to defend or settle any infringement suits that arise.

In all US Foreign Military Sales (FMS) cases, the US

includes a patent indemnification clause as one of its standard terms and conditions in its Letter of Offer and Acceptance (LOA). By this clause, the customer indemnifies and holds the US blameless for any patent infringement suit that may eventually arise. Even if the infringement suit does not arise until long after several customers have taken delivery of the end item, the US is authorized to apportion the claim on a unit basis and recover appropriate amounts from all the customers.

Because of the US position on indemnification in FMS cases, most NATO nations have demanded reciprocal treatment. In the past, the US has often refused to indemnify foreign countries on the grounds that it is against US policy. Not being sufficiently familiar with all the subtleties of foreign legal systems and not considering it wise to be at risk for awards rendered in their courts, the US has preferred to fend for itself in suits filed in the US for the infringement of US patents.

In some circumstances, however, the US has recognized that patent infringement claims and the subsequent awards or settlements are valid developmental costs of multilateral programs that should be shared among the parties. The method of allocating these costs can vary, but it is usually on a unit basis, as described in the F-16 case noted below. The US has recommended this approach to NATO allies in the forum of the NATO Group on Acquisition Practices, which has adopted it and made it an annex to the NATO "Guidance for the Drafting of MOUs and International Co-operative Arrangements."

In any case, if an infringement suit affecting a co-operative program develops in one of the participating countries, it is very likely that a similar claim will eventually be filed in the US. For this reason, the MOU should generally provide that notice be given for all infringement suits that may affect the project as a whole. This would allow each participant to monitor foreign suits and be aware of the possibility that any award or settlement may be passed through as a cost. Further, it would enable the US to prepare properly for and possibly to avoid a similar suit in the US. The MNFP presents an example of how patent infringement may be handled.

#### F-16 Multinational Fighter Program

The MNFP program is unusually complex because it involves coproduction of components in five participating countries; therefore, the parties agreed that all costs of patent infringement litigation and subsequent settlement of awards should be shared by the parties. The parties agreed that each party will "assume the lead" in defense of patent claims in its

territory but the ultimate liability for claims would be allocated on a unit basis for the item that is the subject of the suit.

### WARRANTIES

Whether or not warranty clauses should be included in contracts negotiated for international collaborative weapon system programs depends on whose national acquisition laws and regulations are used for the program.

The use of warranties has undergone a drastic change in recent years. Formerly, it was DoD policy, as described in the Defense Acquisition Regulation (DAR), to use warranty clauses only under exceptional circumstances. A warranty was defined as "a promise or affirmation given by a seller to a purchaser regarding the nature, usefulness, or condition of the supplies or performance of services to be furnished." The DAR stated that the principal purposes of a warranty in a government contract were "to delineate the rights and obligations of the contractor and the government for defective items and services and to foster quality performance." In 1984, however, Congress ordered DoD to obtain performance warranties on all weapon systems, although waivers have been granted for some multinational programs. Most of the equipment developed under warranties will not be delivered for a few more years, so the cost-effectiveness of using warranties is uncertain.

Unless a waiver is authorized, 10 USC 2403 now requires the use of warranties in the procurement of weapon systems. Policy and procedures for obtaining such warranties or waivers are contained in FAR Part 46.770. Warranties in the procurement of items that do not meet the definition of a weapon system (e.g., spare, repair, or replenishment parts) are governed by FAR Part 46.7. In contracts for nonweapon systems, the chief of the purchasing office must approve the use of warranties (exceptions are described FAR 46.7).

Although a warranty generally extends the time after acceptance in which the government may assert a right with respect to correction or replacement and, thus, protects the interests of the government against unforeseen difficulties, it does so at cost. The contractor cannot be expected to accept a deferred liability (after acceptance) without some compensation reflected in the contract price. Moreover, an express warranty may tend to negate all implied warranties of merchantability and fitness for a particular purpose, thus diminishing rather than enlarging the protection of the government's interests in certain respects. Problems may arise involving what improvements or repairs should be made and when they will be accomplished. Prob-

lems also may arise involving who will do the repairs or changes. For these reasons, it is DoD policy to obtain only those warranties that are cost-effective (FAR Part 46.770-8). In assessing the cost-effectiveness of a proposed warranty, an analysis must be performed that considers both the quantitative and the qualitative costs and benefits of the warranty. Costs include the warranty acquisition, administration, enforcement and user costs, weapon system life-cycle costs with and without a warranty, and any costs resulting from limitations imposed by the warranty provisions. Costs incurred during development specifically for the purpose of reducing production warranty risks should also be considered. Similarly, cost-benefit analysis must also consider logistical/operational benefits expected as a result of the warranty, as well as the impact of the additional contractor motivation provided by the warranty. When possible, a comparison should be made with the costs of obtaining and enforcing similar warranties on similar systems. The analysis should be documented in the contract file.

The contract should clearly spell out the responsibilities of the prime contractor, subcontractors, and suppliers. DoD has negotiated warranties for weapon systems item-by-item endurance warranties. There are circumstances in which warranty clauses are appropriate and mutually acceptable to both the government and the contractors. Those circumstances must be evaluated on a case-by-case basis with consideration given to factors such as those indicated above.

The warranty requirements of FAR Part 46.7702 are not mandatory for FMS production contracts. For all weapon systems procured for FMS LOA requirements, the policy of DoD is to obtain the same warranties on conformance to design and manufacturing requirements and against defects in materials and workmanship that are obtained for US supplies. DoD will not normally obtain "essential performance" warranties for FMS purchasers; however, when it is not practical to separately define the cost for the warranty of essential performance requirements, the foreign purchaser may be provided the same warranty that is obtained on the same equipment purchased for the US.

Although the US "stands behind" the systems sold under this procedure, the foreign customer may request some exceptions to normal DoD regulations and procedures for procurements made on behalf of that customer. The principal exceptions have to do with source selection and include requesting the use of a particular prime source and the designation of subcontractors. If such requests are not patently arbitrary or discriminatory, they may--within reason--be honored so long as they do not otherwise interfere with normal DoD regulations and procedures and, so long as

the customer realizes that they may diminish the implied USG warranty.

## BUSINESS CONSIDERATIONS

Various considerations can be collectively placed in the business management arena. In some cases, these topics cover multiple chapter areas; hence, they will be discussed in the following sections.

### INSURANCE AND INDEMNIFICATION LIABILITY

Risks of death, bodily injury, and loss of or damage to property are inherent in most defense development and production work, but the difficulties are compounded in international collaborative efforts because of each nation's unfamiliarity with the ordnance, equipment, and industrial practices of another. To protect third parties and to avoid possibly expensive and disruptive claims against itself, the USG requires its defense contractors to carry certain kinds of insurance. Because commercial insurance against military-related risks is sometimes not available or is very expensive, the USG may allow a contractor to be a self-insurer or may elect to indemnify a contractor against certain risks. US PMs in collaborative activities will need to know the insurance and indemnification practices of other nations and how to reconcile them with US practices and law in cooperative development and production programs.

Insurance principles and procedures for DoD contracts are contained in DFARS Part 28.3. Included in this are the definitions and procedures, sections on insurance under fixed-price cost-reimbursement contracts, and a special casualty insurance plan called the National Defense Project Rating Plan, which is a government-subscribed casualty insurance plan available upon application to both foreign and domestic contracts. Its purpose is not only to save government costs through minimum-cost insurance to contractors but also to foster safety engineering and improved claims services from the insurance industry.

In general, US contractors are required to carry certain types of insurance (e.g., workman's compensation insurance), except when specifically relieved by a contract provision or when the government agrees in a contract provision to indemnify the contractor under specific circumstances. Methods of accounting for costs of required insurance are specified in Cost Accounting Standard 416. "Contract Cost Principles and Procedures" in the FAR lists those insurance costs that are allowable for cost-reimbursement purposes. Normally, evidence of commercial insur-

ance is required, although self-insurance is allowable under certain circumstances with government approval.

Indemnification of contractors and subcontractors is discussed in FAR Part 28.70. For research and development contracts involving risks that are defined as "unusually hazardous," the USG can grant--under authority of 10 USC 2354--indemnification against claims by third persons (including employees) and against loss of or damage to the contractor's property. Public Law 85-804 and Executive Order 10789 specifically add nuclear risks to "unusually hazardous" and extend the authority to grant indemnification to various types of contracts, in addition to research and development contracts. Appropriate contract clauses for indemnification are specified in FAR Parts 52.228-3 through 52.228-10.

International collaborative activities bring different nations' laws and regulations involving insurance practices into potential conflict. The NATO Group on Acquisition Practices (AC/313) has as one of its current objectives the identification and publication of summaries of national insurance practices. Summaries outlining the insurance practices of Canada, the FRG, the UK, and the US have been developed. The NATO Status of Forces Agreement (SOFA), signed in London on 19 June 1951, established principles for determining liability or indemnity as well as procedures for handling claims by citizens of one country against the government of a country to which they are assigned either as military personnel or as civilian employees of their military establishments. These principles and procedures may be adaptable to some aspects of collaborative development and production activities and may usefully be incorporated by reference in a program MOU. Some nations may wish, of course, to modify provisions of previous agreements in adapting them to new programs. For example, the NATO SOFA provides that the government of a third party claimant within that country will pay 25 percent of the awarded damages, while the remaining countries pay 75 percent. Some countries in the NATO AEW&C program have asked that ceilings well below the 25 percent level be placed on their own liability when claims arise from such third parties within their own country.

#### PARTICIPATION OF ADDITIONAL NATIONS

In most cooperative weapon systems programs, provisions must be made for the later addition of participating nations. MOU negotiators should provide for two different types of additional members: either "full partners" or "favored observers." Additional participants may also be classified as those that are "categorically acceptable" by virtue of their memberships in

other mutual defense organizations (or are otherwise pre-accepted by specific agreement) and those that are not members of other mutual defense organizations and are regarded as "third countries."

The applicable documentation dealing with accession of additional nations usually: (1) permits nations that meet defined criteria to join the program on a coequal basis following unanimous approval by the existing members, (2) outlines broad guidance for the sharing of costs with the original members, and (3) stipulates the extent or conditions of integration into the program management and related structures for the new member(s). It may occasionally specify that no nonalliance members will be accepted or even that no additional members will be accepted.

The negotiating issues may often be classified as (1) political, (2) economic, and (3) organizational, i.e., matters affecting program integration. Political considerations may include the acceptability of the candidate new nation to each member of the existing partnership, and the political stability of the candidate as perceived by the member nations. Many participants in cooperative multinational programs also hold membership in other mutual defense organizations. Because of such existing relationships, it may be easier for a "categorically acceptable" country to join the program than it may be for a "third country."

Even if a candidate nation is politically acceptable to all members in a general sense, the political stability of the candidate nation may pose particular problems. A perceived lack of political stability in the candidate nation may cause concern over the ability of the candidate to sustain a broad range of associated commitments, such as the adequate safeguarding of classified materials and the protection of proprietary information and critical technology to which it may gain access by virtue of its program involvement. The candidate nation's ability to meet its financial obligations over the long term would also be an important political consideration.

Economic considerations may be viewed from the perspective of the current membership, as well as the perspective of the candidate member. Current members will normally expect that the candidate nation will compensate the members for an equitable share of development and other appropriate "sunk" costs as a precondition of acceptance into the program. In addition, adjustments to existing cost-sharing and work-sharing arrangements must be determined and agreed to by all nations concerned. In some instances, the net economic impact in terms of initial cost versus eventual return to the candidate nation may indicate that purchase of the weapon system through an FMS arrangement is more



advantageous than "buying" full membership in the program.

The integration of new members into the program's steering committee is another issue that may arise. The new member, under ideal conditions, might expect to be given equal status with the other members in making and implementing program decisions after it has joined the program. Although granting equality in status may appear to be reasonable, especially during the early phases of a program, once a program has matured to the point at which system performance parameters and configuration have effectively been determined, to provide equal status to the new member may not be a practical or acceptable position for the original members. Under such circumstances, if agreeable to all parties involved, the new member may be conditionally accepted into the program as a "favored observer," without being accorded full voting rights.

The methods by which various programs provided for the integration of new member nations illustrate possible approaches.

#### F-16 Multinational Fighter Program

Through the years the F-16 configuration has matured to the degree that any changes desired by a new partner would be extremely difficult. Nevertheless, advances in technology, as well as changes in the threat environment, have resulted in consideration being given to making some significant changes in the existing configuration baseline. In fact, to meet its other worldwide defense commitments, the US may desire to incorporate some system changes that exceed the requirements of the EPGs and that they may not support. Consequently, the US could be required to initiate an "improved F-16 program" to meet its own needs and, perhaps, those of some additional nations, while continuing to fulfill its obligations for production and support of the current version of the F-16.

The original MNFP agreement developed a relatively complicated work-sharing formula using procurement values and aircraft equivalent values to define percentages of offset work to be awarded European industry for the initial buy. Consequently, although some discussion occurred during original negotiations, no specific provisions were made for the addition of third-country participants to share in the work to be performed.

Because of the maturity of the program, the complexity of the work-sharing issue, and political considerations, no additional NATO partners have been added to the program (although the agreement provides for "categorical acceptance" of other NATO nations). Additional non-NATO nations have acquired

the F-16, but only Israel has become a coproducing member. Other countries have participated on essentially an FMS basis, and those nations have not been integrated into the steering committee decision process; however, these purchasers have been encouraged to join the program and have been integrated into the program management staff. Their staff personnel do participate in day-to-day operations of the program office and do perform necessary liaison functions for their respective governments.

#### NATO Seasparrow Surface Missile System

The NSSMS program, initiated in 1968, was established to develop, fabricate, and test a shipboard, self-defense surface-to-air missile system for surface ships. The original participants--Denmark, Italy, Norway and the US--have subsequently been joined by the nations of Belgium, the Netherlands, the FRG, Canada, Greece, and Turkey.

New members have been fully integrated into the Seasparrow program decision-making process. Once accepted into the program, each new nation provides a deputy PM, who is assigned to the program office. As a condition of full membership, new members are required to pay a share of development-related program administration costs. The recoupment of Research and Development (R&D) costs is then credited to the current participants, thereby decreasing each member's R&D investment as new members are added.

Work shares were originally set based on each nation's percent of total program requirements. Differences between work shares and cost shares are handled by the participating nations outside the program as a balance of payments issue. As new nations are added, they receive no guaranteed work share, although some accommodations may be made on an industry-to-industry basis. Nonconsortium purchasers of the weapon system (e.g., Spain, Japan) are handled as traditional FMS clients without any representation in the program structure or office.

#### Explosion Resistant Multi-Influence Sweep System (ERMISS)

ERMISS was a cooperative R&D program mutually and equally supported by the governments of the UK, France, the Netherlands, the FRG, and the US. Although ERMISS had potential applications for any nation desiring to improve its minesweeping capability, no additional nations applied to join the ERMISS program; several additional nations were expected to show interest if the program had been successful.

The agreements for Phase II and Phase III had provisions for accepting additional nations. These provisions were stated generally and required unanimous approval of the participants. Specific conditions for management integration, cost- and work-sharing, and R&D recoupment were to be developed before the accession of any new participants. The US and its partners considered the possibility of incorporating a pre-approved list of "categorically acceptable" countries or other acceptable "third countries" in Phase III, but did not incorporate such a list.

### SOURCE SELECTION

All NATO nations have acquisition laws and regulations that provide for a variety of methods for government purchasing. A recent comparative survey of regulations and procedures of member nations of the Organization For Economic Cooperation and Development (OECD) (OECD's "Government Purchasing: Regulations and Procedures of OECD Member Countries") identified three broad categories of procedures that are commonly distinguished and used to various degrees. These are:

- o "Public" or "open" tender procedures--in which the invitation to tender is given the widest publicity; an unlimited number of suppliers have the opportunity to submit bids.
- o "Selective" or "restricted" tender procedures--in which participation is limited to a certain number of selected suppliers. The invitation to tender normally takes the form of invitations sent to those suppliers.
- o "Private contract" or "single tender" procedures--in which the awarding authority contacts an individual supplier, which is in the strict sense a single supplier.

The OECD publication further notes that the purchasing authorities in most OECD nations (which include all of NATO) are allowed three broad choices. These are:

- o "Automatic" tender--in which the contract is awarded on the basis of predetermined criteria, either the simple criterion of price (the "lowest bid"), or price and other criteria.
- o "Discretionary" tender procedures involving acceptance of the bid that is "the most advantageous"--the award of the contract is based on several criteria, some of

which are predetermined, but which in general leave the awarding authority a certain freedom of choice.

- o "Negotiated" tender--in which the awarding authority negotiates freely with the supplier as to the conditions of the contract.

The method of "formal advertising" in the US corresponds closely to the combination of public or open tender procedures above with automatic selection criteria based on price. Although this method is used for the majority of DoD purchase actions, this automatic selection process is not appropriate for major system acquisition, and it is especially inappropriate for contracting for R&D for such systems. It is thus difficult to see how formal advertising or open tendering could be applied to any cooperative or joint program.

All government purchasing or contracting in the US that is not accomplished by formal advertising is accomplished by "negotiation"--a term that includes the categories of selective or restrictive tendering and "private" contracting or single-source tendering as defined above, as well as the "discretionary" and "negotiated" degrees of choice accorded to the source selection authority. This approach is prescribed in FAR Part 15 "Contracting by Negotiation." For major weapon systems acquisition, including R&D for such systems, competition is mandated (with exceptions), but it is technical competition as much as or more than price competition. DFARS Part 15.6 describes the process of source selection designed to highlight technical excellence in proposal evaluation that is mandated for R&D contractual source selections for major defense systems. For all competitively negotiated contracts, "the primary consideration in determining to whom the award shall be made is: which offeror can perform the contract in a manner most advantageous to the government."

Contracting for major defense systems in other NATO nations is, similarly, accomplished by selective or single tender procedures with discretionary or negotiated conditions of award--the nominal equivalents of "negotiation" in the US; however, since there are generally far fewer potential domestic suppliers for major systems in all other NATO nations than in the US, other NATO nations' procedures are less formalized and less oriented toward fostering competition than are those of the US. Contractor source selection by European NATO governments is typically limited to one or two well-known and often "chosen" instruments for any type of major weapon system. This contrasts sharply with DoD policy and presents a major issue for negotiation in collaborative weapons development or production programs that must select contractor sources for joint or common acquisitions.

To support contracting by competitive negotiation, DoD policy for major systems acquisition is implemented by DoDD 4105.62 (Selection of Contractual Sources for Major Defense Systems), which states, "DoD Component Heads are responsible for contractor source selection, unless otherwise specified by the Secretary of Defense on a specific program. The Component Head is the Source Selection Authority for his Component, with power of delegation at his discretion."

This policy of identifying a single, senior official as "the Source Selection Authority (SSA)" for major systems acquisition is intended to support the objectives of (1) best meeting government needs; (2) ensuring impartial, equitable, and comprehensive evaluation of competitors' proposals and capabilities; and (3) maximizing efficiency and minimizing complexity in the process of solicitation, evaluation, and source selection. DoDD 4105.62 further provides that the single SSA "is responsible for the proper and efficient conduct of the entire process, encompassing proposal solicitation, evaluation, selection, and contract award. He shall have (subject to law and applicable regulations) full responsibility and authority to select the source(s) for award and approve the execution of the contract(s)...."

As the senior official, the SSA does not, of course, plan and conduct the source selection personally without extensive and intensive bureaucratic coordination and help. In particular, the designated PM and the program office, in coordination with the procurement office of the relevant DoD component, are responsible for developing an acquisition strategy and a source selection plan for approval by the SSA before any solicitation activity. A formal review board is normally established to review the plan for a major system acquisition, and evaluation factors may be released to industry as part of a draft Request for Proposals (RFP). In this way, feedback may be received before the formal solicitation is released.

Especially for high-value and high-visibility systems, the source selection plan would almost always establish a "source selection organization" consisting of a Source Selection Evaluation Board (SSEB) and a Source Selection Advisory Council (SSAC) to assist the SSA: the SSEB being composed at a technical level to evaluate (or score) the proposals according to preestablished and published criteria, and the SSAC being composed at a policy level to provide additional judgment and insight about the proposals considered to be technically responsive. The SSA may or may not request a recommendation from the SSEB or the SSAC, but, in either case, he is solely responsible for the selection and is, therefore, free to make an independent choice so long as his selection has a rational basis, is documented, and is made from

among sources that are responsive (to the RFP) and responsible (both technically and financially qualified to perform the work).

A problem emerges in a cooperative weapon system program when the parties to the collaboration decide to contract jointly with a common source, or set of sources, for system development and/or production. Typically in such circumstances, one of the parties is designated to contract with the selected source(s) on behalf of all the parties, with funds contributed by all. Under the US-preferred "golden rule" concerning the applicability of national acquisition laws and regulations, contracts are administered under the contracting party's laws and regulations, no matter what the nationality or location of the contractors. Nevertheless, each of the parties has a vital interest in how the contractual sources are selected and whether the selections are determined competitively to maximize the probability of obtaining the "most advantageous" arrangements technically and financially, or whether the selections are determined by other considerations, such as the distribution of the industrial work among the parties to the collaboration.

European nations generally argue for a source selection process that ensures that their industries receive a "fair share" of the development or production work. Moreover, they frequently wish to designate the particular contractors to accomplish the work allocated to their industry under a cooperative program. As often as not, for a high-technology system or component, there may be only one qualified supplier in their industry. The US--maintaining that competition is necessary to ensure efficiency in the use of alliance resources and to accomplish selection of the contractor or set of contractors that can offer the "best system"--advocates a source selection process such as that prescribed in DoDD 4105.62 and outlined above. In a section or article on contractual arrangements or the equivalent, the MOU must spell out which approach to source selection is to be used and what compromises, if any, between the two broad approaches are to be used for the particular program.

The MOU should also specify what general types of contracts are to be used, independent of whose national acquisition laws and regulations are followed. All NATO nations provide for variants of both cost-reimbursement contracts and fixed-price contracts with similar arrays of incentives to encourage aspects of technical performance and to discourage cost growth and schedule delays. Most use a form of cost-reimbursement contract for R&D and a form of firm fixed-price contract for production. Most also agree that the "cost plus a percentage of cost" type of contract should be avoided. Although still permitted in the UK, this type of cost reimbursement is specifically prohibited in the US.

The US PM should be familiar with the broad principles for procurement by NATO agencies to which NATO nations have collectively subscribed. These are contained in a publication of the former NATO Working Group on Industrial Property (AG/313), entitled "Guidance to NATO Procurement Authorities." The document recommends adaptability and flexibility and describes general principles of source selection and contracting that are broadly akin to US acquisition laws, regulations, and practices.

Several programs will be discussed to show how they approached source selection.

### Multiple Launch Rocket System

The Terminal Guidance Warhead (TGW) project (Phase 3 in the MLRS program) presented problems in source selection and contracting. Development of the TGW is multinationally funded and contracted among the participants. An MOU supplement for concept exploration of the TGW was signed in July 1981, following about a year of tough negotiations involving source selection procedures. The concept studies that were funded under the July 1981 MOU supplement represent modest amounts of money (\$2 million from each of the four participants), but key principles of policy.

In the declaration of intent concerning the TGW development and funding signed about a year before the MOU supplement, the US had held out for the position that, with the US being the contracting party, it would also provide the single SSA to award the contracts. The European governments had argued for an equal share in the source selection decision. Although a European share or participation in a source selection decision is not prohibited by US law or regulation, the US stuck to the practice prescribed in DoDD 4105.62, granting advice and consent to its partners to be exercised in the program's JSC. In the MOU supplement, the US position seemed to be softened a bit by granting a virtual veto right to the European participants over a US selection decision, without giving up insistence on the US principle of that decision being made by a single SSA.

Some close US observers of and senior participants in this program feel that the Europeans may have acceded to US wishes in this phase of the program primarily "to get on with it" and because other adjustments were made to make the US position more acceptable to them. Two provisions in particular made the basic arrangement more palatable to the European participants: (1) announcing in the RFP that international participation was expected and would be an important evaluation factor in award, and (2) making multiple awards. Both would ensure participation

of key European firms. The European governments originally wanted to designate particular contractors from their countries for specific roles in the Concept Exploration (CE) phase, but, with these two provisions in the source selection and contracting processes, they acceded to US wishes on the issue of designation of the SSA. In fact, six proposals were received for the CE phase, and five contracts were awarded, four with US prime contractors and one with a UK prime contractor.

Figure 12-1 shows the source selection structure for the Full-Scale Development phase of the TGW project. The SSA was a US General advised by the JSC. The SSAC was composed of the national PMs, representatives of the national users, contracts representatives, and advisors.

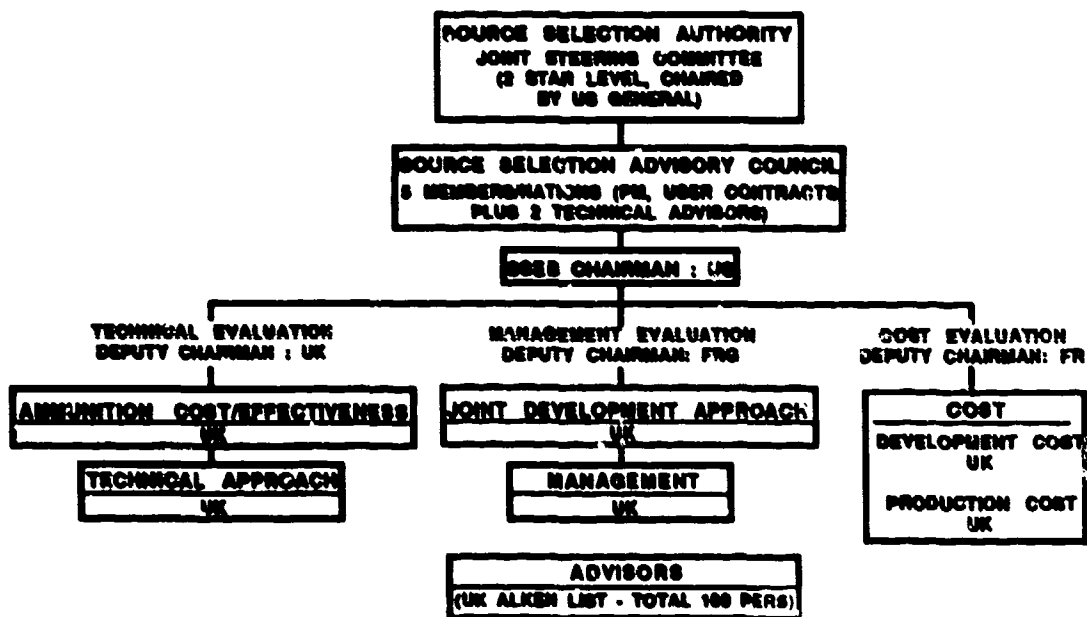


FIGURE 12-1. TGW (MLRS PHASE 3) SOURCE SELECTION STRUCTURE FOR FSD

The chairman of the SSEB was from the US. The other three countries each chaired one of the three principal areas of technical, management, and cost. These three areas were further subdivided into five areas. Advisors were used to supplement the skill areas of the evaluators in the five areas.



### Other Programs

Several other programs are also illustrative of the problem and represent different ways it has been handled in the past, with different degrees of success. Three cases are of particular interest: (1) the F-16 Multinational Fighter Program, (2) the Explosion Resistant Multi-Influence Sweep System, and (3) the Expendable Harassment Drone known as LOCUST.

The F-16 MNFP program is a multitiered production consortium, led by General Dynamics, that existed before the program became multinational in June of 1975. The four EPGs--Belgium, Denmark, the Netherlands, and Norway--initially wanted to designate particular companies for production participation. Since part of the "required" participation included some component production for the initial USAF buy and for third country FMS, the US felt it had to be assured of competitive source selection in General Dynamics' choice of European subcontractors. In the 1975 MOU, the entire section on Contracting (Section E) provided that "The USG will procure the equipment and services required for the F-16 program under the most advantageous terms and conditions available, consistent with DoD regulations and procedures in accordance with this MOU." The USG, working through its prime contractor, thus retained the sole authority to approve subcontracts in Europe; however, in doing so, it recognized that some premium prices (above US prices for the same components) would have to be paid to sustain the desired industrial participation. It therefore required General Dynamics to ensure that the prices of subcontracts in Europe were merely "reasonably competitive" and agreed even to extend this standard beyond the 100-percent offset commitment on the third-country sales portion of industrial participation (Section L of the MOU on Industrial Participation).

The ERMIS3 was a multinational antimine research and development project begun in 1978. Phase III (design definition) began in 1983 but was soon terminated. The program was sponsored by the governments of the FRG, France, the Netherlands, the UK, and the US. The FRG was the contracting party, and contracts were solicited, awarded, and administered according to FRG acquisition laws and regulations. From the US point of view, this program presented source-selection problems quite comparable to those in the MLRS program without providing the leverage of a US lead role to help mitigate them.

The LOCUST program for development of an expendable harassment drone or remotely piloted vehicle was a joint USAF and the FRG Luftwaffe project. The Memorandum of Agreement (MOA) for full-scale development, signed in March 1980, was essentially a 50-50 partnership, although the USAF retained the nominal lead

for contracting. For its contribution to the development, the FRG Government wanted equal industrial participation with US industry and the right to designate the FRG subcontractors. The US held out for requiring competition and international industrial teaming arranged at industry's initiative. In retrospect, some USAF officials feel this had the effect of allowing "chosen" FRG subcontractors to determine which US prime contractors would be selected in the competition. Hard feelings were engendered in the program, and disputes became exceedingly difficult to resolve. As a result, the FRG pulled out in late 1981.

### SECOND SOURCING AND PREPLANNED PRODUCT IMPROVEMENT (P3I) IN EUROPE

The Currie Report (1983) discussed European second sourcing and P3I. The task force found that the designation of a European licensed production center as a second source for US procurement would provide greater motivation for the European adoption of US systems, as well as for participation in the cooperative development of new systems. The results would be a stronger defense alliance through standardization and interoperability of weapons and equipment, as well as better use of available European defense funds through the reduction of unnecessary duplication in R&D expenditures. Ultimately, the corollary of improved use of European R&D money may yield more opportunities for US licensed production of European systems.

In addition, the use of European production as a second source, in the same way as second sources in the US, would afford a competitive alternative to ensure lower costs. However, European governments would provide the investment money necessary to establish the European second source, thus permitting the US to avoid a major outlay of defense funds.

The task force felt that Congress should be willing to support legislation to permit second sourcing in Europe, since this sort of arrangement would be an important step toward the alliance-wide industrial base proposed in 1983 by the Nunn-Roth-Glenn Amendment. The US could provide another inducement for European coproduction of US equipment by permitting European participation in follow-on product improvement programs. This approach would mean continuing work for European defense industry, including long-term participation in third-country sales.

### PROCUREMENT REGULATIONS

In general, it is believed by our NATO allies that there is a marked mismatch between the extensive amount of US

contract requirements and the small amount of European contract requirements.

At a 1985 the UK/US symposium on international program management, a UK representative reported that an in-depth comparison of recent US/UK aircraft and missile developments revealed "substantially larger amounts (as much as 10 to 1) of contract requirements (specifications, military standards, contract data, and testing) for US developments. These questionable requirements unduly complicate contract preparation and administration and significantly increase acquisition costs." The UK representative recommended that contract requirements be reviewed, tailored, and restructured in accordance with "DoD Handbook 248B (Streamlining Initiative), with DoDD 4245.17 (Development to Production Transition), and with DoDD 4245.6 (Production), as was recently accomplished on the US/UK T-46/HAWK aircraft programme."

It has been pointed out by US allies that there are more than 4,000 pieces of US legislation affecting defense acquisition. This is viewed as a major constraint on US flexibility in negotiating international programs.

Indeed, even the 1983 Currie Report found that the DoD "policies, directives, instructions, and regulations on collaborative programs are complex, ambiguous, and burdensome." The commission recognized that much needs to be done, but, in the interim, the task force recommended using simplifications and waivers that worked so well on the MNFP program. Based on lessons learned in this and other collaborative programs, the task force recommended stronger action to improve DoD's acquisition policies and procedures for international programs, such as those in the 1983 Denoon Report on International Coproduction/Industrial Participation Agreements.

#### REMOVAL OF RFP RESTRICTIONS

The International Acquisition Committee of the DoD Acquisition Regulatory (DAR) Council recommended that a change be implemented in the system of RFP notification in the Commerce Business Daily. Foreign sources currently feel that RFPs are too often unnecessarily labeled "no foreign." The recommended procedure would correct this.

When foreign interest is anticipated in an RFP that is about to be released, the applicable DoD component would be required to conduct a national disclosure review. It is believed that this review would reveal, in most cases, that it is proper

to release the RFP to many more qualified sources, both domestic and foreign.

Another pending change regarding national disclosure review involves the timeframe in which it is conducted. If a review of the bidders list reveals possible foreign interest, the disclosure review should be begun as soon as possible. The DAR Council may require a Procurement Contracting Officer (PCO) to be mindful of this, since a disclosure review may take 60-90 days.

#### PROGRAM MANAGEMENT AUTHORITY

A provision of the Packard Commission Report in 1986 concerned the strengthening of program management authority. The commission emphasized that there must be strong, clear, short lines of authority, so that those in positions of responsibility can make decisions without having those decisions then amended or second-guessed. What is needed, the Commission reported, is an inversion of the present system in which a PM or PCO may make a decision that is later amended or reformed by higher authorities. The Packard Commission recommended that the inputs of higher authorities be made earlier in the process. Those inputs should come to the PM or PCO, and the decision should then be made by that decision-maker, whose decision should not be second-guessed. The decision should be reviewed to ensure that it is consistent with the priorities that have been established by DoD.

#### MILESTONE AUTHORIZATION AND BASELINING

The Packard Commission recommended that program funding be provided through to the completion of a program phase (milestone), provided that the following program elements are specified:

- o Program content
- o Performance parameters
- o Schedule
- o Cost cap.

Initially, this funding system will be implemented on three test programs per Service in FY 88. Congress will not review these programs again until the milestones are completed, unless a program baseline or parameter is breached. In this way, program funding will not be altered throughout the phase of acquisition.

## CONCLUSION

The above considerations are broad and encompass many facets of program management. Some of these are beyond the control of the PM; however, knowledge of the topical areas and the discussion points will enhance the PM's performance in the international arena.

## CHAPTER 13 FINANCIAL MANAGEMENT

### INTRODUCTION

The purpose of this chapter is to describe existing policies and procedures relating to financial management of United States (US) Department of Defense (DoD) programs with international involvement. Generally, programs may be classified in three different ways for financial management purposes:

- o US program office buying defense articles or technology
- o US program office selling defense articles or technology
- o Multinational program office involving codevelopment or coproduction.

It is possible for a program to transition from one type of program to another. It is also possible that a larger program might have elements that may be classified in all three program types.

### US PROGRAM OFFICE BUYING DEFENSE ARTICLES OR TECHNOLOGY

When a US program office buys a weapon system from another country, the acquisition model that is usually followed is that for a Nondevelopment Item (NDI). Since NDI acquisition is off-the-shelf, very little development takes place; therefore Research, Development, Test, and Evaluation (RDT&E) funding is not used, except when modifications are necessary. For acquisitions of this type, general guidance may be found in the following regulations:

- o Navy: SECNAVINST 4210.7
- o Army: AR 70-1
- o Air Force: AFR 800-3.

When DoD is the buyer of a foreign weapon system, the difficulties in financial management involve the disbursement and administration of funds. The top half of Figure 13-1 is a simplified DoD Planning, Programming, and Budgeting System (PPBS) and funding cycle that is the same for either US or offshore

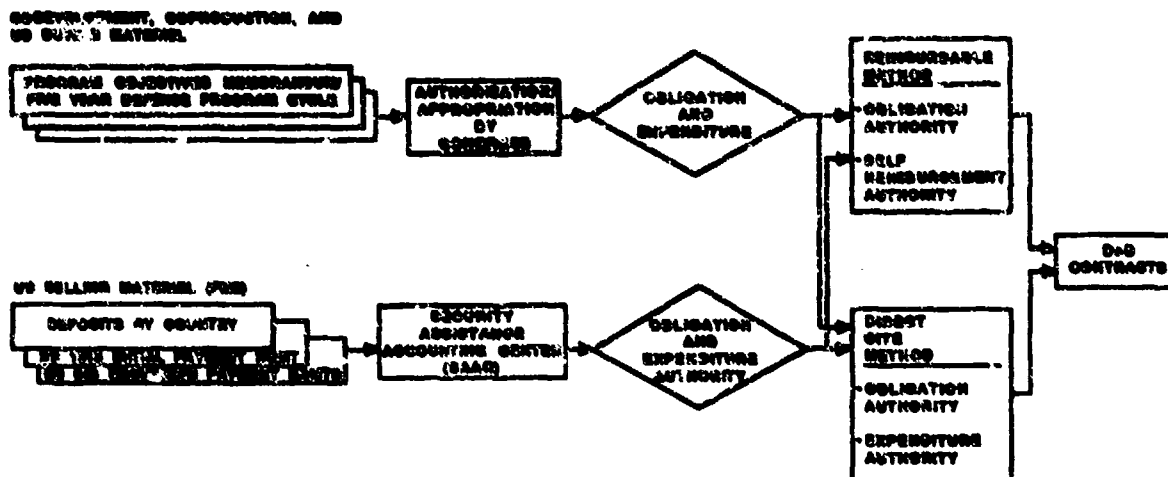


FIGURE 13-1. FLOW OF FUNDING FOR INTERNATIONAL PROGRAMS

procurements. Foreign governments and foreign firms use different fiscal policies and regulations and operate on different fiscal cycles. The basic differences involve the methods and procedures of financing acquisitions and billing progress payments for materials and services.

In many cases, European firms are not required by their governments to provide the detailed cost data required by DOD. In some cases, foreign commercial sources do not have accounting systems that are sufficiently developed to provide these detailed data or are reluctant to disclose such cost data, which they often consider proprietary. Without adequate cost information, program financial management personnel cannot meet the requirements of justifying expenditures of funds and the reasonableness of program costs. These data are also required by program offices for the data bases used to develop reasonable cost estimates and forecasts and for devising sound financial program plans. According to the US General Accounting Office (GAO), a legal or contractual remedy applied after the fact often yields unsatisfactory results if there has been an initial failure of agreement to provide required cost information, to develop fiscal administration procedures, and to develop audit and payment methods.

When the US is buying a weapon from a foreign developer, the Program Manager (PM) and his financial management staff are responsible for providing the same system for identifying, controlling, expending, accounting, and auditing financial resources as for a US product. The PM must ensure (1) the identification of mandatory financial management procedures in the Memorandum of Understanding (MOU); (2) early implementation of cost accounting, auditing, and billing procedures as documented in the MOU; and (3) development and analysis of a source cost data base using the contractor's cost data whenever possible. Because no two foreign programs are identical, the PM and his staff must tailor the

procedures, auditing support, and data base structure to the existing conditions and DoD requirements for each acquisition. The PM must also take aggressive action to define problem areas and resolve them through annexes to the MOU and industry-to-industry agreements, and specifically establish the roles, responsibilities, and access requirements of participating agencies. The scope and level of records and reporting required from the prime contractor, subcontractors, and other vendors must also be delineated.

The principles of Performance Measurement for Selected Acquisitions (DoD Instruction (DoDI) 7000.2) and the Cost/Schedule Control Systems Criteria (C/SCSC) (enclosure 1 of DoDI 7000.2) should be applied when appropriate. The formats for reporting contract performance data and fund requirements should be developed from the standard reporting formats of DoDI 7000.10 (Contract Cost Performance, Funds Status and Cost/Schedule Status Reports), and DoDI 7000.11 (Contractor Cost Data Reporting (CCDR)). The DoDI 7000.10 family of reporting provides information on contract cost and schedule status and the contractor funding requirements. This information enhances the ability to detect and control cost growth. CCDR reports are used to collect projected and actual cost data on acquisition programs for DoD cost analysis and procurement management purposes.

If the program is designated to report in accordance with DoDI 7000.3 (Selected Acquisition Reports (SAR)), significant North Atlantic Treaty Organization (NATO) program data and accomplishments should be provided in the appropriate formats. See DoD 7000.3-G (Preparation and Review of Selected Acquisition Reports) for detailed guidance on SAR reporting.

Payment provisions in the MOU and contract must meet the requirements of the Federal Acquisition Regulation (FAR) on Progress Payments Based On Costs (DFARS Part 32.5). For Progress payments to be authorized, that progress must be subject to US approval and audit of work in progress and material expenditures.

Public Law 91-379 established the Cost Accounting Standards (CAS) Board with the authority to promulgate a formal body of cost accounting standards for "covered" defense contracts. Most large acquisitions are covered by the requirements of the cost accounting standards. A waiver has already been granted to any contract or subcontract over \$100,000 awarded to a foreign government, agency, or contractor pertaining to the requirements of CAS 403 or any subsequent standards. This waiver does not relieve a foreign concern of any obligation to comply with CAS 401 and 402 and to submit a disclosure statement. A special exemption has been granted for the NATO PHM Ship and the United Kingdom (UK) contractors for performance substantially in the UK,



provided that the UK contractor has filed a completed disclosure statement with the Ministry of Defence.

#### US PROGRAM OFFICE SELLING DEFENSE ARTICLES OR TECHNOLOGY

Section 22 of the Arms Export Control Act (AECA) authorizes DoD to enter into contracts on the behalf of foreign governments or international organizations that wish to acquire weapons developed in the US. Programs of this type are usually referred to as Foreign Military Sales (FMS) programs.

Table 13-1 shows an outline of the FMS process, which accounts for the majority of weapon systems sales to foreign countries. Included in the table are the principal financial management steps. For greater detail, see DoD 7290.3-M (the FMS Financial Management Manual). With any FMS program, an account is established for tracking financial credits and directing payments to finance the development or purchase of specific systems, spares, or services such as logistics support, training support, configuration management, testing, engineering services, etc. Funds are tracked for each purchaser country and international organization with fund visibility at the subcase or line-item level of detail. The funds from each country/international organization are monitored and the accounting status is controlled individually. The Security Assistance Accounting Center (SAAC) is the DoD agent for accepting deposits and issuing obligation expenditure authority for DoD components. DoD 7290.3-M requires that new procurement actions for foreign customers be accomplished to the maximum extent feasible and appropriate through the direct citation method. The accounting data are directly cited on the DoD contract, thus they are the funding source for the USG paying office. The reimbursement method citing appropriated funds to be reimbursed by SAAC or by other organizations having reimbursable authority has also been used in the past, but is no longer to be used if direct cite is appropriate.

Financial control in a program office selling materiel involves the same basic tasks as in any program office. An integrated accounting and financial control system is a necessity in order to have the required protection for the customer governments and to ensure that sufficient funds are available to meet case level obligational requirements. Financing requirements are phased to ensure that only current fiscal year requirements are requested and that overobligations/overexpenditures are not experienced.

To facilitate budgeting, financial planning, and cost estimating, a pricing data base must be generated to reflect present

**TABLE 13-1. OUTLINE OF THE FMS PROCESS**

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**PRELIMINARY:**

1. COUNTRY DETERMINES ITS REQUIREMENTS
2. REQUIREMENTS ARE COMPARED WITH US FORECASTS

**DEFINITION:**

3. COUNTRY OBTAINS SYSTEM INFORMATION
4. COUNTRY IDENTIFIES SPECIFIC SYSTEM(S)
5. US/COUNTRY EXCHANGE TECHNICAL INFORMATION

**REQUEST:**

6. COUNTRY SUBMITS LETTER OF REQUEST

**OFFER:**

7. DOD COMPONENT DEVELOPS PRICE AND AVAILABILITY ESTIMATES ON DD FORM 1513
8. DOD COMPONENT DEVELOPS LETTER OF OFFER AND ACCEPTANCE (LOA) (DD FORM 1513)
9. USC REVIEWS LOA
10. DOD COMPONENT ISSUES LOA

**ACCEPTANCE:**

11. COUNTRY ACCEPTS LOA
12. SAAC RECEIVES ACCEPTED LOA AND INITIAL DEPOSIT

**IMPLEMENTATION:**

13. SAAC ISSUES FUNDING OBLIGATION AUTHORITY
14. DOD COMPONENT ISSUES IMPLEMENTING DIRECTIVE
15. DOD COMPONENT ACTIVATES CONTROL SYSTEM

**EXECUTION:**

16. REQUIREMENTS FORWARDED TO PMO
17. PMO ORDERS ARTICLES/SERVICES/TRAINING
18. ARTICLES/SERVICES/TRAINING SHIPPED/PERFORMED
19. DELIVERY REPORTED TO SAAC
20. SAAC FORWARDS QUARTERLY BILLING STATEMENT (DD FORM 645) TO CUSTOMER

**CLOSURE:**

21. SAAC AND DOD COMPONENT RECONCILE RECORDS
  22. SAAC ISSUES FINAL STATEMENT OF ACCOUNT
-

and anticipated costs and cost estimating relationships. This data base is not solely for the cost and program analysts, comptroller, and accountants, but includes such data as engineering estimates, logistics support loadings, testing costs, training estimates, and transportation factors. Critical to the accomplishment of pricing is the identification of every applicable pricing element to be applied at the case line item level in the estimating of the costs of defense equipment and services. This data base is developed and maintained in the program office. An interactive data base is maintained at SAAC linking the DoD component and SAAC, such as the Army Customer Order Control System (ACOCS) for tracking case commitment/obligation authority by direct cite. The other Services have similar interactive links with SAAC. Two forms, DoD Form 2060 (FMS Obligational Authority) and DD Form 2061 (FMS Planning Directive) are the prescribed formats for the interactive data base with SAAC. DoD Form 2060 is prepared by the DoD component to request obligational authority from the SAAC. DD Form 2061 details the pricing elements and status of obligational authority requested and received for the current year and required for the budget year.

In accordance with DoD 7290.3-M, payment schedules and requests for payment amounts should be scrutinized for accuracy. Payments must be sufficient to cover all costs and provide for contingencies such as termination liability. Progress payments provide for incremental payment of material, services, administrative changes, contractor holdback, and any other applicable contingencies or increased efforts. A sale involving Major Defense Equipment (MDE) of \$14 million or more, as well as a sale of \$50 million or more, whether it includes MDE or not, must be reported to Congress. (To be classified as MDE, the US Government (USG) must have invested \$50 million in nonrecurring costs for research, development, testing, and evaluation, or \$200 million in total production costs.) A financial analysis is required with the Letter of Offer and Acceptance (LOA) to permit all approval echelons a review for completeness and accuracy of the financial data used in the estimate when the LOA is for:

- o MDE of \$14 million or more,
- o A sale of \$50 million or more, or
- o Construction or design services of \$200 million or more.

A termination liability worksheet is included as part of this financial analysis.

The dedicated computer systems for FMS tracking are located in each of the Service's International Logistics Control Office

(ILCO). The Army's Centralized Integrated System for International Logistics (CISIL) is located at USASAC in New Cumberland, PA; the Navy's Management Information System for International Logistics (MISIL) is located at NAVILCO in Philadelphia; and the Air Force Security Assistance Management Information System (SAMIS) is located in the Air Force Logistics Command International Logistics Center at Wright-Patterson AFB, OH.

#### CODEVELOPMENT AND COPRODUCTION PROGRAMS

The complex financial management and currency exchange operations for multinational programs are, to a large measure, the product of the negotiations that take place between the USG and foreign participating governments before the signing of the MOU for a particular program. Competition with similar programs for other countries may be intense and may also be based on the economic concessions the competitors are willing to grant. Specific economic concessions have in the past included "Not-To-Exceed (NTE)" pricing and business offsets on the procurement value of the production, cost-sharing relationships, waiver of Research and Development (R&D) recoupments, a fixed rate of currency exchange, a commitment for the US to buy a certain quantity, and performance guarantees and goals. The PM must continually exercise his management role of ensuring that the MOU commitments are met. This responsibility encompasses requirements both to monitor and to assess the performance of the prime contractor(s) and, when required, to plan independently and direct the placement of coproduction work; to manage cost-sharing projects; to manage Design-to-Unit-Production-Cost (DTUPC), research and development costs, and operation and maintenance costs; and to direct currency requirements. These requirements exist both to ensure adequate contractor performance and to strive to meet program business objectives that the contractor may not share.

Agreement must be reached on when bills for actual costs are due. These bills must be in sufficient detail to permit a certification of performance. Without the certification, a payment is considered to be an advance payment. Advanced payments cannot be made without a clearance from the Department of the Treasury and they must be liquidated in a timely manner. Agreement must also be reached on interest on deposits by the participating governments and the sharing basis for interest earned. Normally, interest is shared on the same basis as the amount of each country's deposits. The financial consequences of missing a payment must be specified in the MOU as well as responsibilities of managing foreign currency transactions and contractual provisions for economic price adjustments.

## WORK SHARE AND COST SHARE

Initially, ground rules for the financial procedures for the codevelopment and coproduction effort must be established in the form of cost-sharing arrangements and a payment schedule of the required currencies. This is normally prepared by the prime contractor(s) and agreed upon by the participating nations. In collaborative programs, among the first issues that arise are the methods of determining the sharing of program costs and the work to be accomplished. These are commonly referred to as cost-sharing and work-sharing. Usually they depend on each nation's share of production. Simply put, each nation's proportion of the total production usually determines its proportion of the overall costs and the proportion of the contracted work effort; however, as a policy, this is in conflict with US laws and DoD regulations that emphasize that contracts should be awarded through competition. The US position, as stated in the Denoon Report of 1983, is that there are several methods of determining cost share, including variations of the following:

- o Each nation shares costs equally
- o Each nation contributes the funding required to support the efforts of its own contractors
- o Each nation contributes funding in proportion to the expected number of production units it will acquire.

The approved US negotiating position for cost-sharing is in the following order of precedence:

1. Equal cost sharing for feasibility studies and development programs
2. Share expenses in proportion to production requirements
3. Other methods of cost-sharing, including adjusting shares to reflect the results of competition in the final procurement

A fair determination of work share/cost share is not always straightforward. For example, if contractor work share in the Multiple Launch Rocket System's Terminal Guidance Warhead (MLRS/TGW) program is examined, it appears that the US is paying more than its share:

	<u>COST SHARE (%)</u>	<u>CONTRACTOR WORK SHARE (%)</u>
US	40	33
FRANCE	20	22
UK	20	22
FRG	20	22

However, when overall work share is examined, the US clearly benefits. Overall work share also includes government tasks such as test support, laboratory support, and project management. When these are added, the US work share is 55 percent. From the US perspective, this is 55 percent of the work at only 40 percent of the cost.

#### CURRENCY MANAGEMENT

Methods of currency management are under study. Currently, there are three general approaches: market basket, national funding and contractor implemented. Of the three, market basket is used most often.

With the market basket approach, each country contributes a mix or market basket of the requisite currencies. Each country's market basket is usually determined by its cost share, which results in a fixed cost in each currency. The market basket approach may be less desirable for countries that are not participants in monetary regulation systems (such as the European Monetary System), especially if there is a potential for significant fluctuation. The market basket approach may also be inappropriate for countries whose defense budget systems are intolerant of currency exchange expense fluctuations.

The national funding approach requires each country to provide the currency necessary to fund its domestic industries. The liability in national currency is limited by either the cost share or the work share, whichever is smaller. The national funding approach may be best for programs with rigid base year cost management, especially in countries with rigorous national inflation monitoring. It is also suitable for countries with budgets intolerant of currency exchange expense variations and

countries not participating in monetary regulation systems.

With a contractor-implemented approach, multiple-currency payments may be eliminated. The prime contractor is paid wholly in the principal currency, and obtains foreign currencies for nonnational subcontractors from the commercial market. A modification of this approach is used with the NATO Seasparrow program. The program office is paid in US currency, which is paid to the prime contractor, Raytheon.

The F-16 Multinational Fighter Program (MNFP) uses the market basket approach, with the participating governments each providing a market basket of currencies. The program is, in some respects, a dual program, one in the US and one in Europe. The financial management policy is based on the principle that contractors shall not bear gains or losses due to currency exchange fluctuation. The European Participating Governments (EPGs) provide all the currencies required for the 348-aircraft program, and the European Participating Industries (EPIs) are paid in their national currencies. For the 650-aircraft program, the US provides the currency and obtains currencies for third country sales. The US Air Force Accounting and Finance Center (AFAFC) is the primary financial organization. The principal currency is the US dollar, and the MOU has fixed exchange rates.

For each phase of acquisition, a separate MOU should be developed, since acquisition phases have different agendas and costs. Because of this, the financial management portions of the MOUs will be different. Depending on the needs of the program, the financial arrangements can be quite simple, as with the Seasparrow program, or complex, as with the MLRS/TGW program. The TGW development project members are the US, France, the Federal Republic of Germany (FRG), and the UK, whose contribution percentages are 40, 20, 20, and 20, respectively. To relate work share with cost share, a system of tracking current/actual cost to base year cost is used. The system is documented in a technical arrangement that describes national economic price adjustments and procedures. The banking flow diagram for the TGW program is shown in Figure 13-2, with keyed explanations.

In November 1983, NATO published AACP-1, Supplement 1 (Currency Exchange Management in Multinational Programmes). This study involved a comparative analysis of the systems used in eight programs. The following are some of the principal findings:

- o Principal Currency--All programs used a principal currency, which was used to establish a reference parity at a fixed rate.

- o Payments to Contractors--All subcontractors received payment in their national currencies. With only one exception, primes were provided with the necessary currencies to pay the subcontractors. In the NATO Seasparrow program, the prime received compensation for currency exchange expense. Thus, in all cases, the contractors (down to at least the third level) received protection from currency fluctuation.
- o Adjustments--All programs recognized the potential for inequality in the economic outcomes and established means for adjustment, such as the redistribution of future work.
- o Disbursing Function--All programs except Seasparrow used some form of government-administered disbursing of currencies.

The following several sections provide financial management specifics for several programs. These programs demonstrate salient aspects of how problems were approached.

#### NATO Seasparrow Surface Missile System (NSSMS)

The NSSMS is produced by and for a number of NATO nations. The Canadian government has also developed its own Canadian Seasparrow missile system. The prime contractor is Raytheon Company, which was also responsible for engineering development of the system. Raytheon has subcontracts with nine companies in the consortium countries (except the FRG). These subcontracts allow the countries to offset their acquisition costs by the value of the production in their own countries. Almost all of the offsets are accomplished at the first tier of subcontracting with insignificant levels of subcontracting in other countries at the second tier and below.

Raytheon is responsible for (1) paying its European subcontractors in their own currencies and (2) ascertaining the currency fluctuation effects for the second-tier subcontracts. A quarterly price adjustment to the prime contract is made to cover the currency fluctuations. The contract price is based upon 1 May 1973 exchange rates. Any price adjustments made because of currency fluctuations experienced at the first- and second-tier subcontractor levels may change the target cost and ceiling price, but not the profit provided for in the Raytheon contract. Raytheon actually procures the proper foreign currency as it is needed to make subcontractor progress and final payments. Because Raytheon has many other foreign contracts, a separate corporate office is maintained to take care of currency



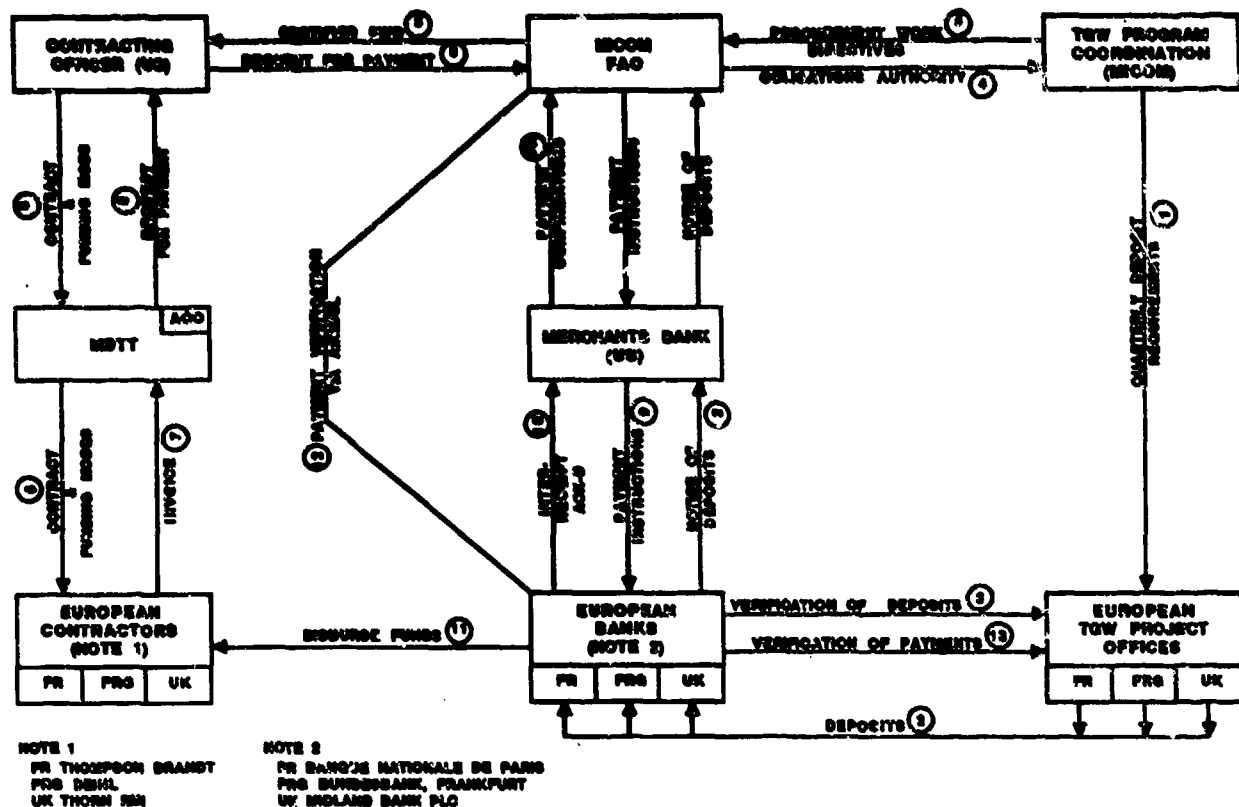


FIGURE 13-2. MLRS/TGW BANKING FLOW

requirements for all of its foreign contracts. Purchases of currency are based upon subcontractor performance or delivery dates. Raytheon, as well as the subcontractors, maintains complete records of all transactions on the subcontracts, including dollar payment and exchange rate obtained, date paid, and the difference from the fixed rate. The quarterly adjustment is subject to audit by the Defense Contract Audit Agency (DCAA).

The NSSMS foreign currency payment system is relatively simple, and it is apparently successful. The relatively minor second-tier currency exchanges make the accounting relatively simple.

#### NATO Airborne Early Warning and Control (AEW&C) Program

The NATO E-3A was delivered to NATO, rather than to individual countries. The NATO AEW&C Program Management Organization (NAPMO) was established in December 1978 by NATO through the North Atlantic Council. An agreement was signed by the NAPMO and the USG on 11 May 1979 for acquisition of E-3As and US Air Force (USAF) program management services. Industrial collaboration is involved in approximately 20 aircraft component packages, under which the US contractors (Boeing and Pratt and Whitney) subcontract with Canadian and FRG firms for the compo-

FIGURE 13-2 EXPLANATION OF MLRS/TGW BANKING FLOW CHART

<u>KEY</u>	<u>EXPLANATION</u>
1,2,3	Deposit requirements are provided quarterly by the TGW program coordinator to each European national project office. After the national currency funds are deposited, each European bank notifies Merchant National Bank and Trust Company of the deposit via Society for Worldwide Interbank Financial Telecommunications System (SWIFT). Merchant notifies the US Army Missile Command (MICOM) Finance and Accounting Office (FAO), which uses these funds on deposit to authorize events leading to contract/modification awards and payments to European contractors. The European project offices are notified of each deposit by their banks.
4,5	Deposits described above provide the MICOM FAO with obligation authority that is used to certify Procurement Work Directives (PWDs). Funds are not certified in amounts exceeding those on deposit.
6	Contract(s) are awarded on the basis of certified PWDs obligating each country for the amounts specified.
7,8	European contractors submit invoices to the prime twice each month. The prime certifies performance of the effort and forwards invoices to the MICOM contracting officer for approval. The contracting officer forwards the invoices to the MICOM FAO for issuance of payment instructions.
9,10	The FAO issues coded messages to Merchant with payment instructions containing the name of the contractor to whom payment is to be made, the amount in the currency of the appropriate country, the invoice number and date, and the European bank and account number to make payment. Merchant relays these payment instructions to the European bank via SWIFT, receives acknowledgment of receipt of the instructions from the European bank, and relays confirmation of payment to the MICOM FAO via coded message. Upon receipt of the message from Merchant confirming payment, the FAO records a disbursement transaction of the appropriate government's currency.
11,12, 13	The European bank, upon receipt of the message from Merchant, makes payment to the European contractor. Payment verification is forwarded to the FAO via air mail. Verification of each payment is provided to the European TGW project offices.

ment packages. The MOU states the following financial conditions:

- o Neither prime nor subcontractors will realize financial loss or gain through fluctuations in currency exchange rates.
- o Participating governments agree to the initial schedules of payments that reflect each government's established percentage share of the cost of the program in constant currencies and that are phased to meet both national budgetary constraints and phasing of total funding requirements.
- o The NAPMO is authorized to open commercial accounts in its own name in any or all of the currencies used and in any or all of the participating countries.
- o In order to ensure adequate program funding, the NAPMO arranges for financial plans to be produced and updated at least annually. These plans identify all anticipated quarterly expenditures for the remainder of the program in all currencies required.
- o The USG, as agent, has complete responsibility for effecting payments to the prime contractors from funds made available by the NAPMO and has sole authority to approve such payments.
- o Contracts down to the third level are concluded and paid in the appropriate currencies, which are provided by NAPMO.

A fixed rate of exchange is used, expressed in US dollars. NAPMO provides all the foreign currencies required by Boeing to pay its European subcontractors, while the paying office at Hanscom AFB, MA, provides the dollars to non-US subcontractors to pay their US subcontractors. The contractor is responsible for forecasting non-US currency requirements, using the Contract Funds Status Report (CFSR) submitted quarterly as the forecasting instrument. When currencies are received by the contractor, prompt payment is required. Non-US currencies used in prior periods are also reported by the contractor. Upon receipt of a contractor request for currency, the US Administrative Contracting Officer (ACO) reviews the request for allowability and certifies the non-US funds requirement by notifying NAPMO to make the non-US currency available to the contractor. In the case of US currency, the ACO forwards a copy of the payment voucher directing the paying office at Hanscom to issue

such currency to the European contractor for payment to his US second tier or below subcontractors.

#### F-16 Multinational Fighter Program

The MNFP example is complex because of the ground rules, the number of contractors and subcontractors in each country, and the requirements for large amounts of foreign currencies. Technical Agreement No. 4 to the basic MOU specifies that payment schedules be developed using the following general principles:

- o A time-phased schedule of required quantities of each country's currency necessary for the program is prepared by the US prime contractors. This schedule separately identifies currency requirements associated with the production for EPG and non-EPG industrial effort.
- o The four EPGs pay the following percentage shares (based on a 348-aircraft program) of each of the four EPG currencies needed to support the financial obligations of the EPG portion of the program:

Belgium	33.333%
Denmark	16.667%
Netherlands	29.310%
Norway	<u>20.690%</u>

TOTAL	100.000%
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- o The USG provides to the AFAFC all the necessary EPG currencies to support the European industry effort associated with the USAF and third country aircraft-related effort.
- o If interest accrues on EPG currencies deposited in MNFP AFAFC bank accounts in the four European participating countries, the five countries share the interest on the same percentage basis as they provide the currencies.
- o If a failure to make payment on time results in one or more EPG currencies being unavailable to finance the EPG portion of the European industry effort, the four EPGs agree that the financial consequences being borne by the country not making the payment will include the difference in the exchange rate between what the USG

had to pay to cover the currency shortage and the rates listed in a supplement to the MOU.

The AFAFC is responsible for managing foreign currency transactions associated with the MNFP and is required to maintain sufficient balances of currencies to facilitate currency conversion transactions between the US contractors and the EPG coproducers. Currencies are provided by the EPG to the AFAFC accounts in accordance with the payment schedules and by the US as needed for EPG industry efforts associated with the non-EPG (US and third nation sales) portion of the MNFP. Currency conversions are made at the base rate established in the MOU.

Economic price adjustments are included in the prime contracts. The price indices for the European subcontractors are provided by each EPG country and are reflected in price adjustments to the prime contractors. The economic price adjustments are computed semiannually for EPG aircraft.

The MNFP uses a level-line price approach totaling the aggregate costs for recurring and nonrecurring airframe, engine, radar, and Government Furnished Accessory Equipment (GFAE) costs for the 348 aircraft for the EPG and dividing this total cost by 348 for a unit cost. Recoupment, minor development support equipment, industrial management, and duplicate tooling costs are specifically excluded from level-line funding. The actual cost of the F-16A (single-seat version) and F-16 (two-seat version) are tracked and prorated separately. Each EPG country pays its prorated share of the common level-line costs at each payment interval. Tooling costs are paid by the country in which the tools are located. EPG configuration options are handled as separate cases. The USG is also responsible for recouping the costs of EPG tooling on sales to third countries.

AFAFC Regulation 177-3 states the responsibilities and procedures for the operation of the accounting and finance clearing house for the F-16 program as a field extension of the AFAFC. A Currency Clearing House (CCH), formerly collocated in Brussels, Belgium, with Air Force Contract Administration Services--Europe (CASEUR), is now located at AFAFC. The CASEUR provides overall contract management in Europe for the MNFP. The CCH is the accounting and reporting center for MNFP currency exchanges, reporting currency exchanges to SAAC and AFAFC.

A time-phased payment schedule is prepared by the US prime contractors separately identifying the currency requirements of both the EPG and the US production. The actual amount required is billed on the DD Form 645 developed by the F-16 System Program Office (SPO) and approved by SAAC.

The Central Bank for all European currency transactions is also collocated in Brussels with the CCH and CASEUR. A bank arrangement has been established to provide for an F-16 Central Bank with Limited Depository Accounts (LDAs). The supply of currencies required for the contractors' and subcontractors' payments is collected from the EPG countries and the USG by deposits in the LDAs. If additional currencies are required beyond the payment schedules, the US Disbursing Office, Paris makes open market purchases of currencies for the CCH at the prevailing foreign exchange rates that may represent financial losses or gains for the USG and EPG. The banking operation consists of accepting and recording currencies from the five participants and transferring currency to the contractors' and subcontractors' accounts. The Chase Manhattan Bank is the financial institution operating the Central Bank and the four LDAs of the EPGs. The banking arrangement is centrally managed by the Chase Manhattan Bank in Brussels, which reports each deposit, disbursement, withdrawal, operating expense, and interest by transaction date, country, currency and amount, and applicable interest rate. The USAF programs and budgets for the possibility of currency exchange losses to be absorbed by the USG in the USAF procurement appropriation.

The CCH is the key to currency flow. Three billion dollars to \$4.5 billion of contract work must be placed with EPG firms and funded with EPG currencies. Because of the magnitude of currency requirements, a number of legal and institutional restraints have been established:

- Demand--The acquisition of each currency to meet US commitments is limited to the amount projected to be required in the next 90 days for payment to the EPG firms. Projections are provided to the F-16 SPO by the prime contractors (General Dynamics, Pratt and Whitney, and General Electric). The SPO reviews and adjusts the projected requirements to ensure reasonableness. The purpose of this limitation is twofold. First, it precludes the buildup of excess foreign currency in countries at the expense of debt financing by the US Treasury. Second, it limits the ability to speculate in or take advantage of unusually favorable exchange rate situations relative to other participants' currencies.
- o Currency supply--Currency supplies are limited to 90-day requirements, as opposed to the total percentage called for as a result of the coproduction agreements. This limitation recognizes that the coproduction requirements are not linear with time. Specifically, the Belgian efforts are front-end loaded because of the capital requirements to buy new tooling, whereas Danish

efforts tend to be more straight line. Thus, at any point in time, the requirement for each currency can vary significantly from the percentage over the life of the program. This limitation also discourages speculation.

- o Transmutation of currency--US-supplied foreign currencies cannot be obtained through the exchange of any EPG currency for another; i.e., the US cannot take advantage of an unusually favorable exchange rate to reduce its losses; however, interest accrued on US LDA deposits for each currency may be used to reduce the costs of exchange transactions.
- o Interest--The dollar value of interest accrued on US foreign currency deposits is credited to the Treasury and is not available to the SPO to finance F-16 program costs; however, the foreign currency resulting from this interest may be used to reduce the purchase requirement, thus mitigating exchange losses.
- o Currency exchange reconciliation--Gains and losses resulting from actual currency exchange transactions, as opposed to the January 1975 fixed rate, are reconciled annually and charged to a special F-16 appropriation to cover gains and losses.

#### CODEVELOPMENT AND COPRODUCTION FINANCIAL MANAGEMENT PRINCIPLES

Whatever currency conversion method is chosen, the actual amount and mix of currencies in the right place in a timely manner is critical for effective program execution. The magnitude of currency requirements and the possible impact on the international currency markets must be taken into account. Adequate limitations and constraints must be established to ensure protection of the various participants.

The design of the financial system is driven by its complexity. Part of the increased complexity is a result of currency exchanges due to having more than one prime, in addition to second tier and lower subcontractor exchanges. This often makes the system administratively expensive and makes auditing complex. Central administration and control are desirable, whether they are accomplished by the contractor or the government. The financial management and currency exchange system must observe the following general principles in negotiating with foreign governments and international organizations:

- o The USG will not permit the withdrawal of dollars from

the Treasury for placement with any program management organization until the need for the dollars is determined by the actual immediate funding requirements of the recipient organization.

- o Arrangements that require US funding shall be negotiated to provide for dollar outlays as close as possible to the time of need for program expenditures.
- o To the maximum practical extent, each program should be structured to provide the flexibility required for each participating nation to fund the program in a manner consistent with its own fiscal needs and policy considerations.
- o The USG's share of funding required to support a program shall be obtained by appropriation, and no part of such funding shall be derived from interest earnings on US contributions.
- o Each request from a foreign nation for the temporary deposit and safekeeping of dollars in an account in the US Treasury will be determined on its own merits, based on the reasons given for it, the specific financial arrangements proposed, and the relevant USG political and general financial considerations.
- o Unless otherwise required by law, the USG will not invest funds on behalf of a foreign nation when USG receipt of such funds would serve as the basis for creating contract obligational authority for a USG department or agency.
- o Application of these general principles in negotiations with foreign nations shall not be compromised by administrative practices of USG departments or agencies. Existing practices should be altered or revised to achieve the principles of the funding policy.
- o All exchanges of dollars for foreign currencies are to be conducted for "spot" delivery. No use may be made of forward contracts or of purchase at negotiated rates directly from foreign governments or private contractors.
- o No US dollars shall be exchanged for foreign currencies before the time that the foreign currency is needed for immediate funding requirements.



- o USG agencies must avoid any appearance of currency speculation.
- o Any change in program costs resulting from the foreign currency denomination of international financial arrangements is the responsibility of the involved program agencies, US or foreign.
- o USG agencies wishing to reduce exchange risks for the US in international programs should take steps for a larger portion of the program expenditure to be in the US. Another way is to have more dollar denominations in the financial arrangements or to use a multiple currency "unit of account" that includes the dollar as one of the currencies.
- o The use of a multiple currency unit of account that includes the dollar, such as the Special Drawing Rights (SDR), may be considered in consultation with the Treasury, if the alternative is a denomination in a foreign currency. Dollar denomination remains the preferred option in terms of minimizing exchange risk. In comparison with the use of a single foreign currency, the use of a unit of account tends to reduce the exchange risk for the US by sharing it, while dollar denomination eliminates the risk entirely.

#### OTHER FINANCIAL MANAGEMENT ISSUES

Several other issues of key importance to the PM are presented in the next several subsections.

#### RECOUPMENT OF NONRECURRING COSTS

Regardless of whether a program is buying or selling materiel, or is a codevelopment or coproduction program, the recoupment of costs must be addressed. All countries have policies regarding this issue.

For recoupment of US costs, DoD Directive (DoDD) 2140.2 (Recoupment of Nonrecurring Costs on Sales of US Products and Technology) establishes criteria within DoD and by US defense contractors when selling products and technology developed with DoD appropriations to a foreign government, international organization, foreign commercial firm, or other non-USG customer. Although costs to be assessed are normally determined by the fly-away cost of the end item, recoupment will be made both on the end item and on component sales on a pro rata basis. When a

direct sale is anticipated, the appropriate DoD FAR Supplement clauses (25.7306, 35.71, and 52.235-7002) should be included in the contract between DoD and the contractor (DFARS changes may be forthcoming.) A deviation to DoDD 2140.2 may be requested for a USG sale or a direct sale by the Service, foreign government, or defense contractor, and may also be waived in the MOU, upon approval by the Director, Defense Security Assistance Agency (DSAA).

DSAA must approve proposed pro rata recoupment charges for major defense equipment. Approved pro rata charges established since 5 January 1977 may be used without prior approval, provided the items are on the Major Defense Equipment List (MDEL) maintained by DSAA or approved for MOU negotiations. Approval of pro rata recoupment charges will be requested by DSAA only for items (1) that are on the latest edition of the MDEL, and (2) for which a current negotiation, LOA, or commercial demand exists.

Other countries also attempt to recoup expenditures for the R&D of major military equipment. One means of recoupment is through the direct sale of a technical data package and licensed production rights. A more common method of recoupment is the charge by the government that paid for the development of the equipment, on all sales made by its contractors. Charges are levied against both domestic and foreign customers, and are applied to the manufacture and sale of the end item, sale of technical data, and licensing of others to produce the item. This indirect method of recoupment through the contractor may be circumvented by direct negotiations between governments. Under this arrangement, the levy is paid directly to the developing government. The amount of the levy is usually determined by a pro rata determination of the common costs, based on the number to be bought or produced by one party, as a percentage of the expected total number of items to be produced by all parties.

The UK, the FRG, France, Italy, Belgium, the Netherlands, Norway, and Canada all have recoupment policies. The FRG seeks to recover not only contract costs but also interest on its investment. The FRG requires its contractors to reimburse the government for developmental contract costs paid by the government, plus a 6.5 percent surcharge for a license or production for delivery to a third party. Under this FRG procedure, the contractor pays either 5 percent of the unit sales price or 50 percent of the net license fee. The amount of reimbursement is based upon the original development contract and does not include test samples and special tooling delivered to the government nor other costs incurred by the FRG government, such as field tests. The reimbursement obligation expires at set periods after the signing of the final developmental report. Periods of recoupment

have been set by the value of the contracts: contracts up to Deutsch Marks (DM) 10,000 normally have a recoupment period of less than 5 years; contracts up to DM 50,000 have a 5-to-10 year recoupment period; and major development programs have a recoupment period of at least 10 years. It is the responsibility of the contractor to make automatic payments and report his sales. Often, if the contractor can show that he is unable to compete for a sale because of the reimbursement costs, the FRG government will allow a reduction in the terms. Whenever the development is based upon more than one R&D contract, a common end date is established for the recoupment on the original and all succeeding contracts, even if the contracts are scheduled to expire at different dates.

The French government normally limits recoupment to 80 percent of the contract costs, regardless of the French proportion of total sales. France has its contractors pay certain fees in accordance with Article 89 of the General Administrative Provisions of Industrial Contracts (Title VI), approved in Decree No. 67-999, dated 3 November 1967. This decree states, "unless otherwise specifically provided by the contract, fees are paid by the contract holder to the government for the sale and for the granting of the right of reproduction, in France and abroad, of materials, elements or parts resulting from the studies conducted under the contract." The fee for sales is 2 percent of sale price, exclusive of taxes. The fee for another contractor to produce items is 30 percent of either the licensing fee or the cost of materials produced, unless the original development contract called for a different rate. The French contractor pays the recoupment fees. Reduction or elimination of this fee can be granted by the French government upon presentation of adequate justification.

With the UK's Forms 6/15A, which are special contract clauses relating to industrial property rights, the UK contractor must reach agreement with the government for the sale or licensing of equipment developed at government expense. Because of the problems of forecasting total sales, normally a fixed percentage of the sales price (7.5 percent being the most widely used) or licensing fee (33.3 percent is common) is levied when the government has paid all of the development costs. The portion of the total development costs borne by the UK particularly affects the percentage.

The policy relating to recoupment is flexible in Canada, with consideration being made on a case-by-case basis. Italy also has a very flexible recoupment policy. The present method is to levy a 5 percent tax, without limitation to the amount recouped. The recoupment levy for the Netherlands is based upon total number of items estimated to be produced. The

seller pays the share of the Netherlands government developmental cost per item. If the Netherlands recoups all of the development costs, royalties may be charged on a case-by-case basis.

The Belgian government provides interest-free loans for up to 80 percent of the cost for research and development of equipment and manufacturing processes. The loan is repayable when the product or process becomes profitable. The purpose of the loans is to provide employment in Belgium. A levy is applied to operating profits and is limited to the total loan. The Belgian Minister of Economic Affairs is the government official empowered to grant these loans on behalf of international organizations, of which Belgium is a member. For international programs, special arrangements for the recoupment of research and development costs are covered by Belgian law, which requires repayment of the loans and a levy on the profit from the sale or licensing of the production of the product; however, the levy cannot be in excess of the loan received.

Norwegian armed forces procurement regulations provide, as a general principle, the recoupment of costs associated with the research, development, and production of new military equipment. Proprietary rights for equipment with both commercial and military purposes remain with the commercial entity, whereas proprietary rights for new equipment that is solely for military purposes reverts to the government. Stringent regulations restrict all export sales, however. Royalties over the past 10 years have averaged approximately 5 percent. When a Norwegian company is competing with foreign firms, a request for waiver for a portion or all of the royalty is frequently given. An exclusive license to only one Norwegian firm is an exception to the rule; normally, the Norwegian government prefers to grant only nonexclusive licenses.

Denmark, Greece, and Luxembourg have no special provisions for recoupment of research and development costs.

In most cases regarding recoupment of costs in NATO cooperative research, development, and production programs, the use of levies or royalty payments are restricted to nonparticipating countries. Such levies on NATO programs should normally be in the same proportion as each country's contribution to the cooperative effort. Levies are normally waived for all participating governments. All countries appear to have very flexible attitudes about the amount of levies and the extent of recoupment. Recoupments are normally not appropriate for data exchange or basic research programs. It also must be emphasized that industrial recoupment of R&D costs, especially by European firms, may be a significant factor, since intellectual property rights

accrue to the inventors and industrial firms under most European laws (see Chapter 11 on Intellectual Property):

### PRICING AND ASSET CHARGES

Foreign governments usually want their own national procurement regulations and pricing practices to be followed on DoD contracts awarded to their industries, even when the contracts are solely for US defense programs, as opposed to multinational programs. The US position is stated in an approved recommendation of the Denoon Report. Programs must use the "Golden Rule" principle, in which the purchasing nation establishes the procurement rules. However, for a multinational effort that receives multinational funding, programs should use a single nation's procurement laws. This is referred to as the "pilot nation" approach, which is also an approved recommendation of the Denoon Report. There are some difficulties with this approach that DoD has yet to iron out. Because of some privity of contract relationships between primes and subcontractors, DoD is unable to hold primes responsible when subcontractors are required to follow local government practices. DoD policy in this regard may be forthcoming.

DoD 7290.3-M (FMS Financial Management Manual) contains the policies for pricing and cost criteria for recouping DoD costs, which cover investment costs and administrative charges for use of the DoD system. The pricing and cost criteria include supply support arrangements, direct sales, FMS agreements, coproduction, and codevelopment. Pricing is normally provided on a DD Form 1513. A properly executed DD Form 1513 represents contract authority to SAAC. The PM and his contracting officer must obtain obligational and expenditure authority from SAAC. Cash disbursements are controlled on a country basis, although transactions must be on a case basis and the individual status of cases must be maintained as discussed previously in the chapter. SAAC is responsible for calculations and billing, unless other arrangements have been made in the MOU.

A charge for the use of DoD facilities and equipment, called an asset use charge, is also included in the pricing and billings. The asset use charge is applied as a percentage of the direct costs, rather than depreciation, damage, or interest on investment. Percentages are 1 percent for items from DoD inventories and 4 percent of the direct cost when DoD facilities are used.

Although, in principle, the NATO governments are in favor of reciprocal waiver of government-controlled charges, they are unwilling to apply any blanket policy other than to review

the possibilities on a case-by-case basis. More information is contained in AC/313, prepared by the NATO Group on Intellectual Property and International Cooperative Arrangements.

When evaluating purchases from European suppliers, the PM and prime contractor(s) must understand the various differences in foreign pricing that usually are not encountered when dealing with US contractors. These differences can affect the evaluation whenever competition exists so that comparisons may have to be made on a "total cost" basis. In a sole-source situation, evaluation of the differences in pricing is necessary before negotiation because many of the special costs affecting prices can be minimized by establishing special provisions in the weapons-specific MOU.

One problem in analyzing foreign prices is the reluctance of most European firms to provide detailed cost breakdowns. The European concept of a fair and reasonable price is tied directly to the marketplace, however imperfect it may be. "Whatever the market will bear" is often the sole basis for a European firm's pricing policy. Thus, the US negotiator must perform an independent price analysis based on domestic budgetary estimates. The most effective tactic in dealing with this situation is to generate competition and not worry about the cost breakdown at all. In mandatory sole-source situations such as directed purchases to specific sources, the best approach seems to be an appeal for a price reduction based on the purchaser's budgetary limitations (both real and imagined).

Another problem is that certain types of costs are often partially hidden, involving special handling, storage, taxes, and transportation. Even in a purchase that specifies FOB destination, some of these costs still must be considered. For example, the movement of the material should be monitored to ensure eventual receipt. This involves additional transportation specialists and expeditors who must make long distance telephone calls or take trips for the major purchases. Since most European firms operate on an "ex works" or "ex dock" (FOB origin) basis, these handling charges, taxes, and various permit fees become direct costs for the purchaser. In fact, there are many European trading terms such as "Free Alongside Ship (FAS) Vessel" and Cost, Insurance, Freight (CIF) Destination" that are not commonly used in the US. These terms are clearly defined in a publication called INCOTERMS, which is available from the National Committee of the International Commerce Commission located in New York City.

A third problem is that currency exchange arrangements can greatly affect the final cost. Currency exchange agreements within the MOU should address (1) which currency is to be used

for pricing the contract, or, alternatively, the fixed exchange rate; (2) the timing of currency exchanges; and (3) the basis for conversion rate determination and the extent of risk sharing for currency fluctuation. Historically, the buyer could generally insist on his own currency for contract pricing. With fluctuation of the US dollar relative to most European currencies, many European suppliers demand exchange rate guarantees. In effect, the contract is priced out in the supplier's currency. The buyer must establish a currency fund pool normally obtained by buying futures in the supplier's currency (not allowed by US Treasury regulations for US agencies) or risk an automatic price change when the foreign currency rate fluctuates. A skillful negotiator may be able to shift a part of the risk of exchange rate fluctuations to the supplier by a sharing formula on currency losses, or by simply limiting the amount of loss the buyer will withstand, with the supplier picking up the losses in excess of this amount.

Unfortunately, foreign exchange pricing arrangements are often further complicated by the timing of payments. European firms tend to have cash flow problems and must frequently assign contract payments to lending institutions. Advance payments obviate the need to make these assignments and are, therefore, very desirable to the seller. In fact, many European suppliers will make significant price concessions if advanced payments are to be made. If the exchange rate and timing of payment factors are carefully tied together, the result can be the elimination of exchange rate fluctuation problems and a price reduction in consideration for the advance payments.

#### AUDIT BY DEPARTMENT OF DEFENSE

##### General

The advent of coproduction and offset arrangements has resulted in the placement of numerous contracts and subcontracts outside of the US. This has led to discussions of auditing of foreign contractors by DCAA. Still other discussions concern foreign contractor compliance with US cost determination principles in the FAR. If reciprocal arrangements are lacking (see Chapter 10, Contract Management), then it is preferred that US prime contractors and subcontractors in other countries be audited by DCAA, as authorized by DoDD 5105.36, in accordance with the FAR and standard contract terms. Minor variations from US cost principles can be accommodated in auditing, but it is not feasible, in view of training and management considerations, to contemplate DCAA auditing according to other regulations that the foreign concerns or governments may wish to use.

Foreign concerns and governments often prefer to use their own auditors and cost determination regulations by negotiating special arrangements on government-to-government bases. This may be negotiated for all DoD activities within a specific country, or for a particular program. The PM should determine whether or not such arrangements exist. Negotiation of an audit annex with special requirements that depart from standard auditing procedures and cost principles requires the participation of ASD(C), and the Assistant Director for Operations, DCAA. Early coordination with DCAA is essential to avoid operating problems that may be associated with the audit roles of cooperating governments. Early coordination with ASD(C) may similarly smooth out the process of negotiating cost principle deviations.

It is also important to coordinate with DCAA Headquarters as soon as overseas audit requirements become known, even if no deviations from US cost principles or audit roles are involved. This is particularly appropriate when auditable overseas procurement is expected to exceed \$100 million, or when there are other unique features in the procurement. This facilitates DCAA planning and staffing of overseas activities. DCAA is available for consultation regarding the use of foreign audit organizations when special audit arrangements are being considered.

### Special Audit Annexes

When there are no reciprocal auditing arrangements (see Chapter 10, Contract Management), other arrangements must be made. Special audit annexes to MOUs covering other aspects of international relations have generally provided for NATO countries performance of independent audits according to terms of specific contracts. The contracts generally specify standard cost determination principles and other US regulations, but the wording of an audit annex is flexible enough to allow accommodations of special considerations through standard FAR deviation procedures. However, the FAR contains provisions on three items that are based upon public law and are not subject to deviation. They are the provisions on advertising, independent research and development/bid and proposal, and agents' fees.

A special audit annex usually provides for the reciprocal provision of audits by DCAA in the US. In all DCAA audits, US cost determination principles are applicable because it is not practical to manage and train auditors in the various regulations of all NATO countries. Some countries may not have extensive procurement regulations, and there can be numerous unwritten practices to consider.



An audit annex also provides for direct contact between the contracting officer and a foreign audit organization. The final decision on the adequacy of information in support of negotiations should be reserved for the contracting officer. The annex also provides that, under extraordinary circumstances, when a government is unable to perform an audit or to perform it in a reasonable time, the procuring country's agencies have the right to perform the audit.

Arrangements for another country to perform audits for DoD should be entered into only when the country is known to have the resources and technical capability to perform independent audits without supervision or assistance by DCAA. Experience has shown that dual audit participation is neither effective nor timely.

The administrative contracting officer must make his needs known directly to the performing auditors, just as it is done in the US, in order to get an audit responsive to acquisition needs. DCAA Headquarters, as well as field personnel located in Europe, are available in a liaison capacity if a contracting officers' attempts to secure adequate audit support are unsuccessful. The audit annex and contract clause must provide for US audit rights, including direct access to contractor records in these situations. This form of DCAA involvement may assist the contracting officer in making the decision concerning whether DCAA should perform the audit independently under the "exceptional circumstances" provisions of the audit annex.

#### Contract Administration Services Costs

In accordance with DoD 7290.3-M the cost of CAS functions is recovered by the SAAC with a percentage surcharge on all FMS procurements (if the surcharge has not been waived). A listing of waived programs is provided in DoD 5105.38-M. The surcharge is reviewed annually by the Assistant Secretary of Defense, Comptroller to determine if it should be changed. The amounts collected are credited to a cost clearing account maintained by the SAAC and used to reimburse DoD components for CAS performed. The prescribed CAS surcharges are as follows:

QA and Inspection	0.5%
Other CAS	0.5%
Contract Audit	<u>0.5%</u>
Total	1.5%

### General Accounting Office Audit Authorization

Finally, standard clauses authorizing audit by GAO should be inserted in contracts when they are applicable according to current FAR requirements. GAO must work out any special arrangements with their counterparts in participating countries. The GAO is generally not a party to DoD audit annexes.

**CHAPTER 14**  
**FOREIGN WEAPONS EVALUATION AND**  
**NATO COMPARATIVE TEST PROGRAMS**

**INTRODUCTION**

This chapter provides the Program Manager (PM) with the basic concepts, references, and procedures for testing foreign alternative weapon systems. This information is required for the PM to obtain funding through two programs that encourage testing of foreign weapons candidates. The objectives for both programs are to reduce Research and Development (R&D) costs, accelerate Initial Operational Capability (IOC) dates by using proven equipment, promote standardization and interoperability, achieve quantity procurement cost advantages, and support United States (US)/allied cooperation.

**FOREIGN WEAPONS EVALUATION (FWE) PROGRAM**

The FWE program has been a significant factor in multinational cooperation for a number of years. Previous and expected funding levels for the FWE program are shown in Table 14-1.

TABLE 14-1. FWE FUNDING

<u>FY</u>	<u>81</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>
\$M	9.1	10.9	11.6	8.0	15.0	16.1	18.1	19.0	20.0	21.0

The FWE program emphasizes the following criteria:

- o The candidate system or equipment is in production, is operational, and has a proven record.
- o The project costs are relatively low, with a potential for high payoff.
- o There is no comparable US system or equipment or, if there is one, it has a far-term IOC.

- o There is willingness by a Department of Defense (DoD) Service or a foreign contractor or government to share evaluation costs.

FWE programs considered in FY 86 are shown in Table 14-2. The average funding for these programs is less than \$400,000, with some much less.

TABLE 14-2. FWE PROGRAMS CONSIDERED IN FY 86

ARMY

PLASTIC TRAINING AMMUNITION  
MULTIPURPOSE OVERBOOT  
C-8 DECONTAMINATION EMULSION  
NBC RECON EQUIPMENT  
SOF MOUNTAINEERING EQUIPMENT  
NBC ALARM ROCKET  
35mm INBORE GUNNERY DEVICE  
SPIRAL-WRAPPED COMBUSTIBLE  
CARRIER

AIR FORCE

HAVE NAP AGM  
CHEMICAL DEFENSE EQUIPMENT  
SPS-200  
SPEECH PROCESSING AND TRANS-  
MISSION  
ICBM ACTIVE DECOYS  
MILLIMETER WAVE COMMUNICATIONS  
CELLULAR LOGIC IMAGE PROCESSOR  
ANTISHELTER WEAPON  
MILLIMETER WAVE SEEKER

NAVY AND MARINE CORPS

LIGHTWEIGHT DECOY LAUNCHER  
IR MISSILE LAUNCH DETECTORS  
NIGHT ATTACK AVIONICS  
IR IMAGING SYSTEM  
SHIPBOARD INTERIOR VOICE C3  
SYSTEM  
MARITIME DECOY  
MINE MECHANISMS  
ANTITANK WEAPON SURVEY  
BARRA SONOBUOY  
BOL CHAFF DISPENSER  
NAVIGATIONAL PLOTTING SYSTEM  
MARINE INTEGRATED NAVIGATION  
SAM 104 HYDROSTATIC FUZE  
NIGHT VISION GOGGLE WARNING  
SENSOR  
SPECIAL WARFARE EQUIPMENT  
A-6 RASTER HUD  
PYROTECHNIC SMOKE SYSTEM  
NIMRODE ANTITANK WEAPON  
LASER AVIONICS EQUIPMENT  
ACTION INFORMATION ORGANI-  
ZATION SYSTEM  
VERSATILE EXERCISE MINES  
GUNFIRE DETECTOR  
ARBS TEST SET

NORTH ATLANTIC TREATY ORGANIZATION (NATO) COMPARATIVE TEST  
(NCT) PROGRAM

Recent Congressional direction has emphasized the importance of cooperation with allies. The FY 86 DoD Authorization Act, for

example, contained the Quayle Amendment, which urges weapons cooperation with NATO countries. The same act also contains the Nunn Amendment, which funds the NCT program. Funding for the NCT program is shown in Table 14-3.

TABLE 14-3. NCT PROGRAM FUNDING

<u>FY</u>	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>
M\$	25	40	50	50	50

The criteria for the NCT program specifies that the system or equipment must:

- o Be manufactured in a NATO country
- o Meet a valid US requirement
- o Be an alternative to a US system in development or offer a cost, schedule, or performance advantage over an existing US equipment
- o Offer a realistic possibility of future procurement.

NCT programs considered in FY 86 and FY 87 are shown in Table 14-4. As with the FWE program, candidates that are selected receive funding, on the average, of \$400,000, with some much less.

The FWE and NCT programs provide for the evaluation of friendly foreign nations' weapon systems and technology to determine potential use within the DoD. Candidates are selected for evaluation based upon potential satisfaction of an operational need or correction of deficiency. Evaluations are also run on components and technologies for which there are DoD systems that might benefit from technology unavailable in the US. The FWE program supported the policy as first stated in the Culver-Nunn Amendment and DoD Directive (DoDD) 2010.6, which encourage procurement of equipment that is standardized, or at least interoperable with equipment of other NATO alliance members. Now both the FWE and the NCT programs are supported by the DoD FY 86 Authorization Bill. The programs provide the potential for significant resource savings by avoiding unnecessary duplication in development. For most US defense tactical equipment needs, alternative foreign systems must be evaluated and considered before the initiation of US development. Through Data Exchange

**TABLE 14-4. NATO COMPARATIVE TEST PROGRAMS  
CONSIDERED IN FY 96 AND FY 87**

<b>PROGRAM</b>	<b>COUNTRY</b>
<b><u>ARMY</u></b>	
NBC RECONNAISSANCE VEHICLE	FRG
MINE RECON AND DETECTION SYSTEM	FRG
MISTRAL AIR DEFENSE SYSTEM	FRANCE
<b><u>NAVY AND MARINE CORPS</u></b>	
ADVANCED INTEGRATED MAD	FRANCE, CANADA
90mm GUN FOR LAV	BELGIUM
AIR DEFENSE SYSTEM DISPLAYS	UK
NATO ID SYSTEM RM INTERROGATOR	UK
2.75" PENETRATING WARHEAD	NORWAY, CANADA
NAVAL DEPTH SOUNDER	FRG
SUBMARINE PERISCOPE	FRG, FRANCE
INSENSITIVE 2.75" ROCKET MOTOR	FRANCE
OSBORNE MINEHUNTER	UK
CRYOGENIC COOLING SYSTEM	NETHERLANDS
MTU 883 DIESEL	FRG
SHIPBOARD IR DECOYS	UK, FRANCE
RECEIVE-ONLY LINK 11	UK
MODULAR STORES MANAGEMENT SYSTEM	UK
<b><u>AIR FORCE</u></b>	
PENGUIN MISSILE	NORWAY
CRATERING MUNITION FUZE	FRANCE
FLAIL SYSTEM	UK
HADES MUNITION DISPENSER	UK
FLARE/CHAFF DISPENSER SWITCH	DENMARK

Agreements (DEAs), information exchange groups, and exchange visits, increased interest in greater standardization has been generated within the US military Services and in friendly foreign nations through the multinational use of similar weapons. The number of requests for evaluation of foreign weapon systems has increased dramatically beginning in FY 87.

Whenever an area or item of interest is identified, a DEA may be developed between the Service and the foreign nation. The DEA provides a vehicle for free exchange of information on capabilities, cost, performance, and support requirements. If

properly structured, the DEA allows for the exchange of test and operational data. If sufficient data are available from foreign test sources or from various other operational modes, the US need for testing and evaluation may be significantly reduced. These DEAs may include provisions for classified data exchanges (see DoDDs 5230.11 and 5530.3, DoD Instructions (DoDI) 2050.1 and 5230.17, and applicable Service regulations on DEA requirements, including classified material exchanges). DoDD 2010.6 requires that, to the maximum extent possible, test data developed by other NATO countries be used in the evaluation. In addition, the US has many agreements with NATO countries supporting mutual acceptance of Test and Evaluation (T&E) data.

### TEST PLANNING

Interoperability with NATO equipment is a key factor to be demonstrated during T&E to the maximum extent feasible. For equipment to be used in Europe, this issue must be addressed in the T&E report.

A Test and Evaluation Master Plan (TEMP) is a test planning document required by DoDI 5000.3, which, as of this printing (1987), is undergoing revision. Also in the development phase is the FWE and NCT Program Procedures Manual, which will be DoD 5000.3-M-2 when published. This document will detail the Candidate Nomination Proposal (CNP) process for both programs. Once the CNP has been approved, a TEMP must be developed in accordance with DoDI 5000.3. The TEMP relates test objectives to the required system characteristics, as specified in the Justification for Major Systems New Start document and subsequent Service requirements documents and Program Decision Memoranda (PDMS). The TEMP specifies critical issues to be tested, including interoperability issues. The TEMP details the testing conducted or to be conducted by NATO allied test centers, and acceptance of other test data generated from commercial use and other testing. The evaluation objectives, organizational responsibilities and resources, and test schedules are provided. The initial TEMP is prepared before Milestone I and updated before subsequent decision milestones for Joint Requirements and Management Board (JRMB) level systems. The TEMP is provided to Director, Defense Test and Evaluation, for review before each milestone review, with a final test report due three days before the JRMB meeting.

T&E is to begin early in the acquisition life cycle to assess and reduce risks and estimate system operational effectiveness and suitability. The test objectives and criteria must be directly related to mission need and must minimize subjective judgments on system performance. T&E objectives must be properly satisfied before the system advances to the next acquisition

phase. This includes the requirement for an independent estimate of operational potential before production.

#### FUNDING AND MANAGEMENT

Points of contact for the FWE and NCT programs are shown in Figure 14-1. The FWE and NCT programs are under the direction of the Deputy Under Secretary of Defense for Test and Evaluation (DUSD(T&E)). Funding for the program is provided under two program elements. FWE is funded under Program Element (PE) 65111D, and NCT is funded under PE 65130D.

FWE and NCT activities are carried out within the potentially benefiting Service. The evaluation of Army materiel is conducted by the US Army Test and Evaluation Command, Aberdeen Proving Ground, MD, in coordination with the development command or the appropriate US Army Materiel Command laboratory. Army commands and agencies representing user, training, and logistics interests are tasked in support roles appropriate to the evaluation requirements. For foreign weapon systems having Navy and Marine Corps applications, evaluations are monitored by the Office of the Assistant for International Research and Development, the Office of the Chief of Naval Operations, and Headquarters, US Marine Corps. Work is performed in various Navy laboratories and test centers, such as the Naval Weapons Center, China Lake, CA; the Naval Surface Weapons Center, Dahlgren, VA; the Naval Ship Weapons System Engineering Station, Port Hueneme, CA; and the Naval Ordnance Station, Louisville, KY. For Air Force systems, evaluations are managed by the Air Force Systems Command, Andrews AFB, MD, and carried out by subsidiary units such as the Air Force Flight Test Center, Edwards AFB, CA; the Air Force Avionics Laboratory, Wright-Patterson AFB, OH; and the Armament Development and Test Center, Eglin AFB, FL. Depending on the specific equipment and the arrangements made for its evaluation, foreign companies or governments may provide test articles, spare parts, and support equipment or services as required.

CNPs are reviewed by DUSD(T&E), and selections are based on the relative potential of individual candidates. The basis for selecting a candidate includes its potential to satisfy an existing or projected operational need, its ability to meet a deficiency in the current inventory, and its possible contribution to the US technology base in areas for which there are no alternative or equivalent US capabilities.

Final approval for the programs is given after the Services have provided DUSD(T&E) representatives with informal briefings on their respective programs. These briefings are normally presented in the month preceding the new fiscal year. When avail-



ORGANIZATION	OFFICE SYMBOL	COMMERCIAL/AUTOVON
<b>OFFICE OF THE SECRETARY OF DEFENSE</b>		
- DEPUTY UNDER SECRETARY OF DEFENSE FOR TEST AND EVALUATION	DUSD (T&E)	202 697-0394 AVN 227-0394
<b>DEPARTMENT OF THE ARMY</b>		
- DEPUTY CHIEF OF STAFF FOR RESEARCH DEVELOPMENT, AND ACQUISITION	DAMA-PPM-T	202 695-6512 AVN 227-6512
- OPERATIONAL TEST AND EVALUATION AGENCY (OTEA)	CSTE-ST3	703 756-2160 AVN 289-2160
- TRAINING AND DOCTRINE COMMAND (TRADOC)	ATCD-YN	AVN 680-3491
- TEST AND EVALUATION COMMAND (TECOM)	AMSTE-TE-I	301 278-3775 AVN 298-3775 AVN 298-4675
- ARMY MATERIEL COMMAND (AMC)	AMSAC-MI	703 274-5650 AVN 284-5650
<b>DEPARTMENT OF THE NAVY</b>		
- ASSISTANT FOR INTERNATIONAL R&D	OP-098F	202 695-7633 AVN 227-7633
- OPERATIONAL TEST AND EVALUATION FORCE (OPTEVFOR)	COTF-02	AVN 690-5061
<b>DEPARTMENT OF THE AIR FORCE</b>		
- HQ USAF, INTERNATIONAL RESEARCH AND DEVELOPMENT	RD-I	202 695-2014 AVN 227-2014
- AIR FORCE TEST AND EVALUATION CENTER (AFTEC)	AFTEC/XRX	AVN 244-4891
- AIR FORCE SYSTEMS COMMAND	AFSC/XRI	301 981-6727 AVN 289-6727

FIGURE 14-1. POINTS OF CONTACT FOR THE FWE AND NCT PROGRAMS

able funding exists, Office of the Secretary of Defense (OSD) provides early (pre-fiscal year) approval of CNFs with long-lead time requirements. Final OSD approval includes a firm commitment of funds to support the approved evaluation program. Funds once committed by OSD for obligation in a given fiscal year normally remain committed to a specific candidate evaluation unless the

sponsoring DoD component informs OSD of schedule and associated funding profile revisions. Excess funds resulting from canceling or restructuring a previously approved evaluation are used by OSD to fund new evaluations or to accelerate ongoing approved programs. All funds are transmitted via Military Interdepartmental Purchase Requests (MIPRs).

#### FWE/NCT CANDIDATE NOMINATION AND SELECTION PROCESS

Figure 14-2 details the process for FWE/NCT nomination and selection. The portions of the diagram that emphasize FWE/NCT are shown in boldface. If there is a requirement for a system or equipment, the R&D command conducts a market investigation to determine if the item already exists in the commercial marketplace or is already in production for a foreign military Service. If no suitable candidate exists, the R&D command may determine that a development program is necessary. If a domestic item appears to be a suitable candidate, the Service may determine that a Nondevelopment Item (NDI) acquisition is necessary. When a foreign item appears suitable, the R&D command assesses the possibility of testing the item under the FWE or NCT program.

For the FWE and NCT programs, the R&D command develops a CNP, which contains funding and testing information. The R&D commands prioritize their CNPs and submit them to Service headquarters by 1 June. The Service headquarters, in turn, determines its FWE/NCT priorities and submits the CNPs to DUSD(T&E) by 1 August. DUSD(T&E) then reviews all the CNPs and selects programs for approval. Thirty days are also allotted for Congressional review, if necessary. By 1 October, the Services receive notification of the approved CNPs that will receive funding.

#### FWE/NCT TESTING

Figure 14-3 illustrates a suggested sequence for testing FWE/NCT-approved items. The process begins when the R&D component receives notification that a CNP has been approved and receives funding. A number of actions are initiated simultaneously. Communications are begun with the applicable foreign country and item source. All available data are gathered and examined. Test issues are drafted, coordinated, and revised. If necessary, on-site visits are conducted to gather more data. In some cases, the data may be sufficient to prepare a test report assessments are made of the value of the item. More often, perhaps, a TEMP is developed, coordinated, and revised. Test items are procured, the item is tested, and the test report is developed. The TEMP and test report are two of the items that are reviewed when assessing the total value of the item. A Service milestone

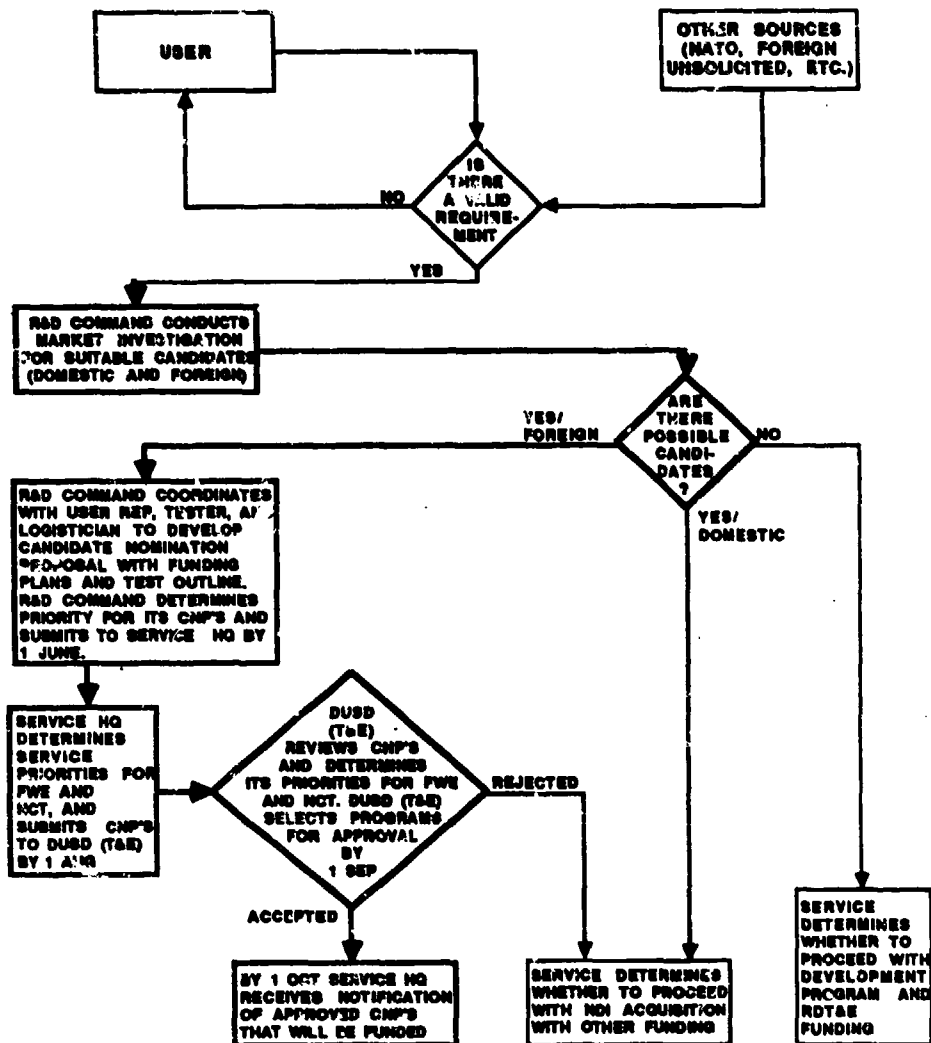


FIGURE 14-2. FWE/NCT CANDIDATE NOMINATION AND SELECTION PROCESS

review may be made of the system or equipment. If the item is rejected, the program may be terminated. In some cases, it may be determined that there are inconclusive data, and the PM may be directed to conduct further study. If the item is accepted, the PM may be directed to undertake efforts to coproduce the item. He may be directed to conduct a direct purchase of the item. If this is the case, the PM will probably follow his Service's procedures for NDI acquisition. In another possible outcome, the milestone review authority may direct the PM to conduct a modification of the item. If the modification is significant, by definition, the program would involve a development effort. If this is the case, Research, Development, Test, and Evaluation

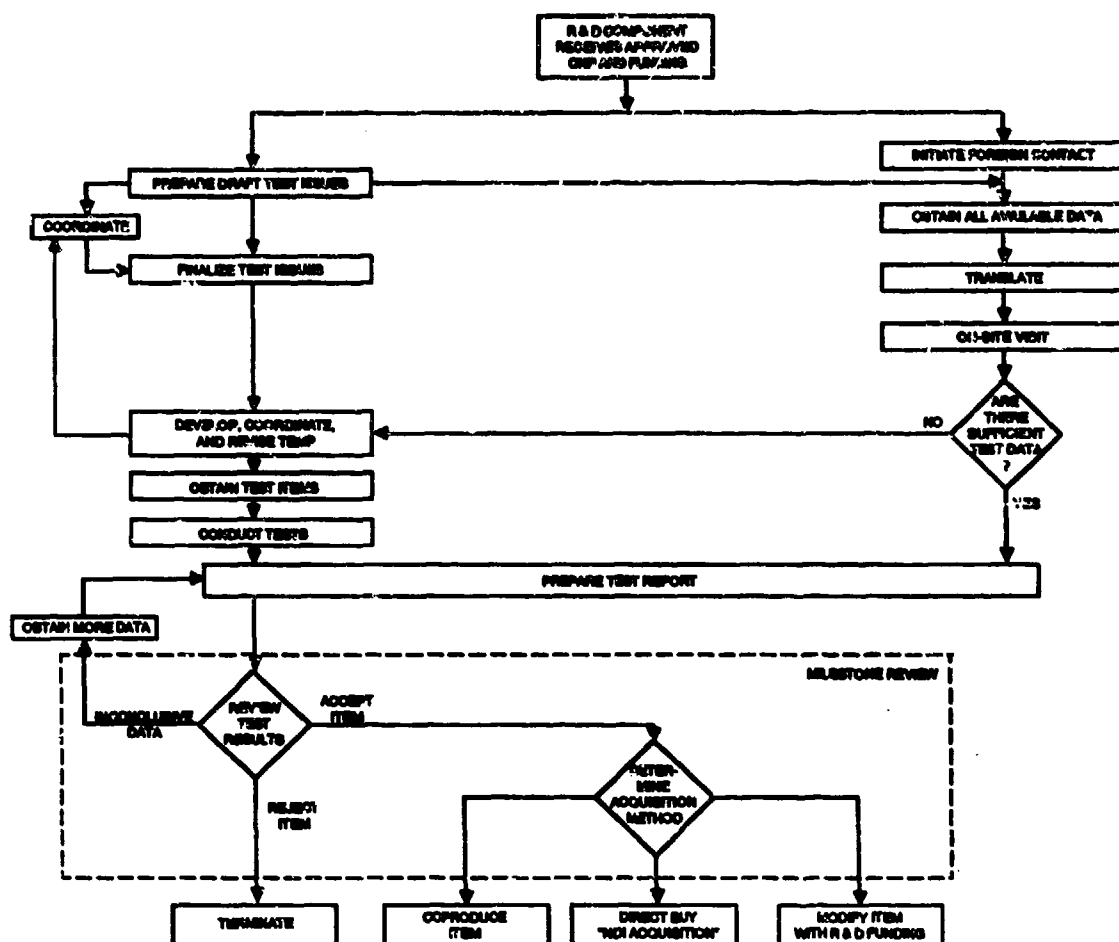


FIGURE 14-3. FWENCT PROGRAM MANAGEMENT TEST SEQUENCE

(RDT&E) funding must be used, and the acquisition procedures become much more complex.

#### INTERNATIONAL COOPERATION ON TEST AND EVALUATION

Initial agreement on T&E was reached on October 9, 1978 between the US and the UK as Annex II to the original Memorandum of Understanding (MOU) between the two governments, dated September 24, 1975. Annex II, entitled "Mutual Acceptance of Test and Evaluation," allows acceptance of data from the other government's official test program. The MOU annex lists the focal point for all Development Test and Evaluation (DT&E) as the US or the UK PM for the equipment and all Operational Test and Evaluation (OT&E) aspects as the US Services' independent operational test agency or the UK PM. The common documentation format is

similar to the US Navy's TEMP, as outlined in OPNAV Instruction 3960.10. For systems under development, participation is invited early in the T&E program. Subject to legal, policy, and proprietary rights, the release of T&E information and all pertinent T&E data is arranged. If one government ascertains that the T&E is inadequate, mutual agreement on additional testing is required. Before additional testing commences, the US and the UK must reach agreement on payment of costs, use of resources, and scheduling and evaluation criteria. Each government agrees: (1) to protect the data submitted in confidence by the other government; (2) to mark the data transmitted with a legend indicating country of origin, conditions of release, and security classification; and (3) to ensure that the data are for information and evaluation and no other purpose, in the absence of any specific agreement to the contrary. When agreement cannot be reached between the focal points or their Service superiors concerning the acceptability and adequacy of T&E, referral to DUSD(T&E) and the appropriate the UK systems controller is required.

The US and Israel have a bilateral agreement to accept each other's testing, and the US, the UK, France, and the FRG have signed an MOU on the mutual acceptance of T&E. The objective of this MOU is the elimination of unwarranted duplication in testing of defense equipment offered by one of the countries for acquisition by the others. Signatories are obligated to review, but not necessarily accept, testing already accomplished by the offering country before undertaking any further testing. The governments' focal points for T&E are:

o For DT&E

- The French technical director concerned
- The FRG Projektbeauftragter/Projekt Ingenieur
- The UK PM
- The US PM

o For OT&E

- The French Service department official responsible for the project
- The FRG Service department official responsible for the project
- The UK PM

The appropriate US independent operational test agency

The agreed upon testing format is similar to that outlined in DoDI 5000.3. Referral of cases when agreement on testing issues cannot be reached are:

- o For France: the DGA or Chief of Staff, as appropriate
- o For the FRG: der Abteilungsleiter Ruestung/Inspekteur der Teilstreitkraefte
- o For the UK: the appropriate systems controller
- o For the US: the DUSD(T&E).

SPECIAL REQUIREMENTS FOR TEST AND EVALUATION OF US CLASSIFIED ITEMS

Foreign test and evaluation of US classified equipment is prohibited, unless the test is on an item approved for foreign disclosure and can be performed at a US installation or under strict US control that guarantees appropriate safeguards for classified information and critical technology, classified or unclassified (see Chapter 17 for information disclosure policy and procedures). Exceptions to the above, such as the sale, grant, or loan of single classified military items for T&E under foreign security control, may be granted only when the proposed disclosure is authorized, and all of the following criteria are fulfilled:

- o There is no transfer of sensitive technology that the US would not license for manufacture abroad.
- o There is no release of equipment that would not be approved for foreign sale or export, if requested.
- o The release results in benefits to the US at least equivalent to the value of the US information being disclosed. Examples of such release include the following:
  - To reduce costs and avoid duplication in development efforts by the US and its allies.
  - To advance the objectives of standardization with and among US allies by promoting cooperation in research and development.

- To exchange technical and scientific information of common interest on a mutually beneficial basis.

The Secretary of the cognizant military Service, in coordination with the USDRE, must approve the exception as meeting these standards. Such actions must be coordinated with the other military Services, if appropriate. The Director, Information Security, USDP, must be informed of each exception.

## REVIEW OF DoD FWE AND NCT PROGRAMS

### ARMY PROGRAMS

The Army's International Materiel Evaluation Program (IMEP) is directed by the DCSRDA (DAMA-PPM-T) and administered by the Army's Test and Evaluation Command (TECOM) (AMSTE-TE-I).

The Army Foreign Weapons Evaluation program was initiated in FY 1977. As a result of testing conducted between FY 77 and FY 80, two foreign systems were Type Classified standard; i.e., adopted for Army use. These were the UK combat support boat, 430 units of which are being used as bridge erection boats, and the Norwegian M72A3 Light Antitank Weapon (LAW), 100,000 rounds of which were purchased. The FRG M.A.N. truck and Swedish BA 202-206 over-snow vehicle test programs were completed in FY 1979. As a result of these evaluations, the Army purchased 466 M.A.N. trucks to support several systems and 268 over-snow vehicles.

The FRG NBC contaminated area marking set was also purchased after testing. Following testing of the FRG .50 caliber plastic training round, the Army purchased 55 million rounds. The UK's .22 caliber tank training ammunition also underwent FWE testing, and 24 million rounds were purchased.

The Army is also testing other foreign weapons, including the multipurpose overboat, the spiral-wrapped combustible emulsion system, the NBC alarm rocket, the 35mm inbore gunnery device, and the SOF mountaineering equipment.

The Army's NCT program began in 1986. Two FRG and one French system are being tested. The FRG NBC reconnaissance vehicle and the mine reconnaissance and detection system received funding in FY 86, as did the French mistral air defense system.

## NAVY AND MARINE CORPS PROGRAMS

The Navy and Marine Corps FWE programs were initiated in 1975 and the NCT program in 1986. Both programs are managed by the Assistant for International R&D (OP-098F) on the staff of the Chief of Naval Operations. FWE commenced with the testing of an Italian OTO Melara 76mm gun system and a modified Dutch SM-25 fire control system. Other systems tested by the Navy and Marine Corps under FWE include an Australian gun velocimeter; the UK's XJ-521 missile; a Canadian high-speed craft sonar; a French aircraft altitude reference system; the Norwegian Penguin missile system; several foreign 76mm VT-RF fuze candidates; the Canadian shipboard integrated processing and display system data processing and transfer system; several foreign aerial, seaborne, and tow target systems; .50 caliber Raufoss multipurpose ammunition effectiveness and safety system; a foreign long wavelength infrared seeker system; the multinational vertical launch Seasparrow system; the Swedish Carl Gustaf antitank weapon; the UK OSBORNE Mk 1 acoustic minesweeping system; the French PAP 104 mine neutralization system; the French Durandal airfield attack weapon; the UK's GROUND SAT tactical UHF radio; a UK air-launched depth charge; an Israeli attitude reference indicator; the UK's Searchwater airborne radar; the French TELEMIR covert inertial navigation calibration system; a Belgian 90mm gun for the Light Armored Vehicle (LAV); and light antitank weapons from nine foreign contractors.

The FY 86 Navy/Marine Corps FWE program includes evaluations of a Swedish chaff dispenser; the UK's HF radio keyer converter, laser avionics equipment, maritime decoy, navigation plotting system, night attack avionics, acoustic mine sweeping system, submarine radar mast, and the versatile exercise mine; Israeli lightweight decoy launcher; Italian mine mechanisms, mine neutralization system, and submarine radar mast; Canadian marine integrated navigation system; the FRG mine mechanisms, ship interior voice system, and submarine radar mast; and French missile launch detector and ship interior voice system.

The Navy/Marine Corps NCT program includes French advanced integrated magnetic anomaly detectors, insensitive 2.75" rocket motors, and shipboard IR decoys; Canadian advanced integrated MAD and 2.75" penetrating warheads; Belgian 90mm gun for the LAV; the UK's air defense system displays, NATO identification system radar mode interrogator, OSBORNE minehunter system, shipboard IR decoys, receive-only Link 11 system, and modular stores management system; Norwegian 2.75" penetrating warhead; the FRG naval depth sounder, submarine periscope, and MTU 883 diesel engine; and a Dutch cryogenic cooling system.

To date, the OTO Melara gun and the SM-25 fire control



system have been procured by the Navy and installed aboard Navy vessels. Other systems selected for procurement after successful FWE testing include Norwegian .50 caliber multipurpose ammunition, the UK's ICS 3A integrated communication system, the UK's TICM FLIR for the AV-8B, the UK's Cat's Eye night vision goggles, and the UK's Versatile Exercise Mine. The Penguin missile is planned for procurement in FY 88-90.

### AIR FORCE PROGRAMS

The US Air Force (USAF) FWE program was initiated in the early 1970s. The program is currently managed by Headquarters USAF/RD-I. Many systems were evaluated in the early stages of the program, but it was not until the 1980s that a large system was purchased as a result of the FWE program. The French Durandel runway attack weapon proved effective after extensive testing. More than 16,000 units were purchased at a cost of more than \$500 million. The UK's Sanator decontamination unit was also purchased after FWE testing. Eighteen hundred units were purchased at a cost of \$25 million. Other systems that were tested included the SPS-2000, the HAVE NAP AGM, chemical defense equipment, the millimeter wave seeker, the millimeter wave communications system, the cellular logic image processor, ICBM active decoys, the antishelter weapon, and the speech processing and transmission system.

The Air Force's NCT was begun in FY 86. Five programs are being investigated. Norway's Penguin missile system and France's cratering munition fuze are being considered, as are two UK systems--the flail system and the Hades munition dispenser. In addition, a flare/chaff dispenser switch system, developed by Denmark, is also being investigated.

### CONCLUSION

Even though NATO countries have expended greater resources on weapons development than have the Warsaw Pact countries, western countries have produced fewer weapon systems. Because of this, there has been greater interest in international cooperation, as expressed in DoD and Congressional direction. The FWE and NCT programs have been developed as part of the effort to expand Rationalization, Standardization, and Interoperability (RSI) programs and to save money.

T&E of foreign weapons is an integral part of DoD's RSI program, which is aimed at attaining greater commonality of weapon systems among friendly nations. Special funds and procedures have been set up in DoD to support the FWE and NCT pro-

grams. Comprehensive procedures have been established to support these programs. International agreements have also been established to promote the mutual acceptance of T&E results.

## CHAPTER 15 MANUFACTURING AND PRODUCTION

### INTRODUCTION

The ultimate success of a multinational program is often dependent upon the level of effectiveness attained in the manufacture of the system under development. A number of the policy and procedural aspects of international production arrangements were discussed in Chapter 2 (Major International Arms Collaboration Approaches). This chapter is concerned with the production environment, the transfer of process technology between the participants, the concepts of manufacture, and product quality assurance requirements.

### GENERAL CHARACTERISTICS OF FOREIGN DEFENSE INDUSTRY

The three most industrialized countries of Western Europe--the Federal Republic of Germany (FRG), the United Kingdom (UK), and France--represent only about 54 percent of the population of the North Atlantic Treaty Organization (NATO) Europe but account for about 80 percent of its arms industry output. The next three most industrialized and populous states, Italy, the Netherlands, and Belgium, represent around 25 percent of NATO European population but account for only 12 percent of its arms industry output. The other states of NATO Europe--Greece, Portugal, Denmark, Norway, Spain, Luxembourg, and Iceland--represent about 22 percent of the population and less than 8 percent of the arms industry output of NATO Europe. Turkey is usually placed in this group, and its immense heavy industry capability has only recently been rediscovered by the other NATO states. Still other states outside Europe have demonstrated the capability for a large industrial output. Among them are Brazil, the Republic of Korea (ROK), Japan, and Australia.

France and the UK were significant net exporters of arms throughout the 1970s, indicating that their defense industries enjoy a market larger than their national consumption. Although the FRG was a net importer of arms for most of the three decades since it became a member of NATO, it has recently been a net exporter of arms. As with the FRG defense industry, the second-tier state defense industries have traditionally been too small to meet their own national demands; however, in recent years, these defense industries have expanded to just about balance national demands and total defense production capacities (in

monetary value). In addition, Belgium, the Netherlands, and Italy each has become a net exporters of arms.

By national policy, the French defense industry encompasses the broadest spectrum of types of armaments and their associated technologies. The breadth of coverage of French defense industry reflects the national desire for policy independence or equality with other NATO partners. Thus, French defense industry covers the gamut from independent nuclear weapons and strategic missiles development and production to small arms and ammunition. The UK defense industry covers almost this entire gamut also--and for similar reasons--except strategic missiles. In nuclear weapons development and production, the UK still enjoys a special relationship with the United States (US), in addition to its own independent capability. The FRG's defense industry, by national policy and the protocols by which in 1954 it joined the Brussels Treaty that established the Western European Union, has foresworn nuclear weapons development and production and strategic missiles. The FRG aerospace industry had been restrained by earlier national policy from rapid rebuilding, although it now enjoys substantial government support.

These impressive Allied capabilities are now more obvious to US industry and government. This is especially true now that economic conditions make multinational collaboration more attractive. It has become apparent in the 1980s that codevelopment is an essential element for multinational collaboration. Such an insistence has long been customary for the UK and French industries, which are the two largest and best developed in Western Europe; however, the FRG industry and government, which until recently were ready to accept US licenses without any codevelopment participation, are now more insistent that codevelopment be a fundamental part of any future transatlantic collaboration and, furthermore, that such collaboration be carried out as a European multinational effort with the US, rather than as a purely bilateral effort.

There appears to be a general view that future collaboration among the FRG, the UK, and France will be more readily achieved in the field of tactical missiles than manned combat aircraft. This is due in part to the successes of missile programs such as the NATO Seasparrow. The success with missile programs does not mean that there is any lack of interest in establishing collaborative arrangements for manned combat aircraft such as the F-16 program; however, tactical missiles have a shorter development cycle, cost less, and have the types of very precisely and narrowly defined missions that make the harmonizing of requirements much easier than those of aircraft. Because manned combat aircraft are so versatile and combine so many different roles and missions, the harmonizing of requirements is especially diffi-

cult--particularly in view of the long life cycles and heavy financial commitments involved.

Other countries are engaging in the manufacture and production of weapons for export or multinational development. The US involvement with these countries is in its infancy, compared with the mature relationship that exists between the US and Europe. The Brazilian defense industry is a good example of such production efforts. Brazil has several major manufacturers of weapon systems. Since Brazil is part of the Third World, it is able to operate in that arena with considerable comfort. In some cases Brazilian equipment has been simpler in design, easier to operate, and less expensive than hardware offered by US and European producers. A key point is that Brazil places no restriction on the re-export of military equipment, although Brazil is currently evaluating this policy. This lack of restrictions has blocked technology-sharing arrangements with the US. Consequently, Brazil has turned to Europe for joint ventures. Brazil's three largest, privately owned companies produce armored vehicles, rockets, and aircraft for sale to most of the countries in the world. There are a few exceptions, such as sales to Chile, Central American countries, and South Africa. The fact that the US Arms Control and Disarmament Agency puts Brazil as 18th in arms deliveries indicates its key manufacturing role.

Another view that is gaining greater acceptance was voiced in the 1983 Currie Report concerning small systems. There has been and there is currently much more industrial cooperation at the level of subsystems and small systems than there is at the level of major systems. Such cooperation has been particularly notable in aircraft subsystems and now is taking place in at least one US advanced missile program. A number of European industrialists understand that cooperation at the subsystem level is a very good strategy for penetrating the US defense market. This also applies to cooperation on small systems, such as the "nine small programs" that were designated as test programs for cooperation. Major system cooperation involves unique political situations that must be dealt with on case-by-case bases; however, with subsystems and subcontracting, there is great potential for expanding industrial collaboration. The advantages to industry are:

- o Competition is reduced, and investing in technological advancements is easier
- o Military Services more readily accept smaller efforts
- o Smaller efforts are of less concern to Congress.

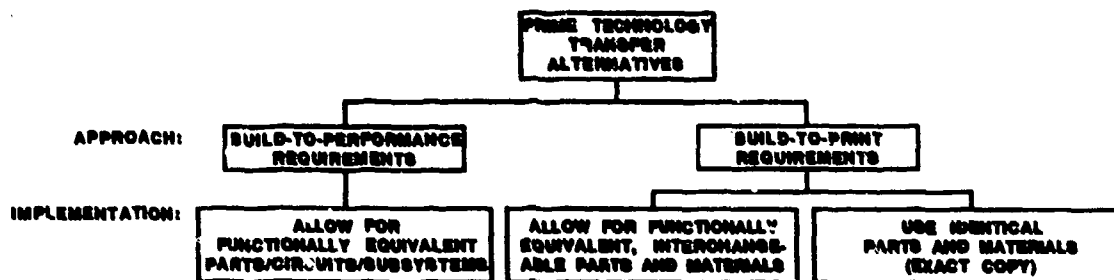
## DEFINITIONS

Terms such as coproduction, dual production, and licensed production are used frequently but have different meanings within the Department of Defense (DoD), the US Government (USG), and US industry. The result is a lack of clarity, misleading and inaccurate information, and confusion. Attempts have been made to define some of the terms in various regulations, reports, and correspondence, but the definitions conflict or are ambiguous. Because of this, the Office of the Secretary of Defense (OSD), through the Denoon Report (1983), has approved the following definitions relating to production:

- o Coproduction--Any program whereby one government or group of governments manufactures or assembles, or has manufactured or assembled, in whole or in part, defense articles or equipment developed at the expense of another government. Coproduced items may be manufactured or assembled for the manufacturing/assembling government(s), the developing government, or any other party.
- o Dual Production--As used only in the NATO context, it is the production of a weapon system in Europe and the United States. The term can refer not only to independent production lines for the entire weapon system, but also to interdependent production, whereby the participants produce for one another parts or components of the system. (The task group felt that this term does not serve any particular purpose and it should be either dropped or, at least, not used outside its NATO context.)
- o Licensed Production--This pertains to the mechanics of establishing a coproduction program wherein the manufacturing/assembling government acquires the necessary technical data, rights, and know-how under one or more license agreements. License agreements may be government-to-government agreements or commercial agreements.

## CONCEPTS OF MANUFACTURE

There are two principal concepts involving technology transfer and fabrication: the "build-to-performance" approach, which allows functionally equivalent components to be substituted, and the "build-to-print" approach, which involves developing near-equivalent or exact copies of the components. The Program Manager (PM) must carefully determine which approach will be used. Figure 15-1 illustrates some of the fundamental differences in the two approaches.



INTERNATIONAL STANDARDIZATION	INTERCHANGEABLE AT WEAPON SYSTEM LEVEL ONLY	INTERCHANGEABLE TO LOWEST REPLACEABLE ASSEMBLY LEVEL	INTERCHANGEABLE TO BIT AND PIECE LEVEL
NATIONAL STANDARDIZATION (PARTS AND MATERIALS COMMON WITH EXISTING US INVENTORY)	HIGH	LOW	VERY LOW
TECHNOLOGY TRANSFER, FABRICATION, AND TEST (TTF & T) COSTS	0.95 TO 2.0	1.0	1.5
PRODUCTION AND SUPPORT COSTS	0.95	1.0	1.5
MODIFY FOR US PRODUCIBILITY	CURRENT WITH TTF&T	CONCURRENT WITH TTF&T   SUBSEQUENT TO TTF&T	--
PROGRAM RISK	HIGH	LOW   VERY LOW	VERY LOW
EURO. TO US TECH. TRANSFER EXAMPLES	PRE-FRENCH AM/PS-55 GROUND RADAR (ITT-GENPILLAN); UK CANBERRA (B-57 MARTIN)	ROLAND (HUGHES)	DUTCH MARK OR FCS (SPERRY)

FIGURE 15-1. ALTERNATIVES FOR TECHNOLOGY TRANSFER, FABRICATION, AND TEST

### CONCEPT OF BUILD-TO-PERFORMANCE

In a leader-follower arrangement, the follower receives the technology transfer. In a build-to-performance approach, the follower may substitute functionally equivalent parts, circuits, and subsystems. There are many differences within the parts and subsystems that would be specified on a foreign design, compared with a US-generated design. On the Roland program, for example, 83 types of steel were used, compared with 28 standard types of steel used in the US. For aluminum, the European design used 21 types, versus 14 US standard types, and 28 types of copper alloys, versus 13 US standard types. For fasteners, the design specified 559 different part numbers, whereas the US has 358 standardized part numbers.

In Figure 15-1, relative costs for the different approaches are illustrated by taking the near-equivalent, build-to-print as the baseline approach with a cost index of 1.0. The

alternative approaches are given cost indices that are compared with this baseline. For example, the production and support cost for an exact copy, build-to-print approach is estimated to involve a cost 1.3 times as great as it would be for a near-equivalent build-to-print approach for the same system. The figure also compares other characteristics, such as the degree of national standardization of component parts and the degree of program risk. The direct introduction of a foreign design requires some loss of standardization within the equipment of the receiving nation. If the receiver elects to allow substitution of functionally equivalent parts and components common to other nationally deployed systems, the level of standardization within the country and its logistics system remains high, but the transferred system is often then interchangeable with those of other nations at the weapon system level only. The cost for the Technology Transfer, Fabrication, and Test (TTF&T) becomes much less predictable, and program risk grows.

When the degree of standardization is high, it is reasonable to expect that the production and support costs for this type of technology transfer will be lower due to the combination of nationally common parts usage and the greater freedom to redesign for producibility during TTF&T.

Two examples of technology transfer and fabrication using performance requirements are the UK's aircraft Canberra, which became the US Air Force (USAF) B-57 produced by Martin, and the FRG-French ground radar AN/TPS-58, which did not enter US production.

Martin extensively modified the Canberra to satisfy US performance and producibility requirements, including a new cockpit and substitution of US electronic systems. The cost to place the B-57s into production approached the cost of a new aircraft. The US contractor for the TPS-58 performed extensive modifications during the technology transfer phase to adapt it for US producibility and to improve numerous circuit design characteristics; however, the aggregate impact of these changes, many of which caused ancillary performance impacts not fully appreciated at the time, was so devastating to the overall system performance, that the military deemed the prudent course was to cancel the program.

#### CONCEPT OF BUILD-TO-PRINT

The build-to-print approach has two options. One is to allow for near-equivalent parts and materials, and the other is to use parts and materials identical to the original design. The first approach is based on the assumption that total multina-



tional interchangeability usually is not feasible at the repair part or material level, but this does not mean that standardization of parts and materials is to be ignored. On the contrary, it is the commonality of parts, materials, and processes that will ultimately determine the degree to which the systems are alike. The formulation of a strategy for parts selection should be of primary concern. The project office must provide guidance to the receiving contractor with the responsibility for technology transfer.

Standards must be defined so that parts comparisons can be made. The following classifications were used on a major program:

- o US Near-Equivalent Interchangeable Part--A part manufactured in the US that is interchangeable and has all the required properties of its foreign counterpart, but in some way is not identical (e.g., a US capacitor may have the same electrical properties but be slightly larger, or the material used in a US product may be slightly harder or possess a different finish from that of the foreign counterpart). The interchangeable piece parts are essential for operational maintenance of the system and for lower life cycle costs.
- o US Exact Equivalent Identical Part--A part manufactured in the US that is an exact duplicate, within specified tolerances, of its foreign counterpart.
- o Foreign Exact Part--A part manufactured in a foreign country that is identical, within specified tolerances, to the part used in the foreign system.

One recommended procedure for parts selection includes the steps listed below:

- o As transferred data are received, the responsible contractor or government activity screens the follower's material system for national exact equivalents of the parts, processes, or materials described in the data. If successful, the follower drawing is so annotated.
- o If an exact national equivalent cannot be found, a near-equivalent part is sought; however, any such selection needs approval by the project office on a case-by-case basis.
- o As a last resort, a leader country exact part is selected if a follower exact or near-equivalent cannot be located or the near equivalent is not acceptable. The

project office again should have the final approval authority.

The process of identifying parts and components for use on the transferred system is painstaking. There are no shortcuts. Screening and searching for identical or near-identical parts is laborious work that requires great patience.

This approach offers a balance between the benefits of international cooperation and the benefits of national standardization. The outcome of this system are components that are interchangeable with the original at the lowest replacement assembly level. It also allows for some consideration of producibility both during and after TTF&T, but this effort is somewhat constrained due to the limitations of maintaining near equivalence. Program risk level is somewhat responsive to the degree to which producibility considerations are addressed during TTF&T, as opposed to waiting until the fabrication and test have been complete. Producibility improvements can be included during TTF&T, but the PM should ensure that the technical personnel have addressed the issue of potential impact on system performance.

The approach used in Roland parts conversion was to select parts that would not impact international interchangeability at the module level but would, at the same time, use a maximum number of US military standard parts. Accordingly, the following exact order of precedence was established in parts selection (with updated terms):

1. Functionally and Dimensionally Interchangeable Equivalent--MIL-STD or Service common item
2. Functionally and Dimensionally Interchangeable Equivalent--US commercial
3. Functionally Equivalent Substitute--MIL-STD item
4. Functionally Equivalent Substitute--US commercial
5. Identical European item.

Thus, when a European drawing was received, the European parts were defined and a search was made of MIL-STD and US Army common parts to find a functionally and dimensionally interchangeable equivalent part. If no MIL-STD item could be found, US commercial parts were searched. US functionally and dimensionally interchangeable equivalents (either MIL-STD or commercial) were found for approximately 80 percent of the European parts. When none could be found, a search was made for functionally equivalent substitutes that would not negate an interchangeability

requirement or detrimentally alter performance. Three levels of approval were required to use a functionally equivalent substitute:

- o The component engineer was required to select a part that was so equivalent that no degradation would occur. In many instances the differences were actually improvements.
- o The responsible circuit engineer had to agree that the substitute was indeed completely acceptable and conformed to specified design and performance tolerance limits.
- o The difference was documented and approved for use by the Missile Command senior representative.

The difference between a functionally and dimensionally interchangeable equivalent and a functionally equivalent substitute part is minor and, in many instances, trivial. A capacitor that is round instead of square but exact in all other characteristics is considered a near-equivalent. A resistor that is 82K $\pm$ 5 percent instead of 81K $\pm$ 10 percent but alike in all other characteristics is a functionally equivalent substitute. It would make no sense to bear the cost to implement manufacture in the US for the identical European part when completely acceptable functionally equivalent substitutes are available from military inventories. The part implementation, supply, and additional logistic costs of stocking a unique part for the 4,000 functionally equivalent substitutes would be substantial (e.g., costs incurred if the identical European items were required).

For example, the prime hardware parts conversion process on Roland resulted in the following parts count:

	<u>HI-REL MIL-STD</u>	<u>Commercial</u>	<u>Total</u>
US Interchangeable Equivalent	36,800	18,000	54,000
US Functionally Equivalent Substitutes	3,800	200	4,000
Identical European Items	--	<u>9,430</u>	<u>9,430</u>
	40,600	27,630	68,230

In the Roland case, if neither an interchangeable

equivalent nor a US functionally equivalent substitute could be found, the identical European part was selected. When a US part supplier could procure or build tooling at a low cost to provide the identical European part, the TTF&T program qualified the supplier and procured the parts; however, in general, because the TTF&T quantities were so few, the amortized tooling cost made the part price substantially higher than direct procurement from Europe. Therefore, the US Army authorized, on an item-by-item basis, foreign procurement as long as a potential US supplier was identified that could be qualified following TTF&T.

Using identical parts under build-to-print minimizes program risk by producing a system identical to the original down to the piece part and material level. This approach can be extremely expensive unless the European system already uses predominantly US parts. This condition was satisfied on the Dutch Mark 92 fire control system for which Sperry was the US licensed contractor. The Dutch radar was designed to the UK's Navy requirements, which, in almost every respect, are identical to those of the US Navy. From inception, this radar was designed for worldwide deployment and worldwide environmental requirements and uses 85 percent US parts. Thus, the technology transfer required only very minor changes to accept 100 percent US items.

In general, the US production of European-developed systems is probably typified by the Roland program experience regarding parts. For Roland, the US Army and its contractor conducted a study of the costs of building an identical replica. This study showed that the TTF&T costs would have increased by \$52.5 million. If the exact copy were placed into production, the increased production costs would be \$92 million, and the increased support costs would be \$95 million, over a 10-year period.

#### PRODUCIBILITY

As has been experienced on a previous TTF&T program, attempting to adapt a foreign-produced design to US automated production equipment concurrent with technology transfer can mean high risk. On Roland, it was found that, after the contractors had built and extensively tested the hardware at the module, unit, subsystem, and, finally, system level, their knowledge and grasp of the critical parameters, performance attributes, and error budgets were measurably greater than when the drawings were initially released for fabrication. Thus, with minimal program risk, the contractors could proceed to adapt that part of the hardware design to automated fabrication when it would result in a substantial reduction in recurring production costs.

There is no best approach to selection of the manufacturing concept. In each case, the PM should attempt to balance the need for both inter- and intranational standardization with the performance capabilities of the system as originally designed. The build-to-print approach will generally yield a system whose performance closely models that of the original system. If there are pressing operational reasons to modify the design and the consequent performance, or if the manufacturing processes used on the original design are not well defined, the PM may wish to use the build-to-performance requirement approach. The basic production decision must be evaluated by risk analysis to determine the specific approach that is most appropriate for the system.

#### PRODUCTION DELAYS--MEMORANDUM OF UNDERSTANDING (MOU) VERSUS LICENSING

At a 1986 conference involving US Army and US industry representatives, the latter voiced concern over delays in production starts. One solution suggested was to forego the development of a multinational MOU if licensing would suffice. MOUs are government-to-government agreements and licenses are industry-to-industry agreements. MOU development, it was contended, sometimes involves a lengthy and cumbersome governmental process that appears to add little to a well-drafted licensing agreement. Industry argued that, in the majority of cases, the controls that are desired or needed by the USG may be achieved through the licensing agreement and that requiring an MOU can add as much as a year to the time needed to negotiate an agreement.

The Defense Security Assistance Agency (DSAA) has rejected similar proposals regarding the release of Technical Data Packages (TDPs). Industry representatives contend that when an MOU authorizes the release of a TDP, the process would be expedited by releasing it through industry channels, rather than through government channels, except in unusual circumstances. The government could contract with industry to meet foreign government requests for TDPs for maintenance and repair purposes. Because of its day-to-day familiarity with TDPs, industry, it is argued, would be a better transfer medium than government; however, in late 1986, the DSAA revised the Security Assistance Management Manual, DoD 5105.38-M, to prohibit this. The release of TDPs may only be done through proper FMS procedures.

In spite of these views of industry, Foxcurran describes a sequence that was recommended by the Roland project office:

"In retrospect, the Roland Project Office would have preferred to have had the Roland license developed in the following sequence: first, negotiate Memoranda of Understanding with

each of three nations--the United Kingdom, France, and the FRG; then ask the foreign government to instruct their industries to seek US companies with whom they would negotiate licenses for the purposes of pursuing the Army's missile competition. Given the fundamental conflicts between the interests of the US government and of US industry, the Roland Project Office believed that the interests of the US government could best be protected, and the potential for friction reduced, by means of an MOU between governments negotiated prior to any licensing arrangements. The license agreement can then be properly structured within that framework.

"The Project Office added a further argument to support the need for an MOU prior to industry-to-industry negotiations for a license agreement, one which was in good part simply required to offset the unnecessary but typical communication/coordination problems that the US government has in dealing with industry. The Army's Project Office pointed out that US contractors may be placed in an awkward and disadvantageous position in negotiating with their European counterparts, since the latter are very closely tied in with their own governments. They felt that US industry needed the US government to support licensing negotiations to balance the combined strength of the European government and industry partnerships, as well as representing US governmental interests."

#### COPRODUCTION RATE-BENEFIT ISSUE

The rate-benefit issue was discussed in the Denoon Report in 1983. Occasionally, another nation may coproduce parts for its own use at whatever price it is willing to pay. Frequently, US contractors offer to subcontract and to buy back additional quantities of those coproduced items for use on DoD equipment. Some nations have proposed that DoD permit higher than competitive prices on those coproduced parts because of higher production rates and overhead sharing; however, OSD has established policy against requests for rate benefit. Instead, contractors for coproduction/industrial participation programs involving DoD-appropriated funds should be selected on merit and general competitive principles.

#### PROCESS OF TECHNOLOGY TRANSFER

The process involved in technology transfer is described in Chapter 8 of this Guide. It is important to recognize that merely transferring the documentation describing the weapon system and its manufacturing processes will probably be insufficient for the second source, or licensee, to accomplish the manufactur-

ing task. There is a certain amount of the technology that is embedded in the personnel and operating procedures of the original manufacturer. To achieve a successful multinational transfer of technology, the embedded technology must also be transmitted and made available to the receiving company. For purposes of our discussion, we will use the generic terms of leader and follower, with the technology flowing from the leader to the follower.

Figure 15-2 illustrates a typical approach to transferring process technology from the leader to the follower. The model of Figure 15-2 presumes that the formal process of documentation transfer has been accomplished or is being accomplished in concert with the process of technology transfer. In phase 1, the follower company begins preparation of the planning for the initiation of manufacturing operations. As the follower reviews the transferred documentation, certain problems in understanding will arise because manufacturing processes and techniques depend on the facility and equipment available. The processes and techniques evolve based upon the capabilities and facilities of the developing company. Transplanting of these processes may require that personnel from the leader company provide background information on how and why the processes have been developed in

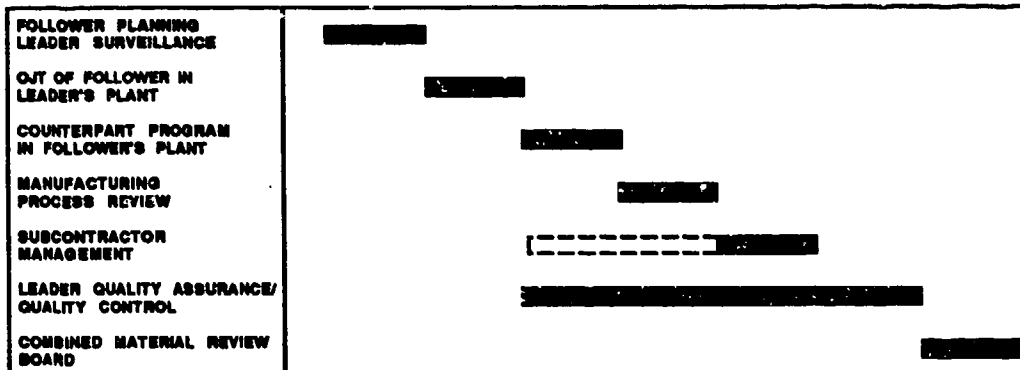


FIGURE 15-2. PHASED PROCESS OF TECHNOLOGY TRANSFER

their particular fashions. This provides, to the follower company, a basis for integrating the processes into its method of operation.

After the initial planning has been completed, selected manufacturing personnel and technicians from the follower company are assigned to the leader's plant for on-the-job training. The purpose of this phase is to provide a cadre of key personnel within the follower company who have had first-hand exposure to the processes and techniques of manufacture. They are able to

compare each process as it is described within the documentation with how it is practiced on the shop floor. When an actual practice goes beyond that described in the formal documentation, there is an opportunity to absorb this information. In addition, some of the shop subtleties involved in "fine tuning" a process for optimum performance can be observed. Having established an increased level of process understanding, the cadre members are able to return to the follower plant for phase 3.

In phase 3, the follower becomes responsible for the detailed manufacturing planning and operations but is supported by counterparts from the leader company who are temporarily assigned to the follower plant. This allows the key people in the follower company to develop their capabilities and responsibilities by managing the manufacturing function, while having available the advice and assistance of leader company personnel.

After the follower company and its key personnel have become confident in their ability to manage and control the manufacturing processes, a manufacturing process review is accomplished as phase 4 with leader company participation. The objective of the manufacturing process review is to establish that the follower has attained a clear and complete understanding of the processes, that the processes have been integrated into the follower's operation, and that they are yielding acceptable parts conforming to configuration control procedures. The result of the review is a set of validated process instructions, in a format usable by the follower.

Upon completion of the review, phase 5 begins with the follower taking full responsibility for the management and expediting of subcontractor deliveries. The leader retains a larger share of the responsibility for determining the acceptability of subcontracted parts and materials and the evaluation of the suppliers' in-process controls.

One caveat is in order. As a result of differences in order lead times between the US and foreign countries, there may be a need for the phase 5 activities to start earlier. Given the propensity of the US defense industry and the foreign defense contractors to use extensive numbers of subcontractors, the success of the program often is critically dependent upon the successful management of the subcontract effort. As the follower improves his management of the subcontracted effort, the responsibility for the quality assurance of the subcontractor effort can be transitioned in phase 5 to the follower.

The transition of process technology ends with phase 7 in which a combined Material Review Board authority is developed by the leader and follower with combined configuration control pro-



cedures. This board is the vehicle that determines the disposition of those parts that do not meet the subordinate-level design requirements. Since the disposition of the parts often is to "use as is," the assumption of this combined authority represents a statement that there is sufficient design and process understanding to make accurate, effective disposition decisions, and that there is a combined responsibility for configuration control.

The model for technology transfer transition described herein is only one of many ways to achieve the desired result. The critical issue, identified in a number of lessons-learned studies, is that the process must be preplanned and carefully monitored. Design and manufacturing practices vary and the grafting of "foreign" processes into an existing manufacturing organization is a delicate process with high risks. Clearly specifying the mechanism and timing for this effort can make a major contribution to program risk reduction.

#### OPERATING VARIATIONS

Although there cannot be a characterization of foreign (or US for that matter) manufacturing practices as homogeneous among the various countries, certain distinctions can be made between general approaches in the US and Europe as examples that can be applied elsewhere. These general differences may be characterized in a number of ways. There are differences in business organization, shop practices, and testing, as well as miscellaneous international variations. These differences were discussed in Chapters 4 and 5. This chapter explores some of these differences and their effects on multinational production efforts.

#### BUSINESS ORGANIZATION

Two differences are often observed by Americans about European defense industry: (1) European companies have much more intimate and "sole-source" relations with their governments than do US companies and (2) intellectual property rights to data, technical drawings, inventions, and the like that derive from defense contracts typically reside with the company and not with the sponsoring government. Some Europeans counter that US Government-owned and Government-operated (GOCO) plants are similar to European traditions. They also point out that with some US programs, data rights are retained by industry. Nevertheless, these perceived differences may complicate transatlantic industrial collaboration in defense systems development and production when technology transfer under license may be involved.

### European Government-Industry Relations

With respect to the status of European defense industry regarding their governments, a variety of organizational and legal observations may be noted. Whereas in the US, defense industry is composed principally of independent industrial corporations whose stock is publicly owned and traded, key industries in the UK and France, in particular, are nationalized companies that are wholly or principally government owned. The tradition of private ownership exists in the rest of Western Europe and, for the electronics industry, generally throughout Western Europe. Individual companies, as in the US, are frequently wholly or principally owned subsidiaries of holding companies or conglomerates, some of which are foreign-owned multinationals. With few exceptions within these patterns of ownership, individual companies are run by professional corporate managers who are fundamentally employees rather than owners or, in the case of government-owned companies, civil servants.

Besides such companies or corporations that have various degrees of public accountability and liability, government establishments, such as the Royal Ordnance Factories in the UK play important roles in several Western European countries. Within the nongovernment establishments, there tends to be a lower level of capital investment than in comparable US companies. (The US has companies with low capital investment too, but the US has a concentration of companies with high capital investment.) The European emphasis is on labor's contribution to value added, rather than on capital equipment. There is also a general tendency to shift more of the risk in financing work in progress to the customer. When progress payments are used, they tend to be at the 90 to 100 percent level, rather than the 80 percent rate common in the US.

The relation of the European defense industry to the governments of Western Europe is a function of markets and broad government policy, as much as it is of ownership and organization/legal forms. Since national markets for European defense industry are only on the order of one-tenth to one-eighth the size of those in the US even for the big three, no European country can sustain more than one to three large companies in the defense sector. Since purchasers of exports are reluctant to buy any weapons that have not been procured by the military Services of the supplying nations, exports do not relieve this problem of the critical market size to sustain more than one or two competitors. The size of the national market, thus, confers on virtually all European defense companies almost a "sole-source" status with respect to their governments.

The sole-source or chosen-instrument character of major European defense companies, however, does not necessarily reduce their dependency on export markets for their financial and economic health. The large export business of the major aerospace companies of the UK and France--typically between 40 and 50 percent of total output--are accepted as normal and essential augmentation of production to give a reasonable return on the high research and development and capital investment costs for aerospace development. When larger production runs are not as important for reducing unit costs--such as in the small arms industries in Belgium and Italy--military exports may still be important and are encouraged by the government not only to promote the health of an individual company, but to help balance the military trade account for those countries that must import other defense equipment.

### Intellectual Property Rights

A significant characteristic, if not a consequence, of the national market size of European defense industry--which has only one or two suppliers per country for any type of weapon system--is the disposition of intellectual property rights or data rights.

When the USG, with alternative sources of supply, funds a development program, it generally seeks or requires sufficient data rights so that it can award a production contract to a second source on a competitive basis. For production of a weapon system in Europe, there are few opportunities to go to a second source--even one developed with government funding. European governments, unlike their counterparts in the US, have far fewer incentives to own or acquire rights to technical data packages, especially if acquiring and documenting such rights and data add to the cost of a development. Data rights, including much of what in the US would be considered foreground rights, usually are left with the developing company in Europe along with company-proprietary data. Moreover, the government of a European country would not typically require a technical data package beyond what would be required for field-level maintenance--let alone alternative production.

Clearly, both aspects of the relation of European defense industries to their governments--the sole-source relationship and the disposition of data rights in the companies--complicate transatlantic defense cooperation.

### Consolidations and Collaboration

For the UK and France--especially in the vital aerospace sector--industrial rationalization has meant an evolutionary process of mergers, consolidations, and nationalization of industrial organizations. Both British Aerospace and Rolls-Royce in the UK and Aerospatiale in France represent the culmination of several mergers of separate companies. It is typical of the nationalized companies of the UK and France that they do only limited subcontracting. They prefer to bring most of the development and production work into their own laboratories and factories. This tends to make them employment giants.

In the private sector, mergers and consolidations on a more limited scale have been a basic pattern in all of the first-tier European countries: the FRG, the UK, and France. These mergers have remained significantly smaller than the mergers that have been nationalized, because the private companies have chosen to subcontract for large portions of their work, partly as a hedge against layoffs when work declines. This pattern of employment in privately owned companies is not likely to change much since--given the employment policies and company costs of layoffs in most European countries--the privately owned companies have a high incentive to use subcontractors to share the risks of cutbacks in orders and the responsibilities for employment stability. Thus, the business structure of the European effort under a given program will be greatly affected by the choice of the specific European companies that will participate.

If consolidation is the principal meaning of industrial rationalization at the country level, its counterpart at the intra-European level has been collaboration. Development costs of complex, high-technology weapon systems and the limited size of national defense markets have been the principal causes of both consolidation and collaboration. Virtually every major aerospace weapon system (except the Mirage combat aircraft) developed by European defense industry in the past 15 years has been the result of an international collaboration. The Multiple Role Combat Aircraft (MRCA), now called the Tornado, is the most ambitious of such collaborations. It included the aerospace industries of the UK, the FRG, and Italy. More typically, the UK, France, and the FRG have been involved in bilateral collaborations in which the companies participating have been determined by the nature of the programs and the preferences of the parties that existed at the time the agreements were consummated.

There is a determination, among the three major countries, to bring to an end the shifting patterns of industrial partnerships that have characterized intra-European collaborative programs to date. Their objective is to establish,

instead, permanent teaming arrangements among the major companies to carry out the next generation of combat aircraft and tactical missile projects. This is seen as essential to overcoming problems of disclosure of intellectual property rights and to build up continuity among professionals. Emphasis is placed especially on the permanent teaming of senior research and development personnel. Manufacturing assignments will continue to be based on the equitable division of work among national industries, in order to meet national employment needs.

### SHOP PROCEDURES

If European companies bid on US contracts, then their shop practices must conform to those specified in the RFP; however, a US program office may encounter difficulties with pre-existing programs, such as the French Roland.

A sampling of some of the differences in shop operating procedures between the US and Europe is shown in Table 15-1. European dimensional tolerances, in general, are considerably looser than US tolerances. This often causes some difficulty when the US or the Europeans are using each other's technical data packages and interpreting specific parts requirements within their usual manufacturing environments. When assembly operations are called out, there is a tendency within Europe--with its craftsmen orientation--to rely on hand-fit assemblies. In the US, the focus is on maintaining parts interchangeability to minimize the time spent in assembling. Matching and selective assembly is, therefore, generally not required. European manufacturing, test, and inspection specifications may be adequate, inadequate, or completely lacking. They may not accurately reflect the work on the shop floor. Efforts may be required to correct these problems, given the technical nature of the products. It should be pointed out, however, that in the big three (the UK, France, and the FRG), procedures are becoming closer to those in the US, particularly in France and the FRG. There is also a trend in Italy toward closer tolerances.

### TESTING

There are also differences between Europe and the US in the test philosophy used to qualify a component or system for production and to maintain surveillance over technical performance. These differences span the gamut of when to test, what to test for, who will test, how many to test, and where to test. In a cooperative program, it is necessary that a coordinated test program be established that satisfies the needs of all the participants. When the program is more of a technology transfer for

**TABLE 15-1. SHOP PRACTICE DIFFERENCES**

<b>ELEMENTS</b>	<b>US</b>	<b>EUROPE</b>
<b>MANUFACTURING TOLERANCES</b>	<b>TIGHTER</b>	<b>LOOSER</b>
<b>ASSEMBLY</b>	<b>INTERCHANGEABILITY</b>	<b>OFTEN HANDFIT</b>
<b>QUALITY CONTROL</b>	<b>MILITARY SPECIFICATIONS (THOUGH US INPUTS TO STANAGs)</b>	<b>STANAGs</b>
<b>MEASUREMENT</b>	<b>ENGLISH (THOUGH MILITARY OFTEN USES METRIC)</b>	<b>METRIC</b>
<b>DRAWING CONVENTION</b>	<b>NATIONAL</b>	<b>COMPANY UNIQUE</b>
<b>PRODUCTION RATES</b>	<b>HIGH RATE</b>	<b>LEVEL LOADING</b>
<b>MATERIALS AND PROCESSES</b>	<b>NATIONAL SPECIFICATIONS AND STANDARDS</b>	<b>HIGH VARIABILITY</b>
<b>PRODUCTION RUNS</b>	<b>LONGER</b>	<b>SHORTER</b>

a developed system, questions often arise about the degree to which the developer's test data can be extrapolated to meet the needs of the receiving country. It is also important that the objectives of the tests be clearly defined to the decision-makers in OSD and Congress to ensure that no misunderstandings or misinterpretations of test results occur. Chapter 14 deals with this topic in greater detail.

#### **OTHER INTERNATIONAL DIFFERENCES**

Chapter 8 (Technology Transfer) noted that standardization of drawings in foreign countries is practiced to a much lesser extent than in the US; however, international and national standards should be understood by US personnel. Of special significance are International Industrial Norms (ISOs). The Multiple Launch Rocket System (MLRS), for example, makes use of

Deutschland Industrial Norms (DINs) for fasteners, tubing, and like items. Recognition of national differences early in a program will ensure appropriate planning, scheduling, and funding of the technology transfer. Since drafting practices vary widely from company to company in foreign countries, it is important that drafting practices of the specific companies involved in the technology transfer be reviewed and understood in advance of acquiring the initial TDP.

In general, mass production is not emphasized elsewhere to the degree that it is in the US. This is primarily because, for many products, manufacturing in foreign countries is considered labor-intensive, while, in the US, it is primarily capital-intensive. Automation is the trend in US manufacturing, while, in many other countries, handfitting is still prevalent in smaller industries. This can affect the capabilities of foreign manufacturers in meeting US delivery schedules. It must be recognized that some foreign industries--for example, automotive, ordnance, and aircraft--are extremely progressive and can be considered as modern as any in the US. Production capacity may be no problem at all in these companies. As Rich, et al. (1984) point out, the emphasis on work stability discourages surges in labor and contributes to longer lead times before production start-up. It also complicates scheduling for final assembly.

There is a frequent failure to distinguish adequately between economics attributable to scale and economics attributable to volume production. With respect to volume economics on military orders from abroad, several points need to be considered. If these foreign orders arrive after production for the domestic armed forces is completed, they will not be of much help in reducing unit costs overall. On the other hand, their late arrival keeps the assembly lines going during those periods when the domestic armed forces are not ordering very much.

With respect to materials and processes, there is a reasonable amount of standardization in the US in accordance with federal, military, and industry standards. In Europe, there is a high degree of variability. Many of the processes are derived from the US standards. When this is true, transition represents a lower level of challenge. The critical point is the program management office, and the contractors involved need to look explicitly at the comparability of the US process and foreign process to be used or the specific system to be manufactured. The impact of the differences can then be determined.

For example, the goal of coproduction of a US system in Europe is to develop a capability to produce the system in Europe; however, some limited purchases of components from the US may be necessary for the following reasons:

- o The quantity desired is too small to justify the cost of tooling up in Europe.
- o Delays are encountered when creating European sources.

For a limited purchase, it may be desirable to have US acquisition agencies act for the foreign government in the source selection. This ensures proper control over quality, price, and delivery. The decisions on which foreign country and firm will receive contracts to manufacture the foreign system are for foreigners to make. The USG and US contractor should be limited to the roles of technical advisors. Helping foreign countries to analyze the amounts and kinds of technical know-how needed is appropriate. Production allocation decisions are both economic and political; therefore, these decisions must be made by the respective countries.

Scheduling multinational programs is an enormous task. Sequencing the products of contractors from several countries into an end item assembly requires detailed planning and the use of sophisticated scheduling techniques. Upon request, the US should be prepared to offer technical advice on network modeling and schedule analysis. In the past, contract delivery schedules have created problems. Schedules appear to have been established more by negotiation than by the order of assembly in the production process. Although schedule negotiations are necessary, their overemphasis can result in unrealistic and costly delivery schedules. The network scheduling techniques previously mentioned can provide a more rational basis for schedule decisions. When developing schedules for European-produced items, for example, the PM should plan for longer lead times. Based on experience from the F-16, HAWK, F-104, and STINGER programs, the European sources tend to require 36 months for manufacture of items that would require 24 months in the US.

This issue of flow time is one of the elements that is evaluated during the Production Readiness Review (PRR) that is required on most major DoD acquisition programs. The objective of the PRR is to determine that the system is ready for production, that production engineering problems have been resolved, and the producer has accomplished adequate planning for the production phase. The particular approach to the PRR must be tailored to the structure of the specific acquisition program. On the F-16 program, the domestic production lines were started nearly a year in advance of the European coproduction lines. As a result, no formal PRRs were held in Europe before the Defense Systems Acquisition Review Council (DSARC) (now the Joint Requirements and Management Board (JRMB)) presentation. After the DSARC presentation, several incremental follow-up PRRs were held



with potential problem vendors. Also, informal PRRs were held in Europe that were officially titled "country audits." It was determined that the use of PRRs on the F-16 program was beneficial in that they highlighted areas of schedule risk when there was still time to do something to minimize the impact.

## PRODUCT ASSURANCE

For multinational programs, product assurance planning is generally consistent with that conducted on US systems. Preparation of a formal product assurance plan with milestones serves as the method for portraying and tracking significant events during a system acquisition. It provides an effective means to disseminate information to all levels of management. Milestones to be scheduled and depicted include events such as the presolicitation conference, the issuance of letters of instruction, technical data package exchange, first article and comparison tests, and the development of fielding and deployment plans.

A system "maturity" analysis should be performed. The maturity of a foreign system and its life-cycle status will determine the degree of Quality Assurance (QA) planning required. The maturity of a system should be judged by its relative status when compared with the life-cycle model. To be "mature," it must be equivalent to a fully qualified deployable system. An "immature" system would fall within the development phase of the model. The maturity analysis must include an evaluation of safety, reliability, maintainability, and other characteristics that may not be emphasized in a foreign system. The maturity analysis is primarily based on results of tests performed on the system by the foreign contractor and the responsible DoD element. As a result of this analysis, the US may determine that the item is ready for production with only minor system changes--such as colors and marking--or the US may determine that further testing and development is required before a production decision can be made.

Product assurance testing during production should follow normal DoD practice for similar items. Tests required may include:

- o Product Qualification Testing
- o First article (preproduction testing or initial testing)
- o Quality conformance
- o Interchangeability.

The user must have an opportunity to evaluate the system for user satisfaction. Release of material to US operating forces must follow established DoD policies and procedures. The Federal Acquisition Regulation prescribes for procurement QA the policies and procedures (1) to ensure that supplies and services procured by DoD conform to the quality and quantity set forth in the contract, and (2) for the acceptance functions associated with QA.

Standardization Agreements (STANAGs) are agreements among several or all of the NATO members to adopt like or similar military equipment, ammunition, supplies, stores, engineering practices, and operational, logistic, and administrative procedures. They may include both material and nonmaterial aspects of military forces. Material STANAGs are implemented through DoD military standards and specifications or nongovernmental, national, or international standards. The DoD Index of Specifications and Standards (DODISS) lists, as international standardization documents, unclassified STANAGs. They may be obtained from the US Naval Publications and Forms Center. Classified STANAGs may be obtained from the appropriate Service's International Standardization Office, which, in turn, may order them from the Naval Publications and Forms Center. Implementation for nonmaterial agreements may be found in field manuals, regulations, circulars, pamphlets, handbooks, or other administrative publications. Department of the Army Pamphlet 310-35 contains listings of agreements, standards, and related US military implementing specifications and standards. A complete list of STANAGs is found in AAP-4, "NATO Standardization Agreements and Allied Publications." Approximately 600 STANAGs are currently listed in the NATO index.

Allied Publications (APs) are NATO publications covering tactics, intelligence, doctrine, and procedures. Of special interest to those participating in armaments cooperation acquisitions are the Allied Quality Assurance Publications (AQAPs). As with STANAGs, the AQAPs are listed in the DODISS as international standardization documents.

Two STANAGs are applicable to procurement QA: STANAG 4107 (Mutual Acceptance of Government Quality Assurance), and STANAG 4108 (Allied Quality Assurance Publications). STANAG 4107 sets forth the conditions and procedures under which mutual QA will be performed by one NATO country at the request of another NATO country or organization. The objective of STANAG 4108 is to propose the use and standardize the development, updating, and application of AQAPs. STANAG 4108 categorizes the AQAPs into three distinct types: contractual, guidance, and informational. It also furnishes criteria for the application of the basic

contractual AQAPs. Another document of significance is STANAG 4093, Mutual Acceptance by NATO Member Countries of Qualification of Electronic and Electrical Components for Military Use. QA issues are further discussed in Chapter 12.

## CHAPTER 16 LOGISTICS

### INTRODUCTION

Some of the greatest payoffs from collaborative programs are efficiencies and savings that accrue to all participating nations through combined logistics support arrangements. Frequently, however, logistical concepts are not prepared until sometime after the development and the production commitments are made. Furthermore, when allied governments procure a system on a direct commercial basis, there may be even more compelling need for them and the United States (US) to explore cooperative configuration control and other logistic arrangements. These steps will contribute to greater combined cost savings and readiness.

Although this chapter is entitled "Logistics," many of these support issues are addressed in other chapters as well. The chapter considers tailoring of the logistics support process and procedures to help ensure operational readiness. Topics covered in this chapter are acquisition logistics, the security assistance interface, and system support for a fielded system. A key point to remember is that this chapter, like the rest of the Guide, is written for a US Program Manager (PM) working in an international program environment.

### ACQUISITION LOGISTICS

All logistics support programs to be developed, regardless of acquisition category or operational interest, are directed from resource sponsors in the Army Materiel Command (AMC), the Air Force Systems Command (AFSC), and the Chief of Naval Operations (OPNAV) to PMs with common requirements to be followed. These precepts for the development of logistic requirements for a program allow flexibility to meet multiservice or multinational support needs. The following precepts must be considered by the PMs:

- o While logistics costs (Operation and Support (O&S), ownership costs, etc.) represent 60 percent and more of a program's total cost, very few logistics dollars are spent early-on when the majority of costs are positively locked in by program management decisions. Properly emphasized and conducted acquisition logistics ensures that these later expenses are optimally cost effective.

- o As a consequence of the above, acquisition programs shall include an Integrated Logistic Support (ILS) program, with an ILS manager assigned early-on in the initiation phases. Early ILS involvement allows designed-in supportability and reduced life-cycle ownership costs through logistics Research and Development (R&D), design influence, and establishing a Department of Defense (DoD)/contractor logistics organization.
- o Design interface during R&D, one of 10 ILS elements, produces a data base from which maintenance planning of all repairables, supply support requirements, technical manuals, and trained manpower requirements are derived. This data base is established through:
  - A well-tailored Logistic Support Analysis (LSA) which, as part of systems engineering, integrates readiness and operational availability considerations with design
  - A source selection policy of establishing logistics and supportability as a major factor weighted no less than performance
  - R&D resource allocation designed to achieve performance, readiness, and schedule with the same emphasis (DoD Directive (DoDD) 5000.39)
  - Emphasis on operational suitability of deployed systems as an R&D objective of equal importance with operational effectiveness (DoDD 5000.1)
  - Organic support, when called for in the support plans, shall, as a minimum for system introduction, consist of a complete set of logistics resources required for operational- and organizational-level maintenance of the system.

The LSA is a common tool in all R&D programs. Requirements documents will require that the PM initiate an appropriately tailored MIL-STD-1388-1A LSA program concurrently with R&D. Its objective is to link design and ILS requirements to system readiness and availability thresholds in order to control ownership costs and to determine through each ILS element the optimal support concept.

LSA is a life-cycle approach whose engineering analysis will allow for decisions that influence design and which effects eventual standardization with other weapon systems or with diverse groups performing maintenance. LSA during R&D results in

the PM having a basis for entering supportability and readiness into the early trade-off arena with cost, performance, and schedule. As the LSA effort continues, an LSA Record (LSAR) or data base is established from which technical and training manuals can be derived to meet system introduction; a level of repair for each repairable can be determined and documented in the maintenance plan; and the supply support requirements and pipeline can be developed. Finally, LSA allows the PM to consider early-on the effect of total life-cycle costs as opposed to acquisition costs only.

Improved readiness and sustainability are primary objectives of the acquisition process. Operational availability (Ao) is a primary indicator of sustainability. As such, Ao drives the logistics support program in an effort to attain it (i.e., a prescribed threshold of readiness). Ao for all systems, whether they are continuously or intermittently used, is the percentage of time the system will be ready to perform in an operational environment when randomly called upon. This percentage of time is expressed as a number threshold value. DoD Instruction (DoDI) 5000.2 requires the PM to work toward such a system readiness objective with firm threshold value by Milestone II.

The computational elements of Ao are reliability, maintainability, and availability. LSA is generally the first step toward arriving at these elements. Therefore, Ao is a concern of both the system engineer and the ILS manager. The resources to achieve readiness as measured by Ao and the resources to conduct the LSA, which reveals the structure to meet cost effective readiness thresholds, are program management trade-off considerations given equal weight with performance considerations. Without LSA and Ao, a PM may still determine the capability of a design and the dependability during operations, but he will not be able to plan for the costs of readiness.

The ILS elements are extremely interactive and involve engineering, technical, and management activities. The ILS manager coordinates an organization that consists of the following: element managers who are responsible for the basic ILS elements, a corresponding organization (a mirror of the PM's organization usually as directed by contract) established by contractors and other countries, field activities and depots, and the other acquisition professionals in the Program Management Office (PMO).

During acquisition, PMs are most concerned with designing support (not just supporting design), relating support to readiness, and acquiring the support. DoDD 5000.39 describes the ILS elements as:

- o Maintenance planning

- o Manpower and personnel
- o Supply support
- o Support equipment
- o Technical data
- o Training and training support
- o Computer resources support
- o Facilities
- o Packaging, handling, storage, and transportation
- o Design interface.

DoDD 5000.39 addresses many specific objectives that ILS programs must satisfy by each program milestone. PMs should refer to enclosure 3 of the directive for those objectives and actions required in each phase.

#### INTERNATIONAL DIFFERENCES--MACRO VIEW

The disciplined, unified, and interactive approach to the management and technical acquisition logistics activities of a program can be simply stated as:

- o Define the support
- o Design the support
- o Acquire the support
- o Provide the support.

The probability and timing of international participation in the program will determine how effectively the PM can include the foreign government's requirements in the acquisition logistics effort as discussed above. If a program is combined from inception, the PM will be better able to influence the system design to accommodate foreign as well as US requirements in the ILS processes. The further the program proceeds without certainty of international involvement, the more difficult it will be for the PM to adjust his system to the needs of the participants.

The difficulties inherent in late international in-

volvement can be eased somewhat by early consideration of potential Host Nation Support (HNS) during ILS planning. Types of support possible from host nations include but are not limited to maintenance, transportation, materiel handling, munitions maintenance and storage, supply support, engineering support, security, airfields and other facilities, and Petroleum, Oil, Lubricants (POL) supply/storage/distribution. Early planning for HNS can improve opportunities for host nation participation late in a program as well as enhance US weapon systems materiel fielding and support, even if allies fail to adopt the system.

Another difference involves the sensitive technology issue. The US Government (USG) sometimes mandates that the foreign-purchased configuration be different from the US configuration. If this is the case, then the PM needs to identify any sensitive technology early-on so that configuration changes can be accommodated during ILS planning and production.

Another important point to remember is that support requirements and capabilities of a foreign country may not match those of the US. The LSA process and the Integrated Logistic Support Plan (ILSP), which manages and integrates the development, delivery, and life-cycle support of required logistics resources, must both take this fact into account.

Communication between the US and a foreign participating country on all areas of ILS is crucial. The PM must ensure that key logistics personnel for each country are identified and that these personnel participate jointly in planning and establishing the logistics program. The foreign personnel must be familiar with the weapon system, and the US personnel must understand the subtleties of the foreign country's logistics requirement, as well as its logistics system. Only then can a well-thought-out cooperative LSA and ILSP be formulated.

The difficulty of achieving this cooperation increases the further the program proceeds without international cooperation. If a program is combined from inception, logistics program review teams should be formed as soon as possible. These teams or committees, which include members of the participating countries should be oriented to the specific level deemed necessary. Depending on the complexity of the program, either a two-tier or a three-tier system will normally be used. The lowest or third level is formed of subcommittees or working groups. This level will comprise the functional working level. This may include a group for provisioning, training, computer support, etc. The actual formatting, data requirements, training, and other integrated logistic support problems will be resolved by these various groups or teams. These level 3 groups will be established by the level 2 committees and meet on an as-required basis.



Items that cannot be resolved at level 3 will be presented to the level 2 committee. The level 2 committee will act as a steering group for the logistics directives from the level 1 team. In a large program, the level 2 committee will be responsible for most of the communications and the agreements in the logistics arena. This level will meet on an as-required basis. Level 1 is the logistics status review team. This team will normally comprise the PM, deputy PM for logistics, and designated logistics representatives for foreign countries. Level 1 will review overall logistics policy, establish major milestones, and resolve problems that cannot be resolved at lower levels. This team may meet only three or four times a year, or when deemed necessary by the PM.

Whereas the above organization would be appropriate for a program that was combined from inception and involved joint financial contribution, a different structure is called for when foreign countries are potential participants but have not funded the program as of this date. Again, the key factor for success is early involvement and communication between key personnel from both the US and the potential participants. It is still advisable to establish subcommittees or working groups for each ILS element or functional grouping. Normally, foreign involvement will be more limited to an advisory basis.

If, however, the participating country has become a participant at a later stage in the acquisition, much more assistance is required from the US. It is still, however, the PM's responsibility to ensure that each participating foreign country be involved fully in the development of effective LSA plan and ILSP, including any country-peculiar annexes that may be required to facilitate mutual support and assistance. If the foreign country has been actively involved in the acquisition process, has participated in logistics committees at all levels, and has a fairly sophisticated system of its own, most of the hard work has already been completed.

There are differences between countries in practically every aspect of support. These differences occur in organizational structure, type of support available at each level, occupational skills, training, facilities, test equipment, and support environments. Because each country understands its own system and infrastructure better than any other, it is appropriate that it play a vital role in reconciling the system's support requirements with its own support capabilities.

One of the most important differences and a driver affecting most of the other logistics elements is the maintenance concept. The concept, together with the operating plan and the system configuration, forms the foundation for logistic planning.

For this reason, it is appropriate to discuss this topic in some detail because it provides an understanding that is applicable in all of the armaments collaboration approaches. As an example, coproduction of a US system by a foreign nation may well require changes to accommodate the foreign recipient's philosophy. Likewise, US desires to pursue acquisition of a foreign system will require knowledge of these environmental differences that were considered in configuring the system, as well as its maintenance and supply approaches.

### Maintenance Concept

It sets forth, in general terms, who performs what maintenance actions, on which items, where, when, and, sometimes, how. Normally, the concept is described in terms of levels, or echelons, of maintenance and the responsibilities of each. For example, a description of a US Navy maintenance concept would identify the types of maintenance performed by each of the three standard US Navy levels of maintenance--organizational, intermediate, and depot--and the role, if any, of contractor support. The maintenance capability required at each level depends on how the weapon system is designed, how it is employed, and how maintenance responsibilities are allocated. The maintenance capability actually established at each level is manifest in the skills, facilities, tools, support equipment, and other resources provided at that level.

### Differences Between US and Foreign Maintenance Concepts

Many foreign countries who use US-designed systems and equipments try to adopt the US approach to maintenance; however, few foreign users of US equipment support the items in exactly the same manner as the US forces. Even when a foreign country says it is following the US maintenance concept, close scrutiny often reveals fundamental differences that significantly affect requirements. The following factors account for differences in the concepts:

- o Mission--the US military Services, because of time and distance factors associated with operations in forward deployed areas, normally try to make units as self-sustaining as possible. The result is to push maintenance capability to the lowest level possible. The missions of many foreign services do not usually require distant deployments. Thus, for ships, it is not unusual for a foreign navy to accept a lower level of

on-board maintenance capability and rely more on shore facilities for maintenance.

- o Number of Weapon Systems--Most foreign acquisitions are for comparatively small numbers of systems or equipments. It may be unnecessary, impractical, uneconomical, or even impossible for a friend or an ally to implement in its entirety a US maintenance concept that is designed to support the US forces. For example, the maintenance concept for a US inventory of several hundred aircraft may not suit the needs of a country that must support only a dozen or two.
- o Organizational Structures for Maintenance--The functions performed by each of the Services' standard three levels of maintenance, are frequently allocated differently among the various levels of a foreign country's maintenance structure. As few as two or as many as five levels may be delineated. For example, at an aircraft operating base, there may be little distinction between organizational and intermediate maintenance, both being accomplished by one organization. At the other extreme, the functions assigned in the US Air Force or Navy to intermediate and depot levels may be split among three or four levels, reflecting a division of responsibility among military units, military-controlled industrial facilities, government-controlled industrial facilities, and private industry (local, US, or third country).
- o Relationship Between Industry and the Military--In many countries, the shipbuilding, aircraft, and other defense industries are either nationalized or partly owned by the government. Even when the government takes no ownership or management role, some privately owned companies may represent the only national industrial capability in their fields. Hence, foreign industry is likely to be given more responsibility for system maintenance than its US counterpart. For example, in some foreign countries, private or nationalized companies may supply the same services provided to the US Navy by naval air rework facilities and naval shipyards, and there may be no comparable military-owned capability. There may also be no national capability for certain types of maintenance; for example, calibration of test equipment, repair of inertial navigation systems, and overhaul of certain components. Such maintenance may be done by the US military Service, US industry, or third countries. Several countries having the same types of equipment may cooperate to establish

a regional industrial activity or to divide depot maintenance functions among themselves. Whatever alternative is used, government-to-government relationships and industry-to-government relationships in each country become critical to establishing effective arrangements for maintaining military systems. It is important that the maintenance concept for these systems and equipment reflects such arrangements.

- o Manpower Structure of the Armed Forces--Implicit in a US maintenance concept are the traditional roles and functions of the various manpower categories: officers, warrant officers, enlisted personnel, and civilians. Every foreign country, too, has its own traditions, culture, and, sometimes, laws governing the types of tasks performed by its workforce and manner in which they are performed. To be effective, the maintenance concept must take these differences into account. For example, maintenance tasks requiring English language training and technical training in the US may not be assigned to an organizational level manned by conscripts who may be serving 13 to 18 month tours. Nor will maintenance tasks be assigned to personnel who traditionally have been responsible only for system operation, as have the ships' crews in some navies. If only civilians traditionally have performed, or are capable of performing, certain tasks, the maintenance concept will be tailored to assign those tasks to maintenance levels manned by civilians.
- o Resource Allocation Priorities or Limitations--Our allies may not want to allocate their resources or may not have the resources (either technically trained manpower or money) to support their systems the same as the US. Nor do their operations always require the same support. Consequently, their decisions about allocation of maintenance functions are frequently motivated by priorities and limitations markedly different from those that shaped the US maintenance concept. Such considerations are most likely to affect decisions on support investments--such items as facilities and support equipment that may be essential to implementation of the US maintenance concept.

Since the program Memorandum of Understanding (MOU) provides the umbrella under which the PM operates in the international environment, it is important to know how acquisition logistics has been addressed. "How" it is discussed depends upon the stage when international cooperation begins, as was previously highlighted. Some programs lay out principles and

mechanisms while others deal in generalities or discuss specific logistics issues of particular interest. The following macro view presents how several programs approached logistics.

#### Multiple Launch Rocket System (MLRS)

The MOU stated as one objective the development of an economical common logistics support system for the MLRS in Western Europe. To implement this declaration, a logistics working group was established, logistics principles were laid out, and milestone objectives were set. In support of the implementation, a configuration management plan was established, commonly produced parts were required to have logistics interchangeability, the technical data necessary for logistics support was required to be provided, and a common maintenance concept was recommended. The European governments were asked to provide maintenance support to the maximum extent possible.

#### NATO Seasparrow Surface Missile System

The MOU of June 1968 said little of logistics support but the Development, Production, and Delivery Plan shows that tailoring of the system and maintenance of an ILSP was underway. The follow-on MOU in December 1977 was needed only for commitment of all European Participating Governments (EPGs) to continue the cooperative effort. The critical phases of tailoring the system and the ILS plan had been completed. The scope of the MOU included configuration management, supply support, technical support, and missile support. The project office exercised its responsibility for procurement through the Naval Sea Systems Command contracting officer. The US waived the US augmentation of its stock of spare and repair parts and provided support to the European partners equivalent to that provided the US Navy, because the worldwide supply of central stock was more than adequate. The EPGs use Foreign Military Sales (FMS) procedures to arrange for repair and replacement of material. The individual governments took primary responsibility for their in-country logistic support.

#### F-16 Multinational Fighter Program

The MOU that created the F-16 program stated that the US would "provide both the logistic support for the F-16 program to the EPGs under a US cooperative logistics program and technical support as long as the aircraft is in operational use in one of the EPG countries, such without prejudice to future EPG arrangements relating to their own logistics support." The only

other logistics issue addressed specifically was that the depot maintenance capabilities of the EPGs would be used for the support of the European-based US Air Force F-16s.

#### NATO Airborne Early Warning and Control (AEW&C) Program

The multilateral MOU (MMOU) that established the program called for the establishment of a committee on Operations and Support. The management of O&S was delegated to the NATO AEW&C Management Agency until the single force commander was established. Some principles for the O&S of the system were laid out in Section XIV of the MMOU. Two specific O&S issues were addressed. The first was that the European host nations would provide support for the AEW&C aircraft in their territories. The second was that the US Government would have responsibility and authority to procure and manage the aircraft, engine, and related support systems programmed within the scope of the agreement. Support cost estimates for the system were included, and the means to fund them were established.

Although the above overview provided a macro-level presentation, the following several sections will focus on a general overview of the more significant logistics issues associated with international armaments cooperation. Just as any country, including the US, may acquire hardware by codevelopment, coproduction, or direct sale, so can the logistics support be acquired in the same manner. To accomplish this task requires a knowledge of the applicable environment.

#### SECURITY ASSISTANCE INTERFACE

The various armaments collaboration approaches are all intended to provide participating countries with weapons that support the goals of standardization and interoperability. During the various acquisition processes associated with the approaches, all logistics aspects of support will inevitably involve security assistance procedures to a greater or lesser degree, depending upon the approach being pursued. The Security Assistance Management Manual (SAMM) (DoD 5105.38M) provides details on policies and procedures required to carry out the management of security assistance. Chapter 8 of that manual provides specifics on case performance, some of which will be discussed in subsequent sections of this chapter pertaining to logistics.

#### LOGISTICS CONSIDERATIONS IN SECURITY ASSISTANCE SALES

The sale of defense articles by the USG, through FMS,

could be considered in the later discussion of support for a fielded system; however, it is placed in this section for several reasons. First, the effective and efficient integration of a materiel system into a foreign government's military structure may include developing the foreign country's logistics support resources, procedures, and requirements for the new system. Second, and more importantly, detailed ILS planning may be required to develop tailored or modified support for the system when this assistance is requested by the purchasing country. This may require a special ILSP for each country. Frequently, a "Country X" plan is expanded to describe how the system will be acquired, as well as supported. Multinational ILS planning conferences, in-country surveys, or both may be used to develop the plan. This planning could be conducted in parallel with US program development actions or at a subsequent time, i.e., after the US system has matured and been fielded.

#### ILS Planning Conference/In-Country Site Survey

When considering the choice of the ILS planning conference versus the in-country site survey method, the PM decides which process will provide adequate information to effectively plan for logistics support. The choice of a planning conference or an in-country survey is influenced by a number of factors, such as:

- o The attitude of the foreign country toward a US team evaluating its capabilities
- o The technological and logistical competence of the foreign country
- o The experience of the foreign country in introducing similar systems
- o The availability of sufficient data.

If the in-country survey is desired, representatives of the foreign country and a team of US personnel work together to conduct the survey. The specific goals of the site survey team generally are to:

- o Provide the customer country with an assessment of support requirements
- o Assist the country in identifying required levels of support and assessing their capabilities to provide the support

- o Develop and document a plan for introducing and supporting the system.

Careful planning and preparation are necessary for a successful site survey. As part of the planning process, a presite survey may be required to collect preliminary data before the formal site survey. The presite survey team generally consists of a small group of highly trained experts who lay the groundwork for the full site survey and prepare a preliminary program and support plan. This document should include a plan of action and milestones for the formal site survey.

A logistics planning conference generally is chosen when the foreign country has an existing system that can support the equipment without a survey. If the planning conference option is chosen, the foreign country participants should include representatives of the relevant logistics specialties. They should have the necessary information to complete the planning exercises that are described in the functional analysis paragraphs. Consultation between the countries before the actual convening of the meeting is helpful to ensure that the required information is developed.

A detailed understanding of how the US FMS system works and an appreciation for how program requirements relate to US requirements will help the foreign country make decisions on those items they wish to procure via FMS. The item delivery lead time and FMS processing time will have to be considered in defining system requirements and item need dates. A US recommendation will indicate when an FMS customer should submit a Letter of Request (LOR) for a Letter of Offer and Acceptance (LOA) to activate the US procurement system. The agreement must address the extent of logistics support the US will provide after the US stops using the system.

The basic structure for an ILSP for a US system is described in the applicable Service directives and regulations. It can be tailored to the needs of the foreign country. The schedule and logistics element section especially will require modification to reflect support of the country's logistics system.

### Functional Analysis

The survey team or planning conference, as appropriate, conducts an analysis of various functional areas. These areas are discussed in subsequent paragraphs.



### Logistic Support Analysis

The LSA performed to support US forces is based upon the US operational role, utilization rates, and support concepts; however, there is a core of data within the LSA and LSA records prepared for US forces that is independent of the role, utilization rates, and support concepts. The core can be used to derive LSA and LSAR information needed to compute the foreign country's requirements for logistics support resources (maintenance manpower, supply support, provisioning quantities, etc.). If desired by the foreign country, the US military Service can assist the foreign government with the analysis, documentation, and resource computations or it can perform these tasks for the foreign country.

### Maintenance Planning

Maintenance planning may require an in-depth study of the foreign customer's procedures for supporting the system. The results of the examination will assist in tailoring maintenance recommendations to correspond to the customer's current maintenance philosophy and practices. Logistics support will be analyzed and unique requirements will be identified. The analysis should result in recommendations on how best to use the country's maintenance capabilities and how DoD can interface and assist in executing the overall maintenance program.

### Facilities

The country's existing facilities should be analyzed to determine their capability to support operation and maintenance of the new system. Analysis of the adequacy of structures, property, and permanently installed support equipment should be performed. The analysis should result in recommendations on cost-effective methods to adapt existing facilities to support requirements of the new system.

### Supply Support

The country's supply system should be analyzed to determine how best to integrate supply support of the new system. A basic understanding of how the foreign customer's supply system works, ADP interfaces, and required new methods to support the system should be analyzed and addressed. A Repair of Repairables (ROR) program can be designed and offered using either customer or US sources for repair of repairable items. A

working knowledge of the country's industrial capabilities is necessary to properly address ROR programs. If the decision is made to use US maintenance facilities to support ROR, an FMS case will have to be established. This FMS case is separate from the case that covered the sale of the system, because separate organizations are responsible for providing supply support.

#### Support Equipment

An analysis should be performed of the country's ability to satisfy requirements for support equipment with its existing equipment or support equipment producible by the foreign country. The analysis should identify requirements to procure support equipment from the USG, when applicable.

#### Training and Training Support

Operational and maintenance training requirements are normally established by the US and will be the baseline for a foreign training program. The analysis can assess existing training facilities, the level of English language proficiency, the level of core technical training, the level of operational proficiency, and the foreign skill specialty structure. Once an assessment is made in these areas, recommendations on training devices, training courses, required software, and operator and maintenance training requirements can be incorporated into a training plan. The training plan will identify sources for accomplishing the training and purchasing the training and training devices, available contractor support, and applicable software. Generally, the US military Service supplies a majority of the support in this area through security assistance channels.

#### Technical Data

The analysis should establish requirements for the country's technical data, publications, and documentation library to support the purchased system. The applicable US Service will have established the documentation required to support US forces, and the analysis can compare the customer's documentation needs with this US documentation. As a follow-on, an information exchange agreement between the purchasing country and the US is desirable in order to efficiently transfer data in a mutually agreeable and timely basis. Another requirement for the customer would be to establish a separate FMS case that would provide automatic updates and revisions to publications and documentation.

### Configuration Management

A method to share the costs of the continuing engineering support should be established. Continued adherence to the US configuration has many advantages, particularly if the customer is going to rely on the US supply system and technical documentation program. If the customer's configuration differs from the US configuration, supply support, software development, and support equipment development will be costly and adversely affect interoperability and standardization objectives.

### Contractor Engineering and Technical Services (CETS)

CETS can be a vital element in any foreign acquisition of a US materiel system. The technical expertise available to the customer in all phases of the program can assist the customer in maintenance, training, the purchase of support equipment, test and evaluation, follow-on provisioning, inspections, and essentially all aspects of the program. The customer country can contract through the US military Service using an FMS case separate from the materiel system sale case, or contract directly with a commercial firm for CETS. The requirements for CETS will depend largely on the time it takes the foreign country to attain full operational and maintenance capability.

### Safety

The analysis will identify potential safety hazards resulting from unique operations and maintenance procedures used by the foreign country. US military instructions, guidance, and reporting procedures are normally used as a basis for this evaluation. If safety hazards do exist, the analysis should result in recommendations for engineering change proposals, revised operation and maintenance procedures, and other corrective actions.

### LOGISTICS ISSUES IN COPRODUCTION

This section addresses ILS issues related to foreign coproduction/licensed production of a US-developed materiel system, as well as to US production of a foreign system. It is not intended to replace any of the previous discussion but only to amplify or build on significant issues.

## Planning

Logistics planning must be initiated early-on and consider all of the ILS elements. All participants must recognize the need to make decisions that are responsive to the needs of the developer, thus precluding adverse effects at a later time. As an example, the foreign participants in the F-16 program were reluctant to cooperate in supplying the logistics planning data necessary for doing a proper job of planning for support of the aircraft. In other instances, the same countries were slow in ordering spares, as well as support equipment. Both instances tended to complicate the task of personnel concerned with logistics in developing a plan for coproduction. Similarly, planning must assess the full ramifications of installing equipment in many countries at one time. In the case of the F-16, logistic support had to be provided almost simultaneously for seven different base activations, a scenario that would be unlikely to occur in standard FMS arrangements.

## Maintenance

Maintenance is driven by design and most assuredly affects supply levels. When foreign weapons are being procured for US use, the PMO must fully understand the design that was employed by the foreign nation. As an example, the 120mm tank gun was designed to be used in the Federal Republic of Germany (FRG) Leopard tank. Its design was integrated with various other key components, such as the recoil mechanism, breach block, and trunnion mounting system. The FRG maintenance philosophy was tied to this design. The US review of the package resulted in a redesigned recoil mechanism and actual usage of only the existing breach block and gun. The FRG maintenance philosophy differed in several respects. First, certain procedures were performed during removal and replacement of the gun tube that the US did not believe were necessary. Second, the levels of maintenance employed were not the same as those used in the US Army. In addition, European countries place more emphasis on contractor maintenance vice organic Service support. The above events resulted in considerable changes in documentation and types of repair parts necessary to support the system. In a similar manner, the AV8A Harrier originally obtained from the United Kingdom (UK) did not have an intermediate maintenance level; hence, the US attempted to create this level from available documentation with mixed results. A closely related maintenance topic concerns the use of tools and test equipment. The US PM must fully understand the testing procedures, equipment, and test parameters for all foreign-designed systems.

### Configuration Management (CM)

CM must be effectively implemented in this approach from the very beginning of the cooperative effort. In the F-16 program, CM was not extended down to the component level in a timely fashion. When considerable concurrency was introduced into the schedule to meet foreign delivery schedules, problems developed due to the lack of effective CM. Manufacture of any item by a second source generally requires changes to manufacturing drawings to enable production by that source. The need to develop and approve Engineering Change Proposals (ECPs) will be encountered more frequently when the source is in a foreign nation that uses different manufacturing processes. Configuration control must be exercised by the US configuration manager. The objectives of this control should be to retain interchangeability of line replaceable units with no impact on maintenance procedures performed at the organizational level and minimum impact on maintenance performed at the intermediate and depot levels.

### Foreign Industrial Base Survey

When logistic support is provided to US forces by a coproducing nation, then such a survey is necessary. It must be conducted by the US military Service, prime contractor, and their foreign counterparts to ensure that the foreign production facilities are contractually required to satisfy US military specifications and quality assurance acceptance standards at a reasonable cost and on an achievable schedule. In particular, the existing tooling must be evaluated and any deficient capability obtained from either the US or abroad. The foreign capacity to produce spares on a surge basis in peacetime and wartime must be addressed because of its readiness implications. To ensure that these logistics requirements are met, a pilot preproduction or low-rate initial production program should be undertaken before the final production program commitments are made.

### ILS to Coproducing Foreign Country

Individual elements of ILS will, in many cases, be provided to coproducing nations through security assistance channels. The FMS case process discussed in the SAMM and the procedures outlined in the previous security assistance section would apply. In the case of the NATO Seasparrow, it was pointed out that when one nation has a dominant position in the development and production effort, it is often simply more cost-effective for the other procuring nations to plug into that one nation's logistics system on a multinational basis.

## ILS for US Acquisition of Foreign Systems

The US PM acquiring a foreign system tends to view the individual ILS elements as they are in a typical US-only acquisition. In essence, some elements are accepted; however, most of them either are prepared to US standards (such as training materials) by the foreign prime contractor, or in-house expertise is applied to prepare ILS elements in accordance with the US requirements.

## Offset Agreements

The PM must also require that offset agreements be analyzed carefully to ensure that logistic support provided by the foreign country contributes to system readiness and is cost-effective. The offset agreement should address several issues: willingness to provide the support on a continuing basis, ability to substitute other equipment or services for those in the agreement because of inability to provide a previously agreed equipment or service, and inclusion of depot maintenance. The cost analysis must seek to define a set of hardware or services to satisfy the offset commitment, which has a reasonably competitive cost compared to domestic production and is feasible for the foreign country to produce. Offset agreements providing for equipment maintenance can have a positive readiness impact by using facilities at locations closer to the operating sites.

## LOGISTICS CONSIDERATIONS IN CODEVELOPMENT

Few true codevelopment projects have been accomplished to date; therefore, it is difficult to portray the logistics issues in a composite sense representing lessons learned. For this reason, the approach used by the MLRS program will be provided as a broad foundation for the reader.

The following approach was pursued in the MLRS logistics program:

- o A logistics working group was established to define the type of logistics support that would be most appropriate on a common basis, recognizing that each country has its own system. From a practical point of view the US felt that it could use only wholesale or depot-level support from the NATO Maintenance and Supply Activity (NANSA). NANSA, as a means of system support, will be discussed in a subsequent section.

- o The US and the other four partners entered into a weapon systems partnership agreement for NAMSA support. The US decided to use NAMSA support only for depot level maintenance of electronics items. The other participants agreed to use NAMSA's support capabilities for depot level maintenance of automotive/hydraulics, etc.; stockage of spares for national maintenance; brokerage procurement; and excess/surplus redistributions.
- o Supply support would be obtained through national channels. NAMSA stocks would back up national stockage levels except for the US, which does not participate in this aspect of the logistics program.
- o The normal US acquisition logistics process based on DoDD 5000.39 was adhered to as outlined in detailed Service regulations. The individual partner countries participated in the various processes, such as the LSA and its various reviews. The countries obtained the LSA outputs that they desired.
- o Configuration control was an important tenet of the program. All countries were represented on the configuration control board, which was under the control of the US materiel developer. All participants agreed to maintain a common weapon system configuration.
- o The repair parts stockage at NAMSA was handled under FMS case procedures. FMS processes were also used for training and manuals. Since NAMSA has no funds of its own, the various countries had to capitalize NAMSA in advance, a process that required Treasury Department approval for US advance funding.
- o The Technical Data Package (TDP) for European production was furnished under FMS. Until such time as the full production capability is established in Europe, the participating European partners are obtaining technical and production assistance via industry-to-industry arrangements.
- o Training systems for the European partners are being obtained from the US via FMS.

## LOGISTICS CONSIDERATIONS IN OTHER COLLABORATION APPROACHES

### Packaging Concepts

Under the Patriot-Roland packaging approach to armaments collaboration, several logistics considerations are important:

- o Since the Patriot is a US system, ILS was approached from a purely national viewpoint.
- o The US, the FRG, and the Netherlands entered into a weapon system partnership agreement with NAMSA for depot maintenance support for most of the system components for all Patriots (regardless of ownership) in Europe. Some components such as radars and combat vehicles are returned to the US for depot maintenance.
- o NAMSA provides maintenance and supply support to the European participants.
- o The TDP remains under US control. Configuration control and all associated actions such as ECPs are centrally controlled by the US. Each participant pays its proportionate share of ECP costs, unless the ECP is designed to interface with the participant's common equipment, such as generators and trucks. In that case, the participant pays the total costs.
- o All repair parts are ordered, via FMS, from the US Army Missile Command. These orders are placed by US sources as well as NAMSA, which results in competing orders for the same parts.
- o The manuals supporting Patriot within the FRG are provided at no cost by the USG to the FRG including the translation of them.
- o The degree of variation in maintenance philosophy between the US and a foreign country is relatable to the amount of previous involvement with the US. In the case of the Patriot, the maintenance philosophies of the participants are basically the same. A significant reason for this similarity is related to the design, which calls for module replacement with module repair accomplished at the depot level.
- o Packaging requires an understanding of the common and associated items that will be used in conjunction with the equipment. As an example, the trucks could be



either a part of the basic system or a particular country's vehicles.

- o Training is accomplished at facilities in the US for all Patriot systems.
- o Offsets are involved due to the FRG's purchase of Roland systems to defend US airbases and for US waiver of certain costs in exchange for offsetting hardware or services by the Netherlands. The prime contractor has subcontractor firms in Europe that become part of the offset, providing dollars to the local economy.

#### Opening Defense Markets

When the US is considering acquiring a foreign weapon system under the opening defense markets approach, many different issues arise. The subsequent discussion will highlight by way of comparison how two Army systems approached several significant ILS issues. The decision to proceed in the chosen manner was based on the following:

- o The priority and usage of the system in the Service's overall equipment acquisition/deployment concept
- o The political/industrial environment of the producing country
- o The range of options available to provide sustained support to the system once acquired and deployed.

The matrix shown in Figure 16-1 compares these two systems and the approaches being pursued. Several lessons learned have emerged from this approach. First, the US should not try to impose its own solutions to problems. Instead, the foreign developer should be allowed to develop solutions. Second, our contracting process should be simplified and tailored whenever possible. As an example, the foreign producer may not know how to conduct a failure analysis by US standards. The producer should be allowed the flexibility to explain how he proceeds to solve the failure problem. If the data that are desired cannot be obtained, the warranty, if applicable (see Chapter 12), may obviate the need for the data.

#### LOGISTICS CONSIDERATIONS WHEN THE US IS PARTICIPANT

In the armaments cooperation arena, it is highly probable that the US will find itself as a participant in a project,

ILS ELEMENT	UK 81 mm MORTAR	FRG M.A.N. TRUCK
MAINTENANCE	US DEVELOPING STANDARD MAINTENANCE SYSTEM FROM AVAILABLE UK DATA.	FIRST AND SECOND LEVELS--ORGANIC US SUPPORT. CONTRACTOR SUPPORT ABOVE SECOND LEVEL IN US AND OVERSEAS.
TECHNICAL DATA PACKAGE	UK ASSISTING US IN MODIFYING TDP TO ALLOW PRODUCTION IN US	M.A.N. CONTROLS THE TDP.
REPAIR PARTS	US USAGE RATE PLUS UK RECOMMENDATIONS FOR BUILDING STOCKAGE IN US SYSTEM.	CONTRACTOR SUPPORT FOR ALL REPAIR PARTS IN US AND OVERSEAS.
CONFIGURATION MANAGEMENT	US CCB REVIEWS UK CHANGES TO DETERMINE WHETHER TO CHANGE US DRAWING PACKAGE.	US MAINTAINS CONTROL OVER ALL FORM, FIT, AND FUNCTION CHANGES. ALL ECPs ARE ACCOMPLISHED CONTRACTUALLY.
PUBLICATIONS	US CHANGING UK MANUALS TO US FORMAT.	M.A.N. PREPARED MANUALS UNDER CONTRACT.
TRAINING	ACCOMPLISHED BY STANDARD US TRAINING AND FIELDING APPROACHES.	ACCOMPLISHED CONTRACTUALLY.

FIGURE 16-1. ILS IN OPENING DEFENSE MARKETS

rather than the lead country. This role is not to be confused with a reverse FMS situation in which the US is buying a product such as the Army's acquisition of the 9mm pistol. Rather, the role being discussed involves a codevelopment project in which "Country X" is in charge and the US is a participant. The following are issues to be resolved under this approach:

- o How does the US obtain the support from the foreign country? Does the US buy it, develop an in-house capability, or use host nation support arrangements?
- o How does the US improve the system? Does the US buy the engineering rights, or does it permit the foreign developer to do the work?
- o How does the US ensure its requirements are considered in the development of the system? The Phased Armaments Programming System (PAPS) in NATO allows for entering multiple nations' needs into an organized process; however, that type of system does not exist in non-NATO countries. Consequently, does that imply that the US will acquire only nondevelopment or off-the-shelf items?
- o How does the US obtain all of the normal ILS elements associated with training, manuals, etc.? One approach is to consider that all of the requirements that a Service expects in a joint acquisition will be applied in a multinational acquisition.

It would appear that several key elements of information would be necessary in considering how to proceed in the above situation. First, what country or countries are the lead? How stable politically and economically is the lead nation? What depth of production capability exists? Combining answers to these questions, along with the knowledge of the availability of US dollars and intended priority/usage of the system, should enable the US to determine its course(s) of action.

### SYSTEM SUPPORT

Logistics support provided to a fielded system must assume the same degree of importance as that which went into developing the system. This section discusses the means by which the US, as well as an ally, can obtain the needed support.

### SUPPORT TO SYSTEMS IN THE US INVENTORY

The Services have a variety of means to obtain support for fielded systems, ranging from organic to host nation support. This section will discuss each of these components.

### Organic

The Services have organic support organizations to provide supply, maintenance, and training to accommodate new weapon systems introduction. The procedures to develop and provide this support are documented in Service regulations and instructions. In many cases, however, contractor support is relied upon until such time as the organic US Service's base is adequately established, which may never happen if transfer to an organic depot cannot be justified. As an example, the NATO Sea-sparrow is still repaired at contractor depots, even though transition to normal Navy support was made in August 1976, 2 months after completion of the first operational ship. The Patriot program uses contractor support for both the US and foreign training until the organic Army school is established.

### Cross-Servicing Arrangements

The NATO Mutual Support Act (NMSA) provides two separate forms of authority to the Secretary of Defense. The first authorizes DoD acquisition of logistic support, supplies, and services from governments of NATO countries, NATO subsidiary bodies or designated non-NATO countries for US Armed Forces deployed in the military region of the supporting country. This authority is for acquisition only, allows liquidation by cash payment or by Replacement-in-Kind (RIK) or exchange of identical or substantially identical items, and does not require the existence of a cross-servicing agreement or implementing arrangement as a prerequisite. Nine provisions of US contract law are rendered inapplicable under such acquisitions. The NMSA also authorizes, after consultation with the Secretary of State, cross-servicing agreements between DoD and governments of other NATO countries, NATO subsidiary bodies, and other designated countries, wherein DoD agrees to provide logistic support, supplies, and services in return for the reciprocal provision of logistic support, supplies, and services. Compensation for the acquisition or transfer under the NMSA may be accomplished by either reimbursement or RIK.

DoD implementation of the program calls for unified commands to negotiate "umbrella" cross-servicing agreements with NATO members to be followed by implementing arrangements negotiated by the Services with their counterparts detailing specific procedures. The first umbrella agreement was negotiated with the NATO Maintenance and Supply Organization (NAMSO). Country agreements have been negotiated with 10 NATO countries. The expansion of the authority to non-NATO countries took place with passage of the FY87 DoD Authorization Act; however, no agreements have been signed to date. Examples of the types of

support included in these agreements are operation of A-10 aircraft at forward operating locations, F-16 flight simulation, aviation fuel, truck maintenance, depot storage and base operations, and field training and command post exercises.

Several constraints are placed on the program as follows:

- o The NMSA may not be used to procure from foreign governments, as a routine or normal source, those goods and services reasonably available from US commercial sources.
- o The initial quantities of replacement parts and spares for major items of organizational equipment covered by tables of organization and equipment, tables of distribution and allowances, or equivalent documents may not be acquired or transferred under the NMSA authority.
- o Major items or weapon systems and certain types of sophisticated munitions are also excluded from transfer.
- o At the present time, only logistic support, supplies, and services in the inventory or otherwise under the jurisdiction and control of the US military Services deployed in the military region may be transferred.
- o The NMSA may not be used to permit foreign governments to use DoD Services as the routine source for logistic support, supplies, and services reasonably available from US commercial sources or from the US through the security assistance program.
- o Inventory levels of the US military Services may not be increased to comply with agreements negotiated under the NMSA. US supply inventories shall be maintained at levels necessary to meet US national security requirements and obligations undertaken using DD Form 1513S, "Letter of Offer and Acceptance."

#### Combined Logistics Activities

The NAMSO is the parent organization for the operating activity known as the NATO Maintenance and Supply Agency. Formed in 1958, NAMSA's mission is to support weapons and equipment systems that several NATO nations are using, with the objectives of maximum effectiveness and minimum costs to all participating NATO nations. The current DoD policy is that, whenever the US

and one or more NATO allies field the same weapon system, the US shall join with those participants in a NAMS0 weapon system partnership agreement for combined logistics support in Europe for those functions that are practicable, unless doing so would be disadvantageous to the US. In addition, the consideration of NAMS0 support is to be documented in the ILSP required by DoDD 5000.39.

The US has been slow to use NAMS0. In 1984, a study by the Army Materiel Systems Analysis Activity (AMSAA) concluded that it was cost-effective for NAMS0 to perform depot-level repair of USAREUR-generated LANCE and TOW unserviceable electronic and optical items. Since that time, various other programs have increased their usage of NAMS0 support, including the MLRS, Patriot, AIM-9L, and US Air Force Europe storage of war reserve materiel. The US usage has consisted primarily of depot-level support; however, NAMS0 has a matrix of support capabilities, including controlling inventory, determining supply requirements, procuring materiel and services, maintaining and repairing equipment, providing technical assistance, and transporting materiel.

The NATO infrastructure program, discussed in Chapter 3, also provides a capability for providing logistics support. Infrastructure provisions encompass the military construction and equipment procurement eligible for funding through the program. PMs should plan for its usage when facilities and equipment can be programmed and planned for under the guidelines of DoDD 2010.5. Nationally managed combined logistics activities (such as NATO POL depots and pipelines, NATO ammunition storage facilities, NATO naval storage and repair facilities, NATO support sites for reinforcement forces, and similar facilities available under bilateral agreements with NATO members) provide effective alternatives to construction and operation of separate US facilities in Europe.

#### Host Nation Support

US forces assigned in foreign countries have the capability, depending upon the country, to rely upon HNS for logistics functions. DoD components should continually ascertain host nations' willingness and capability to provide the support and attempt to formalize that support in written agreements. To ensure the flow of material to support deployed forces in an emergency, agreements, follow-on arrangements, and joint planning for logistics Lines of Communication (LOC) is of especially high priority. Some other areas of host nation support to be addressed are collocated operating bases; reception, departure, and clearance services at ports of debarkation; enroute and transient

support; overflight rights; weapon systems cross-servicing; support of naval vessels; intratheater transportation; terminal transfer services; supplies; troop support services; facilities; materiel handling; equipment decontamination services; communication services and equipment; medical services and equipment; and labor. The absence of written agreements does not preclude planning for HNS in anticipation of such agreements.

HNS agreements are in progress or have been completed with Belgium, Canada, Denmark, the FRG, Italy, Norway, Luxembourg, the Netherlands, Turkey, and the UK. One of the largest HNS agreements was reached with the FRG. The FRG has agreed to provide 92,000 reservists for such activities as transportation, ammunition handling, and other service support functions. The FRG's soldiers will also operate some of the Patriot missile systems introduced under the packaging armaments approach discussed in Chapter 2.

HNS exists to a lesser degree in other countries of the world. The US/Japan agreements primarily are concerned with dollar contributions to the costs of US forces in Japan, as well as new construction. The US and the Republic of Korea (ROK) currently participate in a combined defense improvement program, but it is not a true HNS agreement. The US has recently proposed that such an umbrella HNS agreement be developed with the ROK.

#### SUPPORT TO SYSTEMS IN THE ALLIED FORCES

Allied countries similarly have a range of options available to them to support a weapon system that has been obtained as a result of an armaments collaboration effort. These options will be discussed in subsequent sections.

#### Security Assistance (SA)

The security assistance program contains several methods for providing supplies, services, and training. These are the International Military Education and Training (IMET), FMS, FMS financing (credit), and commercial sales programs to foreign countries.

#### International Military Education and Training/FMS

Training of foreign personnel, both military and civilian, is an essential part of the security assistance program. Training implications are present in the majority of foreign acquisitions, and the interpersonal relationships that

exist during the conduct of training have far-reaching effects on the rapport between the US and foreign armed forces. Objectives of the IMET, as well as training procured under FMS or the Military Assistance Program (MAP), are to:

- o Create skills needed for effective operation and maintenance of equipment acquired from the US through the MAP or FMS.
- o Assist the foreign country in developing expertise needed for effective management and operation of its defense establishment or an element thereof.
- o Foster development by the foreign country of its own indigenous training capacity.
- o Promote US military rapport with the Armed Forces of the foreign country.
- o Promote the foreign policy, security and general welfare of the US by assisting persons of various countries in their efforts toward economic development and their internal and external security.
- o Promote better understanding of the US, including its people, political system, and other institutions.

The basic difference between IMET and FMS training is that the former is conducted on a nonreimbursable (grant) basis using USG-appropriated funds, while the latter requires the recipient to provide reimbursement. Training can be conducted by officers or employees of the USG, contract technicians, and contractors.

#### FMS Financing

The financing program is one in which loans with repayment guarantees are provided by the USG to enable eligible foreign governments to purchase defense articles, services, and training.

#### Commercial Sales

The commercial sales program administered by the State Department allows for exports licensed under the Arms Export Control Act (AECA). These sales are direct transactions between US suppliers and foreign countries. The USG maintains control of the sales by requiring suppliers to apply for export



licenses from the State Department. Sales can be conducted on a cash or credit basis.

Many direct commercial sales are consummated without DoD involvement. The purchaser usually does not contact any element of DoD before transacting a direct commercial sale through the US contractor; however, there could be some DoD involvement. For example, if the purchaser has approved credit, these funds can be used for direct commercial purchases with prior approval from the Defense Security Assistance Agency (DSAA). Therefore, coordination by the purchaser with DSAA to establish the loan program for a particular sale (including direct commercial sales) before it is consummated is a necessity.

DoD normally does not state a preference about whether a foreign country satisfies its requirements for US origin defense articles through FMS or on a direct commercial basis. The prohibition of direct commercial sale of specific items normally will be conveyed via DoD comments on contractor requests for advisory opinions or munitions licenses. DoD inability or unwillingness to designate an item for direct sales preference should not be construed to reflect DoD preference for sale of an item via FMS.

#### Means to Obtain Security Assistance Support

SA is obtained through the sales case process. The standard types of cases include defined orders, blanket orders, and Cooperative Logistics Supply Support Arrangements (CLSSAs). Detailed procedures are contained in the SAMN and DoDD 2000.8.

A defined order case, also known as a firm order case, is for a definitive list of articles, services or training. They are specific, one-time sales contracts with the necessary requisitions prepared by the DoD component.

A blanket order case, also known as a blanket open-end order, is an agreement between a purchaser and the US for a specific category of materiel or services, including training, with no definitive listing of items or quantities. The ordering period is normally one year, with a not-to-exceed dollar ceiling. The purchaser prepares the necessary requisitions to obtain support. Such cases are normally for spares/repair parts (not initial/concurrent), publications, support equipment, technical assistance services, training, and training aids.

FMS cases can also be used for contractor training, either in the US or in-country, as a viable alternative

to US military Services training. Such training may be the only method initially to train foreign industrial workers. The training may be done at the contractor's facility or, as has occurred, by contractors at a US installation. Contractor training may be the only method of training on new equipment, such as introduction of new aircraft, for which only the contractor has sufficiently qualified instructor personnel. Contractor plant training is also applicable to training foreign industrial personnel under a licensing agreement. This has been done under licensing agreements for overseas manufacture of aircraft jet engines.

Contractors may be engaged to conduct training in-country. This method of training may use the original equipment manufacturer, or it may use contractors engaged solely to provide training in both operations and maintenance.

A CLSSA is an agreement between a military Service and a foreign military Service or international organization to support a major end item or test equipment (including hardware and software, as well as vehicles and other support equipment of US origin) that the US and a foreign force hold in common. This support is furnished on an equal basis with US forces of equivalent priority. Support is obtained through FMS Letters of Offer and Acceptance, consisting of two Foreign Military Sales Orders (FMSOs), FMSO I and II.

Under a CLSSA, the USG purchases, stores, manages, and issues spare parts to the foreign customer using the US logistics system. The intent of a CLSSA is to provide the customer peacetime, follow-on support similar to that given US forces having the same priority. Some of the advantages of a CLSSA to the US and foreign governments are:

- o Reduced costs through higher volume procurement
- o Increased accuracy in projection of requirements
- o Increased equipment standardization
- c Reduced order-ship time.

A FMSO I case defines the value of stocks to be maintained in the DoD inventory for the country. Items involved are classified as recoverable spares, consumable spares, and Defense Logistics Agency-managed consumable spares. This type of case results in an obligation for the customer country of normally 17 months' demand value of the material. Upon acceptance of the case by the US, the country must pay only the first 5 months' of estimated demand, plus storage and operating inven-

tory loss and administrative charges, based on the 5 months' of demand value.

A FMGO II case is established on an annual basis to permit the country to draw spares and repair parts from US stocks as in-country stocks are consumed. This type of case is defined only in terms of a dollar value and does not define either items or quantities. The country is authorized to submit requisitions for all spares and repair parts required for support of the approved programmed requirements under the CLSSA. The priority of the individual requisitions is assigned by the country, based on the Force Activity Designator and Urgency of Need Designator approved by the US Joint Chiefs of Staff and the Secretary of Defense. The requisition case is normally valid for the input of new requisitions for one year, at which time a replacement case must be established. The requisition case remains open for management purposes until all items have been shipped, billed, and paid. This case is also used to recover the storage costs for the items on hand in the FMGO I case.

DoD has interest in exploring with NATO and other NATO subsidiary bodies the practicality of establishing similar arrangements with the manufacturing countries for US-held end-items of foreign origin. This is a new initiative that, at this time, is only in its infancy.

#### Direct Commercial Buy

A foreign participant may choose to go directly to a commercial source in the US to buy its support requirements such as repair parts. Some countries have entered into CLSSAs to obtain early-on support in the weapon system life cycle; however, they have subsequently chosen to go directly to the commercial source. When this route is chosen, the USG basically loses visibility over the process.

#### Third-Country Support

Third countries can provide various types of support. They can provide training as well as supply support. Such arrangements can be accommodated through reciprocal trade agreements or collective defense treaty organizations such as NATO.

#### Organic Support

In-house production is an alternative to FMS as well as other means of obtaining support. This approach can

shorten lead times, and/or develop a degree of self-sufficiency. However, the reliability of alternative sources of support must be considered. In-house production itself may require the use of an FMS case. For example, training, engineering drawings and associated lists, and technical support may have to be furnished to the country.

### Coproduction

Coproduction is a method whereby product manufacture and assembly are shared by the US and foreign producers. A coproduction project may be used to provide logistics support under FMS procedures.

A coproduction project may be limited to the assembly of a few end-items with a small input of local country parts, or it may extend to a major manufacturing effort requiring the build-up of capital industries. Coproduction is a program under the auspices of the USG and administered either directly through the FMS program or indirectly through specific licensing arrangements by designated commercial firms. Coproduction enables an eligible foreign government, international organization, or designated foreign commercial producer to acquire the know-how to manufacture or assemble, repair, maintain, and operate, in whole or in part, a specific weapon, a communications or support system, or an individual military item.

The term coproduction includes any program wherein the USG through either diplomatic agreement or an agreement between a Ministry of Defense and DoD: (1) enables an eligible foreign government, international organization, or designated commercial producer to acquire the technical information and know-how to manufacture or assemble, in whole or in part, an item of US defense equipment for use in the defense inventory of the foreign government; or (2) acquires from a foreign government, international organization, or foreign commercial firm the technical information to manufacture domestically a foreign weapon system for use by the US Department of Defense.

Coproduction also provides a means to meet commercial offset requirements associated with the acquisition of an item by a foreign country. In the F-16 program, offset requirements existed with respect to the production and initial spares. Many European firms became subcontractors to US firms for production of F-16 components and parts. In fact, they showed a marked preference for staying tied to the apron strings of the US vendor, rather than becoming full-fledged competitors for major contracts. The continuation of their subcontractor relationship certainly aided in meeting offset requirements. Coproduction

programs are normally outlined in an MOU that provides a detailed outline of the program.

### NAMSA Support

The NANSAs capabilities, discussed previously, certainly provide NATO nations the means to obtain support for various weapon systems. Missile systems (NIKE, HAWK, LANCE, TOW, Patriot, and SIDEWINDER), NLRS, air defense radar, communications equipment, the F104G, CL89 drone, FH-70 howitzer, various torpedoes, and crypto equipment all fall under NANSAs purview. The OTOM Melara 76mm gun, MARK 46 torpedo, and other items are potential candidates for NANSAs support. Hence, a European partner has this means to satisfy support requirements.

### NMSA Support

As stated earlier, the NMSA, as amended, provides a means of furnishing mutual logistic support between the US and its designated allies and friends. However, it is a very limited authority because the USG has a \$100 million annual ceiling on what it sells to NATO members under NMSA. Additionally, the law provides a \$100 million annual ceiling on what the USG can acquire using NMSA authority (of which only \$25 million may be supplies other than POL). For non-NATO countries eligible to participate, the ceiling is \$10 million for sales and \$10 million (\$2.5 million in supplies other than POL) in acquisitions. Although modest in scope, participating friends and allies and the US stand to gain since acquisitions and transfers can be executed faster and easier. By better distribution of available assets, overall readiness is enhanced.

### Exclusive Licensing Agreements

Exclusive licensing agreements are used by foreign countries in acquisition programs. Such an agreement gives the right to sell US equipment in foreign countries to a foreign firm. Such agreements are not directly managed by DoD but involve other USG agencies, such as the Departments of State and Commerce.

It is possible that a PM may become involved in these agreements as they relate to FMS requests from a foreign country. In general, when an exclusive licensing agreement is in effect, it should be honored, and any FMS requests for those items from countries listed in the document should be returned to the country with a reference to the agreement and the advice to

purchase the item commercially. If the purchaser insists on an FMS transaction, the following actions are necessary:

- o The prospective buyer will be provided with the name of the foreign firm involved and informed that this firm has exclusive rights in that country relating to the sale of the article or service being sought.
- o In the event the prospective buyer insists that it wishes an FMS transaction, it should be advised that the request should be set forth in a letter from the Minister of Defense or the Deputy Minister of Defense (or the equivalent) to the Director, DSAA, outlining the reasons for the desire to purchase by means of an FMS transaction, rather than from the foreign licensee.
- o On receipt of a written request containing justification, in order to comply with provisions of the AECA, Section 42(a), the Director, DSAA, will advise the foreign firm involved (or its designated representative in the US) in writing of the request. DSAA will provide the foreign firm with a copy of the written request, if unclassified, and of other unclassified records pertinent to the transaction, and give the foreign firm an opportunity to provide data pertinent to the request, including a statement as to the amount of financial return to the US economy, should such a sale be made by the foreign firm.
- o In the event it is determined that Price and Availability (P&A) data are to be provided, or that an LOA is to be issued to the requesting government, the Director, DSAA, will so advise the foreign firm, and will provide, upon its request, relevant unclassified and nonproprietary P&A data. DSAA will advise the foreign firm of all renewals, modifications, or extension of such LOA before acceptance by the purchasing country.

## CONCLUSION

A comprehensive approach to logistics involving both acquisition aspects and follow-on support are prerequisites to providing cost-effective support in the international environment. The ILSP, which glues the whole process, can be achieved only by a cooperative effort between the US and a foreign participant's logistics personnel. The earlier ILS is made a part of joint planning, the easier it will be to effectively support the weapon system. It is the responsibility of the PM to ensure a success-

ful ILS program. The DSMC Guide on Integrated Logistic Support is a valuable document that should facilitate the various participants involvement in the basic ILS process.

## **CHAPTER 17**

### **DISCLOSURE OF MILITARY INFORMATION**

#### **INTRODUCTION**

It is the policy of the United States Government (USG) to treat military information as a national security asset that must be conserved and protected, and that may be disclosed to foreign governments and international organizations only when there is a clearly defined advantage to the United States (US). Such disclosures must be consistent with US foreign policy objectives and military security requirements, and be confined to information necessary to the purpose of the disclosure. Advance planning by the Program Manager (PM) to ensure prompt compliance with the National Disclosure Policy (NDP) will contribute to the success of international cooperative programs and the sharing of information with our allies.

The purpose of this chapter is to provide the PM with a firm understanding of the policy. The topics covered include the NDP as it affects releasability of classified information to foreign governments, unclassified technical information disclosure, control of foreign representatives, and industrial security.

#### **NATIONAL DISCLOSURE POLICY**

US classified information is provided only to officials of the USG and to US defense contractors who have the following:

- o The proper security clearances
- o A capabilities to provide sufficient safeguards against disclosure
- o A need to know in order to perform their jobs.

Such military information may be provided to foreign governments and international organizations when it can be shown that advantages will accrue to the United States from this sharing. In recognition of this fact, a policy has been established under which US officials may release classified military information to foreign governments and international organizations. This policy is known as the NDP.

The basic disclosure policy was issued in 1971 by the



National Security Council with Presidential approval. That policy, its objectives, and implementing responsibilities were reaffirmed by the Executive Branch in 1978. Under the policy, the Secretaries of State and Defense are jointly responsible for controlling the disclosure of classified military information to foreign entities. When appropriate, they will consult with the Director, Central Intelligence Agency (DCI); the Secretary, Department of Energy; and heads of other Departments and agencies. The Secretaries of State and Defense have established an interdepartmental committee, the National Disclosure Policy Committee (NDPC), to implement the policy. The Committee is responsible for promulgating specific disclosure criteria and to consider requests for exceptions to the policy.

The basic policy governs the disclosure of classified military information. Such military information is information under the control of, or of primary interest to, the Department of Defense and its departments or agencies and which requires protection in the interests of national security. In this context, disclosure refers to the authorized transfer of classified military information to a foreign government or an international organization. The policy also controls the release of information concerning equipment on the Munitions List, which is published by the State Department.

There are several categories of information specifically not controlled by the policy. National Intelligence, for example, is controlled by the DCI and the National Foreign Intelligence Board, while the release of communications intelligence is controlled by the National Security Agency and the DCI. The DCI also controls the release of counterintelligence information and products. Communications security information is controlled by the National Telecommunications and Information Systems Security Committee. The Atomic Energy Act of 1954, as amended, governs the release of atomic information; and the Secretary of Defense and the Joint Chiefs of Staff control the release of strategic planning and guidance information.

The most important aspect of the policy is that classified military information is a national security asset, an asset that must be conserved and protected but which may be shared with foreign governments and international organizations. This asset is shared only when there is a clearly defined advantage to the United States. To amplify this point, the basic policy sets forth five policy objectives, or criteria, all of which must be satisfied before deciding to disclose classified military information to a foreign government or international organization.

- o The first objective is that the disclosure must be consistent with the US foreign policy toward the

recipient nation or organization. Normally, the US will exchange information with countries that are pursuing military and political objectives similar to our own. However, the US may release information to a country with distinctly different military and political objectives from that of the US if a specific national purpose, diplomatic or military, is served.

- o The second objective to be met is that the disclosure must not seriously jeopardize the military security of the United States. In assessing this risk, the US must examine carefully, for instance, the level of technology or the sensitivity of the information involved in a particular disclosure and determine the effect on the national security, should the information be compromised. Part of this determination is based on the extent to which the technology or information is already known by other countries, and the likelihood of compromise.
- o The third policy consideration is the assessment of the foreign recipient's ability to give the information substantially the same degree of security protection that the US affords it. This is designed to reduce the risk in sharing information. Some recipients may provide greater security for classified information than that afforded by the US. In order to protect the information, the recipient must have not only the capability but the intent. The US establishes intent by executing a written General Security of Information Agreement (GSOIA). This is a reciprocal agreement negotiated between the US and a foreign government. The agreement reflects both parties' intent to protect each other's information. The Department of State is responsible for negotiating these agreements, which it does through the respective US embassies. The NDPC is charged to ascertain the capability of the foreign government to protect US information by conducting periodic on-site surveys through the State Department and US embassy concerned. The committee obtains the host government's approval and assistance in conducting this survey. The survey teams, comprising top-level security specialists from agencies concerned with foreign disclosure, review the security laws, procedures, and practices of the government to determine its ability to protect US information. Governments with whom the US exchanges classified military information are welcome to perform reciprocal security surveys in the US. Of course, the NDPC is guided by the team's findings and acts on its recommendations.

- o The benefits to the US must be at least equivalent to the value of the information disclosed. Since classified military information is a valued asset, the US should treat it with a sense of worth. This concept ties all aspects of the policy together and relates it to the real world. The benefits could be a quid pro quo exchange of military intelligence on the potential adversary. In a coproduction arrangement, it might be to the US advantage to share state-of-the-art technologies. The improvement in the military capability of the recipient government also might be in the best national interest.
- o The last policy consideration is whether the information to be provided is sufficiently limited to that which is necessary to accomplish the purpose of disclosure. This is a common sense requirement to minimize the chances of possible loss of the information and still do the job. This requirement is consistent with the familiar need-to-know requirement in the United States.

#### NATIONAL DISCLOSURE POLICY COMMITTEE

The Secretaries of Defense and State, the military Service Heads, and the Joint Chiefs of Staff are represented on the NDPC as general members. General members have a broad interest in all committee operations. The Secretaries of State and Defense have a responsibility to consult with other officials as appropriate. These other officials, the Director, Central Intelligence Agency; the Under Secretaries of Defense for Policy and Research and Engineering; the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence; the Assistant Secretary of Defense for Atomic Energy; the Director, Defense Intelligence Agency; and the Director, Strategic Defense Initiative Organization, are represented as special members. Special members have an interest in only certain facets of committee operations. For example, the directors of the intelligence agencies, both of whom are represented as special members, are primarily interested in disclosures of intelligence information. The Air Force representative, a general member, may have an interest in the disclosures of Army and Navy weapons because of a common technology used in the manufacture of these weapons or their components.

By agreement between the Department of Defense (DoD) and the Department of State, the representative of the Secretary of Defense chairs the committee. The Secretary of Defense also

is responsible for administration of the committee, and issues the document that implements the NDP with the concurrence of the Departments of State and Energy, and the DCI. The Secretary of Defense has designated the Deputy Under Secretary of Defense for Policy to be the senior official in the department responsible for foreign disclosure matters. Senior DoD members on the NDPC and their points of contact are shown in Figure 17-1.

The large volume of disclosure decisions required does not allow the committee itself to act on each case. Consequently, disclosure authority must be delegated in writing. Disclosure authority in the Defense Department has been delegated to the Secretaries of the Military Departments, the Joint Chiefs of Staff, the Director of the Defense Intelligence Agency, and a few other key officials. They may, in turn, delegate this authority in writing. In order to provide guidance to those officials who have been delegated disclosure authority, the committee has developed disclosure charts as an annex to the NDP. An example of the charts is shown in Figure 17-2. These disclosure charts set forth classification eligibility levels in eight categories of information for most foreign governments and each international organization to which the US releases classified military information. Disclosure officials are authorized to disclose information up to the classification levels specified in the charts (TS, Top Secret; S, Secret; C, Confidential; and X, through Secret for Communist countries only) for the particular category of information, provided each of the five disclosure policy objectives or criteria discussed earlier can be met. Each decision is made on a case-by-case basis.

There are eight categories of information listed in the charts. Category 1 (Organization, Training, and Employment of Military Forces) includes military information of a general nature necessary to the organization of military, paramilitary, or irregular forces to include those tactics, techniques, and tactical doctrine necessary to train and employ them. Category 2 (Military Material and Munitions) encompasses all military material, arms and munitions procured and controlled by the USG for the equipage, operation, maintenance, and support of its military forces or the military, paramilitary, or irregular forces of its allies. Items developed under USG contract or derived from technology paid for by the USG are included in this category. In sum, this category comprises technical data and training necessary to operate, maintain, or support specific military material, arms, or munitions. Category 3 (Applied Research and Development Information and Material) includes, but is not limited to, classified military information resulting from extension of fundamental theories, designs, and data from purely theoretical or experimental investigations into possible military material and muni-

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(Other members represent USDRE, USD (Policy), ASD (C3I), ATSD (AE), SDIO, DIA, Departments of State and Energy, CIA, and NASA). (All numbers are commercial. Autovon prefixes are 225, 224, or 227)

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**FIGURE 17-1.  
POINTS OF CONTACT FOR KEY DoD NDPC MEMBERS**

tions. Category 5 (Combined Military Operations, Planning and Readiness) includes that information necessary to plan, ensure readiness for, and provide support to the achievement of mutual

force development goals or participation in specific combined tactical operations and exercises. Category 6 (US Order of Battle) includes information pertaining to US forces located within territory that is under the jurisdiction of a recipient government or is otherwise of direct concern to a foreign government or an international organization. Category 7 (North American Defense) includes information that concerns plans, programs, projects, and operations directly related to North American Defense. Category 8 (Military Intelligence) comprises information of a military character pertaining to foreign nations and areas as delimited by the exclusions noted earlier.

#### DISCLOSURE CHARTS

CATEGORIES	COUNTRY A	COUNTRY B	COUNTRY C
1. ORGANIZATION, TRAINING, AND EMPLOYMENT OF MILITARY FORCES	S	C	
2. MILITARY MATERIAL AND MUNITIONS	S	C	
3. APPLIED RESEARCH AND DEVELOPMENTAL INFORMATION AND MATERIAL	C		
4. PRODUCTION INFORMATION	C		
5. COMBINED MILITARY OPERATIONS, PLANNING AND READINESS			
6. US ORDER OF BATTLE			
7. NORTH AMERICAN DEFENSE			
8. MILITARY INTELLIGENCE	TS	S	X
S=SECRET, C=CONFIDENTIAL, TS=TOP SECRET, X=THROUGH SECRET FOR COMMUNIST COUNTRIES ONLY			

FIGURE 17-2. ANNEX TO NDP

If the classification of the information proposed for disclosure exceeds that country's eligibility in the appropriate category of the charts, or if the policy criteria cannot be met, the proposed disclosure must be denied, or an exception to policy must be obtained to permit the disclosure. Moreover, even if the US disclosure official has determined that eligibility in the charts exists and that all policy criteria have been met, disclosures of classified military information may not be made until the affected originator's approval has been obtained, and/or appropriate authority to disclose has been received.

### EXCEPTIONS TO POLICY

There are normally under 100 requests for exceptions to policy annually. These requests normally involve situations in which it is determined that the information proposed for release exceeds the intended recipient's eligibility in the particular category in the disclosure chart, or it cannot be ascertained that the recipient has the capability to protect the information. Requests for exception to policy normally emanate from the military Services since, in most cases, they own the information. On occasion, the State Department or Defense Department's International Security Affairs office requests an exception to policy when foreign policy is a principal consideration. In most cases, however, the requests deal with the transfer of weapon systems and other military hardware. The NDPC adjudicates the requests, making sure that all of the disclosure criteria are considered and that the release of information ultimately results in a clearly defined advantage to the United States. It is the responsibility of the requesting agency to ensure that the committee is presented with all the information needed to make a sound decision. The committee must ensure that it is in the best interests of the United States to share US information with a foreign government. A considerable amount of research and coordination goes into the development of these requests.

If the committee cannot reach a unanimous decision, the request is not shelved. In these cases, the chairman must weigh the arguments for and against the disclosure and issue a decision. His decision is subject to appeal within 10 working days by any of the committee members having an interest in the matter. Ultimately, this appeal may reach the desk of the Secretary or Deputy Secretary of Defense whose decision is final. If the chairman's decision is not appealed within the 10-day timeframe, it stands.

Not all requests for exceptions to policy are consid-

ered by the committee. The Secretaries of State and Defense or their deputies may personally authorize exceptions to policy. Before the Secretary of State or his Deputy may approve an exception to policy, he must have the concurrence of the Department or Agency having jurisdiction over the information involved--normally DoD. Annually, about five exceptions to policy are granted by the Secretary or Deputy Secretary of Defense in time-sensitive situations.

### FALSE IMPRESSIONS

It is the policy of the US to avoid creating false impressions of our readiness to make available classified military material, technology, or information. Lack of strict adherence to this policy may create problems. Much of the US military hardware is unclassified; however, this same unclassified hardware, if sold, may require the release of sensitive classified information for its operation or maintenance, or for the foreign recipient to receive appropriate training. Therefore, the disclosure decision must be based on the classification level of all information that may be required for release if the system were to be acquired. If the proposed foreign recipient is not authorized to receive the highest level of classified information required, no information not even unclassified may be released or discussed until the required authority is obtained. This means that there can be no weapon-specific contracts, and no release of price or availability data until authority is obtained to release the highest level of classified information ultimately required for disclosure.

### RECORDING OF DISCLOSURE DECISIONS

To aid in tracking disclosure decisions, the Foreign Disclosure and Technical Information System (FORDTIS) exists as a central repository for such decisions. FORDTIS, as described in DoD Instruction (DoDI) 5230.18, consists of three categories of Data Bases (DBs):

- o Tracking and assignment
- o Historical
- o Reference.

The tracking and assignment DBs supports the management of case opening, assignment, review/status, and closing. The historical DB consists of the following cases:



- o Classified Military Information (CMI)
- o Visit and Accreditation
- o NDP Exceptions
- o Munitions
- o Commodity Control List (CCL)
- o Commodity Committee (COCOM) Cases.

Lastly, the reference segment DB is a set of files containing information frequently needed for reference during review of cases.

FORDTIS is used on a routine basis to provide a background of previous, similar cases by weapon or country. It is also used to make damage assessments if a sudden change occurs in a foreign government that brings into question its capability to protect our classified information.

#### TRANSFER OF CLASSIFIED INFORMATION

USG policies concerning the release of classified material to foreign governments and international organizations, such as NATO, are derived from law, Executive Orders, and Presidential Directives. These prescribed rules for the protection of US classified material require that such material be released on a government-to-government basis. Such transmissions are accomplished in that manner even if the foreign addressee is located in the US. Further, care must be exercised to ensure compliance with USG arms export control laws as set forth in the Department of State International Traffic in Arms Regulations (ITARs). Government arrangements cannot be used to bypass the provisions of ITAR. For these reasons, DoD policies differentiate between access to US information and technology by foreign government officials and access by representatives of foreign industry, and between contacts by foreign representatives with DoD elements and contacts with US defense contractors.

Requests by foreign governments, international organizations, and their authorized representatives, as well as US-generated proposed disclosures, are to be forwarded to the appropriate disclosure office of the originating Service, agency, or Joint Chiefs of Staff (for strategic plans and combat operations) for authorization of the disclosure. When transfer is authorized, the information is to be transmitted government-to-government only, even in the case of classified information held by US

defense contractors when the ultimate destination is a foreign government or contractor. Transmittal will be in accordance with DoD Information Security Program Regulation 5200.1-R. Disclosures and denials are to be recorded in FORDTIS. Figure 17-3 lists the applicable DoD and Service security policy publications.

DoD	ARMY	NAVY	AIR FORCE
DoDD 4020.2	AR380-XX AR380-25	SECNAVINST 5260.1	
DoDD 5030.14		OPNAVINST 5510.48	
DoD 5200.1-R	AR380-5	OPNAVINST 5510.1 (APP G)	AFR205-1
DoDD 5200.12		OPNAVINST 5510.1	AFR80-43
DoDD 5220.6	No Service Implementation Required		
DoDD 5220.22-M&-R	AR380-49	OPNAVINST 5540.8	
DoDD 5230.3		SECNAVINST 5720.44	AFR190-1 AFR12-30
DoDD 5230.9	AR380-5	SECNAVINST 5720.44	AFR190-1 AFR12-30
DoDD 5230.11	AR380-10 AR380-11	SECNAVINST 5510.24	AFR200-9
DoDD 5230.17	AR380-10 AR380-11 AR380-25	SECNAVINST 5510.26	AFR200-9 HOI200-3
DoDI 5230.18	AR380-11	OPNAVINST 5510.127	AFR200-6
DoDI 5230.20	AR380-25	SECNAVINST 5510.31	AFR200-9
DoDD C-5230.23	AR380-10	SECNAVINST 5510.24	AFR200-9
DoDD 5230.24		OPNAVINST 5510.1	AFR80-45
DoDD 5230.25	AR70-31	OPNAVINST 5510.161	AFR80-34

FIGURE 17-3. DoD AND SERVICE SECURITY POLICY PUBLICATIONS

Normally, classified information is transferred to foreign governments under the following:

- o International agreements
- o Symposia and conferences
- o Foreign visits and accreditations
- o Foreign Military Sales (FMS), loans, or grants of classified items
- o Foreign participation in DoD component training activities
- o Personnel exchange program (foreign integrated personnel)
- o Scientist/engineer exchange programs
- o Commercial arrangements under the International Traffic in Arms Regulations.

The program office should request specific written approval for the disclosure of classified information from the appropriate designated disclosure authority before disclosure. This approval should include the general parameters within which disclosures may be made in the course of conducting business overseas on official travel. Presentations at symposia and conferences should meet the provisions of DoD Directive (DoDD) 5200.12.

The following standards shall also be met, before DoD component approval, for release of any classified or unclassified information, relating to foreign military sales, leases, loans, or grants of classified items:

- o Extreme care shall be exercised in the release of technical data that may involve design, manufacturing, production, or system integration technology. In certain instances, it shall be necessary to edit or rewrite data packages to exclude information that is clearly beyond that which has been authorized for disclosure.
- o Classified material or data must be moved under security safeguards appropriate to the transportation mode employed, as established by DoD Regulation 5200.1-R.
- o Classified information authorized for release in pur-

suance of a possible sale shall be limited to general information, usually no higher than confidential, on system characteristics, capabilities, price, and availability until a sale is consummated. No specific information on system Counter Measure (CM) susceptibilities or vulnerabilities or Counter-Counter Measure (CCM) capabilities may be disclosed until the sale is consummated. After consummation of the sale or grant, classified information may be released up to the level authorized for the foreign recipient.

- o In those instances involving disclosure of intelligence information, care shall be exercised to ensure that the disclosure shall not jeopardize US intelligence sources and collection methods. DoDD C-5230.23 provides further details.

#### ARMY VISIT AND INFORMATION REQUESTS

Requests for information/visits are received from foreign governments or from Army commands/activities for passing to foreign governments under various international agreements of data exchange. As shown in Figure 17-4, foreign requests are directed to the Director of Foreign Liaison, and US-initiated requests are directed to the Foreign Disclosure Team, Directorate of Counterintelligence. These directorates coordinate the releases with Army staff activities, Army commands, and activities external to the Army, as required. Based upon the responses received and current policy concerning both the country and the information to be released, a releasability determination is made at the Department of Army staff level. Approved documentary releases are made by the Directorate of Foreign Liaison to the foreign embassy in Washington as a government-to-government exchange. Visit requests, however, are almost always limited to oral/visual releases.

#### NAVY VISIT AND INFORMATION REQUESTS

Requests for documentary information and visits are normally received by the Chief of Naval Operations (CNO) (OP622) from foreign embassies, other Services, industry, and other offices within the Navy (see Figure 17-5). When possible, the decision to release documentation is made without staffing; however, when staffing is necessary, the replies are consolidated and coordinated before the release determination. Visit requests are processed in the same manner.

The Navy document request procedures are consummated

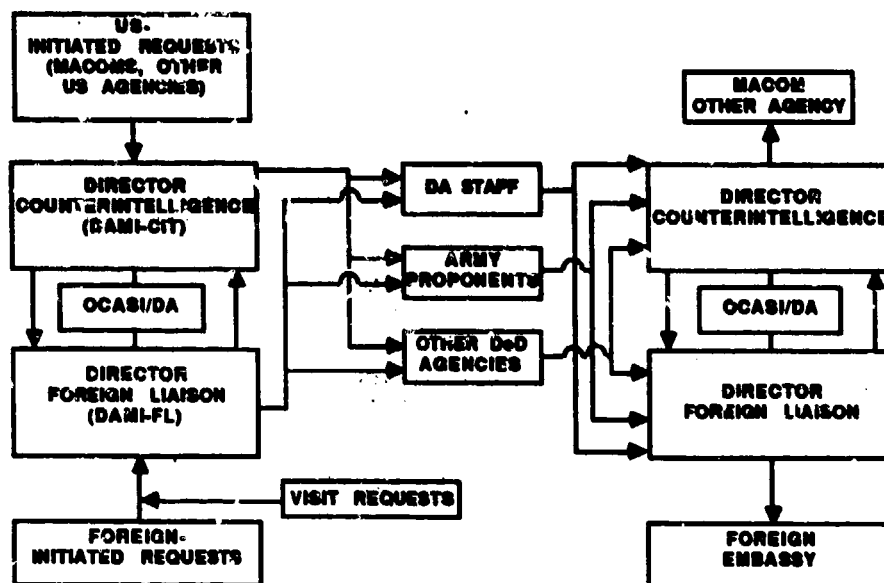


FIGURE 17-4. ARMY INFORMATION RELEASE PROCEDURES

by answering the originator's request and entering all denials and classified documentary releases in the FORDTIS system.

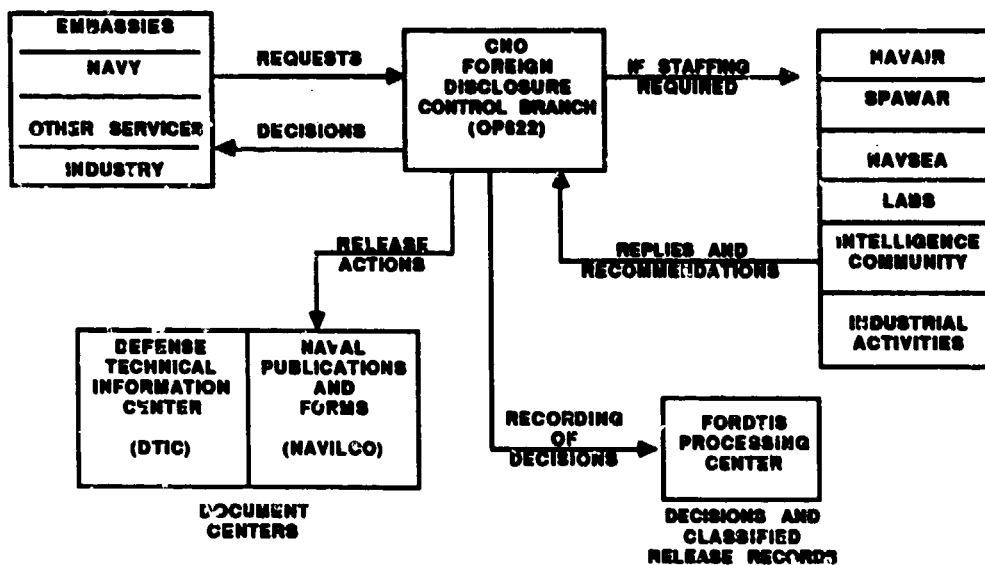


FIGURE 17-5. NAVY INFORMATION RELEASE PROCEDURES

### US AIR FORCE (USAF) VISIT AND INFORMATION REQUESTS

Requests for documentary information and visits are normally received from foreign embassies, other Services, industry, and other offices within the Air Force (see Figure 17-6).

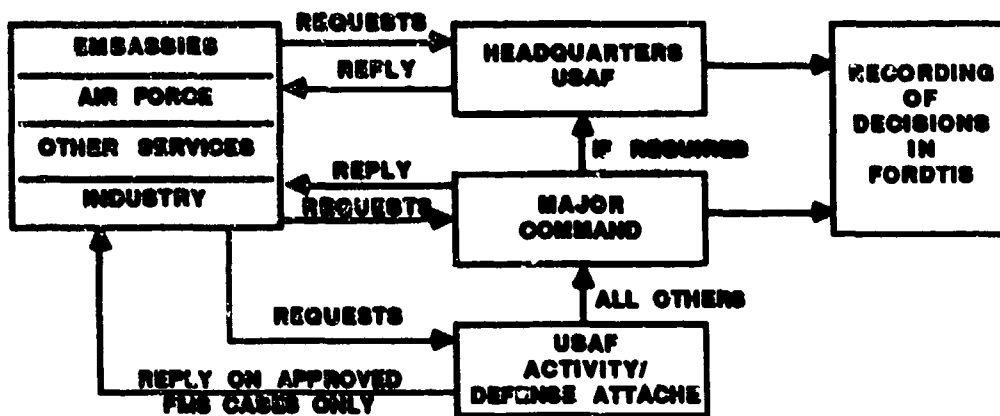


FIGURE 17-6. AIR FORCE INFORMATION RELEASE PROCEDURES

USAF activities may propose release of documents, either unilaterally or in response to a specific request. The Air Force delegates some authority to release information/conduct visits to major commands. If the request exceeds that authority, it is elevated to the next echelon for a decision. In addition, attaches and Milgroups in foreign countries can provide information on approved FMS cases. Any request received directly from foreign nationals must be sent through major command disclosure channels to USAF Headquarters (CVAII). Entries are made into the FORDTIS system portraying the results of the above decisions.

#### UNCLASSIFIED TECHNICAL INFORMATION DISCLOSURE

The channels, controls, and procedures for disclosing unclassified documents have been substantially modified with the inclusion in the FY 84 DoD Authorization Act of the authority for the Secretary of Defense to withhold from public disclosure certain technical data with military or space application. DoDD 5320.25 and 5320.24 implement the withholding of unclassified technical data provisions. The directives provide that data may be withheld from public disclosure when all of the following criteria are met. The technical data:

- o Are in the possession of or under the control of a Service within DoD
- o Have military or space application
- o May not be exported lawfully without an approval, authorization, or license under US export control laws
- o Disclose critical technology.

Information under the control of or in the possession of the

DoD means data created or received by elements of the Department and information developed and produced for the Department under contractual arrangement or other agreements. The new legislation defines the technical data with military or space application as any blueprint, drawing, plan, instruction, computer software and documentation, or other technical information. These elements apply to any efforts to design, engineer, produce, manufacture, operate, repair, overhaul, or reproduce military or space equipment or related technology. The Secretary's authority to withhold such data, however, does not extend to technical data authorized for export under a general, unrestricted license, or exemption under regulations implementing the export control laws.

The implementing regulations for the export control laws describe the technical data that may not be exported lawfully without approval. Generally, technical data related to items on the State Department's Munitions List and the Commerce Department's Commodities Control List, contained in these regulations, require licensing or approval. Critical technology essentially is data that reveal production know-how that would contribute significantly to a country's military potential and possibly prove detrimental to the security of the United States. Such data may comprise, in part or in whole, the following items:

- o Arrays of design and manufacturing know-how
- o Keystone manufacturing, inspection, and test equipment
- o Keystone materials
- o Goods accompanied by sophisticated operation, application, or maintenance know-how.

The Military Critical Technologies List (MCTL) is an excellent aid in identifying critical technology.

These directives provide for the withholding of data as well as for the provision of data to requesters with legitimate requirements. Freedom of Information Act (FOIA) and other requests for export-controlled DoD technical data that are received from private individuals or enterprises will be denied unless they are from "qualified US contractors" within the meaning of the DoDDs. Becoming a "qualified US contractor" is accomplished by submission of DD Form 2345 (Export-Controlled DoD Technical Data Agreement) to the Defense Logistics Agency's Defense Logistics Services Center. The certifications on this form are intended to allow technical data to be provided by the Department of Defense without making them available publicly, thus leaving the export-control laws in force with respect to such data. The form asks for a brief business description to allow the Department of

Defense to make the judgment that technical data requested in the future have a connection with the stated business of the requester.

With few exceptions, "qualified US contractors" who request export-controlled DoD technical data for use in connection with their legitimate business can expect to receive that data from DoD even when the business activity does not involve DoD or USG contracts. A business will have to establish itself as a "qualified US contractor" in order to receive future DoD bid packages that contain technical data controlled under the new directive. Further, to the extent that export-controlled DoD technical data are involved, prospective prime contractors who are "qualified US contractors" will not be able to share bid packages with prospective subcontractors unless the subcontractors are also "qualified US contractors."

There are exceptions to the new requirements. The provisions of the directive do not:

- o Alter the responsibilities of DoD components to protect proprietary data of a private party in which DoD has limited rights or restricted rights
- o Apply to classified technical data or
- o Affect release of technical data by DoD components to foreign governments, international organizations, or their representatives or contractors, pursuant to official agreement of USG licensed transactions.

The channels, controls, and procedures for disclosing unclassified information meeting the third exception above are essentially the same as for classified documents. Again, the appropriate foreign disclosure office must always approve disclosing any information, and material and information should be distribution-limited by the originator when he wishes to impose additional protection. Distribution-limited information should then be released only through specifically approved government-to-government channels, based upon appropriate release authority. Only documents cleared in advance for public release should not be marked "distribution-limited."

#### CONTROL OF FOREIGN REPRESENTATIVES

DoD Instruction 5230.20 sets forth standard procedures concerning requests for visits, accreditations, and other related matters. Accreditation as used in DoDI 5230.20 pertains only to foreign representatives, military or civilian, including US



citizens who are officially employed by a particular foreign government. As implemented by the Services and the Defense Intelligence Agency, "accreditations" are extended only to the foreign government-sponsored officials who have frequent needs for contacts with DoD Services and agencies, such as liaison officers and procurement officials. Normally, those individuals are assigned to the foreign embassy or mission in the United States. Those foreign officials who do not have frequent needs for contacts, such as foreign government officials stationed outside the United States and foreign industry representatives, must apply for either one-time visit authorizations or extended visit authorizations.

#### VISITATION PROCEDURES TO DoD COMPONENTS

Except for those visits approved by the immediate office of the Secretary of Defense and Deputy Secretary of Defense, the Director, Defense Intelligence Agency (DIA) processes requests for visits and accreditations for OSD, the Office of the Joint Chiefs of Staff (OJCS), the Unified and Specified Commands, Defense agencies, and their defense contractors. The Services process requests for their own departments and Department of Defense contractors. Foreign requests to visit DoD contractors shall be reviewed concurrently by the three military Services. Correspondence with DoD contractors relative to approved foreign visits shall be coordinated by the military Service has been designated as the point of contact with the particular Defense Investigative Service (DIS) Industrial Security Regional Office.

Requests by foreign embassies shall normally be submitted at least 30 days in advance for visits and 90 days in advance for accreditations. Visits carried out under the terms of an approved accreditation and extended visit authorizations or one-time visits may take place after coordination with the PM office by the visitor, with at least 72 hours advance notice to the office concerned. Requests for visits and accreditations submitted by foreign embassies should follow the examples contained in DoDI 5230.20 enclosures (3) and (4), respectively. Standardized notifications shall be used to advise foreign embassies of final action on requests for visits and accreditations. These standardized notifications are contained in DoD Instruction 5230.20 enclosures (5) and (6), respectively.

Notifications of approval of a foreign request for a visit or accreditation to a DoD component shall be forwarded to the contracting office in which the foreign representative is accredited, or where the representative will visit. This notification shall contain adequate guidance regarding the parameters of the subject matter and maximum permissible level of classified

information that has been authorized for disclosure. The level of the disclosure authorization and detailed disclosure guidance may not be divulged to the foreign visitor; however, the foreign visitor should be informed of the classification of the information disclosed to ensure that it is properly safeguarded. Only that information essential for accomplishing the stated purpose of the visit should be disclosed.

Disclosures of classified military information to foreign visitors and accredited foreign representatives shall be limited to releasable oral and visual information, unless the release of documentary information resulting from a foreign visit will be processed through normal foreign disclosure channels. In either case, the physical transfer of classified documentary information shall be effected through government-to-government channels.

An official visit by a foreign representative is approved on the basis of a disclosure authorization, not a US security clearance. The US Program Management Organization (PMO) should note the distinction between a foreign government security clearance and a disclosure authorization, and avoid the use of the former terminology in correspondence regarding an approved foreign visit request. A PM who wishes to invite foreign representatives to visit the PMO or a defense contractor, or who wishes to have a foreign representative accredited to the PMO, shall coordinate his actions with his military Service before extending an invitation. This procedure is not required when the foreign representative is authorized recurring contacts as a result of an approved accreditation or extended visit authorization.

A foreign national may be permitted to participate in training if it pertains primarily to the operation and maintenance of a US item and it is scheduled to be conducted after a purchase agreement has been signed by the prospective trainee's government, or after a military assistance program order for the item has been issued by the Defense Security Assistance Agency. The foreign national may conduct classified training on a US item after disclosure to the foreign national's government has been approved.

#### VISITS TO DoD CONTRACTORS

Requests by foreign nationals to visit contractor facilities may be approved by DoD components only when the proposed visit is related to a specific or potential program or project with the foreign government concerned, such as FMS, Data Exchange Agreements (DEAs), or other cooperative arrangements.

Requests for visits that are not related to a specific or potential program or project with the foreign government shall be returned to the requestor without DoD sponsorship. If the DoD component with jurisdiction over the information involved in the request has no objection to its release, the requestor shall be notified to contact the contractor directly to arrange a visit. For nonsponsored visits, the contractor shall comply with the provisions of the ITAR (22CFR 121-128). If the DoD component concerned has determined that the specific information requested regarding a nonsponsored visit cannot be authorized for release to the foreign government involved based on current policy, the responsible DoD component shall so notify the contractor.

Foreign government requests to visit DoD contractors shall be reviewed as applicable concurrently by the military Services and DIA. Correspondence with DoD contractors relative to foreign visits shall be forwarded to the cognizant DIS Regional Office of Industrial Security for transmittal to the contractor. Communications with cognizant security offices relative to foreign visits to contractors shall be coordinated by the military Service that has been designated as the point of contact with the cognizant security office.

#### VISITS BY EMPLOYEES OF RECIPROCALLY CLEARED FIRMS

Under existing industrial security agreements with certain allies, reciprocal clearance procedures have been developed to clear US firms under Foreign Ownership, Control, or Influence (FOCI). The following procedures govern visits by employees of firms that have been granted reciprocal industrial security facility clearances:

- o Visit requests by US citizen employees of reciprocally cleared firms for unclassified commercial purposes only may be submitted directly to the security office of the facility to be visited.
- o Visit requests involving US citizen employees of reciprocally cleared firms that will require the release of classified or unclassified information related to classified programs or projects, and all visits by foreign nationals employed by reciprocally cleared firms, shall be submitted directly to the foreign liaison office of the military Service concerned or DIA, as applicable.
- o Classified documentary information may be provided in connection with visits under the auspices of the

preceding paragraph, with the authorization of the DoD component having classification jurisdiction over such information.

#### INTEGRATED PERSONNEL

Foreign personnel integrated with the command or the PMO shall not be assigned to positions that would expose them to classified military or other sensitive information that is not releasable to their government. Detailed job descriptions shall be prepared by each office for those positions to which integrated personnel are assigned. Integrated personnel may have access to releasable classified military information on an oral or visual basis only. Such personnel may not act as official representatives of their government while assigned to a command or PMO, nor may they represent the command or PMO with other foreign governments or foreign representatives.

#### FOREIGN ATTENDANCE AT MEETINGS

DoD policy encourages foreign participation at meetings, seminars, and conferences related to contractual opportunities for equipment, weapon systems, or programs that enhance our defense posture. The military Services are responsible for planning of foreign participation in these meetings. In such planning, the Services should consider three factors previously covered: (1) decisions to approve the release of classified military information rests first with the originating department or agency (2) not all foreign governments have the same eligibility for classified military information, and (3) the false impressions provision of the NDP.

The USG has entered into cooperative agreements with allies and other friendly nations that allow the exchange of information in specified areas of mutual interest required for their participation in contractual opportunities. Planning for meetings that may lead directly or indirectly to contract opportunities for such nations shall be based on the presumption that there will be foreign attendance. Security requirements for classified meetings are contained in DoDD 5200.12. The following additional guidance applies to the attendance at meetings by representatives of governments with which the DoD has cooperative agreements.

### Participation by NATO and Other Allies at Related Conferences, Symposia, and Seminars

The DoD security sponsor shall be the central point of contact for coordinating with other DoD components the attendance of foreign representatives at classified meetings involving non-DoD participants that are sponsored by a DoD component. The DoD security sponsor also shall ensure that necessary foreign disclosure guidance is obtained and followed for the meeting. At a minimum, coordination shall be effected with the Military Departments; the Deputy Under Secretary of Defense for Policy; the Deputy Assistant Secretary of Defense (International Economic, Trade, and Security Policy), Office of the Under Secretary of Defense for Policy; and the Deputy Under Secretary of Defense (International Programs and Technology), Office of the Under Secretary of Defense for Research and Engineering. When full access to classified or sensitive technical information by foreign representatives is not possible under applicable policies, nonreleasable information shall be either excised or presented at US-only sessions. Concurrent with acceptance by a DoD component of security sponsorship for such meetings, the following actions shall be accomplished during the coordination process:

- o Identification of specific topics or technical information to be presented at the meeting.
- o Identification of countries with which the DoD has cooperative agreements.
- o Determination, based on the above, and current foreign disclosure and technology transfer policies of the requirement for limiting foreign attendance or scheduling US-only sessions.
- o Development of foreign disclosure guidelines for sessions to be attended by foreign representatives.

### Foreign Attendance at Contract Related Meetings

Attendance by such foreign representatives at meetings designed to publicize advance requirements of the purchasing activity, at presolicitation, prebidders, preproposal and preaward meetings and at postaward technical debriefings shall be controlled by the DoD component conducting the meeting. Before the announcement of such meetings, an analysis shall be made of the extent to which classified information may be involved throughout the life cycle of the program. After such analysis, decisions on requests for foreign attendance shall be in

compliance with the NDP-1, and shall be in support of our national objectives with respect to each program under consideration. Denial of a specific appeal by a foreign government for attendance by its representatives at such meetings shall be approved by the head of the DoD component conducting the meeting or a designee at a level no lower than the Assistant Secretary.

#### Participation by Foreign Representatives at Association Meetings

Procedures have been developed and provided to major associations for their voluntary use in facilitating the review and clearance of papers to be presented at conferences, symposia, and seminars hosted by industry, and industry associations with DoD sponsorship or participation. These procedures pertain primarily to classified information and unclassified information pertaining to a classified program. PMO personnel should be aware of their existence. Further information can be obtained by contacting the applicable association.

#### INDUSTRIAL SECURITY

The security of the US depends in part upon the proper safeguarding of classified information released to industry. The objective of the Industrial Security Program is to ensure the safeguarding of classified information in the hands of US industrial organizations, educational institutions, and all organizations and facilities used by prime and subcontractors. The Industrial Security Regulation (ISR) (DoD 5220.22-R) sets forth policies, practices, and procedures of the Industrial Security Program used internally by the DoD to ensure maximum uniformity and effectiveness in its application throughout industry. The Industrial Security Manual (ISM), DoD 5220.22-M, a companion document to the ISR, is a DoD publication that contains detailed security requirements to be followed by US contractors for safeguarding classified information. The ISM is made applicable to industry by management's execution of the Department of Defense Security Agreement (DD Form 441) and by direct reference in the "Military Security Requirements" clause in the contract.

Administration of the Defense Industrial Security Program (DISP) is assigned to the Director, Defense Investigative Service; however, administration of the security cognizance concept has been assigned to the Deputy Director (Industrial Security), Headquarters DIS. Security cognizance authority has been delegated to the regional Directors of Industrial Security for all contractor facilities physically located within prescribed regional boundaries. The regional Director of Industrial Secur-

ity performs all cognizant security functions prescribed in the ISR and ISM on behalf of all user agencies, except in certain instances involving contractor activities on user agency installations and for US classified contracts awarded to US contractors for performance abroad. In such instances, the Commander or Head of a user agency installation is responsible for performing certain security actions.

Although the ISR and ISM prescribe minimum industrial security requirements, user agencies may augment these requirements by imposing more restrictive standards through incorporating them into the basic terms of the contract. User agencies are not permitted to authorize lower standards of industrial security, e.g., waivers, exceptions, or deviations, without the written approval of the USDP, his designee, or higher authority. All contractor-initiated requests for waivers or deviations are required to be submitted through the appropriate cognizant security office (DIS Regional Headquarters) to the Deputy Director for Industrial Security at DIS Headquarters. Requests from a government source should be submitted to the USDP. The ISR should not, however, be construed to limit in any manner the authority of the Secretary of Defense or the Secretaries of the Services individually to grant access to classified information under their cognizance to any individual designated by them. The granting of such access is beyond the scope of the industrial security program.

DoD negotiates industrial security protocols with those foreign governments with which the USG has entered into coproduction, codevelopment, and/or reciprocal procurement arrangements involving industry. It includes provisions for clearance of facilities and personnel, handling and transmission of classified material, and procedures for visits. The protocol becomes an annex to the GSOIA discussed in an earlier section of this chapter.

In addition to the DIS Industrial Security Regional Offices, there are three primary field extensions of the DIS that affect international cooperative efforts. These are the Defense Industrial Security Clearance Office (DISCO), the Defense Security Institute (DSI), and the Office of Industrial Security International (OISI).

#### DEFENSE INDUSTRIAL SECURITY CLEARANCE OFFICE

The DISP establishes procedures for safeguarding classified defense information that is entrusted to contractors. Included in these procedures is a system for determining the eligibility of industrial personnel for access to classified

defense information. This function is performed centrally by DISCO. DISCO receives requests for personnel security clearances from DoD contractors. It also obtains Reports of Investigations (ROI) from the appropriate investigative agencies. Clearances are based on evaluation of the above information. Requests may be rejected for certain administrative reasons; however, derogatory cases must be decided by the OSD General Counsel. Overseas assignment notification, security clearances from foreign governments, and limited access authorizations on behalf of non-US citizens are also processed by DISCO. DISCO maintains a computerized records system for the preservation and ready accessibility of all industrial personnel and facility security clearances, the maintenance of facility clearance records, and the retention of individual clearance case folder for the prescribed time period.

#### DEFENSE SECURITY INSTITUTE

The Defense Security Institute (DSI) offers specialized, formal security training to eligible industry and government personnel. The institute is also tasked with presenting courses of instruction on information security management to DoD personnel. These courses include the Information Security Program and the safeguarding of Classified information within the military Services. DSI also provides counterintelligence awareness briefings to industry. Every other year, DSI schedules an international industrial security orientation program to familiarize foreign industrial security officials with the DISP, and to surface any difficulties or problems encountered pertaining to the implementation of bilateral agreements.

#### OFFICE OF INDUSTRIAL SECURITY INTERNATIONAL (OISI)

OISI has locations in Brussels, Belgium; Mannheim, Germany; and Yokohama, Japan. OISI performs the following functions:

- o Serves as the central point for maintaining records of letters of consent (clearances) and Security Assurances issued on behalf of contractor personnel assigned outside the US. It uses these records to process classified visit requests to USG, foreign government, and North Atlantic Treaty Organization (NATO) activities as may be required, and to confirm clearance data to such activities and contractors when appropriate.
- o Processes requests for NATO facility security clearance certificates pursuant to DoD Directive 5210.60. It maintains an index of such clearances and disseminates



clearance verifications to USG, foreign government, and NATO activities upon their request.

- o Provides advice, guidance, and assistance on industrial security matters to US contractors, their employees, and other individuals who have requested, been granted, or are being considered for security clearance or assurances. OISI administers security briefings and orientations when required and assists in facilitating classified visits by cleared industrial representatives.
- o Provides advice, guidance, and assistance on industrial security matters to US, foreign, and international organization officials. Maintains personal liaison with such officials on a recurring basis.
- o Provides a repository for classified material that has been released by US contractors or user agencies for use by cleared industry representatives. It ensures that the material that is not releasable to foreign governments or their nationals is afforded safeguarding within a USG-controlled activity.
- o Assists in the establishment of government-to-government transmission channels between the US and foreign governments. Serves as a conduit for the designated USG representative in processing classified material received from or released to foreign activities located in the Brussels, Belgium, area.
- o OISI performs periodic inspections of US contractor activities on US-controlled installations in Europe, the Middle East, and Africa when requested to do so by the Services.

#### FOREIGN CONTRACTS TO US FIRMS

With the favorable conditions that currently exist, foreign governments and firms are letting classified contracts and subcontracts to US firms on an increasing and unprecedented scale. The initial point of contact for such procurement is the Director of Industrial Security at DIS Headquarters. When pre-contract discussions between the US firm and the foreign representatives are expected to involve disclosure of foreign classified information, the foreign government should be directed to communicate directly with the Director of Industrial Security to:

- o Obtain information about the firm's present facility security clearance.
- o Determine the ability of the facility to properly safeguard the classified information.
- o Request clearance action in those cases in which facility security clearances of the appropriate levels have not been granted.
- o Ascertain which cognizant security office will exercise supervision over the security aspects of the contract.
- o Obtain information about the security clearance of the key personnel with whom they will negotiate.
- o Request instructions relative to the USG's classified visitor control procedures.
- o Notify the cognizant security office when discussions with the foreign government or the firm will involve the release or disclosure of foreign classified information to a US firm.

#### US CONTRACTS TO FOREIGN FIRMS

A user agency may initiate action to award or permit one of its contractors to award a classified contract to a foreign contractor, provided the classified information involved has been approved for release (or is determined to be releasable) to the government of that country under the National Disclosure Policy. In addition, the foreign government concerned must have entered into a security agreement with the US under which it agrees to protect US classified information released to it. The user agency, acting on its own behalf or on behalf of one of its contractors, must also communicate with the designated foreign government through DIS to ascertain the same information as discussed above for foreign awards to US firms.

Once the contract has been approved by the foreign government, a number of security procedures prescribed by paragraph 8-104 of DoD 5200.1-R must be accomplished by the user agency. Further, the user agency is required to inform the Deputy Director (Industrial Security) at Headquarters, DIS, when it authorizes a US contractor to place a US classified contract in a foreign country involving disclosure of US classified information to the foreign country. The Deputy Director is responsible for providing guidance to the appropriate cognizant security office regarding the US contractor's obligation to properly safe-

guard any foreign classified information released to them. The US firm's obligation in this regard would be based on an existing bilateral agreement, or otherwise in accordance with instructions received from the foreign government or contractor releasing the information to the US contractor.

#### SECURITY CLASSIFICATION AUTHORITY, RESPONSIBILITY, AND POLICY

The PMO and its contractors have a responsibility to know and understand the security classification arena, particularly since weapon systems development may involve highly sensitive technology that may require protection. The only reason for security classification of information is to protect the national security, which is defined as the national defense and foreign relations of the US. The policy is implemented within DoD by DoD 5200.1-R.

An original decision to classify shall be made only by an official with such authority when, first, it is determined that the information in question is within several categories of information that are classifiable, and second, a separate determination is made that unauthorized disclosure of the information reasonably could be expected to cause damage to the national security. If both of the foregoing determinations are affirmative, DoD information requiring protection against unauthorized disclosure, or uncontrolled dissemination, shall be classified at one of three levels, namely, Top Secret, Secret, or Confidential. Classifiers will also set a date on which automatic declassification should occur. Lastly, the original classifier incurs the responsibility for communicating that decision to others who have need for the classified information through appropriate markings or other guidance. This responsibility to provide security classification guidance extends to industry when classified contracting is involved.

#### MISCELLANEOUS DISCLOSURE-RELATED TOPICS

The PM operates in a dynamic arena, particularly when international cooperation is involved. The following additional topics are considered to be of such importance that they are highlighted with pertinent reference.

- o Safeguarding of US classified information located in foreign countries is governed by DoD 5200.1-R. Such retention may be authorized only when that material is necessary to satisfy specific USG requirements.
- o Marking of NATO and other foreign government documents

and associated protective measures is governed by DoD 5200.1-R.

- o Classified information originated by NATO shall be safeguarded in accordance with DoDD 5100.55.
- o Transmission of classified material to foreign governments, as previously discussed, is accomplished on a government-to-government basis. DoD 5200.1-R contains a significant new requirement to prepare a transportation plan in conjunction with such release of classified material for foreign entities. This plan must be approved by the appropriate DoD security and transportation officials before release of the material. Specifics are provided in DoD 5200.1-R.
- o Special Security Agreements (SSA) exist to facilitate transfer of information to subsidiary companies that are under FOCI. The SSA is used when a reciprocal security agreement is not in existence between the countries. Essentially, several conditions must exist before the SSA is executed. First, there must be a compelling need to use the firm. Second, the information is not currently releasable under the NDP. Third, the DoD component recognizes that the use of this FOCI firm is the prudent procurement course of action. Under the ISR, an SSA is established between the parent company, the subsidiary, and DoD. This agreement provides for the transfer of selected information to the subsidiary only, establishes an oversight committee of cleared US personnel in the subsidiary, and contains limitations on the parent firm's management control over its subsidiary. Specifics are provided in DoD 5220.22-R.

## CHAPTER 18 MODES OF COMMUNICATION

### INTRODUCTION

This concluding chapter focuses on the more general feature of international programs--the problem of communication, given national differences in languages and in patterns of behavior. Multiple topics are covered in this chapter; namely, communications aspects of meetings, translation and interpretation services, lessons learned, and salient issues related to negotiations. In addition, a discussion of information sources available to the Program Manager (PM) is provided covering topics such as foreign weapons evaluation, technology, and Department of Defense (DoD) centers of information.

The success of a cooperative international program depends, in a large measure, on effective two-way communication and a sharing of information. Poor communication and lack of relevant data have been blamed in the past for what was actually poor program management. Thus, the complications of different languages and the variety of available data sources have been used as an excuse for such international program failures. Actually, there is an orderly, systematic manner to tailor reasonable program goals and objectives and to develop the appropriate management organization and structure to meet these goals and objectives. The organization established to accomplish the program management tasks should also ensure that effective communication is taking place. Chapter 9 discusses organization and staffing of a multinational program office in detail. Interface/communications management becomes the task of the PM as requirements are defined.

Once program objectives have been established, the next step is development of a front-end analysis and initiation of the program plan. These involve answering the following basic questions:

- o What is the program selling (hardware, training, turn-key facility)?
- o To whom is the program selling (government, industry)?
- o Who is the competition?
- o What environment is anticipated?

The PM must know his customer, understand the customer's economic goals, and know his positions on the subject. The program manager's Acquisition Strategy (AS) must be attuned to the customer; for instance, to consider the use of native subcontractors, whenever possible, and to train nationals for blue-collar, white-collar, and management positions. The PM must understand the thinking, interests, and authority of the customer's representatives. The PM must be aware of individuals in the customer's organization who may feel threatened by the program plan with loss of prestige, authority, or prospects for advancement.

A recent lessons learned report indicated that three basic principles emerged from the successful anti-infrared smoke project. These principles are:

- o National confidence must be present from the outset that the project is feasible, likely to succeed and will produce good results.
- o Continuity of personnel significantly contributes to the success of a cooperative project.
- o Full sharing of information, equipment, technical expertise, and generated data is essential in order to achieve maximum return.

Inherent in at least two of the above elements is good communication. Without good communication, confidence would not have been built nor would information have been effectively shared.

## MEETINGS

Because of travel distances and differences in time zones and working schedules, meetings assume a special significance in international programs. It may require several days of meetings to reach understandings, because participants must obtain coordinated national positions. Meetings, however, are essential to resolve issues, negotiate licensing agreements and Memoranda of Understanding (MOUs), disseminate new information or provide feedback, coordinate specific efforts and obtain participating nations' support, and reconcile conflict. Meetings are an effective means of communication for an international project to gather participants together on matters of mutual interest to produce the following results:

- o Integrate project interests

- o Change attitudes, perspective on problems, and national positions
- o Encourage participation in bilateral and multilateral projects
- o Gain information from participants to improve decision-making
- o Obtain commitments of participants to particular courses of action.

Productive meetings are an effective tool for program management communication, in order to develop specific plans and to organize specific tasks. Effective meetings take place as a result of careful planning, meeting leadership, and attention to details. An agenda should be prepared with the meeting objectives in mind, thereby providing the framework to keep the meeting on course. A well-planned agenda will allow the chairman to facilitate interactions of participants. The agenda should focus on issues relating to one topic, if possible, thus requiring fewer attendees and yielding better participation in the discussion. The more concise the agenda the better, as it is difficult for most participants with specific interests to be prepared to discuss a wide variety of issues. Background data should be provided on each coordinated position before the meeting. Also, the agenda and background data should be provided to the interested parties as early as possible to assure that such a meeting is required.

The two requirements for international meetings over and above the general requirements for other types of meetings are those for handling messages and communications to establish and review positions on issues under negotiation, and also the use of interpreters. The meeting place must have adequate communications to the outside world. Adequately equipped meeting rooms are available at international business and trade centers for business negotiations, and at North Atlantic Treaty Organization (NATO) headquarters and national capitals for government-to-government meetings.

To produce an effective meeting, only those with expertise and/or decision-making responsibility should attend. Meetings always tend to attract many people, some of whom may not have direct involvement in the issues to be discussed. An attempt should be made to keep the meeting size down to a level at which true results can be obtained. Even so, international meetings will tend to be much slower in operation, especially if several positions need to be considered for multinational endeavors. Quick decisions are not normally to be expected. Time will be

required for participants to review previously established positions, with development and/or consideration of new alternatives. Such delays are inevitable in order to obtain better decision-making on courses of action. An effective meeting can serve as a basis for multinational team building on the way to achieve successful international collaboration.

In meetings or group discussions, it is especially important that certain etiquette and protocol be observed:

- o Never browbeat, criticize, or demean an individual in or outside the group. The individual will be undercut and lose face, and you will lose the trust and credibility of the group.
- o Learn national taboos, because some natural behavior in the US may be regarded as lack of morality or taste in other countries.
- o Be a tough businessman and hard negotiator. All negotiators will have to show their superiors the results of the negotiation, which may not be endorsed if the outcome is inequitable.
- o Precedent is an especially important consideration in international discussion; rely on analysis before proposing "innovative and creative" proposals that may become precedents.
- o Never make a commitment that has not been approved or that you do not have the responsibility and authority to satisfy. Go to meetings with a staffed and approved position on all issues.
- o Know the history, educational background, position, and authority of each participant from other governments or their businesses, as well as your own. Attempt to ascertain to what level the delegation of authority has been made.
- o Effective communication starts with a thorough knowledge of our own methods, problems, and requirements. Next, be able to describe future requirements, the time they are needed, and the reasons for them. To ensure that these plans are only improved or else substantively unchanged during follow-on discussion, harmonization and agreements are needed on secondary factors and details. Remember to understand the other participants' systems and philosophies--the US way is not necessarily the best way.



- o The leader of the negotiating or other business "teams" should use functional specialists available within or through the PM organization to communicate effectively with the participating personnel on issues outside the leader's area of expertise.
- o The leader should be the spokesperson for the group. Arguments among team members only cause confusion and portray a disorganized position. If such discussions must take place, then caucus among the team at a separate location from the main meeting.
- o An effective but sometimes exhausting technique is to let the team leader do all of the talking unless a need exists to identify a particular individual due to the need for the expertise. In highly technical meetings covering many areas of expertise, the team leader should ensure adequate coverage of each area in a timely manner.
- o Speak clearly and precisely. Attempt to use common terms that the parties understand. Remember that languages require different amounts of words and sentences to express ideas. What the US representative may express in a short time could take more time to convey in another language.
- o Avoid organization-specific slang.
- o Above all, exercise common courtesy in dealing with all parties. For example, some Europeans frown on being greeted with a handshake, with the other hand stuck in the pocket. In Buddhist countries, showing the bottom of the feet or shoe or touching another person's head is considered a personal affront. Above all, find out what the local taboos are and respect them.

A distinction must be made between public and private sector contract negotiations. The distinction rests primarily on the difference between the public sector concept of sovereign equality and the private sector's economic marketplace orientation. Public sector negotiations between two governments cannot rest only on one government's framework of rules and regulations, but will always involve some mixture of both sets of rules. In public sector negotiations, political considerations are often paramount, while in the private sector, economic considerations usually prevail. Public sector negotiations may involve many more emotional issues, and protocol then becomes very important. For example, most of the private sector US negotiators have

reported that they have had very few language problems in dealing with European firms because all negotiations were conducted in English and contracts are normally written in English. Although public sector negotiations were frequently conducted in English, a great deal of time was spent preparing and altering translations to produce a bilingual document, because these documents must be available in the respective national language for legal, staffing, and decision-making reasons. As a rule, in public sector negotiations, the participating countries use their respective national languages, and interpreters translate them into the other languages.

Several other issues, which are equally applicable across the range of communications topics, are deserving of recognition. Although most countries have a considerable number of English-speaking people, problems abound in the acquisition arena even with English-speaking countries. The adage that the US and the United Kingdom (UK), for example, are divided by a common language is still true in many instances. Within the English-speaking sphere alone, there are many common words and expressions that have different meanings in the US and the UK. Sufficient effort is not made to understand each other across the board. For example, the US and the UK have very different meanings regarding nonrecurring cost, specification, and post-design services. US nonrecurring costs include such items as tooling. In the UK, tooling is part of production and, thus, a recurring cost. A significant assist would be the compilation of an acquisition-oriented handbook addressing related aspects of culture, economic, and acquisition differences to include a language translation glossary for country representative usage. A glossary of common words, terms, and acronyms should be produced showing the different meanings in each country. Once such a document is developed, the terms should be used instead of synonyms or other expressions with the same, or nearly same meaning. With such a document, all communications would be greatly improved. It should be noted that Allied Administrative Publication (AAP-6) does contain a glossary of terms and definitions. In a similar vein, the various Standardization Agreements (STANAGs) have glossaries of terms that are pertinent to the applicable subject areas.

Involvement with foreign governments in international programs will undoubtedly include contact with embassy personnel, particularly procurement counselors or defense attaches. In many cases, there is a lack of awareness on the part of the embassy staff of program details, procurement regulations, and aspects of the negotiations that are ongoing. The PM could certainly assist in cementing the bond in collaborative programs by offering to provide timely briefings to cognizant embassy personnel on program progress and future intentions.

## INTERPRETATION AND TRANSLATION

In meetings and group discussions, interpreters are required on the formal negotiating level and may be required on the lower working level if participants are not fluent in the languages that are being spoken. Even if the participants are familiar with the languages, the interpreter can catch dialects, meanings, nationally specific terminology, and nuances not always apparent or known to all participants, and give them time to think before answering if the mode of interpreting is consecutive. Interpreters are divided into three levels of proficiency:

- o Conference interpreters who provide exact, instantaneous, simultaneous, or consecutive translations of conversations and statements. Simultaneous is the most precise, verbatim mode of interpreting, for which the interpreter must possess thorough knowledge of the area of expertise under discussion.
- o Seminar interpreters who are almost equally skilled but not as precise, use more conversational than verbatim representation in their interpretation.
- o Escort interpreters, who are fluent in the language(s), usually interpret consecutively in short paragraphs/statements.

Interpreting, when conducted by conference interpreters, is actually an artistic performance based on the sound knowledge of subject areas. Normally only conference and seminar interpreters are used for meetings. Escort interpreters are used for escort services, when only a one-on-one conversation is expected and the meeting is not a negotiation-type involving critical areas of expertise. If an interpreter of a higher skill has been employed, it is preferable to remain with this higher skilled individual in the event of contingencies as well as the knowledge base in the particular subject matters to be discussed. An interpreter will usually require some time before the meeting, either at home with study material or at the meeting site with knowledgeable program personnel, to prepare for the meeting in terms of areas of expertise to be discussed. Freelance interpreters are usually paid by the day, plus expenses.

Translators take written work and express it in another language, so that it is scientifically, technically, and grammatically correct. If the translation is critical, a reviewer may be necessary for final editing; e.g., a Memorandum of Understanding, to ensure correctness and completeness by the above criteria. Freelance translators are paid by the day or by trans-

lating the project. Translation may take considerable time because of the research involved; the expert translator normally averages 2,000 words per day. Translating and interpreting teams may be set up permanently, depending on the nature of the multinational program, availability of such services, areas of expertise, and number of languages involved.

The continuity of personnel discussed previously, is certainly applicable in the interpretation/translation arena, especially for lengthy deliberations. The anti-infrared smoke project found that the NATO team of interpreters developed a rapport with the team over time. The interpreters not only became thoroughly familiar with the various areas of expertise but also got to know the personalities of the participants. This is borne out by many multinational programs. The continuity of interpreters significantly contributed to the success of these projects.

Since most meetings and their translating/interpreting activities require security clearances, the PM should in general, use the office of Language Services, Department of State, for contract services. This office, located in Washington, DC, can normally provide the type of support or contract service required. Service is provided on a first-come, first-served basis.

Early contact is essential to establish the availability of interpreters and/or translators with the skills, expertise, and languages that are needed. During these early discussions, the State Department can provide advice on the numbers and types of interpreters required, based on the size of the meeting and numbers of subgroups. In addition, advice can be furnished on the type of equipment needed to support the interpretation effort. The requester should also specify the type of conference (legal, technical, or political/economic). Written follow-up will be required to provide specifics as well as fiscal data.

State Department personnel with the requisite skills may be substituted at the same cost to the DoD program manager. The PM is required to pay the salary for one study date, either on site or at home (interpreter only); travel and work time; and per diem, travel, and a 10 percent State Department overhead. Salaries range from \$260 per day for a conference interpreter, to \$195 for a seminar interpreter, to \$105 per day for an escort interpreter (FY 86 stabilized rate). The US Army Foreign Science and Technology Center at Charlottesville, VA, provides translation services for requirements which are generated by the Army Materiel Command (AMC) laboratories and arsenals. Interpreting, however, is coordinated through AMC Headquarters.

For contractors, The American Association of Language Spe-

cialists (TAALS), located in Washington, DC, is the professional association with language specialists working at international levels, either in conferences or permanent organizations. The association has a membership of about 205 interpreters and translators. They are based in 13 countries of the Western Hemisphere--Argentina, Brazil, Canada, Chile, Columbia, Guatemala, Mexico, the Netherlands, Panama, Peru, the US, Uruguay, Venezuela--and in Europe, Africa, and Japan. Over 60 of them are permanently employed by international organizations, governmental agencies, and universities. The remaining individuals work on a free-lance basis. The association vouches for the language competence of its individual members through its rating system. The TAALS standards of professional ethics and working conditions are binding on its members everywhere. Additional services can be obtained through commercial translation services such as Berlitz Incorporated. It should be remembered, however, that for security reasons, contractors should consider hiring their own translators and interpreters with security clearance if working on classified contracts with multinational implications.

#### LESSONS LEARNED

To broaden the concept of communications, a series of lessons learned is provided to reinforce the necessity for a PM to proceed carefully from a statement of requirements to a well-developed plan so that communication will be facilitated. The basics of any management process depend upon good leadership and communication. International program management places a premium on both of these elements.

The following examples serve as useful lessons learned:

- o The anti-infrared smoke project experienced problems in written communications. The conclusion of the project group was that many of the reports were not precisely written, nor were they formally reviewed and approved at subsequent meetings before proceeding to new agenda items. Reports of proceedings usually are critical when something goes wrong, and to address a wrong, perceived or otherwise, requires reports that are accurate and precise.
- o In international programs, it takes a longer period of time to send or obtain documentation. It is not unusual for a project office to experience periods of 2 to 3 weeks between mailing of papers and their receipt. Considerable difficulty has been experienced by PM staffs in hand-carrying or forwarding classified documents between cooperating countries. Differences in

classification categories add a further dimension to the problem. In some cases, documents that were required in days have taken several months to transit the "system." Although solutions have not been found, recommendations have been made to examine electronic means of transmission to include encryption.

- o Projects can conceivably require multiple MOUs. The anti-infrared smoke representatives decided to develop two MOUs. MOU 1 was concerned with the conduct of comparative testing of state-of-the-art, anti-infrared smoke-producing materials and MOU 2 was concerned with the exchange of information on the development of anti-infrared smokes. As the project group continued in its deliberations, it became apparent that the immediate task was to produce MOU 1 in order to proceed with the trials. MOU 2 was to address smoke development and cooperation pending the results by the trials and, therefore, did not attract much attention of the participants. As events took place, MOU 2 was never given a serious focus, and it eventually ceased to be considered by the group. It became clear that any effort directed toward MOU 2 detracted from the completion and the staffing of MOU 1, which was more important to the trials. The lesson learned is that only one MOU should be considered at a time.
- o Many business arrangements are based on requests for equipment from specified manufacturers or services from specified sources. This totally negates DoD's or the US company's ability to compete the contracts. Information to foreign customers should emphasize benefits derived through competition, such as more advantageous prices, types of contracts, and contract terms; and more favorable delivery schedules. Wherever possible, requests should specify equipment capability or type of service and encourage competition between known qualified sources.
- o Foreign customers may require concurrent development/production programs to gain the advantage of the earliest possible delivery date. In doing so, the customer should be aware of possible qualification, production, and engineering change/retrofit costs due to early design freezes and release of necessary production parts to meet production schedules. Concurrent development/production should be used only when the earliest possible delivery is the primary factor. In such cases, the customer should be formally apprised of the higher risks involved.

- o In responding to the demands of the moment, many programs are begun with general statements of work, but without program plans to define specific tasks and schedules as well as a host of other details. As a result, early efforts normally lack direction and cohesion. Sufficient planning is extremely important in international programs before implementation.
- o In an effort to have spare parts, special tools, etc., available for concurrent delivery with the end item, most support items are released using production-based estimates of budgetary cost and delivery schedules. The actual prices may vary considerably from budgetary estimates, and delivery times of support items are difficult to program accurately because the schedules are estimated. Firm prices or, as a minimum, "not to exceed" prices and firm delivery schedules should be established for support items before their release. This same philosophy should apply to technical manuals covering such areas as preparation times, cut-off dates for changes, printing schedules, and costs.
- o Negotiation of major hardware and service contracts, and statements of work should be accomplished at the location of contract performance. This substantially improves customer participation and allows functional managers and on-site administrative personnel to be available immediately for consultation and participation. The on-site negotiating process significantly improves the integrity of the statement of work.
- o The PM should institute a quarterly review procedure of all contracts. At each review, which PM personnel and customer representatives should attend, the prime contractor should be required to present a status briefing. This mechanism is very useful in surfacing problems, identifying action items, and tracking program progress, all of which enhance involvement and motivation in the program.
- o The negotiation/communication process is significantly longer if the foreign firm has not had extensive exposure to US business practices, and vice versa. Many items identified in the buyer's regular "boiler plate" clauses must be thoroughly discussed with foreign suppliers. American business practices regarding payment, warranties, and liquidated damages also require discussion because treatment of these factors varies from country to country. Normally, the US contracting

agency must establish the extent to which the foreign supplier previously has complied with applicable US specifications. This requires a detailed, step-by-step review of the specifications. Sometimes the foreign supplier's standard specifications meet or exceed the US requirement; however, a very detailed review and comparison is required to ascertain the adequacy of the foreign specifications.

- o Small, tightly knit teams, with authority to enforce consensus decisions, are imperative to the success of international projects. Accomplishment of the above requires good communication skills. In the same manner, the team should have ready access to corporate policy-making management via a clean chain of command (single line of authority).
- o Successful programs will attempt to establish good communications in all aspects, thus striving toward the establishment of a project/home team relationship. When all members are working toward successful accomplishment of the program, many obstacles can be overcome.
- o It should be obvious that lesser visibility programs allow for greater flexibility and compromise. It is easier to reconcile views and interests, thus cutting down on the volume of communications with a plethora of agencies/activities/governments.
- o Communication will be facilitated by establishing firm Points-of-Contact (POCs). POCs should be established early-on. Everyone should know who they are, what organization(s) they represent, with whom they interface, and their responsibilities.

## NEGOTIATIONS

Chapter 10 discusses negotiation in the general context of the contracting sequence, from program approval to contract award. This section focuses on specific elements of an international negotiation as they can be affected by communication.

Trade-offs are commonplace in almost all negotiations; however, in dealing with foreign countries, the quid pro quo concept is especially important. In some countries, the "winner" is thought to be the negotiator who gains the most concessions, regardless of their importance. Concessions can be offered or exchanged in an attempt to attain agreement on more significant



issues while yielding on smaller points. One must always be aware of the emotional issues in negotiations. The skilled US negotiator must fully understand foreign business practices and cultural influences on negotiations. The cooperative arena demands that all parties leave the table with a sincere belief that they have gained something or shared in the benefits in proportion to their contributions. Failure to do this will result in an eventual recognition by the lesser party that a sense of imbalance or wrong has resulted which may damage the collaborative project. Since negotiating techniques and culture varies from country-to-country, the PM and his team must recognize the differences and act accordingly.

A few points apply to US negotiations with all foreign nations. The US members should speak slowly, pronouncing their words correctly, if they are to be fully understood, especially for simultaneous interpreting. English-speaking members should keep in mind that it takes approximately 20 percent more volume of words in the German language, and more or less in other non-English languages, to simultaneously and verbatim interpret from the English language. The place in which an individual learned the English language will have an impact on communications. For instance, the US and the UK both teach English; however, certain countries require, for the teaching profession, a certification by the person as to the country of origin from which the language was learned. This is required due to the differences in the language that could affect pronunciation. It is important to avoid embarrassing members of the foreign negotiating team. While this might seem obvious, it must be remembered that it is easy to embarrass someone without realizing it, particularly if foreign customs are not understood fully. To minimize misunderstanding, US personnel should always use clear, simple language and repeat important points often, using slightly different phraseology each time. Caucuses may be especially useful in multinational meetings because they help to relieve tension.

#### SOURCES OF DATA

PMs who are involved in collaborative programs have requirements for a wide variety of information relating to foreign weapon system, the worldwide industrial and technological base as well as host of technical information on the specific program in question. These data are necessary if the Program Management Office (PMO) and Service/OSD staffs are to:

- o Implement DoD policies relating to collaborative armaments programs
- o Provide a baseline for assessment of US/foreign milit-

ary equipment capabilities and deficiencies

- o Develop the necessary planning documents and program plans needed to accomplish the specific program in question
- o Further the goals of armaments cooperation as discussed in Chapter 1
- o Provide a comparison of foreign and US programs to reduce the potential for duplications and obtain the synergistic effects of all alliance projects.

The total DoD requirement for foreign data falls into six major categories as follows:

- o Technology Assessments: technological posture of different countries
- o Weapon Systems: systems and subsystems developed or programmed for development
- o Industrial Enterprises: character of foreign industries--strengths and weaknesses
- o Economic Factors: evaluation of economic strength
- o International Agreements: formalized commitments such as Data Exchange Agreements (DEAs), MOUs, etc.
- o Historical Reports of Technology Transfers: a record of FMS, exports, etc.

Appendix E provides a listing of selected data sources, together with an assessment thereof. It reflects a partial listing that the PM can use along with a host of other documents as discussed below. These sources would include the following examples:

o Periodicals/Publications

- |                                |                       |
|--------------------------------|-----------------------|
| - International Defense Review | - Defense Electronics |
| - Defense and Foreign Affairs  | - Logistics Spectrum  |
| - Armed Forces Journal         | - Military Logistics  |
| International                  | Forum                 |
| - NATO's Sixteen Nations       | - Defense Management  |
| - National Defense             | Journal               |
| - Defense                      | - National Contract   |
| - Military Technology          | Management            |

- Aviation Week and Space Technology
- Government Executive
- Asian Defense Journal
- Interavia

- Program Manager
- GAO Reports
- Naval Institute Proceedings

- o Foreign Equipment Exhibitions--The source of data involves on-site observations devoted to technical and performance characteristics of selected items of equipment. While it may be difficult to obtain a schedule of such activities, depending upon the items involved, an inquiry may be made through the Office of Defense Cooperation (ODC) to the country involved. The Paris Air Show is a prime example of revealing defense-type equipment recently developed for the international market.
- o Equipment Catalogs--On certain occasions, foreign governments publish catalogs to indicate availability of selected types of equipment and/or components. The most common type of catalog is represented by a document distributed from the UK. This catalog provides a description of the item, performance characteristics, military applications, options/modifications available, and source of additional detailed information. In addition, international publishing organizations also prepare catalogs such as NATO's Sixteen Nations Defense Equipment Catalog.
- o Industry Brochures--Another source of foreign data is the publication of industrial brochures designed to market specific products. These brochures normally include a general description, pictures or drawings, capability and a sales promotion explaining how the equipment can meet the needs of the military Service. The question that must be addressed is how to ensure that an individual is included on the mailing lists to receive these documents. This requires an aggressive approach to determine the following:
  - Country that possesses the needed technology
  - Names of specific companies (if available)
  - When practical, arrangements for visits to subject industrial concerns
  - Requests to industry to be included on the mailing lists for subject materials

- Participation in marketing survey programs
- Requests for assistance from the applicable security assistance organization to be included on appropriate distribution lists
- Review of publications for potential documents
- o Industrial Reports--DoD sponsors studies utilizing many different contractors to survey and publish data on foreign governments and industry. The aggressive manager of international programs surveys data bases such as the Defense Technical Information Center (DTIC) and the Defense Logistics Studies Information Exchange (DLSIE) to determine the availability of information pertinent to the program.
- o Seminars/Conferences/Association Meetings--Both industry and the government sponsor periodic meetings to examine US-foreign relationships, e.g., American Defense Preparedness Association (ADPA). Although the majority of topics presented at these meetings involves policies and procedures, they do constitute a forum that permits the exchange of military information and data. In addition, reference material is published by many of these associations which discusses significant subjects of interest to the international PM. As an example, the ADPA recently completed a conference that discussed offset/countertrade issues. In addition, the Association of the US Army (AUSA) holds meetings at which equipment is displayed, some of which is of foreign origin.
- o Intelligence Reports--The military community issues intelligence reports that discuss foreign weapon systems and technology. The PM should be aware of this data source and attempt to maximize its use whenever possible.

The PM has a wide variety of data sources available to him. These sources are, however, widely dispersed among many governmental agencies with no single attempt to consolidate these data into a usable format. The PM must creatively pursue the information. This lack of consolidation does create a more difficult environment for the PM to accomplish his responsibilities effectively. The PM must:

- o Be aware of foreign systems and technology

- o Aggressively seek out information from all sources that relates to the program
- o Know the industrial/governmental arena that bounds the international program.

## **APPENDIX A GENERIC MEMORANDUM OF UNDERSTANDING (MOU)**

This appendix provides guidance for preparing the separate sections of an MOU. Since each program is unique, some sections can be combined, deleted, or expanded and divided into several sections to adequately address the complexity of the issue. Expert advice is always necessary. Such sections as intellectual property, finance, and security are particular candidates for expertise. Compatibility of sections is essential, and cross-referencing should be used whenever necessary. Prior agreements and MOUs should be referenced in specific sections where applicable. This description is largely obtained from Allied Acquisition Practices Publication number 1, dated March 1982.

- o Title Page Identifies the document.
  - States the document is an MOU.
  - Identifies participants.
  - Gives the subject and security classification.
- o Table of Contents--Lists sections and annexes by title and page number.
- o Section 1--Defines terms, abbreviations, and reference agreements.
  - Defines all words and phrases to the extent necessary to ensure a common understanding.
  - Defines all abbreviations and acronyms.
  - States prior agreements and their effect on the current agreement as well as precedence.
  - Describes effect of proposed modifications on referenced prior agreements.
- o Section 2--Introduction and the Basis for the Arrangement
  - Sets out background and introduces the program in summary form.
  - Identifies the participants and, if appropriate, their representatives.

- Gives reasons for execution of the arrangement and benefits to be derived.
  - Summarizes background considerations and intentions respecting follow-on activities.
  - Sets out general aims of the program.
- o Section 3--Objectives.
- Addresses specific objectives and general goals of the participants, given in a manner to clarify the intent of the participants and aid in resolution of ambiguities in other sections of the MOU.
- o Section 4--Total Scope of the Project and MOU.
- Identifies activities to be conducted under this MOU, delimited as far as possible by tangible accomplishments.
  - Describes provisions affecting follow-on activities.
- o Section 5--Basic Management Structure, Interfaces, and Participants Authority and Responsibility.
- Describes type of management structure i.e., separate, joint, or centralized authority.
  - Describes organizational structures for handling overall responsibilities for program policy and direction; e.g., Board of Directors (large programs); Steering Committee (other programs); closed NATO Project Group (feasibility phase).
  - Describes organizational structures for handling overall responsibilities for program management; e.g., General Manager heading NATO or other international agency; pilot or lead nation for single country management; Project Director heading a project office (such a project office may be established by separate joint administrative arrangement including provisions for its funding, location, staffing and administrative support); joint national responsibilities, each country being responsible for the performance of its national work share.

- Identifies other separate but related programs to facilitate information exchange.
- Addresses plans to lead to more extensive programs as related projects mature.
- Identifies position designations, of personnel accomplishing data and technology transfer and liaison (normally, national project officers).
- Describes joint management plan, coordination, and cooperation.
- Discusses managerial involvement by industry.
- Outlines management committee: voting members from each participant; selection of the chairman; meeting procedures, frequency, and locations; voting procedures and percentage of vote required for approval; and direct liaison between committee members and designated representatives.
- Outlines steering committee member/project officer responsibility and authority in conducting design reviews and assisting in design analysis; development and review of test planning and participation in the test and evaluation; approval of budget and payment schedules; coordination of visit and access requests; consideration of amendments/modifications of the MOU; coordination of documentation exchange; notification of cost, schedule, and performance degradations; and all other duties in administering his country's responsibilities to the project.
- Discusses industrial organization: framework of any industrial structure appropriate to secure the objectives of the program should be recognized and provisions included as necessary: relationship of industrial organization to participants (governments), prime contractor (leader, follower), contractor (consortium), and subcontractors.

o Section 6--Report Requirements.

- Stipulates the reports required, frequency of reporting, preparation and review responsibilities, copies and distribution, availability to



nonparticipants, official language, use of restrictive markings on security and IP information, and security classification of these documents.

o Section 7--Work-Sharing.

- Defines of the principles governing allocation of work to be performed under the MOU.
- Factors affecting work-sharing: technological requirements of the program, including standardization and interoperability requirements; technical capabilities of the participants; prospective requirements of the participants; financial contributions by participants and other contributions by participants (e.g., government services and facilities).
- Decision on present work-sharing percentage, whether prior work is to be included in these percentages, and whether subcontracting is an approved method of work-sharing.
- Designates approval authority for the work-sharing plan.
- Consultation with industrial interests.
- Monitoring work-sharing plan including adjustment of any imbalance occurring during program. Sharing with regard to third party sales.
- Provisions for subcontracting.
- Provisions for coproduction.
- Provisions for logistic support as appropriate.

o Section 8--Cost-Sharing.

- Develops guidelines for the determination and reimbursement of costs.
- Defines of program costs.
- Determines the basic financial arrangement; specify each participant's financial contribution, noting any relevant constraints.

- Specifies the economic conditions on which any estimates are made.
- Specifies permitted costs such as those incurred prior to MOU, contractual agreements, overhead costs, and other allowable costs.
- Specifies unallowable costs including costs prohibited by national laws.
- Sets appropriate cost milestones and thresholds for the project.
- Designates an index of the ceiling price for inflation.
- Establishes procedures for allocating cost overruns, notices, and substantiation responsibilities for revised efforts and approval authority at each level of management for cost overruns.

o Section 9--Financial Matters.

- Establishes pricing arrangements.
- Establishes funding procedures.
- Sets up provisions for controlling changes in program costs.
- Establishes mechanism for accumulation and disbursement of funds with specification of the method of collection, collection on demand or payment schedules, and establishment of project trust fund.
- Designates and authorizes individuals to draw funds.
- States amounts in specific monetary units, provisions for currency fluctuations, and adjustment schedules to share equitable gain or loss caused by fluctuations.
- Establishes project budget function, specify frequency of budgeting responsibility for budget formulation and approval, and state reporting requirements.
- Establishes a fiscal baseline and fiscal year.

- Provides for nonavailability of appropriated funds, loan provisions, etc.
  - Establishes procedures for adjusting contributions and cancellation charges of the parties.
  - Provides procedures for the actual currency exchange and transfer.
  - States auditing and accounting procedures to be followed, and designate responsibility for maintaining records of costs and obligations incurred, monies received and disbursed, issuance of auditing reports.
  - Establishes notice requirements for audits and who has the right to audit program and contractor records.
- o Section 10--Taxes, Duties and Other Charges.
- States those materials and personal property exempt from taxation, those personnel exempt from taxes, and charges to be paid by the government that imposes them.
  - States taxes specifically not waived or not paid by the government imposing them.
- o Section 11--Contractual Arrangements.
- This section should contain provisions as to:
- By whom contracts are to be placed
  - On whom contracts can be placed
  - Nature of contracts
  - Governing law(s) concerning contract(s)
  - Administration of contracts, including responsibilities for administrative costs incurred thereby
  - Special contract provisions presented in the program
  - Any constraints due to international and national

**purchasing laws, regulations, practices or policies, and authorities (technical, design, etc.)**

**o Section 12--Transfers and Exchanges.**

- Discusses equipment delivery and acceptance.**
- States how loans of equipment are handled.**
- Determines how title transfer occurs.**
- Provides relevant warranty considerations.**

**o Section 13--Intellectual Property (IP).**

- Assesses the Intellectual Property considerations involved in the work to be performed. Bear in mind that the term "Intellectual Property" whether background or foreground, can be defined as including inventions, patented or not, trademarks, industrial designs, copyrights and technical information including software, data, designs, technical know-how, manufacturing information and know-how, techniques, technical data packages, manufacturing data packages and trade secrets.**
- Includes specific provisions under the following headings:**
  - Disclosure of intellectual property covering information to be exchanged and the applicable guidelines.**
  - Permitted and non-permitted use of IP including project generated, government/contractor owned and third party.**
  - Protection of IP.**
  - Availability of IP rights including licenses and financial terms applicable to the transferred IP.**
  - Accountability of parties for misuse of IP including establishing policy and procedures governing settlement of disputes and determination of accountability and liability in disputes.**

o **Section 14--Inspection and Quality Assurance.**

- Establishes responsibility of each party to formulate and maintain quality control/inspection plans and procedures.
- Designates source and approving authority of criteria and develop procedures for nonconformant materials.
- States the right of the other parties to observe inspections and conduct additional ones.
- Discusses implications for program cost.

o **Section 15--Standardization, Codification, and Configuration Control.**

- Identifies level of standardization/interoperability required.
- Provides for configuration control and codification (see STANAGS 3050/3051).
- Recognizes applicable STANAGS.
- Stipulates the procedures and organization for managing changes, and level of standardization desired by the participants.

o **Section 16--Management of Assets.**

- Applies to such assets including among others: special tooling and test equipment, models or prototypes, and facilities.
- States items to be covered, procedures for ownership, custody, and responsibility, and define rights of parties maintaining possession of the equipment after disposition.
- Discusses implications for program costs.

o **Section 17--Insurance and Indemnification Liability.**

Liabilities of the participants in respect to:

- Personnel - consider application of the NATO Status of Forces Agreement.

- Product - insurance arrangements/indemnity against the risks of loss, damage or third party claims. (Intellectual property indemnities should be covered under Section 13 "Intellectual Property.")

o Section 18--Logistic Support.

As far as practicable, provisions should be made at the outset, which include consideration of NAMSA's capabilities, and anticipate the requirements of in-service phases including:

- Supply and stockholding of spare parts
- Provisions for repair and overhaul
- Preparation and control of modifications
- Supply and availability of documentation
- Any training arrangements
- Responsibility for funding logistic support.

o Section 19--Sales and Disposals.

- Defines the rights of the participants, separately or jointly, to make sales or disposals, noting any restrictions and requirements for prior consultation between participants.
- Identifies charges and fees (recoupment, waiver, etc.).
- States the IP restrictions to sales.

o Section 20--Security.

- Establishes classification procedures, authority for classification of documents, and reclassification review intervals.
- Devises method and highest degree of classified material to be exchanged including appropriate handling, storage, and transmittal procedures for classified information and material.
- Makes reference to the appropriate security agreement, i.e., General Security of Information Agreement or Industrial Security Agreement.

- Draws drafter's attention to NATO document CM(55) 15 Final, as supplemented, if appropriate.
- o Section 21--Access to Establishments and Exchange of Personnel.
  - Stipulates the extent of personnel exchanges and transfer by numbers of personnel, schedule, responsibility for costs and liability for damages, and rights of individuals to inventions and technical data from work performed by exchange personnel.
  - States those personnel authorized access, security clearance required, facilities to which access is granted, type of authorizations granted, noninterference requirements. and procedures for attaining access.
- o Section 22--Release of Information to Third Parties and Publicity.
  - Specifies general, releasable project information, responsibility for release determination, and acceptable forums.
  - States that IP and security information are covered separately in sections 13 and 20, respectively.
- o Section 23--Participation of Additional Nations.
 

This section covers:

  - Procedures for admission
  - Impact on the program
  - Terms and conditions for admission
  - Effects on work-sharing and cost-sharing.
- o Section 24--Withdrawal and Termination.
  - Discusses procedures for withdrawal.
  - Defines the conditions and procedures of premature termination.

- Discusses the obligation and rights of the withdrawing participant and the same responsibilities.
- Defines the rights of the remaining participants.

o Section 25--Settlement of Disputes.

This section provides for the orderly handling and resolution of disputes and should discuss the following:

- Managerial committees' responsibilities
- Policies and procedures
- Any limitations on recommendations referred to participants, referral to committees, and referral to others.

o Section 26--Extension/Amendment.

- Establishes procedures for amending/modifying/terminating the MOU, including who may submit an amendment, notice requirements, required time period, voting requirements, and time before an amendment becomes effective.
- Specifies policy for determination of types of changes requiring formal amendment of the MOU.

o Section 27--Signature Page.

- States governing language and effective date/duration.
- Stipulates circumstances making the MOU effective, such as national ratification or appropriation of funds.
- States distribution of official copies of the MOU.
- States signatures required.

Annexes, Appendices and Other Attachments.

- Information not appropriate for inclusion in the body of the MOU, e.g., of a sensitive or confidential nature, too detailed, or formulated subsequent to signature is placed in this section.



**APPENDIX B**  
**POLICY CRITERIA FOR DECISIONS**

**MILITARY**

The RSI program has been developed primarily within the NATO context. Similar considerations apply to some extent in other United States alliances such as the ABCA agreements and with other friendly nations such as Israel, Egypt, Spain, and Japan. Although there is a strong intuitive basis to suggest that RSI-type considerations would enhance US alliance military capabilities, the quantification of these benefits has not been addressed in detail, and their relative importance is not fully understood. The results of the few studies that have been conducted are mixed; however, the relationship between standardization/interoperability and battlefield reconstitution, i.e., the on-the-spot creation of composite formations from units of different nationalities, has emerged as a crucial issue. Reconstitution was found to be an overriding requirement to maintain a cohesive defense and force integrity.

Although one may not be able to quantify the military benefits of RSI-type programs, it can be reasonably concluded that potential international collaborative programs should be evaluated from the standpoint of combat capability and sustainability in the region. Specific policy criteria are:

- o The promotion of US-allied standardization of military material and equipment, which, in turn, would generate the establishment of uniform logistics support;
- o The creation of in-country compatibility with US standardized equipment, thereby creating allied capability of supporting deployment of US forces;
- o The creation of additional sources of supply with attendant impact on logistical responsiveness and in-country mobilization base;
- o The improvement of military capability derived from the ability to reconstitute forces;
- o The improvement of readiness posture derived from common training and joint exercises; and

- o The capability of the foreign nation's military establishment to cooperate and support the weapon system in question.

## POLITICAL

There are a number of political considerations, both domestic and international, that should be taken into account in examining proposals for collaborative arms programs. Normally, the particular array of considerations which will bear on any one program will vary widely from case to case. However, it is necessary to review proposed programs with all of these considerations in mind to ensure that the best possible course of action is taken.

- o In the international arena, one of the most significant questions is the effect upon our relations with the foreign government of a refusal to agree to the program or to certain parts of it. Pertinent to this consideration are such factors as the foreign government's political, military, and economic significance to the US.
  - Is it an alliance country?
  - Is the US committed to the program in some form through a separate agreement?
  - Is there a military, political, or economic quid which the US is seeking to obtain?
  - Are there base rights considerations involved?
  - Are we seeking to obtain or preserve areas of cooperation with the country which are of significance to US interests?
  - Will denial result in a shift in relations to a third country supplier or domestic production at a net loss to US interests?
- o In the international arena, some consideration should be given to the effect of our decision on our relations with other governments in terms of precedent and in terms of advantage or disadvantage to them if they have viable alternatives to offer.
- o Domestically, there are two areas that need to be examined:

- The first is whether the US prime contractor involved is generally favorable to the project or not. Major programs involving US industrial participation cannot be successfully implemented without US industry's cooperation. It is, therefore, important to have a back-to-back arrangement in place, i.e., an agreement with the US contractor together with the agreement with the foreign government, so as to ensure that the program can be carried out as agreed to.
- A second domestic political factor involves possible Congressional interest in the program. This can be either positive or negative. There may be significant interest on the part of key members of Congress who are in favor of the program while there may also be opposition from key members on the grounds that permission to manufacture abroad will impact unacceptably in key US industrial facilities. In addition, there may be concern expressed in the Congress over the program as a whole, in terms of the releasability of the technology involved and the overall impact of such release on long-range US interests.

## ECONOMIC

An assessment of the economic considerations associated with a potential program must be made so that the economic impacts, long-term, and short-term, on the US, the foreign nation, and, if appropriate, the regional alliance as a whole, will be made evident to decision-makers. When the assessments are to be made, and how thorough they can be, will depend on the status of program evolution, the size of the program, and the program's sensitivity. For a large program, the assessments would continue over time as the program becomes better defined. Described below is an outline of the assessment to be performed on a coproduction program, an assessment of a program involving other offsets or codevelopment would follow similar lines in addressing the totality of the program's economic impacts.

### o Micro Analysis

- What is the cost of doing coproduction for the feasible range of participation?
- What is the capability of the participating country to absorb the technology and are there spin-off effects?

- What are likely economic benefits/costs?
  - To USG--e.g., economies of scale, amortized R&D, overseas depot maintenance, future impact of technology transfer.
  - To the participating country--improvement of industrial (military and commercial) base, impact of increased costs of program (compared to purchase from US) of the particular weapon acquisition.
  - To the regional alliance (if appropriate)--the benefit/costs to an alliance may be greater than the sum of those applicable to each individual country.\*

\* NOTE: Due to a paucity of definitive studies on such matters, any efforts to determine alliance benefits/costs would be largely theoretical at this time.

- What are feasible alternatives to the participating country if the USG does not agree to collaboration or to the totality of the program desired by the country?

#### o Macroeconomic Analysis

- Would participation in the project have a measurable impact on the participating country's:
  - Balance of payments?
  - Capital investment?
  - Foreign exchange requirements?
  - Ability to finance any other critical government planned expenditures--particularly the defense budget?
- How do the above impacts compare to those under feasible alternatives (e.g., alternative collaborative projects with other nations)?
- What are likely impacts of the project on the US:

- Government budget?
- Employment (specific level of skills and locations)?
- Loss of technological lead?
- Balance of payments?
- Industrial base?

o Summary of Costs and Benefits (by reasonable range of alternatives)

- To the US
- To the participating country(ies) and alliance as a whole
- Conclusions.

#### INDUSTRIAL BASE/CRITICAL MATERIALS

Offset (including coproduction) agreements are being used with increasing frequency by foreign nations to enhance their industrial bases and improve their balance of trade. These agreements, when mandated by governments, may not promote economic or military efficiency and may have an adverse net impact on the US domestic defense industrial base. As an example of a negative impact, when military items are included as offsets, business may be diverted away from US producers with resultant harm to the US industrial base. Another example is found in cases in which offset/coproduction agreements are necessary to establish a priority rating under the Defense Priorities System in order to provide US-produced parts to foreign source producers; such actions may cause delivery delays in DoD system schedules and, in some cases, additional costs due to delays. Another area that must be considered is the need by coproducing allies for critical and strategic materials required to produce end items; the US can be placed in a situation such that the USG or domestic industry will have to provide these materials if the foreign contractors cannot obtain them from their normal source. On the other hand, US involvement in an international program may have some positive effects on the US domestic industrial base because it:

- o Tends to keep the base warm longer

- o Cuts US investment cost (R&D and production)
- o Helps retain skilled production personnel
- o May make possible the gaining of technology from foreign sources
- o May provide second sources.

Hence the need for careful scrutiny of all offset/coproduction programs especially as it involves foreign procurement and/or production of military parts or items. The Department of Defense objective must be to retain critical domestic skills and industrial capabilities with advanced technology while not becoming foreign source dependent for critical defense items.

Criteria by which programs should be judged are:

- o Is this particular action in the best interest of our national defense objectives (short and long term)?
- o Are the items critical military items?
- o Will there be any adverse impact on US schedules?
- o Will the US be able to maintain a viable R&D/production capability to meet surge/mobilization needs?
- o If a critical need for domestic sources exists, will the US be able to ensure that at least one domestic source is retained or established?
- o Will the program cause critical plant closures with an attendant loss of job skills and capability?
- o Will this action require transfer of vital industrial technology to foreign sources and is this going to adversely impact US technology leads or advances?
- o Will US item costs be increased or reduced?
- o Has the effort been fully coordinated with Service/OSD industrial base activities and, where appropriate, with domestic industry through subcontractor level?

#### TECHNOLOGY TRANSFER

There presently exist three principal mechanisms that assess

technology proposed for transfer to other nations. These are:

- o The Military Critical Technologies List was developed for assessing exports in East-West trade. Within the framework of US-allied or friendly nation relationships, it could be employed to identify technologies which should be released with caution. Such releases would, in the final analysis, be weighed in the context of:
  - Our defense relations with the nation
  - Degree to which the recipient cooperates in the control of such technologies
  - Impact upon any US lead in the technology concerned
  - Impact upon the US industrial mobilization base
- o All classified information or equipment releases must be assessed by the criteria and mechanisms established under the National Disclosure Policy. Within established classification levels for each country, authority for release rests with the Service responsible for the system or technology concerned. (If the information is under the cognizance of more than one Service, all must agree.) Information which exceeds the established classification levels must be approved by the NDPC as a whole. The US must determine, at the outset, all information that may be needed by the foreign nations and the willingness of the US to release needed information.
- o The State Department's International Traffic in Arms Regulations govern the export of technical information for production of arms, ammunition, and implements of war in a manner generally more stringent than the controls applied to other technical data. DoD and State review the detailed agreements between the US firm and the foreign recipient to ensure that the firm and extent of the transfer are acceptable. Commercial licenses approved under these regulations do not enjoy the protection of government-to-government agreements to secure compliance with US licensing conditions. Accordingly, reliance upon commercial licensing, as a mechanism for sensitive programs, can leave a great deal to be desired.

Judgment on technology transfers associated with a particu-

lar program can and should employ these existing mechanisms. They have a basis in US law and are flexible instruments of national policy. With the exception of the infant MCTL, they have stood the test of time. In one way or another, they involve in the decision-making process, the agencies and departments most likely to be impacted by the issue at hand.

### MANAGERIAL/BUSINESS

Even though the objective and terms of a potential program may be sound from a military/political/economic/industrial base/technology transfer viewpoint, the program as structured may present US (or foreign) managers with significant difficulties in implementation. These difficulties can include requirements to waive rules, change ingrained procedures, develop unique and complicated mechanisms in order to comply with existing law/regulation, establish off-line organizational structures, and even to request changes to laws. In addition, the program can be deficient from a good business perspective for either the USG or the US industry. During the review/decision/negotiation process, the program must be viewed from this managerial/business perspective with the objective of identifying shortcomings, trying to correct them, and of identifying the extent to which extraordinary measures and effort are going to be required to implement the program. Some criteria are listed below:

- o Are changes to law necessary to implement the program?
- o Are waivers of rules required and what is the impact (political, economic, business) of waiving these rules?
- o To what extent will unique procedures have to be established or existing procedures changed?
- o Will unique organizations have to be established, or the existing organization modified, to implement the program?
- o Are additional resources (people, facilities, equipment) needed?
- o Is the program manageable?
- o Is the program structure desirable from an acquisition and business viewpoint?



## **APPENDIX C ARMAMENTS COOPERATION PROGRAMS**

This appendix provides a listing of military systems in which armaments cooperation has been a significant factor. Section I provides a listing of major system cooperative programs since World War II. Section II provides a list of current/proposed cooperative projects. The reader should note that OSD provides an annual report to Congress each year on "DoD Standardization of Equipment within NATO". This document provides an up-to-date listing of equipment in which armaments cooperation is the driving factor.

**SECTION I**  
**US MAJOR SYSTEM COOPERATIVE PROGRAMS**

<b>SYSTEM DESIGNATION</b>	<b>TYPE OF SYSTEM</b>	<b>COUNTRIES INVOLVED</b>	<b>START DATE</b>
<b>FOREIGN PRODUCTION OF US-DESIGNED SYSTEMS:</b>			
AIM-4D	MISSILE	SWEDEN	UNKNOWN
AIM-26B	MISSILE	SWEDEN	UNKNOWN
S-51	HELICOPTER	UK	1947
F-86	FIGHTER	CANADA AUSTRALIA ITALY JAPAN	1949 1952 1954 1955
S-55	HELICOPTER	UK JAPAN	1950 1958
M-7	HOWITZER	CANADA	1950
T-33	TRAINER	CANADA JAPAN	1951 1954
47-G	HELICOPTER	ITALY JAPAN UK	1952 1953 1957
MK-44	TORPEDO	ITALY FRANCE CANADA	LATE 1950s LATE 1950s LATE 1950s
T-34	TRAINER	CANADA JAPAN ARGENTINA	1955 1957 1958
S-2	ANTISUBMARINE WARFARE AIRCRAFT	CANADA	1955
S-58	HELICOPTER	UK FRANCE	1956 1960
P-2H	ANTISUBMARINE WARFARE AIRCRAFT	JAPAN	1956

F-104	FIGHTER	FRG	1959
		BELGIUM	1959
		CANADA	1959
		NETHERLANDS	1960
		JAPAN	1960
		ITALY	1961
SH-3	HELICOPTER	UK	1959
		JAPAN	1960
		CANADA	1962
		ITALY	1965
HAWK	MISSILE	FRANCE	1959
		BELGIUM	1959
		FRG	1959
		ITALY	1959
		NETHERLANDS	1959
AGM-12B	MISSILE	NORWAY	1960
S-62	HELICOPTER	JAPAN	1960
KV-107	HELICOPTER	JAPAN	1960
UH-1B/D	HELICOPTER	ITALY	1961
		JAPAN	1964
		REPUBLIC OF CHINA	1969
AIM-9B	MISSILE	BELGIUM	1962
		FRG	1962
		DENMARK	1962
		GREECE	1962
		NETHERLANDS	1962
		NORWAY	1962
		PORTUGAL	1962
		TURKEY	1962
KH-4	HELICOPTER	JAPAN	1962
S-61B	HELICOPTER	CANADA	1962
		JAPAN	1962
		ITALY	1963
		UK	1963
BULLPUP	MISSILE	DENMARK	1963
		NORWAY	1962
		TURKEY	1962
		UK	1962

CH-46	HELICOPTER	JAPAN	1963
F-5	FIGHTER	CANADA	1965
		REPUBLIC OF CHINA	1973
		SWITZERLAND	1976
		ROK	1979
M60A1	TANK	ITALY	1965
M-109	HOWITZER	NETHERLANDS	1966
		NORWAY	1966
M-113	ARMORED PERSONNEL CARRIER (APC)	ITALY	1966
M-109	HOWITZER	NETHERLANDS	1966
		NORWAY	1966
M-113	APC	ITALY	1967
		BELGIUM	1979
NIKE HERCULES	MISSILE	JAPAN	1967
OH-58	HELICOPTER	ITALY	1967
		AUSTRALIA	1971
AIM-7E	MISSILE	ITALY	1967
		JAPAN	1971
		UK	1973
CH-53	HELICOPTER	FRG	1968
OH-6	HELICOPTER	JAPAN	1968
		ITALY	1969
		ARGENTINA	1973
		ROK	1976
NATO SEA SPARROW	MISSILE	DENMARK	1969
		ITALY	1969
		NORWAY	1969
		BELGIUM	1970
		NETHERLANDS	1970
		CANADA	1970
CH-47	HELICOPTER	ITALY	1969
F-4	FIGHTER	UK	1969
		JAPAN	1969

AIM-23A/B	MISSILE	DENMARK	1974
		ITALY	1974
		FRANCE	1974
		FRG	1974
		NETHERLANDS	1974
		BELGIUM	1979
		JAPAN	1980
P-3C	ANTISUBMARINE WARFARE AIRCRAFT	JAPAN	1978
F-15	FIGHTER	JAPAN	1978
AIM-9L	MISSILE	FRG	1978
		ITALY	1978
		NORWAY	1978
		UK	1978
E-3A	AIRCRAFT	BELGIUM	1978
		CANADA	1978
		DENMARK	1978
		FRG	1978
		GREECE	1978
		ITALY	1978
		NETHERLANDS	1978
		NORWAY	1978
		TURKEY	1978
M-2	ARMORED VEHICLE	BELGIUM	1979
214ST	HELICOPTER	JAPAN	1980
COPPERHEAD	PROJECTILE	BELGIUM	1980
		FRG	1980
		ITALY	1980
		NETHERLANDS	1980
		UK	1980

**US LICENSED PRODUCTION OF FOREIGN-DESIGNED SYSTEMS:**

B-57	AIRCRAFT	UK	1951
ROLAND II	MISSILE SYSTEM	FRG	1977
		FRANCE	1977

**FULLY-INTEGRATED COPRDUCTION:**

F-16	FIGHTER	NETHERLANDS	1975
		BELGIUM	1975
		DENMARK	1975
		NORWAY	1975
AV-8B	V/STOL FIGHTER/ ATTACK AIRCRAFT	UK	1981
		,	

**SECTION II**  
**CURRENT/PROPOSED MILITARY COOPERATIVE PROJECTS**

<b>SYSTEM DESIGNATION</b>	<b>TYPE OF SYSTEM</b>	<b>COUNTRIES</b>
<u><b>COPRODUCTION</b></u>		
<b>F-16</b>	<b>FIGHTER</b>	<b>BELGIUM DENMARK NETHERLANDS NORWAY</b>
<b>F-5G</b>	<b>FIGHTER</b>	<b>CANADA REPUBLIC OF CHINA SWITZERLAND ROK</b>
<b>F/A-18</b>	<b>FIGHTER</b>	<b>CANADA SPAIN AUSTRALIA</b>
<b>F-15</b>	<b>FIGHTER</b>	<b>JAPAN</b>
<b>P3</b>	<b>ASW PATROL AIRCRAFT</b>	<b>JAPAN</b>
<b>AV-8B</b>	<b>V/STOL AIRCRAFT</b>	<b>UK SPAIN</b>
<b>I-HAWK</b>	<b>MEDIUM RANGE GROUND-TO-AIR MISSILE</b>	<b>BELGIUM DENMARK FRANCE FRG GREECE ITALY JAPAN NETHERLANDS NORWAY</b>
<b>AMRAAM</b>	<b>ADVANCED MEDIUM-RANGE AIR-TO-AIR MISSILE</b>	<b>FRG UK</b>

MAVERICK	CLOSE AIR SUPPORT MISSILE	BELGIUM DENMARK FRG GREECE ITALY NETHERLANDS UK PORTUGAL TURKEY
SPARM	ANTIRADIATION MISSILE	BELGIUM CANADA FRG GREECE ITALY NETHERLANDS UK
AIM/9L	AIR-TO-AIR MISSILE	FRG ITALY NORWAY UK JAPAN
NAVSTAR GPS	GLOBAL POSITIONING SYSTEM	BELGIUM CANADA DENMARK FRANCE FRG ITALY NETHERLANDS NORWAY UK
AH-1S	HELICOPTER	JAPAN
STINGER	INFRARED HOMING MISSILE	BELGIUM FRG DENMARK GREECE ITALY NORWAY TURKEY NETHERLANDS
PATRIOT	SURFACE-TO-AIR MISSILE	FRG ITALY JAPAN NETHERLANDS



IMPROVED TOW	MISSILE SYSTEM	NINE NATO NATIONS
M114A2	HOWITZER, 155mm	ROK
M109G	HOWITZER CONVERSION	NETHERLANDS ITALY FRG
M101A1	HOWITZER, 105mm	ROK
81mm	MORTAR	ROK
M79	GRENADE	ROK
M19	ANTITANK MINE	ROK
NATO SEA GNAT	RADIO DECOY	DENMARK UK
PENGUIN, MK II, III,	ANTISHIP MISSILE	GREECE NORWAY UK
HARPOON	ANTISHIP MISSILE	CANADA DENMARK FRG GREECE NETHERLANDS SPAIN TURKEY UK
PRC 77	TACTICAL RADIO	ROK
GRC 122	TACTICAL RADIO	ROK
VRC 12	TACTICAL RADIO	ROK
120mm	TANK GUN	FRG
155mm	PRECISION GUIDED MUNITION	11 NATO COUNTRIES
M240	ARMOR MACHINE GUN	BELGIUM
M252	IMPROVED 81mm MORTAR	UK

9mm PISTOL

9mm. HANDGUN

ITALY

CODEVELOPMENT

AWACS

AIRBORNE WARNING  
AND CONTROL SYSTEM

12 NATO COUNTRIES

KC 135

RE-ENGINEING TANKER  
AIRCRAFT

FRANCE

ASRAAM

ADVANCED SHORT RANGE  
AIR-TO-AIR MISSILE

FRG  
NORWAY  
UK

LRMOM

LONG-RANGE STANDOFF  
MISSILE

FRG  
UK

LAMS/MFR

MISSILE/MULTIFUNCTION  
RADAR

CANADA  
FRANCE  
FRG  
NETHERLANDS  
SPAIN  
UK

MSAM/ESAM

MEDIUM RANGE/EXTENDED  
RANGE SURFACE-TO-AIR  
MISSILE

BELGIUM  
FRANCE  
FRG  
ITALY  
NETHERLANDS  
NORWAY  
SPAIN  
TURKEY  
UK

SES

SURFACE EFFECT  
SHIP

CANADA  
FRANCE  
FRG  
SPAIN  
UK

RAM

ANTI-AIRSHIP MISSILE

DENMARK  
FRG

M109A2/A3

ARTILLERY SUPPORT  
VEHICLE

FRG  
ITALY  
NETHERLANDS

NFR 90

FRIGATE

CANADA  
FRANCE  
FRG  
ITALY  
NETHERLANDS  
SPAIN  
UK

MLRS

ROCKET SYSTEM

FRANCE  
FRG  
ITALY  
UK  
TURKEY

M.A.N.

10-TON TRUCK

FRG

MINE DETECTION  
AND NEUTRALI-  
ZATION

MINE DETECTION  
SYSTEM

CANADA  
FRG  
NETHERLANDS  
UK  
FRANCE

EXPENDABLE  
JAMMERS

FAMILY OF RADAR  
JAMMERS

CANADA  
DENMARK  
FRANCE  
FRG  
ITALY  
NETHERLANDS  
UK

**APPENDIX D**  
**APPLICABLE STATUTES, REGULATIONS, NATIONAL**  
**SOCIOECONOMIC REQUIREMENTS, AND PROPOSED**  
**CHANGES DUE TO THE NUNN AND QUAYLE AMENDMENTS**

This appendix contains various listings of statutes, regulations, and national socioeconomic requirements applicable to the international contracting environment. Section I contains a list of FAR and DoD FAR Supplement clauses affecting foreign firms when contracting with the USG. Section II contains a list of FAR and DoD FAR Supplement clauses/provisions that may be inapplicable to foreign firms when contracting with the USG. Section III contains summaries of national socioeconomic requirements imposed by contracting governments. These lists were compiled by the ASD (A&L). Section IV is a brief description of the proposed changes to the DoD FAR Supplement that are due to the Nunn and Quayle Amendments.

## **SECTION I**

### **FAR AND DoD FAR SUPPLEMENT CLAUSES AFFECTING FOREIGN FIRMS**

52.219-1	Small Business Concern Representation
52.219-2	Small Disadv. ,ed Business Concern Representation
52.219-3	Women-Owned Small Business Representation
52.219-4	Notice of Small Business-Small Purchase Set-Aside
52.219-5	Notice of Total Small Business-Labor Surplus Area Set-Aside
52.219-6	Notice of Total Small Business Set-Aside
52.219-7	Notice of Partial Small Business Set-Aside
52.219-11	Special 8(a) Contract Conditions
52.219-12	Special 8(a) Contract Conditions
52.220-1	Preference for Labor Surplus Area Concerns
52.220-2	Notice of Total Labor Surplus Area Set-Aside
52.225-1	Buy American Certificate
52.225-3	Buy American Act--Supplies
52.225-5	Buy American Act--Construction Materials
52.225-6	Balance of Payments Program Certificate
52.225-7	Balance of Payments Program
52.225-8	Buy-American Act--Trade Agreements Act--Balance of Payments Program Certificate
52.225-9	Buy American Act--Trade Agreements Act--Balance of Payments Program
52.225-11	Certain Communist Areas
52.227-11	Patent Rights--Retention by the Contractor (Short Form)
52.227-12	Patent Rights--Retention by the Contractor (Long Form)

52.227-13 Patent Rights--Acquisition by the Government

52.232-14 Notice of Availability of Progress  
Payment Exclusively for Small Business Concerns

52.232-16 Progress Payments

52.247-63 Preference for US-Flag Air Carriers

52.247-64 Preference for Privately Owned US-Flag Commercial  
Vessels

52.208-7000 Required Sources for Miniature and Instrument Ball  
Bearings

52.208-7001 Required Sources for Precision Components for  
Mechanical Time Devices

52.208-7002 Required Sources for High-Purity Silicon

52.208-7003 Required Sources for High Carbon Ferrochrome

52.208-7004 Required Sources for Precision Optics

52.208-7005 Required Sources for Forging Items

52.213-7000 Inconsistency Between English Version and  
Translation of Contract

52.219-7001 Notice of Combined Small Business-Labor Surplus Area  
Set-Aside

52.219-7002 Notice of Combined Small Business-Labor Surplus Area  
Set-Aside

52.219-7003 Determining the Set-Aside Award Price

52.219-7004 Eligibility for Preference as a Labor Surplus  
Concern

52.220-7000 Notice of Labor Surplus Area Set-Aside

52.220-7001 Notice of Labor Surplus Area Set-Aside--Alternate

52.225-7000 Buy American-Balance of Payments Program Certificate

52.225-7001 Buy American Act and the Balance of Payments Program

- 52.225-7005 Buy American Act--Trade Agreements Act--Balance of Payments Program Certificate
- 52.225-7006 Buy American Act--Trade Agreements Act--Balance of Payments Program Certificate
- 52.225-7009 Preference for Certain Domestic Commodities
- 52.225-7010 Domestic Wool Preference
- 52.225-7011 Preference for Domestic Specialty Metals (Major Programs)
- 52.225-7012 Preference for Domestic Specialty Metals
- 52.225-7013 Preference for Domestic Hand or Measuring Tools
- 52.225-7015 United States Products Certificate (Military Assistance Program)
- 52.225-7016 United States Products (Military Assistance Program)

**OTHER STATUTORY/REGULATORY POLICIES AFFECTING FOREIGN SOURCE PARTICIPATION**

**DoDD 5230.11 - National Disclosure Policy**

**FAR 6.302-3 - Regulatory implementation of statutory authority for exception to full and open competition for the purpose of maintaining a mobilization base**

**FAR 9.601 - Regulatory implementation of 18 USC 4121-4118 on acquisition of prison-made goods**

**FAR 8.700 - Regulatory implementation of 41 USC 46-48c on acquisition from the blind and other severely handicapped**

**DFARS 25.7004 - PL 97-377, Restriction on sources for manual typewriters**

**DFARS 25.7006 - PL 90-500, Restriction on acquisition of foreign buses**

**DFARS 25.7007 - PL 92-570, Restriction on contracting with foreign sources**

## SECTION II

### FAR AND DoD FAR SUPPLEMENT CLAUSES/PROVISIONS THAT MAY NOT BE APPLICABLE TO FOREIGN FIRMS

- <sup>a</sup>  
52.215-1 Examination of Records by Comptroller General
- <sup>b</sup>  
52.219-8 Utilization of Small Business Concerns and Small Disadvantaged Business Concerns
- <sup>b</sup>  
52.219-9 Small Business and Small Disadvantaged Business Subcontracting Plans
- <sup>b</sup>  
52.219-10 Incentive Subcontracting Program for Small and Small Disadvantaged Business Concerns
- <sup>b</sup>  
52.219-13 Utilization of Women-Owned Small Businesses
- <sup>b</sup>  
52.220-3 Utilization of Labor Surplus Area Concerns
- <sup>b</sup>  
52.222-4 Labor Surplus Area Subcontracting Program
- 52.222-3 Convict Labor
- 52.222-4 Contract Work Hours and Safety Standards Act--  
Overtime Compensation--General
- 52.222-5 Contract Work Hours and Safety Standards Act--  
Overtime Compensation--Firefighters and Fireguards
- 52.222-19 Walsh-Healey Public Contracts Act Representation
- 52.222-20 Walsh-Healey Public Contracts Act
- <sup>c</sup>  
52.222-21 Certification of Nonsegregated Facilities
- <sup>c</sup>  
52.222-22 Previous Contracts and Compliance Reports
- <sup>c</sup>  
52.222-23 Notice of Requirement for Affirmative Action to  
Ensure Equal Employment Opportunity
- <sup>c</sup>  
52.222-24 Preaward On-Site Equal Opportunity Compliance Review
- <sup>c</sup>  
52.222-25 Affirmative Action Compliance
- <sup>c</sup>  
52.222-26 Equal Opportunity
- <sup>c</sup>  
52.222-27 Affirmative Action Compliance Requirements for  
Construction



52.222-28<sup>c</sup> Equal Opportunity Preaward Clearance of Subcontracts  
 52.222-35<sup>c</sup> Affirmative Action for Special Disabled and Vietnam  
 Era Veterans  
 52.222-36<sup>c</sup> Affirmative Action for Handicapped Workers  
 52.223-1 Clean Air and Water Certification  
 52.223-2 Clean Air and Water  
 52.227-1<sup>d</sup> Authorization and Consent  
 52.227-2<sup>d</sup> Notice and Assistance Regarding Patent and Copyright  
 Infringement  
 52.227-3<sup>d</sup> Patent Indemnity  
 52.228-5 Insurance--Work on a Government Installation  
 52.229-3<sup>e</sup> Federal, State, and Local Taxes  
 52.229-4<sup>e</sup> Federal, State, and Local Taxes  
 52.229-5<sup>e</sup> Taxes--Contracts Performed in US Possessions or  
 Puerto Rico  
 52.230-1<sup>f</sup> Cost Accounting Standards Notices and Certification  
 (National Defense)  
 52.230-3<sup>f</sup> Cost Accounting Standards  
 52.230-4<sup>f</sup> Administration of Cost Accounting Standards  
 52.219-7000 Small Business and Small Disadvantaged Business  
 Subcontracting Plan (Master Plans)  
 52.222-7000 Potential Application of the Service Contract Act,  
 As Amended (Fixed Price)  
 52.222-7001 Service Contract (SCA) Minimum Wages and Fringe  
 Benefits  
 52.235-7003 Care of Laboratory Animals  
 52.247-7104 Various clauses relating to contracts for movement  
 -7121 and storage of personal property

a

This clause may be omitted from contracts with foreign contractors if the contractor is a foreign government or is prohibited by the laws of the country involved from making its books, documents, etc., available for examination, and the agency head determines, after taking into account the price and availability of the property or services from domestic sources, that omission of the clause best serves the public interest.

b

Although these clauses arguably impose a burden on US prime contractors who must prepare subcontracting plans and are directed to comply with the US national policy of affording the maximum practicable opportunity to compete for subcontracts to groups such as small, disadvantaged, women-owned, and labor surplus concerns, they also presumably benefit US companies in those groups at the subcontract level. Conversely, although foreign primes need not incur the administrative burden of managing their subcontract programs in accordance with these clauses, foreign subcontractors do not enjoy the priority treatment afforded US concerns.

c

These clauses are inapplicable for work performed outside the US by employees recruited outside the US.

d

These clauses are inapplicable when both complete performance and delivery are outside the US.

e

Comparable foreign tax clauses (52.229-6-9) provide that contract prices include all applicable taxes and duties except taxes and duties that the US and government of the concerned country have agreed shall not be applicable. The US has entered into tax agreements with several countries under which the US expenditures for the common defense are exempt from certain specified taxes of the countries in which these expenditures are made.

f

The Cost Accounting Standards Board exempted contracts and subcontracts with foreign concerns for all Cost Accounting Standards (CAS) except CAS 401 and 402. These two standards require uniformity and consistency in a contractor's treatment of his cost accounting data. Foreign concerns must also comply with the cost accounting disclosure requirements.

## SECTION III

### NATIONAL SOCIOECONOMIC REQUIREMENTS

#### A. EXAMINATION OF RECORDS BY COMPTROLLER GENERAL

##### US

US contractors are required to retain contract documents and records generally for a 3-year period and to permit access to those records by the Comptroller General of the US. Prime contractors must flow this provision down to the first subcontract tier. Contracting officials are required to attempt to include this requirement in contracts with foreign concerns unless the laws of the country concerned preclude access.

##### Belgium

Belgian Government contracts are controlled by the Belgian "Cour des Comptes" (equivalent to the US General Accounting Office), which alone has the jurisdiction to authorize payments. Such contracts, and all records pertaining thereto, must be retained by the contractor for a period of 5 years after completion of the contract and by the Belgian Government Administration for a 30-year period. Access to these records is admissible to US officials.

##### Canada

Canada requires retention of records (minimum of 5 years) and access by federal government inspectors (Department of Supply and Services, Defense Production Act).

##### Denmark

Danish law does not preclude access by US officials. Tax legislation would normally require companies to retain records for 5 years.

##### FRG

The US-FRG agreement on price and cost control provides for responsible performance of price/control efforts by FRG in favor of the US. US authorities are allowed to participate in those

control efforts. FRG statutes provide for retention of price and cost records by industry for 5 years starting with the date of the price predetermination when a fixed price is to be assessed, or with the date of the cost postdetermination in case of a cost reimbursable price. The obligation to retain those documents serves to determine the allowability of a price or elements thereof. Consequently, government officials have access to those records.

#### France

French laws prohibit access by US officials. Books, records, and documents are available for examination at any time by accredited agents of the Ministry of Defense.

#### Israel

There are no Israeli laws that prohibit access to contract documents and records by US officials. The regulations of the Israeli Ministry of Defense (MOD) provide for access to contract documents and records during execution of the contract and for a period of 3 years thereafter. Under certain conditions, this right of access extends also to subcontractor records.

#### Italy

The Italian Minister of Defense may inspect the technical books and the accounting books. Foreign governments and contractors may apply to the Administration of the Defense (AD) to exercise the control through the AD itself.

#### Netherlands

No Dutch law prohibits access to Dutch company records by GAO auditors; thus, the clause is as effective in contracts with Dutch companies as with US companies.

### **B. PRIORITY CONSIDERATION OF ECONOMICALLY OR SOCIALLY DISADVANTAGED GROUPS FOR SUBCONTRACTS**

#### US

It is US policy by statute to encourage US prime contractors to place subcontracts with disadvantaged concerns or concerns lo-

cated in areas of high unemployment. US primes are generally required, for contracts over \$500,000, to prepare subcontracting plans that include percentage goals for using small and disadvantaged business concerns as subcontractors and to document their efforts to ensure such concerns have the opportunity to compete for subcontracts.

### Belgium

The government tries to promote activities in socially and geographically disadvantaged regions and regions with high unemployment. Companies seeking to develop any activities in those regions must fulfill the administrative requirements of the applicable legislation.

### Canada

The Canadian Government recognizes regional disparity through industrial development (Department of Regional Industrial Expansion) and major acquisition programs (Department of Supply and Services).

### Denmark

Denmark does not have any socioeconomic subcontracting programs similar to those of the US; however, in the context of the general economic policy, employment schemes are initiated and unemployment benefits are provided. As a result, the general level of taxation on companies, as well as on individuals, is high compared with the level in the US.

### France

The Ministry of Defense can impose particular subcontractors on prime contractors for socioeconomic reasons.

### FRG

Certain socially or geographically disadvantaged industries (such as those located in occupation zones, border areas, Berlin Development Act, support of the Blind and Handicapped, as well as small business) are considered privileged competitors; e.g., upon invitation to bid, they get the award of a contract if their bid is as economical or just minimally more expensive than competitive bids. In case the privileged competitor is cooperating

or subcontracting with an unprivileged partner, the privileged competitor must prove that at least 50 percent of the contract volume is performed by him.

### Israel

MOD regulations grant certain priorities to contractors located in "development areas," as defined and designated by the appropriate authorities. Such areas are generally subject to a high rate of unemployment. The Israeli firms that locate in these areas in order to obtain these priorities are among the firms competing for contracts with the US DoD.

### Italy

The AD must allocate 30 percent of its orders for works and supplies to companies located in southern Italy (social charges for companies located in the northern and central Italy are higher than in the southern regions).

### Netherlands

None.

## C. LABOR STANDARDS

### US

Under the Contract Work Hours and Safety Standards Act, certain US contractors who employ laborers or mechanics are required to pay them time-and-a-half for work in excess of 8 hours a day and 40 hours a week. This requirement also extends to all subcontracts. Contractors receiving supply contracts over \$10,000 that are manufacturers of, or regular dealers in, the supplies must comply with the regulations issued by the Secretary of Labor under the Walsh-Healey Public Contracts Act. This act governs minimum wages, maximum hours, and working conditions and prohibits the use of child and convict labor. Each contract not subject to the Walsh-Healey Act must include a provision prohibiting the use of convict labor. A contract involving construction work must contain several additional clauses relating to construction industry labor standards. Contracts for services must contain a clause stipulating minimum standards for wages, fringe benefits, and working conditions for service employees.

### Belgium

The Belgian labor standards are more sophisticated and impose more obligations than do US labor standards. Furthermore, the labor market is strictly regulated, and companies must abide by strict regulations in case of layoffs, yearly holidays, safety and hygiene requirements, health requirements, social security (sickness benefits, pension, unemployment benefits, children allowances), etc.

### Canada

Federal and Provincial Labour Codes cover working hours, minimum wage, and safety.

### Denmark

Work hours, wages, overtime pay, and general working conditions are parts of general agreements between the employers' association and the trade unions. Other benefits, such as 5 weeks annual holiday and paid sickness leave, are regulated by legislation.

### France

France has an extensive Code of Labor whose enforcement is monitored by the Ministry of Labor. It includes extensive benefits for sickness, maternity, and paid holidays. It provides for minimum mandatory pension schemes, safety standards, minimum age of 16, and a minimum wage.

### FRG

Either by law or by agreement between industry and trade unions, the FRG has conventions similar to US law.

### Israel

Israeli law contains many statutes dealing with labor standards such as:

- o Collective Agreements Law - 1957
- o Hours of Work and Rest Law - 1951
- o Wage Protection Law - 1977 (section 17A provides severe

financial penalties in the event of delay in payment of salary).

- o Employment Service Law - 1959
- o Payment for Sick Leave Law - 1976
- o Annual Leave Law - 1952
- o Youth Labor Law - 1953
- o Apprenticeship Law - 1953
- o Labor Inspection (Organization Law - 1954 (covers supervision of safety, vocational hygiene, and generally workers' physical welfare in the place of work)).
- o Accident and Occupational Hazard Ordinance - 1945
- o Wage Protection Law - 1958
- o Settlement of Labor Disputes Law - 1957
- o Severance Pay Law - 1963
- o Series of General Collective Agreements dealing with minimum income, payment of cost of living increases, private and public sector salaries, recuperation and relaxation, and reimbursement of travel expenses to and from the work place.

The above listing is not complete. In any event, all employers, including defense contractors, must comply with same.

### Italy

Work standards are established by Italian National Contracts of Employment, which regulate both the weekly working hours (between 40 and 36 hours) according to different sectors and the specific limitations on overtime work (150 hours per year per capita for companies employing over 200 workers; 200 hours per year for companies employing up to 200 workers). The overtime compensation paid may be as high as 75 percent (night overtime for holidays). Firms must respect the social rules and the wage agreements concerning the social charges; namely, the work social insurances (i.e., injuries, sickness, disability, old-age, unemployment, etc.). These rules and agreements are specified in a contractual article (Art. 21) of the uniform agreement.

### Netherlands

Extensive range of labor and social security laws and individual labor agreements. Statutes include:

- o 1983 Act on Labor conditions that mandates safety, health, and general well-being in the work place, comparable in scope to OSHA.
- o 1971 Works Council Act requires establishment of employee councils to provide advice to management.



Council consent is required on selected employment-related and work conditions matters.

- o 1968 Minimum Wages Act provides for a national minimum wage that is adjusted semiannually.

Additionally, Dutch companies are considerably less free to put on or lay off workers to meet workflow peaks and valleys.

Dismissals except for specific cause must be with the permission of the District.

#### D. EQUAL OPPORTUNITY REQUIREMENTS

##### US

US contractors must certify that they will not discriminate against any employee or applicant because of race, color, religion, sex, or national origin; will take affirmative action to ensure that employees are treated during employment in a nondiscriminatory manner; and will not maintain segregated facilities. They must post explanations of this requirement in conspicuous places and permit access to records by the Office of Federal Contract Compliance Programs for purposes of determining compliance. Contractors must have on file affirmative action programs conforming to Labor Department rules. Contract awards over \$1 million are subject to on-site preaward equal opportunity compliance reviews. Additional affirmative action requirements are in place for the special categories of Vietnam Era Veterans and Handicapped Workers. These requirements are applicable only when contract work is performed inside the US by employees recruited inside the US.

##### Belgium

Requirements similar to those in the US are also imposed under Belgian law, but are not restricted only to defense contracts. Belgian companies are subjected to strict legislation of non-discrimination within Belgian law, but also in the framework of the European Convention (EC) and directives, and of the EC on Human Rights. Groups singled out for special employment consideration and treatment are particular categories of unemployed, handicapped workers, and displaced persons from the former Belgian colony of the Belgian Congo, now known as Zaire.

### Canada

The Charter of Rights as embodied in the Canadian Constitution requires industry to conform.

### Denmark

Equal treatment of men and women is regulated by legislation with respect to employment, working conditions, and dismissal. Legislation also prohibits discrimination on the basis of race, religion, or political convictions. Special employment schemes exist for handicapped and disadvantaged groups. Such schemes are financed through tax revenues.

### FRG

Constitutional law (Art. 3) provides for equal treatment unless there are different prerequisites. Handicapped workers are favored by preferential treatment, provided they correspond to the required profile. Instead of employment of the handicapped, a payment of certain duties may be allowable.

### France

France does not have affirmative action programs because the French social structure and its evolution are different; however, special employment consideration is given to handicapped workers. Protection of minorities, or other categories of people, from discrimination is provided by law that makes it illegal to discriminate (by race, creed, color, and sex). The courts are responsible for enforcing the law.

### Israel

Israeli statutes include both equal opportunity statutes and statutes dealing with veterans:

- o Employment of Women Law - 1954
- o Male and Female Workers (Equal Pay) Law - 1964
- o Discharged Soldiers (Reinstatement in Employment) Law - 1949
- o Discharged Soldiers (Temporary Provisions) Law - 1973 (deals, among other things, with priorities granted in order to obtain employment)

- o Discharged Soldiers Law - 1984 (deals with priority granted in labor exchanges for job offers and assistance in completing vocational or professional training that was interrupted by compulsory service)
- o Regulations, Employment of the War-Handicapped - 1951 (these regulations contain provisions that stipulate that a firm must employ a certain number of war-handicapped, with the number of the latter increasing as the number of regular employees increases). In order to become a "recognized supplier" to the MOD, an Israeli must complete a certification of compliance with the above. Failure to comply with laws and regulations applicable to discharged soldiers is grounds for loss of status of "recognized contractor."

### Italy

The National Contract of Employment now in force regulates, with explicit reference to current laws, the work of women, of minors, and of people having the right of compulsory hiring. The latter includes the disabled, handicapped, and refugees and orphans, who must be hired within the approximate limit of 15 percent of the staff, through the appropriate state employment agencies.

### Netherlands

Work councils are chartered with the responsibility for ensuring equal pay for men and women, and for protecting selected classes of laborers, including young persons, older workers, veterans, handicapped workers, and expectant mothers.

## **E. CLEAN AIR AND WATER**

### US

US contractors must certify that they will comply with all the requirements of the Clean Air Act and Clean Water Act relating to inspection, monitoring, entry, reports, etc.; that no portion of the work for the defense contract will be performed in a facility listed on the Environmental Protection Agency (EPA) List of Violating Facilities unless and until the EPA eliminates the name of the facility from the listing; and that they will use their best efforts to comply with clean air and water standards at the facility in which the contract is being performed. The requirement is not applicable to contracts performed outside the US.

### Belgium

General environmental standards are applicable by law to the entire industry of Belgium; therefore, there are no special requirements necessary for US defense contracts performed in Belgium.

### Canada

Federal, provincial, and municipal governments impose environmental restrictions on Canadian industry.

### Denmark

The principal Danish statute is the Environmental Protection Act of 1983. This statute has as its objectives the prevention of air, water, and soil pollution, as well as noise nuisances and the establishment of environmental regulations based on consideration of hygiene. The statute provides for the establishment of environmental standards by the Minister of the Environment. It also establishes the requirement for licensing and approval of corporate plans that may have environmental impacts. Sanctions for violation may include fines, detention, or imprisonment.

### FRG

Industries must conform with existing environmental laws that are more comprehensive than those of other European countries.

### France

French environmental standards are similar to those applied in other Western European nations and the US. They are enforced by the Ministry of Environment through headquarters in Paris and agencies scattered nationwide.

### Israel

Numerous statutes, regulations, and other forms of environmental protection deal with water and air pollution. The key statute is the Abatement of Nuisance Law - 1961, which provides that the granting of a license for the operation of an undertaking is conditional upon compliance with that law and all regulations and directions under it.

### Italy

An article of the National Contract of Employment deals with the problems concerning the environment for work hygiene and safety for which the keeping of a record for "environmental data" and "biostatistic data," is provided, as are control rules.

The Ministry for the Environment and the Ministry of Labour also provide regulations for the setting up of water conditioners, air cleaners, and cleaners for other kinds of industrial pollution.

### Netherlands

Pollution control is governed by the Air Pollution Act of 1970, the Public Nuisance Act of 1953, and a number of other regulations. These controls are a major consideration when companies seek permission from local authorities for any plant or facility changes. Enforcement is a high political priority, and substantial fines are levied against offenders. A Health Department license is required for companies that may cause water, air, or noise pollution. Duties are assessed to any companies passing pollutants into waterways or using harmful materials.

## F. COST ACCOUNTING STANDARDS

### US

National defense contractors awarded certain dollar amounts of contracts must comply with Cost Accounting Standards (CAS) that range from accounting for unallowable costs to cost accounting rules for depreciation. Foreign contractors must comply only with CAS 401 and 402 requiring disclosure and consistency of cost accounting practices.

### Belgium

National standardized cost accounting standards are applicable.

### Canada

None.

## Denmark

The European Community has set common standards for cost accounting. National tax legislation sets more detailed standards, including standards for unallowable costs and depreciation. Special cost accounting procedures for some subcontracts are required. For others, the normal practices described above are more stringent than CAS 402 requirements.

## FRG

Each contract requires that an accounting system be established and conducted in agreement with the "Verordnung ueber Preise bei oeffentlichen Auftraegen, VOPR 30/53" and with the implementing rules of "Leitsaetze fuer Preisermittlung."

## France

Each French defense contractor must comply with a Cost Accounting Plan that is developed by the government's commissaries in coordination with industry. Plans of this type are negotiated first at a national level with industry as a whole, and then with each type of industry (aerospace, electronics, telecommunications). The specific rules are negotiated between the Ministry of Defense and those firms whose main interests are defense. Similar negotiations are pursued by other ministries, such as the Ministry of Telecommunications for firms whose main interests are in telecommunications. The Ministry of Defense can require very detailed explanations about the accounting structure of its contractors and may negotiate to obtain fair treatment.

## Israel

MOD regulations contain many detailed provisions governing cost accounting. The following brief sampling illustrates types of requirements:

- o Suppliers must maintain clear, accurate, and consistent cost accounting records.
- o Procedures for examination of these records during the periods of negotiation and execution of contracts are stipulated.
- o The different items that form the basis for calculation of the cost are set out together with criteria for examining them.
- o Allowable and unallowable costs are set out in great detail. In essence, all these regulations together

constitute a cost accounting standard to which all "recognized suppliers" must adhere. These are more demanding than the usual manner of doing business in Israel.

### Italy

The rules in effect provide for the relations between the Defense Administration and industry and allow for the verification and the analysis of manufacturing costs. This verification may be compulsory. The verification is made on the accounting books of the firms. The books must be stamped as required by law and registered at the tax office.

### Netherlands

There is no cost accounting standards system comparable to that of the US. The Dutch Civil Code does require all business enterprises to keep records regarding the financial position of the company and to provide comprehensive information about its various businesses and transactions; however, there is no mandatory code or chart of accounts. In any cost-type contract, the same US cost allowability regulations are applicable.

## SECTION IV

### PROPOSED FAR CHANGES DUE TO THE NUNN AND QUAYLE AMENDMENTS

The Defense Acquisition Regulatory Council is considering a change to the DoD FAR Supplement that would implement section 115 of the International Security and Development Cooperation Act of 1985 and section 1102 of the DoD Authorization Act of 1985.

Public Laws 99-83 and 99-145 provide authority to waive certain statutory requirements that relate to the formation of contracts and contractual terms on a case-by-case basis in implementation of cooperative agreements. The objective of cooperative projects is to obtain economies by pooling scarce NATO resources. This proposed rule will provide guidance to DoD contracting components in support of cooperative projects. Principal coverage is in a proposed Subpart 225.79, with ancillary proposed changes in 201.103 and 245.603-71.

This proposed rule is not likely to have a significant economic impact on many small projects because it is geared to internal changes in contracting procedures when dealing with foreign sources under NATO Cooperative Projects. More details on the proposed changes may be found in the Federal Register of October 20, 1986, Vol. 51, No. 202, page 37205.



## **APPENDIX E DATA SOURCES**

This appendix contains an assessment of significant data sources that the PM will find useful in his management of an international program. As indicated in Chapter 18, there is no integrated collection of such data. The information is found in many sources. Useful data sources include those that are identified in the chapter, in this appendix, as well as others that may be surfaced through individual research.

1. DATA SOURCE: Department of Commerce/Office of Export Administration  
  
CONTENT: Commercial technological exports (electronics, computers, capital goods)  
  
ASSESSMENT: Technical assessment performed. Foreign availability considered. Data not easily retrievable.  
  
DATA FORMAT: FIL CONTACT: Commerce  
(202) 377-2118
2. DATA SOURCE: Central Information Reference and Control (CIRC), US Air Force  
  
CONTENT: Foreign threat, Scientific and Technology (S&T) intelligence reference control.  
  
ASSESSMENT: Bulk of data from foreign S&T literature. Complicated to use. Must have certified need from DIA. Little Free World data.  
  
DATA FORMAT: COM CONTACT: Air Force Foreign Technology Division  
AV 787-2242
3. DATA SOURCE: Defense Marketing Service (DMS), DoD  
  
CONTENT: Foreign military markets. US defense R&D markets. US on-going and new weapons programs.  
  
ASSESSMENT: Not detailed technical data. Limited to program status funding and performance specifications.  
  
DATA FORMAT: REP CONTACT: DMS  
(703) 528-5810
4. DATA SOURCE: Data Resources Inc. (DRI)  
  
CONTENT: National economic statistics. Computerized national economic models.

**ASSESSMENT:** Performs quick-response parametric analyses.  
On-line service available.

**DATA FORMAT:** COM, REP

**CONTACT:** DRI  
(202) 663-7600

**5. DATA SOURCE:** Defense Systems Management College

**CONTENT:** MOUs, NATO RSI, acquisition plans, point papers  
and other documents.

**ASSESSMENT:** Access limited to on-site use (Ft. Belvoir).  
Bibliographies and searches are available.

**DATA FORMAT:** COM, REP and FIL

**CONTACT:** Information  
Resource Center  
AV 354-2900

**6. DATA SOURCE:** Department of Energy-International Security  
Affairs

**CONTENT:** Energy-related technologies primarily nuclear.  
Export cases interface to Commerce. Technology  
transfer information newsletter.

**ASSESSMENT:** Technical assessments performed. Foreign  
availability considered. Data not easily re-  
trievable.

**DATA FORMAT:** FIL

**CONTACT:** Energy  
(202) 252-2100

**7. DATA SOURCE:** Department of Energy-Office of Science and  
Technology Information

**CONTENT:** All published energy articles both nuclear and non  
nuclear from foreign/US sources.

**ASSESSMENT:** Serves as a clearing house for Government/com-  
mercial energy related articles published in  
reports, conferences, books, and journals.  
Includes patent data.

**DATA FORMAT:** COM

**CONTACT:** Energy  
(615) 576-1541

8. DATA SOURCE: Defense Logistics Studies Information Exchange (DLSIE)
- CONTENT: Acquires, stores, and disseminates DoD logistics and management information.
- ASSESSMENT: Abstracts available. No assessments performed.
- DATA FORMAT: COM, REP CONTACT: DLSIE  
AV 687-4546
9. DATA SOURCE: Defense Technical Information Center (DTIC)
- CONTENT: RDT&E technical reports covering 2 million entries. Serves as a place to query on any subject matter under the above umbrella.
- ASSESSMENT: On-line bibliographic abstracts. Complete copies available.
- DATA FORMAT: COM, REP CONTACT: DLA  
AV 274-6833
10. DATA SOURCE: Foreign Military Assistance (FOMA), DoD
- CONTENT: Foreign military assistance agreements. Value and types of weapons and equipments. Data for supplier and recipient countries.
- ASSESSMENT: Semi-annual publication. No Order of Battle or US data.
- DATA FORMAT: COM, REP CONTACT: DIA  
AV 243-3646
11. DATA SOURCE: Foreign Disclosure, and Technical Information System (FORDTIS), DoD
- CONTENT: Munitions export cases. Classified disclosures to foreign countries. Foreign visitor, Commercial Committee (COCOM), Commodity Control list, FMS, and accreditation data bases.

**ASSESSMENT:** Historical data base. Relatively easy to use.  
(See Chapter 17 on Disclosure of Military Information.)

**DATA FORMAT:** COM

**CONTACT:** USDP  
AV 227-5495

**12. DATA SOURCE:** Foreign Weapons Evaluation Program (FWEP), DoD

**CONTENT:** Foreign weapons test and evaluation.

**ASSESSMENT:** Nonuniform selection, test and evaluation procedures used by Services.

**DATA FORMAT:** REP

**CONTACT:** USDRE  
AV 227-0394

**13. DATA SOURCE:** Information Analysis Centers (IACs)

**CONTENT:** Expert information service on call and collection/evaluation of worldwide scientific/technical information in assigned specific disciplines, e.g., metals, chemical warfare. There are 21 DoD IACs available for PM use.

**ASSESSMENT:** Highly specialized data can provide direct answers or make arrangements to provide answers. Abstracts on computer. Hard copy text available through DTIC or IAC published documents. Analysis provided upon request.

**DATA FORMAT:** REP, COM

**CONTACT:** DLA  
AV 274-6260

**14. DATA SOURCE:** International Monetary Fund (IMF)

**CONTENT:** National economic statistics.

**ASSESSMENT:** Major data source for AID, US responsible agency for international accounts of Free World countries.

**DATA FORMAT:** REP

**CONTACT:** IMF  
(202) 623-7000

**15. DATA SOURCE: Intelligence Products, Defense Intelligence Agency**

**CONTENT:** Focus on worldwide (less US) military capabilities-force balances, political developments, armaments and their deployment.

**ASSESSMENT:** Very little data on Free World weapon systems and technology. Weak subject area correlation among different products.

**DATA FORMAT:** REP

**CONTACT:** DIA  
AV 243-3773

**16. DATA SOURCE: International Agreements, DoD**

**CONTENT:** DEAs, IEPs, MOUs

**ASSESSMENT:** Process for identifying US data requirements and disseminating foreign technical data is inadequate.

**DATA FORMAT:** FIL

**CONTACT:** USDRE/OSD (GC)  
AV 224-3203  
AV 225-2604

**17. DATA SOURCE: Legal Information Services (LIS), DoD**

**CONTENT:** Data includes all published International Agreements of the US and unpublished agreements affecting Defense including MOUs; US Code; FAR; CFR; decisions of the federal courts and administrative agencies, including GAO. Serves as a clearing house for Government attorneys.

**ASSESSMENT:** Currency varies from more recent than published texts to a few years old, depending upon the data base. DoD International Agreements are approximately one year old. Legal research service and full text copies provided.

**DATA FORMAT:** COM

**CONTACT:** LIS  
AV 926-7531  
(303) 370-7531

18. DATA SOURCE: Military Production (MILPRO), Defense Intelligence Agency

CONTENT: Foreign production rates, capacities, and plant size for combat material.

ASSESSMENT: No data on export share of production. No net assessment of data is performed. No production cost data.

DATA FORMAT: COM

CONTACT: DIA  
AV 243-3657

19. DATA SOURCE: Military Production/R&D facilities (MILFAC)

CONTENT: Current and past products and capacities of material production facilities.

ASSESSMENT: Companion to MILPRO-added industrial data.

DATA FORMAT: COM

CONTACT: DIA  
AV 243-3680

20. DATA SOURCE: National Aeronautics and Space Administration (NASA)

CONTENT: Assessments of space technologies. Limited foreign data available.

ASSESSMENT: Considerable number of space technology assessments that have military relevance.

DATA FORMAT: FIL, REP

CONTACT: NASA  
(202) 453-8545  
or any NASA  
facility

21. DATA SOURCE: National Technical Information Service (NTIS), Department of Commerce

CONTENT: Selected unclassified US Government technical reports.

**ASSESSMENT:** Availability of technical information dependent upon whether Government agency has agreement with NTIS.

**DATA FORMAT:** REP

**CONTACT:** NTIS  
(703) 487-4650

22. **DATA SOURCE:** Organization of Economic Cooperation and Development (OECD)

**CONTENT:** National economic statistics, science and technology policies.

**ASSESSMENT:** Economic analysis provided for country comparisons. Nonmilitary emphasis.

**DATA FORMAT:** REP

**CONTACT:** OECD  
(202) 724-1857

23. **DATA SOURCE:** Service's Overseas R&D Liaison Offices

**CONTENT:** R&D progress in Free World countries.

**ASSESSMENT:** Limited weapon systems coverage. Data not easily retrievable.

**DATA FORMAT:** FIL, REP

**CONTACT:** AF AV225-2014  
Navy AV227-1234  
Army AV227-4310

24. **DATA SOURCE:** State Department/Office of East-West Trade

**CONTENT:** Historical data on Commodity Committee cases, COCOM embargo items.

**ASSESSMENT:** Technological assessment data available. Limited foreign availability data. Data not easily retrievable.

**DATA FORMAT:** FIL

**CONTACT:** State Department  
(202) 647-2871

**DATA FORMAT LEGEND:** COM - Computerized; FIL - Files;  
REP - Reports



## **APPENDIX F REFERENCES**

It should be noted that almost all of the references tend to be broad in content, with relatively few containing quantitative information. Accordingly the references are categorized as follows:

- o SECTION I General references applicable to all parts of the Guide
- o SECTION II Chapter references primarily applicable to the Chapter
- o SECTION III Applicable DoDD/DoDI

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SECTION III  
APPLICABLE DoDD/DoDI

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
2000.3	(D) International Interchange of Patent Rights and Technical Information (GC)	11 Mar 1959
2000.8	(D) Cooperative Logistic Supply Support Arrangements (A&L)	12 Feb 1981
2000.9	(D) International Coproduction Projects and Agreements Between the US and Other Countries or International Organizations (A&L)	23 Jan 1974
2002.3	(D) Clearance of Research and Studies with Foreign Affairs Implications (USDP)	15 Aug 1985
2010.1	(D) Support of International Military Activities (C)	2 Sep 1981
2010.4	US Participation in Certain NATO Groups Relating to Research, Development, Production, and Logistics Support of Military Equipment (USDRE)	12 Dec 1967
2010.5	(D) DoD Participation in the NATO Infrastructure Program (A&L)	19 Mar 1985
2010.7	(D) Policy on Rationalization of NATO and NATO Member Telecommunications Facilities (C3I)	6 Jul 1981
2010.8	(D) Department of Defense Policy for NATO Logistics (A&L)	2 Mar 1979
2010.9	(D) Mutual Logistic Support Between the United States and Governments of Other NATO Countries and NATO Subsidiary Bodies (A&L)	7 Jun 1984
2010.10	Mutual Logistic Support Between the United States and Other NATO Forces-Financial Policy (C)	29 Oct 1980

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
2015.4	Mutual Weapons Development Data Exchange Program (MWDDEP) and Defense Development Exchange Program (DDEP) (USDRE)	5 Nov 1963
2035.1	(D) Defense Economic Cooperation with Canada (ISP)	4 Nov 1980
2040.2	(D) International Transfers of Technology, Goods, Services, and Munitions (ISP)	17 Jan 1984
2045.2	Agreements with Australia, Canada, and Ireland for Reciprocal Qualification of Products of Non-resident Manufacturers (USDRE)	13 Feb 1985
2050.1	(D) Delegated Approval Authority to Negotiate and Conclude International Agreements (ISA)	6 Jul 1977
2110.32	Foreign Military Sales Between the United States and the Federal Republic of Germany (DSAA)	25 Mar 1980
2125.1	(D) Military Assistance Program Offshore Procurement (MAP/OSP) (DSAA)	18 Jun 1970
3100.3	(D) Cooperation with Allies in Research and Development of Defense Equipment (USDRE)	27 Sep 1963
3100.4	(D) Harmonization of Qualitative Requirements for Defense Equipment of the United States and Its Allies (USDRE)	27 Sep 1963
C-3100.6*	(D) Continental United States Support of US-Federal Republic of Germany Logistic Programs (U) (A&I)	10 Aug 1978
3310.1	(D) International Intelligence Agreements (USDP)	22 Oct 1982
4120.3	(D) Defense Standardization and Specification Program (A&L)	10 Feb 1979
4120.3-M	Defense Standardization Manual: Standardization Policies, Procedures, and Instructions (A&L)	12 Aug 1978

<u>NUMBER</u>		<u>TITLE</u>	<u>DATE</u>
4120.11	(D)	Standardization of Mobile Electric Power Generating Sources (A&L)	19 Nov 1979
4120.18	(D)	Metric System of Measurement (A&L)	28 Jan 1980
4120.19		DoD Parts Control Program (A&L)	30 Oct 1985
4120.20		Development and Use of Non-Government Specification and Standards (A&L)	28 Dec 1976
4120.23		DoD Metrication Plan (USDRE)	22 Mar 1983
4130.2	(D)	The Federal Catalog System (A&L)	9 Mar 1981
4630.5	(D)	Compatibility and Interoperability of Tactical Command, Control, Communications, and Intelligence Systems (C3I)	9 Oct 1985
5000.3	(D)	Test and Evaluation (USDRE)	12 Mar 1986
5000.3-M-2		Foreign Weapons Evaluation Program Procedures Manual (DRAFT) (USDRE)	Oct 1985
5000.9	(D)	Standardization of Military Terminology (C)	23 Mar 1981
5010.19	(D)	Configuration Management (A&L)	1 May 1979
5010.20	(D)	Work Breakdown Structures for Defense Materiel Items (A&L)	31 Jul 1968
5100.27	(D)	Delineation of International Logistic Responsibilities (A&L)	29 Dec 1964
5100.53	(D)	US Participation in Certain NATO Groups Relating to the Research, Development, Production, and Logistics Support of Military Equipment (USDRE)	29 Jul 1967
5100.55	(D)	United States Security Authority for North Atlantic Treaty Organization Affairs (USDP)	21 Apr 1982
5105.20	(D)	Defense Representation, United States Mission to the North Atlantic Treaty Organization and Europe (ISP)	16 Nov 1972

<u>NUMBER</u>		<u>TITLE</u>	<u>DATE</u>
5105.38-M		Security Assistance Management Manual (DSAA)	1 Apr 1984
5200.12	(D)	Policy on the Conduct of Meetings Involving Access to Classified Information (USDP)	24 Sep 1984
C-5220.29*		Implementation of the North Atlantic Treaty Organization Industrial Security Procedures (U) (USDP)	15 Dec 1982
S-5225.1*		Communications Security (COMSEC) Assistance to Foreign Governments and International Organizations (U) (C3I)	4 Nov 1983
5230.9	(D)	Clearance of DoD Information for Public Release (PA)	2 Apr 1982
5230.11	(D)	Disclosure of Classified Military Information to Foreign Governments and International Organizations (USDP)	31 Dec 1984
5230.17		Procedures for Disclosure of Classified Military Information to Foreign Governments and International Organizations (USDP)	17 Feb 1985
5230.18		The DoD Foreign Disclosure and Technical Information System (FORDTIS) (USDP)	6 Nov 1984
5230.20		Control of Foreign Representatives (USDP)	25 Jun 1984
5230.24	(D)	Distribution Statements on Technical Documents (USDRE)	20 Nov 1984
5230.25	(D)	Withholding of Unclassified Technical Data from Public Disclosure (USDRE)	6 Nov 1984
5530.3	(D)	International Agreements (GC)	6 Dec 1979
7250.13	(D)	Official Representation Funds (C)	22 Mar 1984
7290.3-M		Foreign Military Sales Financial Management Manual (C)	18 Sep 1986

**NOTES:**

- o \*Letter preceding number indicates security classification
- o The following codes after the title reflect the OSD organization responsible for the publication:
  - A&L - Acquisition and Logistics
  - C - Comptroller
  - C3I - Command, Control, Communications and Intelligence
  - DSAA - Defense Security Assistance Agency
  - GC - General Counsel
  - ISA - USDP, International Security Affairs
  - ISP - USDP, International Security Policy
  - PA - Public Affairs
- o (D) means DoD Directive. All others are DoD Instructions or Manuals. Manuals have an "M" after the number.

**APPENDIX G**  
**GLOSSARY OF ABBREVIATIONS AND DEFINITIONS**

This glossary consists of a list of abbreviations and their meaning as used in the Guide. Also included is a selection of important definitions which are not found in readily available Service or DoD regulations, dictionaries, or other similar documents that define the meaning of terms.



### ABBREVIATIONS

AAPP	Allied Acquisition Practices Publication
ABCA	America, Britain, Canada, and Australia
AC	Atlantic Council
ACDA	Arms Control and Disarmament Agency
ACEP	Advisory Committee on Export Policy
ACO	Administrative Contracting Officer
ACOCS	Army Customer Order Control System
ACSI	Assistant Chief of Staff, Intelligence (Army)
ACSM	Assemblies, Components, Spare Parts and Materials (NATO Standard Areas)
AD	Administration of Defense
ADPA	American Defense Preparedness Association
AECA	Arms Export Control Act
AECB	Arms Export Control Board
AEW&C	Airborne Early Warning and Control
AFAFC	USAF Accounting & Finance Center
AFAR	Azores Fixed Acoustic Range
AFCENT	Allied Forces Central Europe
AFLC	Air Force Logistics Command
AFR	Air Force Regulation
AFSC	Air Force Systems Command
AFTEC	Air Force Test and Evaluation Center
AGARD	Advisory Group for Aerospace Research and Development
AGC	Army General Council
AGS/DS	Assistant Secretary General for Defense Support, NATO

AIM-9L	Air-to-Air Infrared Missile
ALCM	Air Launched Cruise Missile
AMC	Army Materiel Command
AMRAAM	Advanced Medium Range Air-to-Air Missile
AMSAA	Army Materiel Systems Analysis Activity
ANSI	American National Standards Institute
Ao	Operational Availability
AP	Allied Publications; Acquisition Policy
APS	Administration, Personnel, and Security
AQAP	Allied Quality Assurance Publication
AS	Acquisition Strategy
ASBCA	Armed Services Board of Contract Appeals
ASCC	Air Standardization Coordination Committee
ASD	Assistant Secretary of Defense
ASD (ISA)	Assistant Secretary of Defense, International Security Affairs
ASRAAM	Advanced Short Range Air-to-Air Missile
ASSM	Anti-Surface Ship Missile
ATP	Allied Tactical Publications
AUSA	Association of the United States (US) Army
AWACS	Airborne Warning and Control System
BE	Belgium
BOD	Board of Directors
BOP	Balance of Payments
BPFA	Bureau de Programme Francais Allemand

CA	Configuration Audit
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing
CAO	Contract Administration Office
CAS	Contract Administration Service; Cost Accounting Standards
CASEUR	Contract Administration Service-Europe (Air Force)
CBD	Commerce Business Daily
CC	Configuration Control
CCC	Canadian Commercial Corporation
CCB	Configuration Control Board
CCDR	Contractor Cost Data Reporting
C3I	Command, Control, Communication, and Intelligence
CCH	Currency Clearing House
CCL	Commodity Control List
CCM	Counter-Counter Measures
CEA	Council of Economic Advisers
CEB	CNO Evaluation Board (Navy)
CETS	Contractor Engineering and Technical Services
CFIUS	Committee on Foreign Investment
CFR	Contractor Furnished Requirements
CFSP	Contractor Field Services Personnel
CFSR	Contract Funds Status Report
CI	Configuration Item
CIA	Central Intelligence Agency
CICA	Competition in Contracting Act

CIF	Cost, Insurance, Freight
CINCLANT	Commander-In-Chief, Atlantic Command
CINCPAC	Commander-in-Chief, Pacific Command
CISIL	Centralized Integrated System for International Logistics
CLSSA	Cooperative Logistic Supply Support Arrangement
CM	Configuration Management, Counter Measures
CMI	Classified Military Information
CMS	Contractor Maintenance Services
CNAD	Conference of National Armaments Directors
CNO	Chief of Naval Operations
CNP	Candidate Nomination Proposal
COCOM	Coordinating Committee
COD	Cooperative Opportunities Document
COMMZ	Communication Zone
COMSEC	Communications Security Equipment
C/SCSC	Cost/Schedule Control Systems Criteria
CSA	Configuration Status Accounting
CTP	Cooperative Technology Project; Comparative Test Program
DA	Department of Army
DAC	Defense Acquisition Circular
DACRS	Defense Automated Cases Review System
DAO	Defense Attache Office
DAR	Defense Acquisition Regulation
DB	Database
DCA	Defense Communications Agency

DCAA	Defense Contract Audit Agency
DCI	Director, Central Intelligence
DCP	Decision Coordinating Paper
DCSLOG	Deputy Chief of Staff, Logistics (Army)
DCSRDA	Deputy Chief of Staff, Research & Development, and Acquisition (Army)
DDT&E	Director, Defense Test and Evaluation
DE	Denmark
DEA	Data Exchange Agreement
DFARS	DoD FAR Supplement
DIA	Defense Intelligence Agency
DIN	Deutschland Industrial Norms
DIS	Defense Investigative Service
DISCO	Defense Industrial Security Clearance Office
DISCR	Directorate of Industrial Security Clearance Review Office, OSD
DISP	Defense Security Industrial Program
DLSIE	Defense Logistics Studies Information Exchange
DM	Deutsch Marks
DoD	Department of Defense
DoDD	DoD Directive
DoDI	DoD Instruction
DoDISS	DoD Index of Specifications and Standards
DMS	Defense Materials System
DMZ	Demilitarized Zone
DPA	Defense Production Act

DPS	Defense Priorities System
DRP	Direct Requisitioning Procedure
DS	Direct Support Level of Maintenance
DSAA	Defense Security Assistance Agency
DSARC	Defense Systems Acquisition Review Council
DSB	Defense Science Board
DSI	Defense Security Institute
DT	Development Test
DT&E	Development Test and Evaluation
DTC	Design to Cost
DTIC	Defense Technical Information Center
DTPUC	Design to Production Unit Cost
DTSA	Defense Technology Security Administration
DUSDP	Deputy Undersecretary of Defense for Policy
DUSD (T&E)	Deputy Undersecretary of Defense for Test and Evaluation
EAA	Export Administration Act
ECP	Engineering Change Proposal
ECWG	Evaluation Coordination Working Group (Navy)
EDAC	Economic Defense Advisory Committee
EEC	European Economic Community
EFA	European Fighter Aircraft
ELISA	Export License Status Advisor
EMC	Executive Management Committee
EMIC	Electromagnetic Impulse Compatibility
EPG	European Participating Government

EPG	European Participating Government
EPI	European Participating Industry
ERMISS	Explosion Resistant Multi-Influence Sweep System
ESAM	Extended Range Surface-to-Air Missile
ET	Emerging Technologies
ETSS	Engineering and Technical Services Specialists (DoD)
EW	Electronic Warfare
FAA	Foreign Assistance Act
FAD	Force Activity Designator
FAC	Finance and Accounting Officer
FAR	Federal Acquisition Regulation
FAS	Free Alongside Ship
FEMA	Federal Emergency Management Agency
FMS	Foreign Military Sales
FMSO	Foreign Military Sales Order
FOB	Freight on Board
FOCI	Foreign Ownership, Control, or Influence
FOIA	Freedom of Information Act
FORDTIS	Foreign Disclosure and Information System
FR	France
FRG	Federal Republic of Germany
FSD	Full-Scale Development
FTS	Field Training Services
FWE	Foreign Weapons Evaluation
GAO	General Accounting Office

GATT	General Agreement on Tariffs and Trade
GFE	Government Furnished Equipment
GFAE	Government Furnished Accessory Equipment
GLCM	Ground-Launched Cruise Missile
GNP	Gross National Product
GPS	Global Positioning System
GR	Greece
GS	General Support Level of Maintenance
GSE	General Support Equipment
GSOIA	General Agreement on Tariffs and Trade
HEMTT	Heavy Expanded Mobility Tactical Truck
HNS	Host Nation Support
IBOP	International Balance of Payments
IDL	Indentured Drawing List
IEPG	Independent European Programme Group
IEP	International Exchange Program
IFV	Infantry Fighting Vehicle
2	
I	International Interchangeability
ILCO	International Logistics Control Office
ILRRP	International Long Range Reconnaissance Patrol
ILS	Integrated Logistic Support
ILSP	Integrated Logistic Support Plan
IMET	International Military Education and Training
IOC	Initial Operating Capability
IP	Intellectual Property



IP&T	Intellectual Property and Technology
IPB	Illustrated Parts Breakdown
IPR	Intellectual Property Rights
IPS	Integrated Program Summary
IPT	Intellectual Property Transfer
ISA	International Security Affairs
ISI	Industrial Security International
ISM	Industrial Security Manual
ISO	International Industrial Norms
ISR	Industrial Security Regulation
ITAR	International Traffic in Arms Regulations, Dept. of State
2	
IT	International Technology Transfer
IVL	Individual Validated License
JCCB	Joint Configuration Control Board
JCCC	Joint Configuration Control Committee
JCI	Joint Configuration Items
JMSNS	Justification for Major System New Starts
JRMB	Joint Requirements and Management Board
JSC	Joint Steering Committee
IAMS	Local Area Missile System
LARS	License Access Review System
LAW	Light Attack Weapon
LCC	Life Cycle Cost
LCF	Legal, Contracts, and Finance
LDA	Limited Depository Account

LOA	Letter of Acceptance; Letter of Offer and Acceptance
LOC	Lines of Communication
LOR	Letter of Request
LRIP	Low-Rate Initial Production
LRMOM	Long-Range Standoff Missile
LSA	Logistic Support Analysis
LSAR	Logistic Support Analysis Record
LTVAD	LTV Aerospace and Defense Company
LWIR	Long Wave Infrared
MAAG	Military Assistance Advisory Group
MAG	Main Armament Group
M.A.N.	Maschinenfabrix Augsburg-Nuernberg
MAP	Military Assistance Program
MAS	Military Agency for Standardization
MASM	Military Assistance Sales Manual
MCM	Military Committee Memorandum, Mine Counter Measures
MCTL	Military Critical Technologies List
MDEL	Major Defense Equipment List
MDTT	Martin Marietta Corp., Diehl GmbH & Co., Thorn EMI Electronics, LTD, and Thompson-Brandt Armaments
MFR	Multifunction Radar
MICOM	Missile Command
MIDS	Multifunctional Information Distribution System
MIL-SPEC	Military Specifications
MIL-STD	Military Standard

MILSTRIP	Military Standard Requisitioning and Issue Procedure
MIPR	Military Interdepartmental Purchase Request
MISIL	Management Information System for International Logistics
MLRS	Multiple Launch Rocket System
MMOU	Multilateral MOU
MNC	Major NATO Commanders
MNCC	Multinational Coordination Center (NATO)
MOA	Memorandum of Agreement
MOB	Main Operating Base
MODFLIR	Forward-Looking Infrared Modules
MOU	Memorandum of Understanding
MRCA	Multiple Role Combat Aircraft
MSAM	Medium Range Surface-to-Air Missile
MSOW	Modular Standoff Weapon
NAAG	NATO Army Armaments Group
NAC	North Atlantic Council
NADC	NATO Air Defense Committee
NADs	National Armament Directors
NADD0	NATO Design and Development Objective
NADREPs	National Armament Directors Representatives
NAFAG	NATO Air Force Armaments Group
NAMSA	NATO Maintenance and Supply Agency
NAMSO	NATO Maintenance and Supply Organization
NAPATMO	NATO Patriot Management Office
NAPMA	NATO AEW Program Management Agency

NAPMO	NATO AEW Program Management Organization
NAPO	NATO Production Objective
NAPR	NATO Armaments Planning Review
NATO	North Atlantic Treaty Organization
NATO AEW	NATO Airborne Early Warning Programme
NATO MC	NATO Military Committee
NA/SEA	Naval Sea Systems Command
NAVSTAG	Naval Standardization Agreement
NBMR	NATO Basic Military Requirements
NCT	NATO Comparative Test
NDI	Nondevelopment Item
NDP	National Disclosure Policy
NDPC	National Disclosure Policy Committee
NIAG	NATO Industrial Advisory Group
NIS	NATO Identification System
NMA's	National Military Authorities
NMSA	NATO Mutual Support Act
NE	Netherlands
NFR	NATO Frigate
NNAG	NATO Navy Armaments Group
NSA	National Security Agency
NSPSC	NSSM Project Steering Committee
NSPO	NATO Seasparrow Project Office
NSSMS	NATO Seasparrow Surface Missile System
NST	NATO Staff Target

NTE	Not to Exceed
O&S	Operations and Support
ODC	Office of Defense Cooperation
OECD	Organization for Economic Cooperation and Development
OGC	Office of General Council
OISI	Office of Industrial Security International
OMB	Office of Management and Budget
ONST	Outline NATO Staff Target
OPNAV	Office of Chief of Naval Operations
OPTEVFOR	Operational Test and Evaluation Force (Navy)
OSD	Office of Secretary of Defense
OSP-J	Overseas Procurement-Japan
OT	Operational Test
OT&E	Operational Test and Evaluation
OTEA	Operational Test and Evaluation Agency (Army)
OTS	Operations, Technical, and Support
P3I	Preplanned Product Improvement
PAPS	Phased Armaments Programming System
P&A	Price and Availability
PCO	Procurement Contracting Officer
PDM	Program Decision Memoranda
PEM	Program Element Monitor
PL	Public Law
PM	Program/Project Manager
PMD	Program Management Directive

PNO	Program Management Organization/Office
POL	Petroleum, Oils, and Lubricants
POM	Program Objectives Memorandum
POMCUS	Prepositioned Material Configured to Unit Sets
PPBS	Planning, Programming, and Budgeting System
PPE	Preproduction Proposal Evaluation
PRC	Peoples Republic of China
PRR	Production Readiness Review
PTD	Provisioning Technical Documentation
PWD	Procurement Work Directive
QA	Quality Assurance
QSTAG	Quadripartite Standardization Agreement
RAM	Rolling Air Frame Missile
RDT&E	Research, Development, Test and Engineering
R&D	Research and Development
RFD	Request for Deviation
RFP	Request for Proposals
RFW	Request for Waiver
RIK	Replacement-in-Kind
ROI	Report of Investigation
ROK	Republic of Korea
ROR	Repair of Repairables
RSC	Reinforcement Support Category (NATO)
RSI	Rationalization, Standardization, and Interoperability
SA	Security Assistance

SAAC	Security Assistance Accounting Center
SAMM	Security Assistance Management Manual
SAR	Selected Acquisition Report
SBA	Small Business Administration
SCEPC	Senior Civil Emergency Planning Committee
SDI	Strategic Defense Initiative
SDR	Special Drawing Rights
SEATO	Southeast Asia Treaty Organization
SECNAV	Secretary of the Navy
SES	Surface Effect Ship
SISMS	Standard Integrated Support Management System
SNLC	Senior NATO Logistics Conference
SOARDS	Stand Off Airborne Radar Demonstrator System
SOFA	Status of Forces Agreement
SOTAS	Standoff Target Acquisition System
SOW	Statement of Work
SPARM	Short Range Anti-Radiation Missile
SPO	System Program Office; Special Project Office
SRAM	Short Range Air Missile
SSA	Source Selection Authority
SSAC	Source Selection Advisory Council
SSE	System Support Equipment
SSEB	Source Selection Evaluation Board
STANAG	Standardization Agreement
TAALS	American Association of Language Specialists

TACOM	Tank-Automotive Command (Army)
T&C	Technical and Configuration
TDP	Technical Data Package
TDY	Temporary Duty
TECOM	Test and Evaluation Command (Army)
TEMP	Test and Evaluation Master Plan
TGW	Terminal Guidance Warhead
TIAS	US Treaties and Other International Agreements Series
TIWG	Test Integration Working Group (Army)
TOW	Tube Launched, Optically Tracked, Wire Guided
TPWG	Test Plans Working Group (Air Force)
TRADOC	Training and Doctrine Command (Army)
TSGAD	Tri-Service Group on Air Defense
TSGCEE	Tri-Service Group in Communications and Electronics Equipment
TTF&T	Technology Transfer, Fabrication, and Test
TTG	Technical Task Groups
UK	United Kingdom
UN	United Nations
UND	Urgency of Need Designator
US	United States
USA	United States Army
USAF	United States Air Force
USASAC	United States Army Security Assistance Center
USC	United States Code



USDP	Undersecretary of Defense for Policy
USDRE	Undersecretary of Defense for Research and Engineering
USDRE (IPT)	Deputy Undersecretary of Defense for Research and Engineering (International Programs and Technology)
USEUCOM	United States European Command
USG	United States Government
USI	US Industry
USMC	United States Marine Corps
USN	United States Navy
USSAN	United States Security Authority, NATO
USTR	US Trade Representative
WEU	Western European Union

#### DEFINITIONS

Arms Export Control Board (AECB). An interagency board, chaired by the Under Secretary of State for Security Assistance, Science and Technology, that serves to advise the Secretary of State on matters relating to security assistance program levels and arms transfer policies.

Arms Transfers. Defense articles and defense services such as arms, ammunition, and implements of war, including components thereof, and the training, manufacturing licenses, technical assistance and technical data related thereto, provided by the government under the Foreign Assistance Act of 1961, as amended; foreign private firms, or to international organizations (Executive Order No. 10973, as amended, "Administration of Foreign Assistance and Related Functions").

Commercial-Type Items. Any items, including those expended or consumed in military use, that are used and traded in normal civilian enterprise and which are, or can be, imported/exported through normal international channels.

Commonality. A quality that applies to material or systems possessing like and interchangeable characteristics enabling each to be used or operated and maintained by personnel trained on the

others without additional specialized training; or having interchangeable repair parts or components; and applying to consumable items interchangeably equivalent without adjustment.

Compatibility. The characteristic or ability of systems to coexist and function in the same environment without mutual interference.

Cooperative Logistics Sales. Sales pursuant to arrangements for which continuing support is provided a foreign government through its participation in the US Department of Defense logistics system, with reimbursement to the US for support performed.

Defense Articles. Includes any weapons, weapon system, munitions, aircraft, vessel, boat, or other implement of war; any property, installation, commodity, material, equipment, supply, or goods used for the purposes of furnishing military assistance or making military sales; any machinery, facility, tool, material, supply, or other item necessary for the manufacture, production, processing, repair, servicing, storage, construction, transportation, operation, or use of any other defense article or any component or part of any articles listed above, but shall not include merchant vessels, major combatant vessels (10 USC 7307), or as defined by the Atomic Energy Act of 1954, as amended (42 USC 2011), source material, by-product material, special nuclear material, production facilities, utilization facilities, or atomic weapons or articles involving Restricted Data. (Sec. 644(d), FAA and Sec. 47(3), AECA).

Defense Information. Any document, writing, sketch, photograph, plan, model, specification, design prototype, or other recorded or oral information relating to any defense article, defense service, or major combatant vessel, but shall not include Restricted Data as defined by the Atomic Energy Act of 1954, as amended, and data removed from the Restricted Data category under section 142d of that Act. (Sec. 644(e) FAA 61).

Defense Service. Includes any service, test, inspection, repair, training, publication, or technical or other assistance, or defense information used for the purpose of furnishing military assistance or FMS but does not include military educational training activities. (Sec. 644(f), FAA and Sec. 47(4), AECA).

Development Objective. A result to be obtained by a development activity, stated in technological and operational terms. (NATO)

Development Requirement. A development rationale to justify the decision to start the relevant development activity. (NATO)

Dual Production. It is the production of a weapons system in Europe and the United States. The term can refer not only to independent production lines for the entire weapon system, but also to interdependent production whereby the participants produce for one another parts or components of the system.

Eurogroup. A term used for those European nations that have joined (combined) within the North Atlantic Treaty Organization in order to make a greater and better coordinated contribution to the common defense effort and thus strengthen the alliance.

Exclusive (Non-Exclusive) License. A license covering a patent(s), technical or proprietary data, technical assistance, know-how, or any combination of these, granted by a US firm to a foreign firm or government to produce, coproduce or sell a defense article or service within a given sales territory without competition from any other licenses or from the licensor. A non-exclusive license is a license as described as above, except that competition may be permitted with other licensees and/or the licensor.

Feasibility Study. A feasibility study is carried out by industry or government agencies or a combination of both with the object of providing a technical appraisal of the feasibility of developing and producing an equipment with the performance required by the NATO Staff Target. The study identifies areas of technical risk, recommends characteristics of the system(s) and gives the optimum balance between performance, cost and development time. The study also indicates areas where considerable advances on the existing state of knowledge are likely to prove necessary for successful development. It indicates the means by which the recommended solution will be achieved, suggests a programme for project definition, development and production, with a preliminary estimate of the costs for these stages and must result in the establishment of a NATO staff requirement. (NATO)

Foreign Military Sales. That portion of United States security assistance authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act, as amended. This assistance differs from the Military Assistance Program and the International Military Education and Training Program in that the recipient provides reimbursement for defense articles and services transferred (JCS Pub 1). Includes cash sales from stocks (inventories, services, training) by the DoD; DoD guarantees covering financing by private or Federal Financing Bank sources of credit sales of defense articles and defense services (Secs 21, 22, 23 and 24 AECA).

Harmonization. The process and/or results of adjusting

differences or inconsistencies to bring significant features into agreement.

Host Nation Support. Civil and military assistance provided by host nations to allied forces and organizations in peace, transition to war, and wartime.

Independent European Programme Group (IEPG). The IEPG was created in November 1975 as a independent forum to promote closer inter-European cooperation in the development, production, and procurement of defense equipment. Its members are Belgium, Denmark, France, The Federal Republic of Germany, Greece, Italy, Luxembourg, The Netherlands, Norway, Turkey, and The United Kingdom.

Interchangeability. A condition that exists when two or more items possess such functional and physical characteristics as to be equivalent in performance, fit and durability, and are capable of being exchanged one for the other without alteration of the items themselves or of adjoining items, except for adjustment.

Licensed Production. Licensed production involves agreements made by US commercial firms with international organizations, foreign governments, or foreign commercial firms. USG involvement is limited to the case license process. (International Relations Dictionary, Department of State Library)

Logistic Interoperability. A form of interoperability in which the service to be exchanged is assemblies, components, spares, or repair parts. Logistic interoperability will often be achieved by making such assemblies components, spares, or repair parts interchangeable, but can sometimes be a capability less than interchangeability when a degradation of performance or some limitations are operationally acceptable.

Logistics (NATO Definition). The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with: (a) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of material; (b) movement, evacuation, and hospitalization of personnel; (c) acquisition or construction, maintenance operation, and disposition of facilities; and (d) acquiring or furnishing of services.

Memorandum of Understanding. A written arrangement or understanding between governments and/or international agencies, setting forth the terms under which they will cooperate in the performance of certain work such as research, development, pro-

duction or utilization. The MOU usually sets down, in broad terms, the objectives of the programme, the work to be performed by each participant and its financing, the rights to technical data and patents to be acquired and other necessary elements concerned with the administration and performance of the programme. (NATO)

Mission Analysis. A process to determine the operational capabilities of military forces that are required to carry out assigned missions, roles and tasks in the face of the existing and/or postulated threat with an acceptable degree of risk. Having ascertained the quality and quantity of the military forces required, a comparative assessment is made between those available and those required in order to identify the qualitative and quantitative deficiencies that may be related to the element of risk involved. (NATO)

Mission Area. A mission area is a grouping of military activities by mission-related functions. (NATO)

Mission Need. A statement based on a mission analysis identifying in broad outline a quantitative or qualitative operational deficiency that cannot be solved satisfactorily with existing or planned forces and/or equipment. (NATO)

National Policy and Procedures for the Disclosure of Classified Military Information to Foreign Governments and International Organizations (U) (Short Title: National Disclosure Policy) (NDP-1). Promulgates national policy and procedures in the form of specific disclosure criteria and limitations, definitions of terms, release arrangements, and other guidance required by US departments and agencies having occasion to release classified US military information to foreign governments and international organizations. In addition, it establishes and provides for the management of an interagency mechanism and procedures that are required for the effective implementation of the policy.

NATO Staff Requirement. A detailed statement of the required design parameters and operational performance of the equipment or weapon system(s). This document represents the specification of the system upon which project definition is based. (NATO)

NATO Staff Target. A broad outline of the function and desired performance of new equipment or weapons system(s), before the feasibility or method of meeting the requirement, or other implications have been fully assessed. Based upon the findings of any prefeasibility study(ies), the NATO staff target lists, in greater detail, operational characteristics and certain technical specifications that are desired and which have been shown to be

broadly feasible. It may also contain broad cost parameters when required. (NATO)

Outline NATO Staff Target. A very broad outline of the function and desired performance of a new weapon or equipment to satisfy a mission need, before the possibilities of achievement and the financial aspects have been examined. This approved document contains operational characteristics, details of the threat, desired capability and a general indication of size in particular and broad cost parameters whenever possible. Sufficient detail is given to enable prefeasibility study(ies) to be carried out. (NATO)

Prefeasibility Study. A prefeasibility study indicates whether or not the outline NATO staff target merits a deeper feasibility study. It is conducted either by industry and/or government agencies or by the NATO Industrial Advisory Group (NIAG). Its aim is to examine the proposal, assess the trade-off points and make a broad assessment of the practical alternatives and also the penalties involved in adopting certain courses of action. The study should, so far as possible, establish the feasibility of suitable solutions consistent with the calendar of needs. The prefeasibility study will result in the establishment of a NATO staff target. This document is used as a basis for the request for proposals from industry for a solution or for a feasibility study of the system. (NATO)

Project Definition. The process of exploring more thoroughly all aspects of the proposed project and to examine the relations between required performance, development time and cost. The areas of technical uncertainty are examined and possible trade-offs, are evolved in order to achieve a satisfactory balance between performance, development time and cost. These trade-offs may lead to amending the operational requirement. From then on, performance requirements regarding the technical characteristics are established so as to meet the operational requirement under the best conditions. These requirements will form the basis of the establishment of a development programme and of more detailed and realistic estimates of development time and cost.

The overall results of the studies carried out during project definition will be used for the discussion on whether to proceed with the development or not. (NATO)

Research Objective. A result to be obtained by a research activity, stated in operational and scientific or technological terms. (NATO)

Research Requirement. A research rationale to justify the decision to start the relevant research activity. (NATO)

Security Assistance. Group of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act, as amended, or other related statutes by which the United States provides defense articles, military training, and other defense related services, by grant, credit or cash sales, in furtherance of national policies and objectives.

STANAG. Standardization Agreement (NATO). The record of an agreement among several or all the member nations to adopt like or similar military equipment, ammunition, supplies and stores; and operational, logistic and administrative procedures. National acceptance of a NATO allied publication issued by the Military Agency for Standardization may be recorded as a Standardization Agreement (STANAG).

Systems Acquisition Process. The sequence of acquisition activities starting from the agency's reconciliation of its mission needs, with its capabilities, priorities and resources and extending through the introduction of a system into operational use or the otherwise successful achievement of program objectives.

Teaming Arrangements. An agreement of two or more firms to form a partnership or joint venture to act as a potential prime contractor; or an agreement by a potential prime contractor to act as a subcontractor under a specified acquisition program; or an agreement for a joint proposal resulting from a normal prime contractor-subcontractor, licensee-licensor, or leader company relationship.

Weapon System Life Cycle. The period divided into phases, ranging from the first consideration of the need for a weapon system through the development and in-service stages down to phase-out and disposal. (NATO)

**Comment Sheet  
for  
Guide for the Management  
Of Multinational Programs**

**This guide was prepared to provide program management personnel with background and substantive information on multinational programs. It stresses the need for all managers to consider early in their programs the important objectives of international armaments cooperation. Your comments and suggestions are solicited.**

**If you have comments, please tear this sheet out, write the comments in the space provided below, fold, tape closed, and mail. This form is pre-addressed and needs no postage.**

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**Comment:**

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