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I. EXECUTIVE SUMMARY

The federal government procurement system is generally known to be expensive and lengthy. However, the tools are available for major reform and new process is being tested or has been initiated. In DoD the process for developing and purchasing major military systems still generally averages 16 to 18 years. Numerous studies over the past 20 years have indicated that to reduce cost and shorten lead times the federal government must more fully utilize the capability, process, and products of the commercial marketplace.

It's well established that commercial products and services can satisfy many military needs. In spite of obvious benefits, substantial progress has not been made to reduce or eliminate the barriers to tapping the commercial marketplace until recently. The Federal Acquisition Streamlining Act of 1994 created in-roads to greatly increased use of commercial items and services.

But even prior to 1994 Congress was aware of the need to introduce time and cost saving methods into the Research and Development process. Part of these new methods depended upon the same underlying concepts used to give preference to acquisition of commercial items and services. These concepts were to make greater use of ideas, products, services, and procedures of the commercial marketplace. In the late 1980s, Congress created special authority for the Defense Advanced Research Projects Agency to tap commercial process and products through use of business arrangements known as Other Transactions (OTs). These OTs were defined as anything other than grants, cooperative agreements, or contracts. This identical authority was later given to all of DoD.

Using these OTs and cooperative agreements as tools to create non-traditional business arrangements, DARPA and the rest of DoD entered the commercial marketplace for Research and Development projects. Many of these R&D arrangements were with defense industry organizations as well, but the OTs and cooperative agreements used commercial-like provisions.

Initially, most projects using OTs and cooperative agreements were to fund development projects which had both military and civilian application. These so-called "dual use" projects involved arrangements with a few individual companies but primarily were with consortiums of interested organizations. Most of these consortiums were with groups of co-equal business partners who bonded together under "Articles of Collaboration" for the project. In most cases these consortiums provided substantial portions of the project funding (50% or more).

The placement and administration of these OTs are a study in how the federal government can shed its classic "arms length" purchaser's role and assume a project partnership role with industry, non-profit organizations, educational institutions, and other government organizations. As partners, the purpose was to develop new products and processes that could benefit both the commercial marketplace and military users.

The authority for OTs has been expanded to acquiring "prototypes." "Prototypes" have not been defined in detail in the law so broad application is possible. DARPA has had experience with several prototype projects using the new authority and the entire Department of Defense can now use the expanded authority.

Model agreements have been created by DARPA for dual use projects with consortiums. In addition, model phased project structures have been initiated on three major hardware programs for prototypes. Many lessons have been learned from these experiences over the last decade and additional improvements need to be made. But these innovative processes have introduced exciting non-traditional proactive approaches to developing new products and services and new systems through lower-cost, faster approaches.

II. DEFINITIONS

1. “Other Transactions (OTs). A legal instrument other than a standard contract, grant, or cooperative agreement for performing research and development projects. In accordance with this interim guidance, “other transactions” are used almost exclusively for performing basic, applied, and advance research.
2. Contract. A legal instrument which reflects a relationship between the Federal government and a State, a local government, or other person when the principle purpose of the instrument is to acquire property or services for the direct benefit or use of the Federal government. Also referred to as a “procurement contract.”
3. Contracting Officer. A person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings.
4. Grant. A legal instrument used to enter into a relationship, the principal purpose of which is to transfer a thing of value to the recipient to carry out a public purpose of support or stimulation authorized by a law of the United States, rather than to acquire property or services for the Department of Defense’s direct benefit or use. Further, it is a relationship in which substantial involvement is not expected between the Department of Defense and the recipient when carrying out the activity contemplated by the grant.
5. Cooperative Agreements. A legal instrument used to enter into the same kind of relationship as a grant (see definition in 4. above), except that substantial involvement is expected between the Department of Defense and the recipient when carrying out the activity contemplated by the cooperative agreement.
6. Grants Officer. An official with the authority to enter into, administer, and/or terminate grants or cooperative agreements.
7. Advance Research. For the purposes of 10 U.S.C. S 2358, advance research is advanced technology development that creates new technology or demonstrates the viability of applying existing technology to new products and processes in a general way.
8. Applied Research. Efforts, typically funded within the Exploratory Development category of RDT&E, to determine and exploit the potential of science and engineering knowledge and understanding in technology such as new materials, devices, methods, and processes.
9. Basic Research. Efforts, typically funded in RDT&E 6.1 Research category, intended to increase knowledge and understanding in science and engineering.
10. Development Efforts to systematically use scientific and technical knowledge to design, develop, test, or evaluate potential new products, processes, or services to meet specific performance requirements or objectives.

Information later in this manual contains details on how in 1989 authority was given to DARPA

under 10 U.S.C. 2371 for cooperative agreements and OTs. Cooperative agreements were later moved to 10 U.S.C. 2358. In 1993, 10 U.S.C. 2371 was again amended to add what is now called Section 845—Other Transactions, a much broader authority than the original. The difference will be explained later, but to distinguish between the two, this report shall refer to the 1989 authority as “10 U.S.C. 2371 OTs” and the 1993 expanded authority as “Section 845 OTs.” The 10 U.S.C. 2371 OT authority is also known as “OTs for Research” or “Other OTs” and the Section 845 OTs are known as “OTs for Prototypes.”

OT's for Research are those agreements utilizing the authority contained in 10 U.S.C. 2371.

III. INTRODUCTION

A. THE FEDERAL GOVERNMENT REACHES OUT TO COMMERCIAL ORGANIZATIONS, PRODUCTS, AND PROCESS

Prior to the implementation of the Federal Acquisition Streamlining Act (FASA) in 1994 and, more recently, the Clinger-Cohen Act and the Information Technology Management Reform Act (ITMRA) of 1996, the government procurement system had become an intricate combination of statutes, prescriptions, and contract requirements that regulated controls over the price and quality of items that were being produced to government-unique specifications. The procurement system was filled with difficult hurdles for the acquisition of new, state-of-the-art technology available in the commercial marketplace. Some of the government regulation or legislation that were dominant factors in creating this situation were government-unique audit and accounting requirements, government-unique specifications and standards, technical data rights favorable to the government, and government-unique contract requirements. All of these added complexity and cost to doing business with the federal government. Many presented insurmountable barriers for commercial companies to do business in the federal sector.

Prior to 1994 there were many failed attempts to tap the commercial marketplace. For example:

- In 1978, DoD published its Directive 5000.37, Acquisition and Distribution of Commercial Items (ADCOP). The ADCOP program encouraged contracting officers to acquire commercial supplies instead of items built to MILSPECs. The program was incorporated into the Federal Acquisition Regulation (FAR) when the FAR was first issued in 1984. Although the program encouraged the use of commercial items, it did not offer any incentives to buy them and was soon regarded simply as a policy statement.
- In 1982, the Office of Management and Budget (OMB) reported to Congress that the government's reliance on government-unique specifications for items that were commonly available in the commercial market inhibited the purchase of commercially available items and services. No major remedial legislation was issued.
- Two years later, in 1984, when Congress passed the Competition in Contracting Act (CICA), it required federal agencies to "promote the use of commercial items

wherever practicable.” Again, however, no special incentives or statutory waivers were offered.

- In 1986, the President’s Blue Ribbon Commission on Defense Management, known as the Packard Commission, again emphasized the benefits (i.e., reduced costs and shortened lead times) that would result from increasing DoD’s use of commercial items. The Commission recommended that DoD make greater use of “off-the-shelf” components rather than relying on excessively rigid MILSPECs. Further, the Commission recommended a statutory preference for commercial items and advocated the removal of statutory and regulatory impediments to the acquisition of commercial items and the use of effective commercial-style procurement competition.

It wasn’t until 1993 that the Advisory Panel on Streamlining and Codifying Acquisition Laws (the Section 800 Panel), which was created by DoD in response to congressional direction in Section 800 of the FY 1991 Defense Authorization Act, analyzed the history of government policies on commercial item acquisition. The Panel concluded that the chief impediment to the expanded use of commercial items was the statutory impediments. The lack of a complete, systematic statutory and regulatory structure for buying commercial items was highlighted. The Panel proposed a broad new definition of commercial items (including ancillary services) and recommended that several procurement laws be waived for commercial item acquisitions. The Panel’s report became the blueprint for FASA and later the Clinger-Cohen Act.

FASA resulted in major new provisions in FAR including a new FAR Part 12 covering Acquisition of Commercial Items. While all of this was happening the R&D community, especially in the science and technology area, was attempting to streamline their procedures. This community was also suffering from the same type problems as was the remainder of the acquisition system. It also did not have the tools necessary to enter the commercial marketplace for R&D. Broad Agency Announcements (BAAs) as a short form solicitation method became popular and use of grants and cooperative agreements in DoD was introduced and expanded. Special experimental authority for use of OTs in DARPA was passed in the late 1980s. These OTs were loosely defined as anything other than contracts, grants, or cooperative agreements. Later this authority was expanded to all of DoD. Then in the early 1990s, additional experimental authority was given to DARPA for OTs for acquisition of prototypes. In 1997, that experimental authority was also expanded to all of DoD.

The approach to commercial item procurement was to create fairly explicit law and regulation and

then let the exact system be further defined through practice. The approach in R&D was to give broad authority to experiment, first to DARPA, then to all of DoD and wait and see what happened. While the approaches are different, the underlying goals are the same. These goals are to tap the commercial marketplace and use innovative commercial contractors not before reachable, use commercial products, use commercial practice, and make affordability a primary goal. The process described in this report is that created by DoD to meet the challenge of the above goals.

B. THE USE OF OTs IN DoD

The use of OTs at DARPA has grown significantly in the last several years. OTs originally were used with single commercial firms, such as agreements with Gazelle Microcircuits, Cray Research, and Intel. But, most of DARPA's OTs have been multi-party agreements with multiple signatures. A few have been with one company as an agent signing for all members of a consortium. Initially, use was heavily in support of "dual use" projects. These are projects whose results benefit both military and civilian consumers. Later this use was expanded in DARPA to projects to purchase prototypes for excessive military use. Now this expanded use for prototypes has been authorized for use in all of the Department of Defense.

Mr. Richard Dunn, General Counsel of DARPA, in testimony before the Committee on Science of the U.S. House of Representatives on November 8, 1995, concluded his testimony as follows:

"At a time when government is trying to reinvent itself and government's role in research and development is being re-examined in light of the end of the Cold War, the authority to enter into "other transactions" provides government agencies an unparalleled opportunity to experiment with new ways of doing business. "Other transactions" permit the deregulation of government supported research and development. Government is able to enter into "partnership" with industry and leverage not only the resources but also the genius and leadership of industry to the mutual advantage of both government and industry. Government is no longer **the market** for high technology. Government technology developments must not only meet mission needs but must do so affordably. The dual-use strategy is premised on the view that integration of the government market into the broader commercial market place is an important facet in assuring the affordability of high technology products for the military. "Other transactions" that are extremely flexible and permit the adoption of commercial practices can be an important tool

in reaching the goal of affordable military superiority for the United States. They should be able to help civilian technology agencies meet their goals as well.”

C. THE DSB CITES DARPA PROGRAM AS A MODEL FITTING THEIR RECOMMENDATION

In May of 1996, the Defense Science Board (DSB) task force on defense acquisition reform issued a report with recommendations to the Secretary of Defense entitled, “A Streamlined Approach to Weapons Systems Research Development and Acquisition—The Application of Commercial Practices.” The DSB stated that America’s warfighters have entered an era of reacting to emerging or new missions under constraints of a much reduced defense budget. This means that DoD must develop and acquire weapons systems faster and better at lower cost. They expressed the belief that the present DoD process for developing and buying major military systems has serious failings. The process is generally acknowledged to be expensive and lengthy averaging 16 to 18 years to field a system. Commercial products are often better, more reliable, and less expensive than comparable military-specific products. They observed that DoD does not have an effective access to the best-practices of the commercial market.

The DSB recommended that DoD model its system research, development, and acquisition based on the American free market system that has open access to world class suppliers. They recommended a model that calls for maintaining effective competition throughout the acquisition process. Within a mission area, they recommend integrated product teams of contractors, users, and supplier agencies who will compete to provide the best solutions within specific schedule and price constraints.

The DSB stated that they have found strong evidence that the model they proposed will work well since their approach extends and refines a number of successful initiatives on programs already underway at DoD. One of these initiatives they cite is the DARPA Tier II Plus and Tier III Minus surveillance vehicle programs. These programs are covered in this report as well as the arsenal ship program, but recognized by the DSB as a special study area to be reviewed later.

D. THE GAO CITES COOPERATIVE AGREEMENTS AND OTs AS DoD LEVERAGE

The General Accounting Office (GAO) in its report of March 1996, entitled, “DoD Research—Acquiring Research By Non-traditional Means” concludes that cooperative agreements and OTs

appear to have provided DoD a tool to leverage the private sector's technological know-how and financial investment. These instruments have attracted firms, the GAO notes, that traditionally did not perform research for DoD by enabling more flexible terms and conditions than the standard financial management and intellectual property provisions typically found in DoD contracts and grants. The GAO notes that the instruments also appear to be contributing to fostering new relationships and practices within the defense industry, especially under projects being undertaken by consortia. This report addresses the topic of 10 U.S.C. 2371 OTs and the Section 845 OT Authority for Prototype Projects.

E. THE DoDIG ISSUES CONCERNS

The DoDIG report issued in 1997 raised concerns about OT's for Research.

Those concerns includes: (1) not providing an acceptable determination and justification for the use of OTs; (2) inadequate supporting documentation of contribution cost analysis; (3) inadequate determination of the value of in-kind contributions and IR&D contributions; (4) failure to include interest clause in agreements; and (5) participants not paying interest to the government.

This manual is written to address the successes and concerns that have occurred so far in Other Transactions. By no means is the manual meant to capture all experiences. The reader is encouraged to provide additional examples of these issues, as well as, new successes and concerns.

IV. HISTORICAL PERSPECTIVE

A. THE SPECIFIC AUTHORITY TO USE GRANTS IN DoD AND THE DoD USE OF COOPERATIVE AGREEMENTS

Grant Authority for the Federal Government

In 1958, the same year DARPA was created, the Federal Grants Statute 42 U.S.C. 1891-1892 was passed authorizing federal agencies to support R&D efforts through grants. The statute was made necessary since some agencies, including the Department of Defense, viewed grants not as contracts but as “gifts” that required “donative intent.” Many federal agencies, including DoD, believed that they did not have gift authority. So, with the passage of the Act, it was clear that DoD could enter into grants for research. However, this authority was closely held at the DoD level and was little used. Even the Office of Naval Research, which clearly had grant authority in its enabling statute, did not issue those documents since there was little perceived benefit. Contracts, and the related administrative process of awarding them, were then simple and could be processed easily to those submitting unique research ideas in unsolicited proposals.

Cooperative Agreement Authority for the Federal Government

The Grant Statute remained until 1978 when the Federal Grant and Cooperative Agreement Act [PL 95-224] was passed and later codified as 31 U.S.C. 6301-6308. It repealed the Grant Statute. One of the primary changes was that this new law added express authority for cooperative agreements.

Specific Authority for DoD Grants Creates Cooperative Agreement Issue

In spite of issuance of these laws, DoD still wished expressed authority to do R&D and to use grants for R&D. In 1982, an amendment to 10 U.S.C. 2358 authorized the Secretary of Defense to conduct R&D by grant as well as contract. The basic authority for the Secretary of Defense to engage in R&D as it relates to weapons systems and other military means was 10 U.S.C. 2358. However, 2358 did not contain reference to cooperative agreements.

Later, DoD implemented the 2358 authority through a DoD directive and through what eventually became DFARS 235.003. That DFARS section reads as follows: “Grants are authorized under 10 U.S.C. 2358 for basic research and educational institutions and other non-

profit organizations where the primary purpose is the conduct of scientific research. The policies and procedures for grants are prescribed by other Department of Defense directives and implemented in departmental procedures.”

DFARS did not specifically authorize the use of cooperative agreements. However, DFARS 235.003 was based upon FAR 35.003(a) which stated: “Use of Contracts. Contracts shall be used only when the principle purpose is the acquisition of supplies or services for the direct benefit or use of the federal government. Grants or cooperative agreements should be used when the principle purpose of the transaction is to stimulate or support research and development for another public purpose.” It seems that DoD never fully implemented the policy stated in the FAR section because it doubted that it had authority to enter into cooperative agreements under 10 U.S.C. 2358.

Grants and Cooperative Agreements in DoD Without Specific Authority

DARPA, however, applied broad interpretation of law on the cooperative agreement issue. In the 1980s, many DoD research agencies started using grants to fund basic research with universities. The Office of Naval Research issued grants extensively and also issued many cooperative agreements to industry. They probably were the only organization in DoD who did so for technology-based projects. Many of the cooperative agreements issued were for DARPA-sponsored projects. The cooperative agreements were a form of assistance under the Federal Grant and Cooperative Agreement Act of 1978 and, therefore, were controlled by the same OMB circulars which controlled grants, another form of assistance. However, at the time, there were no models for agreement provisions, so individual contracting officers fashioned their own arrangements.

B. THE EMERGING USE OF BROAD AGENCY ANNOUNCEMENTS (BAAs) AND THE NEED FOR OTHER INSTRUMENTS

Unsolicited Proposals

Prior to the issuance of the Competition in Contracting Act (CICA) in the early 1980s, the DoD research agencies and DARPA depended heavily on Unsolicited Proposals as a source of ideas for research projects. The CICA made such awards a non-competitive procedure which required the development of a Justification and Approval (J&A), a time-consuming, difficult administrative process in most agencies.

BAAs Created

Two research agencies, DARPA and the Office of Naval Research, under the auspices of the DDR&E, supported the sponsoring of legislation which recognized general announcements of agency need and subsequent peer or scientific review and selection of proposals. Later this process was recognized in FAR and DFARS as the Broad Agency Announcement (BAA).

Something More Was Needed

So, in the latter part of 1988 there was an expedited solicitation procedure for R&D (BAAs), an ability to award grants to educational institutions and, in DARPA and ONR, the use of cooperative agreements. The combined use of BAAs and grants for educational institutions was exactly the type expedited procedure R&D demanded. However, it wasn't enough. Cooperative agreements needed to be clearly recognized as an acceptable instrument so DoD could tap predominantly commercial organizations, who would not accept a Federal Acquisition Regulation (FAR) based contract. Also, DARPA wished its agents to issue cooperative agreements to support appropriate DARPA-sponsored projects. What was needed was clear recognition that cooperative agreements in DoD were acceptable.

C. 10 U.S.C. 2371 COOPERATIVE AGREEMENTS AND OTs FOR RESEARCH—SPECIFIC AUTHORITY GIVEN TO DoD

Opportunities Missed

Prior to 1989, and in the absence of clear authority, most of DARPA's agents used standard procurement contracts as the R&D agreement with profit-making concerns. DARPA itself was only able to use cooperative agreements on a minor part of their overall program because, as originally conceived, the size of their contracting office was very limited. As a result they missed numerous opportunities to contract with companies which were developing some new technologies. For example, DARPA found that some of the most promising technical ideas were found in small start-up companies that were often made up of nothing more than the owners of intellectual property, the skills of their principals, and a few key employees.

DARPA also found that several of the most innovative commercial companies did not have the Government accounting systems required to perform cost-reimbursement, R&D agreements.

Often these companies had neither the capability nor desire to do business with the Government through the procurement process.

Another problem was the need to support consortia formed to address the development of certain technologies, such as high temperature super-conductors. These consortia were often not a separate legal entity and many individual members were companies who would not or could not take a government contract. When they could, DARPA would issue procurement contracts to consortia for R&D but they resulted in awkward and inappropriate contractual relationships. Procurement contracts require a prime contractor/subcontractor relationship which is inappropriate for a consortium that is not a separate legal entity. What was needed for consortia was a multi-party agreement where each consortium member would be equivalent to a co-prime contractor with the Government and this agreement, for many, had to be other than a standard government contract.

DARPA Receives Cooperative Agreement and OT Authority

In 1989, DARPA was given not only cooperative agreement authority but also OT agreement authority by language in the 1990 Defense Authorization Bill. It was a two-year test authority to enter into cooperative agreements and OTs. This authority was codified at 10 U.S.C. 2371. The authority related to cooperative agreements was later moved to 10 U.S.C. 2358 and after a subsequent amendment was found in both statutes..

Authority Expanded to DoD for Cooperative Agreement and OTs

In 1991, DARPA's authority under 10 U.S.C. 2371 to enter into cooperative agreements and OTs was expanded to cover all of DoD and made permanent. The expansion was effective in FY93.

D. DoD GRANT AND AGREEMENT REGULATIONS (DoDGARs)

When to Use Grants and Cooperative Agreements

The guidance provided in the law was that Grants should be used to enter a relationship whose purpose was to stimulate or support a recipient carrying out a project that supports a public purpose. The terms "stimulate or support" leaves open the possibility of total funding support or cost sharing. But, the underlying concept is that the Grant recipient has an inherent interest in the work rather than an interest in making a profit.

Often these recipients are public agencies whose mission is to perform some tangible public purpose such as a regional housing or transportation authority. In basic and applied research this public purpose could be advancement in knowledge in the sciences or technology. While the provider of funds, the government, has an interest in the result, this interest is primarily that of the recipient's, or the "public" that the recipient represents. In the area of basic research, often these recipients are universities who use the research results to complement their academic mission to impart knowledge in the basic sciences.

Cooperative agreements, like Grants, are a form of assistance, but they are used where there is a mutuality of interest, very often equally balanced. Both sides have specific missions to fulfill and the work enhances that fulfillment need. A typical example is an industrial organization that wants to develop a technology that can be used in a product to make a profit. The federal government is also interested in the technology to enhance its military mission. This is a perfect situation for a cooperative agreement. More oversight by the government is needed than on a grant, but less than on a contract. Since there is an interest on the part of the recipient, there is normally a willingness to cost share. However, this cost share does not necessarily have to be cash as in-kind cost share is often acceptable.

The use of procurement contracts obviously is appropriate when the interest in the work is the government's only and the contractor's interest is in profit. Using a procurement contract, with all of its oversight mechanisms, for non-contract situations (grants or cooperative agreements), causes delays and unwarranted expense.

Why Other Transactions for Research

An often asked question is why Congress provided authority for OTs. Weren't the existing assistance instruments, grants, and cooperative agreements enough? The answer, in most cases, seems to be "yes, but . . ." Acquisition instruments are subject to a complex set of laws. Assistance instruments, while not controlled by laws as complex, must comply, however, to some federally mandated rules.

Grants and cooperative agreements with nonprofit entities, including universities and state and local governments, are subject to OMB circulars that specify administrative, audit, and other requirements. On the other hand, grants and cooperative agreements with commercial organizations are subject to few externally imposed requirements and agencies have great discretion to establish parameters for their award and administration. Practically, however, few

grants and cooperative agreements are awarded to commercial organizations and the "culture" surrounding their use seems to result in them being applied mostly to universities and non-profit institutions with the expanded uses being authorized by the military services, grants and cooperative agreements now meet most of the research situations present today. This was not the case in 1989, prior to 10 U.S.C. 2371.

The most commonly cited reason to use OT's for Research is in the area of intellectual property rights (IPR). The Bayh-Dole Act limits DoD's ability to negotiate patent rights. Since 10 U.S.C. 2371 OTs are basically a "clean sheet of paper" with practically no laws applying, there is complete freedom to resolve IPR issues. Perhaps a secondary reason is the application of federal rule by the OMB circulars. Even though these rules are far less demanding than contract rules they none-the-less do require accounting systems that keep records in detail normally not maintained by commercial companies. They also give government audit agencies the right of oversight. Many commercial companies will not accept these provisions.

These 10 U.S.C. 2371 OTs were later expanded by a new class of OTs by an amendment to 10 U.S.C. 2371 allowing contract-like instruments, under a new Section 845. Section 845 OTs are without sharing requirements, and are applicable to a broad area of acquisition, without FAR applicability. These OTs will be described in more detail later.

E. USE OF ASSISTANCE INSTRUMENTS AND OTs

The Delegation of Responsibility

Now that there was clear authority for all of DoD in the early 1990s to use grants, cooperative agreements, and OTs, many believed that some type of regulation was necessary. Since these authorities were not procurement matters, responsibility was given to the R&D elements of DoD to create the regulations. On February 8, 1994, the Director of Defense Research and Engineering issued a memorandum for the Secretaries of the Military Departments and the Director of DARPA which provided interim guidance for the use of grants, cooperative agreements, and OTs. The memo assigned to the recipients certain responsibilities of the Secretary of Defense under 10 U.S.C. 2358 and 10 U.S.C. 2371, as amended by Section 827 of the National Defense Authorization Act for Fiscal Year 1994 (P.L. 103-160). The law authorized the Secretary of Defense and Secretaries of the Military Departments to perform R&D projects by cooperative agreement or other transaction, as well as by grant or contract.

The DoD Assistance Regulation

The memorandum also included, as an attachment, the DoD Grant and Agreement Regulations identified as interim draft guidance. In that document are the implementing regulations for use of OTs.

The guidance indicated that the rules were in draft and the agencies using the authority were expected to test the provisions. The test was to determine which provisions caused difficulty in practice and what additional provisions might be needed. Awarding agencies were allowed to waive or amend the rules as necessary provided they complied with the various underlying statutes.

As of the date of this report, the regulations are still issued as interim guidance under the original operating rules. A major amendment was issued in the summer of 1996 to make them permanent. Public comments are now being analyzed. Even in their current form, the regulations do provide substantial information, definition, procedure background, and guidance for the issuing grants, cooperative agreements, and OTs. Examples of information contained in the regulations are:

- Appropriate use of grants and cooperative agreements;
- Identification of statutory authority;
- Appointment of grant officers and reporting systems;
- Debarment and suspension rules;
- Administration of grants and agreements;
- Administrative requirements for grants and agreements with commercial organizations;
- R&D grants and agreements; and
- Cooperative agreements under 10 U.S.C. 2371.

F. DARPA's USE OF 10 U.S.C. 2371 AUTHORITY

Use of OT Authority is Extensive

DARPA has made extensive use of OTs authority. Between 1989 and June 1995, DARPA entered into approximately 100 OTs. While there was only one in each of FY90 and FY91, there were four in FY92, 11 in FY93, and approximately 40 in each of FY94 and FY95.

Use Identified

Funded OTs included efforts with commercial companies such as Cray Research, Intel Corporation, and Boeing. Unfunded efforts included OTs with Rockwell Corporation, Boeing, and Northrop. Most of DARPA's OTs were funded agreements entered into as partnerships or consortia. Funding has ranged from less than \$1 million to over \$300 million. Most of DARPA's OTs have been awarded under the Congressionally mandated Technology Reinvestment Project (TRP).

G. MILITARY SERVICES' USE OF 10 U.S.C. 2371 AUTHORITY

Cooperative Agreement and OT Authority to the Services

The Services received authority to use cooperative agreements and OTs when 10 U.S.C. 2371 was amended in 1991. However, they did not begin to use the authority until 1994, after DDR&E issued interim guidance in the DoDGARs. To date, the Services have principally used "flexible" cooperative agreements. They are called "flexible" since standard terms and conditions are not mandated.

Services Primarily Use Cooperative Agreements

The services have managed OTs for DARPA projects utilizing DARPA funds but awarded by the DARPA contracts office. They reported not using more OTs because of language in 10 U.S.C. 2371 that stated OTs can only be used when a standard contract, grant, or cooperative agreement is not feasible or appropriate. This restrictive language has recently been changed. But, because of the uncertain nature of OTs, the Services retained authority for OTs at the service major command headquarters. This discouraged field activities from requesting or using OTs. DARPA has not viewed the language as restrictive and has extensively used OTs. The Services' position has been that to date, they have been able to accomplish their mission by entering into cooperative agreements with industry and consortia. This is probably so as cooperative agreements and OTs are nearly identical as will be illustrated later. Section IV of this report refers to a comparison of a type cooperative agreement used by the Air Force and the model OT used by DARPA.

H. 845 PROTOTYPE ACQUISITION AUTHORITY

Original 10 U.S.C. 2371 OT Authority Had Limitations

Most, but not all, of the agreements entered into under the 10 U.S.C. 2371 authority were related to research, exploratory development, or advanced development. Also, most were dual-use in character, that is, there were potential commercial as well as military applications for the technology being developed. While the authority was not necessarily limited to technology based and dual-use projects, the statutory requirement for equal cost sharing to the extent "practicable" and the restriction on using the authority only when a "standard contract or grant" was not feasible or appropriate limited its usefulness for technology demonstrations and prototype projects of strictly military systems.

Expanded Coverage by Creating Section 845 OTs

Encouraged by DARPA's use of 10 U.S.C. 2371 in technology based and dual-use projects, Congress authorized in November 1993 the use of the previously authorized agreements authority for military technology demonstrations and prototype projects. The three-year authorization allowed use through November 30, 1996. The FY97 DoD Authorization Bill in Section 804 expanded this new authority to the Military Departments and extended the authority until November 1999.

The Section 845 authority allows DoD to experiment with OTs even if a procurement contract would be appropriate or feasible. It also allows projects with or without cost sharing. It basically is authority to use streamlined acquisition procedures, including non-FAR contracts, for prototypes up to, but not including, full scale production. The procedures and resulting agreements, which are contracts by most definitions, are not subject to the Federal Acquisition Regulation nor the DoDGARs. Section VI of this report provides more detail.

V. 10 U.S.C. 2371 OT DETAILS

A. AN OVERVIEW OF THE USE OF 10 U.S.C. 2371 OTs FROM 1989 TO THE PRESENT

The 1989 Law

In 1989 Congress enacted Section 251 of public law 101-189 which was codified at 10 U.S.C. 2371. Section (a) stated:

“The Secretary of Defense, in carrying out advanced research projects through the Defense Advanced Research Projects Agency, may enter into cooperative agreements and OTs with any person, any agency or instrumentality of the United States, any unit of state or local government, any educational institution, and any other entity.”

The law provided both clear authority for DoD to allow DARPA to enter cooperative agreements but also added authority for OTs. The statute also provided for equal cost sharing “to the extent . . . practicable . . .” Advance payments could be made. Recoupment or other payments to the government were authorized.

Use of the Law

The authority was to be used only “when the use of standard contracts or grants is not feasible or appropriate . . .” In 1989 “standard” DoD grants were grants to universities and non-profit research organizations for the conduct of basic research. Standard contracts were described in Part 16 of the FAR and involved the principal purpose of acquiring goods or services for the direct benefit or use of the Federal Government. The authorization to use OTs filled a void since much of DARPA’s work involved neither basic research nor acquiring goods and services for DARPA’s use. Rather, DARPA was involved in other activities such as advancing the state of the art, demonstrating technology, establishing industrial capabilities, and transitioning technology into actual use.

Another characteristic of “standard” DoD instruments in 1989 when the statute was originally enacted is that they were entered into with single parties. The use of cooperative agreements and OTs to support research consortiums was later to prove essential.

Extended and Expanded Use of the Authority

DARPA has repeatedly reported to Congress on its use of OT authority. Congress has re-enacted the statute three times (1991, 1993, and 1994) making minor changes without changing the substance of the authority. In 1990 (Section 244, Public Law 101-510) Congress authorized a \$50 million appropriation for DARPA to fund consortia to support dual-use technologies utilizing the authority of 10 U.S.C. 2371. The following year \$60 million was authorized. Each year DARPA used these funds to enter into several OTs which were duly reported to Congress. In 1992 Congress appropriated nearly one-half billion dollars for a series of programs that became known as the Technology Reinvestment Project (TRP). Although many TRP efforts were conducted by other agencies cooperating with DARPA, all of DARPA's TRP efforts were executed as OTs. Many of the dual-use and all of the TRP OTs involved consortiums. Total TRP appropriations have now exceeded one billion dollars.

B. THE TECHNOLOGY REINVESTMENT PROJECT (TRP)

DoD Again Taps the Commercial Market

For years DoD has spent a large portion of its annual procurement budget on commercial items. In the last several years much greater emphasis has been placed on using the capability of available commercial products. Many incentives and tools have been created to push DoD program managers in the direction of buying commercial products and services. Creation of commercial products advocates commercial item procurement regulations and forms, and reduction of dependence on MILSPECS are all examples. One of the TRP goals was greater investment in creation of commercial products that have potential dual use; military as well as commercial. The use of cooperative agreements and OTs under 10 U.S.C. 2371 has assisted this overall effort.

TRP

TRP was a program jointly managed by six (6) executive departments with DARPA serving as DoD's representative to develop dual-use products that satisfy both defense and commercial requirements through innovative partnerships. Industry cost and, therefore, risk was shared. There were three parts to the TRP. The first two, technology deployment and manufacturing

engineering and education technology, were discontinued after initiation primarily because some in congress doubted their relevance to military needs. The third phase, technology development, was funded over \$1 billion and began in FY92. Three solicitations were involved and thousands of proposals were submitted. DoD is currently sponsoring over 130 technology development programs that may take several years to complete. There is a continuing dual-use DoD-sponsored program for FY97, but not called TRP. Rather than being DARPA-managed, the manager of this continuing dual-use project is a joint service sponsored office. It, like the TRP program, will use 10 U.S.C. 2371 OTs as well as the new Section 845 authority for prototypes.

C. AN OVERVIEW OF THE NATURE OF 2371 OTs

Laws Not Applicable

“OTs” are a class of agreements outside the procurement and assistance categories, and are not subject to the Armed Services Procurement Act, Federal Acquisition Regulation, Defense Federal Acquisitions Regulation Supplement, or other laws and regulations specific to the procurement system including most of the statutes codified in title 41 U.S.C. Likewise, laws and regulations governing assistance relationships or specific to grants and cooperative agreements are not applicable. Statutes of general applicability such as title VI of the Civil Rights Act of 1964 and statutes applicable to “every . . . agreement . . . of the United States” (e.g., 41 U.S.C. 22) are applicable. Moreover, such laws are applicable whether or not the agreements references them.

DARPA has entered into a number of OTs with single commercial firms such as agreements with Gazelle Microcircuits, Cray Research, Intel Corporation, and Boeing. They also have entered into unfunded agreements with Rockwell Corporation, Boeing, and Northrop. The majority of DARPA’s OTs have been multi-party with consortium groups. Most agreements have had multiple signatures. A few are with one company as an agent signing for all members of the consortium. The agreements are styled in various ways and called by various names; Coordinated Research Agreement, Technology Reinvestment Project Agreement, Technology Development Agreement, or other appropriate designation. Agreements range in total funding from less than \$1 million to several hundred million. Government funding is almost always less than half and in some cases a small fraction of the total.

DARPA does not require the consortium to be a separate legal entity (e.g., a joint venture or partnership) to receive an OT. In cases where the consortium is not a separate legal entity, each member of the consortium is viewed as similar to a co-prime contractor.

Model Available

While OTs are not subject to acquisition or assistance rules, they have not been completely unstructured nor inconsistent. DARPA has drafted a model OT agreement for use with consortia.

This model is covered in the next section of this report. It contains twelve articles which define the terms and conditions of the agreement and five attachments addressing the statement of work, reporting requirements, schedule of payments and payable milestones, funding schedule, and a list of Government and consortium representatives. In using this model, DARPA's position has been that there is only one non-negotiable provision: (1) the "Civil Rights Act" clause. This provision is required by law to be included in all government agreements. All other provisions of the model are subject to negotiation.

D. MODEL AGREEMENT OVERVIEW

Two Models Available

Use of a model OT agreement for use with consortia and one for use with individual companies. The models are similar.

Payments Based on Milestones

In the case of a consortium they are paid fixed amounts for accomplishment of payable milestones rather than its actual incurred costs. While advanced payments and classic cost reimbursement is possible, DARPA has chosen the milestone payment method. If the milestone is not met then payment may be withheld. In some cases milestones are not met because both the government and the consortium underestimated or miscalculated an effort. In these cases new milestones may be negotiated. The milestones, when used, make the OT like a series of fixed price agreements. DARPA tries to make the milestone descriptions as explicit as possible.

These arrangements are not unlike performance based payments authorized by FAR part 32. But FAR policy is not to use milestone payments when other type financing, such as progress payments based on cost, is available.

Accounting by Commercial Methods

Generally accepted accounting principles (GAAP), rather than the FAR and DFARS cost principles, apply. Many commercial companies cannot, or will not, establish the systems needed to perform cost-reimbursement contracts, grants, or cooperative agreements. Strict Government labor reporting requirements, which are mandatory for cost reimbursement contracts and assistance arrangements, are not required for OTs. Some companies are regular defense contractors, however, and follow systems already certified under government cost accounting standards. But use of these systems is not mandatory.

Commercial companies technical employees are often permitted to report time anywhere from daily to as infrequently as once a month, depending upon the policy of the company or business unit involved. Commercial time-reporting in research laboratories of commercial companies generally is a management tool for determining approximately how much effort is being devoted to individual internal research projects. The fear of criminal penalties for failure to properly comply with Government time reporting requirements is a disincentive for technical employees of commercial companies to work on Government cost reimbursement arrangements.

Management of 10 U.S.C. 2371 OTs

Under the "Management of the Project" provision of the DARPA model, the program is subject to periodic reviews. These reviews are usually quarterly, with major reviews annually. This frequency is greater than on normal R&D projects. In addition, decisions on milestone payments may require other reviews that may or may not be made at the established quarterly and annual reviews. Government program managers, or their representatives, attend the reviews. Participants characterize them as joint sessions where government program managers and all consortium members sit as equals and as partners to plan the work. They use the reviews as opportunities to assess progress and plan future activity on the project which has the interest of everyone. Recognizing the nature of research and technology development, changes are anticipated and invited. All parties work toward assuring that changes complement the effort.

Expenses Versus Milestone Payments

The "Obligation and Payment" provision of the DARPA model transaction recognizes that the quarterly accounting of current expenditures made by the consortium is not necessarily intended or required to match the Payable Milestones until submission of the final report. However, the

Payable Milestones shall be revised during the course of the program to reflect current and revised projected expenditures, provided that the Government's obligation to make payments under the OT remains limited to only those funds obligated under the OT.

Purchasing Oversight

Government-unique purchasing requirements do not apply to the DARPA model OT. These include subcontract approvals, competition in contracting and subcontracting, special purchasing files, and cost or price analysis. Nonetheless, many of these rules are followed. For example, placement of these agreements are the result of a highly competitive process. Also, some cost and price analysis is conducted and common business concerns are addressed.

Flowdown Requirements

With two exceptions, the flowdown of Government terms and conditions does not apply. The two exceptions, which are subject to negotiations, are that R&D subcontracts must include (a) flowdown clauses for Government patent and data rights, and (b) a flowdown clause to prevent transfer of technology developed under the OT to foreign firms and institutions without the approval of DARPA. The Buy American Act (41 U.S.C. 10a-10d) and Trade Agreements Act of 1979 (19 U.S.C. 2501-2582) do not apply. In addition, certifications do not have to be obtained from subcontractors regarding compliance with laws such as the Byrd Amendment (31 U.S.C. 1352) or Equal Employment Opportunity (Executive Order 11246). Therefore, commercial purchasing practices can be used almost entirely when issuing subcontracts under the DARPA model other transaction. The model does not contain a "changes" clause nor a "termination for default" clause.

E. MODEL AGREEMENT PROVISIONS ANALYSIS

Provision Compared to CPFF

The following is a brief analysis of the model agreement provisions. When possible, the provisions are compared to a federal government cost plus fixed fee (CPFF) contract. A CPFF contract is the normal instrument used to acquire R&D from commercial organizations. Also, this analysis incorporates comments of interviewees on the practical applications, problems or issues related to these provisions.

Analysis

Article I: Scope of Agreement

This article anticipates development of a vision statement that describes the purpose of the agreement, the technology involved, and the commercialization goals. This statement is in addition to the government description of the project in the project announcement and the project description submitted in the offeror's proposal. Work statement details are not unlike those found in R&D contracts. Many PMs report this to be a difficult but important area to address as it should summarize exact goals of the collaboration.

The parties agree that the principal purpose of the agreement is for the government to support and stimulate the consortium to provide its best efforts to achieve the research goals. While these "best efforts" words are the same as found in CPFF contract arrangements, other provisions related to payable milestones make these agreements very unlike normal CPFF contract arrangements wherein progress payments are usually based on cost expended. Payable milestones are events that must be achieved or the consortium isn't paid for that event. This requirement shifts the normal CPFF contract burden of risk from the government to the consortium.

Additional risk burden is placed on the consortium since they are required to cost match. Often this is a 50/50 requirement. The value shown on the agreement is the value of both the government and consortium share. If the consortium doesn't provide its full share than the government can reduce its support proportionately.

Article II: Term

This article provides that the program continues for a specified number of months, but if all funds are expended prior to the end of the term the parties have no obligation to continue performance. This provision is similar to that found under "best effort" CPFF contracts.

Unlike a CPFF contract which only permits the government to terminate the contract (for its convenience or for default of the contractor), Article II provides that either DARPA or the consortium may terminate the OT for convenience. This is accomplished by written notice to the other party provided that such written notice is preceded by consultation between the parties.

Article III: Management of the Project

The agreement among consortium members defining the business arrangement among themselves is commonly referred to as "Articles of Collaboration." This term is used in this provision. There is no required format and DARPA PMs report agreement on the collaboration arrangements among consortium members to be a very difficult and time-consuming process in many cases. Often, DARPA PMs and contracting officers must become involved in resolving issues among potential consortium members. This model agreement article provides for a listing of consortium members, and provides for management by a Consortium Management Committee (CMC). Each consortium member has a vote and normally each vote is equal. But there are arrangements which allow unequal votes based on the amount of cost share or other negotiated arrangements.

Certain major changes to the Articles of Collaboration such as new consortium members or change in cost share must be approved by DARPA. Quarterly meetings as a norm are established and the DARPA program manager, or the agent program manager of the project is assigned to an agent, or both, attend. In some cases, the government PM gets an equal vote; in other cases the PM is the final deciding vote. Issues that arise normally are progress since the last meeting, activities planned until the next meeting, milestone payments, and changes.

This article provides for a planning process. Normally the initial program plan contained in the statement of work is followed for the first quarter. Thereafter, a detailed annual program plan is usually developed and approved at the first quarterly meeting.

Article IV: Agreement Administration

Under this article one representative of the consortium is appointed the Consortium Administrator and is to be the consortium's representative to DARPA for administrative and contractual matters. Another representative of the consortium is appointed the consortium's representative to DARPA for technical matters. DARPA makes payment to the Consortium Administrator for Payable Milestones that have been accomplished by the consortium. The Consortium Administrator is responsible to pay each member of the consortium its respective share of such payments.

Article V: Obligation and Payment

Under this article the consortium must maintain an established accounting system which complies with Generally Accepted Accounting Principles (GAAP). This is one of the primary benefits of the OT. The FAR allows GAAP when purchasing commercial items but not otherwise. Article V also provides that since the consortium is only a conduit, it cannot incur nor allocate to the government any indirect costs of its own. In addition, the consortium and each member are responsible to maintain adequate records to account for Government funds received under the other transaction. The assumption is that these records are in the same detail as accepted by commercial practice. The Government has the right to examine or audit the consortium's relevant financial records for a period not to exceed three years after expiration of the term of the other transaction.

As each milestone is reached, the consortium is required to provide a report or other evidence of accomplishment of that milestone to the DARPA Program Manager for review and validation of successful completion. The DARPA Program Manager then provides notice of milestone acceptance to the DARPA Agreements Officer (the Contracting Officer), who approves the invoice and processes payment. Payment by the government will not be made unless the milestone has been successfully completed.

Article VI: Disputes

Under this article disputes are to be resolved by negotiation and mutual agreement. If negotiation does not resolve the dispute, the aggrieved party may request a joint decision of the DARPA Deputy Director for Management and a representative of the Consortium Management Committee who shall make a joint decision. The joint decision is final. If a joint decision cannot be reached, a timely appeal may be made to the Director of DARPA whose decision is final and binding, to the extent permitted by law. This provision may be in the process of revision.

The Contract Disputes Act of 1978 (41 U.S.C. 601-613), which is applicable to FAR-covered procurement contracts, does not apply to disputes arising under the other transaction.

Article VII: Patent Rights

This clause is similar to FAR 52.227-12 "Patent Rights-Retention by the Contractor" clause. The consortium retains title to any inventions conceived or first actually reduced to practice under the

OT and DARPA receives a non-exclusive, nontransferable, irrevocable, paid-up license to practice or have practiced on behalf of the government such inventions throughout the world. The consortium may elect to provide full or partial rights that it has retained to consortium members or other parties. The Patent Rights clause contains provisions relating to "Preference for U.S. Industry" and government "March-In Rights" similar to corresponding provisions found in FAR 52.227-12. Since the clause references the consortium rights as between the inventing company and other members of the consortium, the issue needs to be addressed in the articles of collaboration.

As in all other provisions, this article may be revised. It is this ability to revise these provisions, and, therefore, revise the standard FAR provisions based on the Bayh-Dole Act, that is one primary reason OTs are used rather than cooperative agreements.

Article VIII: Data Rights

The DARPA model OT includes special Data Rights provisions that generally are much easier to comply with and more equitable to contractors than DoD's DFARS technical data and computer software regulations and clauses for FAR-covered contracts.

The DARPA Data Rights clause provides that since the OT involves mixed government/contractor funding, the government obtains government-purpose rights (GPR) in data delivered under the OT. GPR is defined to mean government rights to use, duplicate, or disclose data, in whole or in part and in any manner, for government purposes only, and to have or permit others to do so for government purposes only. "Data" is defined to mean recorded information, regardless of form or method of recording, which includes but is not limited to, technical data, software, trade secrets, and mask works. The term does not include financial, administrative, cost, pricing, management information, or subject inventions.

The DARPA Rights Clause states that in consideration for Government funding, the consortium agrees that it intends to reduce to practical application items, components, and processes developed under the OT.

The DARPA Data Rights clause also includes an unusual section pertaining to Government march-in rights. In the event the Government exercises its march-in rights to subject inventions under the Patent Rights clause or the Data Rights clause, the consortium agrees to deliver, at no additional cost to the government, all data necessary to achieve practical application. The

government obtains “unlimited rights” in such background data.

DARPA can exercise march-in rights primarily if the consortium has not taken effective steps to achieve practical application of the technology developed during the performance of the other transaction.

Article IX: Foreign Access to Technology

The DARPA model OT contains a “Foreign Access to Technology” clause which places controls on access by foreign firms or institutions to important technology developments. This implements policy that the principal economic benefit of DARPA research efforts must be to the economy of the United States.

Article X: Civil Rights Act

The only socioeconomic clause included in the DARPA model OT is Article XI, “Civil Rights Act.” This clause requires each consortium member to comply with Title VI of the Civil Rights Act of 1964 relating to nondiscrimination in Federally-assisted programs and to provide a certification to that effect. There is no requirement that this “Civil Rights Act” clause be flowed down to subcontractors.

Article XI: Order of Precedence

This clause provides that in the event of any inconsistency between the terms of the OT and language set forth in the consortium’s Articles of Collaboration, the inconsistency shall be resolved by giving preference in the following order: (1) the OT, (2) attachments to the OT, and (3) the consortium’s Articles of Collaboration.

Article XII: Execution

This merger clause provides that the OT constitutes the entire agreement of the parties and supersedes all prior and contemporaneous agreements, understandings, negotiations, and discussions among the parties, whether oral or written, with respect to the subject matter of the OT. The clause also provides that the OT may be revised only by written consent of the Consortium Management Committee (CMC) and the DARPA Agreements Administrator.

Attachment 1—Statement of Work

This attachment to the DARPA model other transaction provides a detailed explanation of what the consortium is expected to do under the research projects. Normally it is written in terms of the problem to be solved, the technical approach, or the specific tasks to be accomplished.

Attachment 2—Reporting Requirements

This article provides for quarterly reports, an annual program plan, special technical reports, payable milestone reports, and a final report. The quarterly report has a technical and business section. The business section provides for summarized details of the resource status from both the government participation and consortium's cost share.

Attachment 3—Schedule of Payments and Payable Milestones

This provides a place to identify by task number and month the task is scheduled to be completed the payable milestones, the DARPA payments due, and the consortium payments due.

Attachment 4—Funding Schedule

This provides for a schedule of projected DARPA program funding commitments by FY and related consortium contributors by consortium member.

Attachment 5—List of Government and Consortium Representatives

This provides a place to list the names, addresses, phone numbers, and E-mail addresses of the representatives.

F. 10 U.S.C. 2371 OTs VERSUS COOPERATIVE AGREEMENTS

DARPA Model Versus Various DoD Models

In accordance with the DDR&E's interim guidance in February of 1994, DARPA in early 1995 identified to the DDR&E a class of OTs that it had developed for use in the Technology Reinvestment Project (TRP). This is the model described above for consortiums and one other for commercial companies that did not significantly differ. DARPA believed these models to be

as one type of OT that could be defined clearly and standardized, to facilitate using them more widely and on a routine basis. At the request of the Deputy DDR&E, the DoDGARs working group undertook a review of those DARPA OTs and the cooperative agreements used by the Military Departments for similar purposes.

In support of the review, the working group asked the Logistics Management Institute (LMI) to do an analysis of the instruments. LMI found that DARPA OTs and the military departments cooperative agreements were similar in most respects. On the other hand, some comments from private industry have expressed dissatisfaction in the Services "use of cooperative agreements in lieu of OTs. Anecdotal reasons given indicate that the problems arose not because of the differences in the models but because of the outlook of the individuals administering the models. In some cases, government personnel lost sight of the fact that a model could be tailored and exhibited unwillingness or inability to make changes. Also, there clearly was a difference in the ability to negotiate intellectual property rights. Non-OT models follow Bayh-Dole.

The working group concluded that the Services' cooperative agreements and DARPA's OTs should be integrated into a single instrument. This instrument could be a cooperative agreement unless Bayh-Dole or other factors required the instrument to be entered into as an OT. Such an effort is now underway.

DARPA Versus the Air Force Model

A detailed analysis of a model cooperative agreement used by the AF versus the DARPA model has been made by Richard Kuyath (See Appendix B of this report). Mr. Kuyath concludes as follows:

"In summary, there are three legal requirements under the Air Force model cooperative agreement which cannot be waived because they are required by law or regulation and which are not required in an other transaction:

1. The requirement under the Bayh-Dole Act that the government obtain a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced on behalf of the government any invention conceived or first actually reduced to practice by the recipient under the cooperative agreement for which the recipient elects to retain title.

2. The requirement in 37 CFR 401.3 that the Patent Rights clause in 37 CFR 401.14 be included in the cooperative agreement. Paragraph (g) of that clause contains the restriction that the prime contractor cannot obtain, in any R&D subcontract, any rights in an R&D subcontractor's subject inventions in the subcontract itself. The only alternatives are for the consortium members to (a) request that an exceptional circumstance determination be issued by the agency permitting the consortium members to obtain such rights in their subcontracts, or (b) enter into separate licensing agreements with their R&D subcontractors, with separate consideration given for such rights.
3. The requirement to flow down to subcontractors certain certifications required by law or regulation for subcontracts over certain dollar thresholds issued under the Air Force model cooperative agreement."

G. SOLICITATION, NEGOTIATION, AND AWARD PROCESS IDENTIFICATION AND COMPARISONS

Analysis Scope

This section identifies the major milestone events in the solicitation, negotiation, and award process of 2371 OTs and compares them to those identical milestone events leading to award of a CPFF contract, grant, or cooperative agreement for basic or applied research. In this context the definition of basic and applied research is work in support of improving science or technology short of testing, developing, or producing specific products, systems, or processes. Also, the OT process involved was both for TRP and non-TRP projects.

Use of the BAA or RA—When acquiring basic or applied research, the solicitation process is usually a Broad Agency Announcement (BAA). Similar announcements called Research Announcements (RAs) are also used. But the basic characteristic of these announcements is identification of government need in general terms and solicitation of proposals that can satisfy these needs. Proposals can be submitted either by a common date or anytime during an open announcement period. Since there is no detailed common work description, proposals can widely vary in scope, structure, and cost.

Preparation of the Needs Statement and Issuance of the BAA or RA—The BAAs and Research Announcements used by DARPA that result in 10 U.S.C. 2371 OTs meet all of the above

characteristics of non-OT announcements. In many cases the needs statement is coordinated with the Contracting Officer who will ultimately issue the BAA. So is the case with OT research announcements. In DARPA a BAA is used when a variety of award instruments may result. These could be contracts, cooperative agreements, or grants. When an OT is anticipated, an RA is used.

The RA is a bit more detailed than a BAA since it must address issues such as consortium requirements, sharing criteria, and intellectual property matters.

Submission of Proposals—DARPA, like others, sometimes asks for a “White Paper,” “Statement of Capabilities,” or “Concept Paper” from proposers prior to encouraging proposers to go to the expense of submitting a full proposal.

Details in proposals for OTs are similar to those found in S&T proposals submitted under BAAs contemplating FAR contract or assistance awards. The TRP program requirements were quite detailed in identifying required proposal formats and page limitations. A breakdown of costs was required by major task. A breakdown of the proposed share arrangement was also required. The announcement listed the evaluation criteria in some detail. The proposers were required to submit an index which identified the pages of the proposal on which the selection criteria is addressed.

Evaluation and Selection of Proposals—Like an ordinary BAA process, DARPA, on OTs, evaluates proposals using teams of three to five people who develop numerical and narrative scoring in accordance with announced criteria. After initial evaluations, there are varying methods of resolving problems such as differing evaluators’ scores, insufficient evaluation information, or other evaluation deficiencies. There is an attempt, however, to arrive at a consensus in selecting proposals.

Contracting personnel are sometimes involved in the evaluation process but usually only to review business issues. The TRP used a business committee to evaluate share arrangements and other business matters. Audits of rates or other costs are rarely conducted. However, in non-OT evaluations for early stage science and technology proposals, usually simple rate checks, are sufficient. Unless there is an unusual amount of equipment involved, simple price analysis of other direct costs and labor is usually sufficient. DARPA practices on OTs do not deviate from this norm.

In the case of OTs, when there is a cost share, there is an additional protection on the government

cost risk side. Organizations providing half or more of the cost tend not to be wasteful since they must match the waste, if there is any. Also, it is far more difficult to be inefficient and wasteful when you are a member of a consortium group and there is a common interest in cost expended by every member.

Like in non-OT processes, contracting organizations received selected proposals for award. They do not receive evaluation reports as these are kept in the technical office where proposals were evaluated. Contracting Officers may see the records, if necessary, but it is usually not necessary as there are few challenges to award decisions.

Various technical organizations handle proposal clarifications differently. In some cases, if proposals need clarification, the technical organization conducts all discussions, reviews, amended proposals, including revised budgets, and sends the proposal to the contracts office only when the technical organization is completely satisfied. In other cases the technical organization will identify what needs clarification and will ask the contracts office to take it from there.

Awards, Debriefings, Protests—In this area there are a number of differences between OTs and normal S&T awards. These differences are caused by the use of agents, the special problems of dealing with consortiums, the requirement for cost share arrangements, intellectual property issues, the ability to negotiate nearly any provisions, and the nature of debriefings and protest.

Use of Agents—When proposals are sent to the DARPA contracts office for award, an OT under 10 U.S.C. 2371 results. When they are sent to agents, they are sent in one of several ways. An OT could be awarded and administered by the DARPA contracts office and then sent to an agent for technical administration, it could be sent to an agent for both technical and business administration, or it could be sent for award and administration of both business and technical matters. When it is sent to an agent for award, a cooperative agreement rather than an OT will probably result (See Section III.G. of this report).

Dealing With Consortiums—Dealing with consortiums has special problems. Obtaining agreement from all on the OT arrangements is sometimes difficult and time consuming. Also, getting members to agree among themselves on Articles of Collaboration is often problematic and may require government intervention. These discussions and agreements occur after selection and prior to award. Delays of six to 12 months resolving issues are not uncommon.

Cost Sharing and Intellectual Property—Cost sharing and intellectual property adds

complication. Some cost sharing proposals are complex and require considerable analysis and discussion. Use of "in kind" cost share has unlimited variation. Use of IR&D projects also raises issues such as relevancy of the IR&D project to the OT project and the degree of control that the consortium has of the IR&D project. For further information, see Section VI of this report. Intellectual property rights between the consortium and the government are sometimes easy to resolve when compared to those that arise among the consortium members.

Negotiation of Provisions—When nearly any provisions of the agreement are subject to negotiation, the invitation is sometimes taken and time consuming discussions result.

Debriefing and Protest—Debriefings are given if requested but they are usually very informal. Most are conducted by telephone. Contract protest rules do not apply to OTs, but the TRP program information package required protests be submitted to the TRP office for settlement. There is no procedure, like FAR practice, to address protests to the Contracting Officer, the Government Accounting Office, or the courts.

H. ADMINISTRATION PROCESS AND COMPARISONS

The Nature of S&T Projects

Overall, whether it's an OT project or not, the administration of S&T type acquisitions typically requires very little business oversight. Often, the product is the report of the result of a scientific study or a technology evaluation or development. Hardware is sometimes involved but usually it is one-of-a-kind to support the study. Therefore, the business issues are usually whether the reports were submitted on time and whether the labor hours have been expended. In most cases the arrangement is on a cost reimbursable basis. Rarely is there an audit of incurred cost outside of organization wide system reviews.

Changes are possible but work statements are generally so non-specific in describing research goals rather than tasks that changes are made far less often than they are on non-S&T programs.

OT Project Differences

DARPA OT projects share many of the same characteristics as other S&T projects except for a few notable exceptions. Since OTs are typically partnership agreements among consortium members, with the government as a partner, there are more frequent, detailed program reviews.

Quarterly reviews are the norm.

Also, the introduction of the mandatory cost share adds a new dimension for both the consortium members and the government partner. All consortium members are interested in the details of the cost expended since they must use their own funds to match. The government is interested in assuring that the consortium members provide their match in the form and in the amount that they promised. There is frequent discussion on these type issues.

Another issue is milestone payments. Under cost reimbursable arrangements a "best efforts" criteria is used and allowable cost is reimbursed regardless of the achievement or non-achievement of research goals. In the case of OTs, "best efforts" language is used but if the best effort does not result in achievement of any one of the separate goals identified for the milestone payment, then payment is not made for that goal. This changes the nature of OTs into a series of arrangements that have fixed price characteristics. In addition, when there are milestone payments, cash flow is tied to these payments and not to progress. If the milestone payments do not track cost expenditure, there can be cash shortages and the subsequent need for consortium financing. Alternatively, there can be cash surplus, and the need to address how interest on excess funds is to be handled.

Another difference between OTs and normal S&T arrangements is that under contracts where there is fee involved, recognition of changes outside of the original agreement is a business concern since new work is fee bearing. Therefore, there is an incentive to negotiate as high a cost as possible to reduce risk and maximize fee return. In OTs all consortium partners, including the government partner, are concerned with changing the project in such a way as to enhance project success rather than fee maximization. So, all investors, government, and consortium members alike approach changes from a very different perspective than on a contract. The view is, "How can we make changes that will achieve goals at the least possible cost for us all?" This is quite different from, "How much cost estimate can I sell my government customer that will reduce my risk and maximize my fee?"

VI. SECTION 845 OTs—PROTOTYPE ACQUISITION AUTHORITY

A. AN OVERVIEW OF THE USE OF SECTION 845 OTs FROM 1993 TO THE PRESENT

OT Authority Expanded to Include Prototype Demonstrations

Most, but not all, of the agreements entered into under 10 U.S.C. 2371 related to research, exploratory development, or advanced development, or were dual-use in character (potential commercial as well as military applications). While the authority was not necessarily limited to technology base and dual-use projects, the statutory requirement for equal cost sharing to the extent “practicable” and the restriction on using the authority only when a “standard contract or grant” was not feasible or appropriate limited its usefulness for technology demonstrations and prototype projects of strictly military systems. An extended authority proposed in 1993 created an ability to award agreements for technology demonstrations and prototypes. These type projects eliminated the need for cost share and allowed use of the authority even when a procurement contract could be used.

In November 1993, Congress authorized the use of “agreements authority” for military technology demonstrations and prototype projects by amendment to 10 U.S.C. 2371. The amendment granted the authority for three years. Just as 10 U.S.C. 2371 had initially been authorized for two years prior to becoming permanent, the new authority was viewed as experimental.

The amendment was eventually enacted into law as Section 845, Public Law 103-160 (107 Stat. 1547). From the text of the statute and legislative history it is clear that the authority allows non-procurement agreements under 10 U.S.C. 2371 to be used for purely military research and development and technology demonstrations or prototypes directly relevant to weapons systems. For these type projects, it may be used even if a procurement contract would be feasible or appropriate and there is no requirement for cost sharing.

A Contract Outside of the FAR

Since the original 10 U.S.C. 2371 OTs and the new Section 845 OTs both are not under the procurement system, this means that the Armed Services Procurement Act, the Competition in Contracting Act, and other statutes which specifically regulate the procurement system are inapplicable to Section 845 agreements. The Federal Acquisition Regulation, Defense Federal Acquisition Regulation Supplement, and similar implementary regulations are likewise inapplicable. Existing departmental regulations governing the acquisition system, such as DoDD 5000.1 and DoD 5000.2R, and MILSPECS and MILSTANDARDS need to be considered but not strictly applied. It is possible on a pilot basis to reinvent the acquisition system for each Section 845 OT. Those aspects of the current system which are deemed to add value can be adopted by agreement.

The Potential of Section 845 OTs

The potential of this new authority is similar to that created when 10 U.S.C. 2371 was originally enacted allowing OTs. This expanded authority will open new opportunities for innovation for traditional defense contractors which participate in Section 845 OT projects as prime contractors. It almost certainly can afford an opportunity for companies which are not traditional defense contractors to compete for Department of Defense business and has broad implications for adopting commercial practices in subcontracting. The new authority expands the original authority created in 1989 with dual use technology base research and development to technology demonstration and prototyping of systems with direct military relevancy.

DARPA Programs Using Section 845 OT Authority

There have been two major programs in the initial three-year experimental period initiated. DARPA, in conjunction with the Defense Airborne Reconnaissance Office (DARO), has embarked on development of unmanned air vehicles and, with support of the Navy, a new type ship. These programs will be described in summary later in this section. They are the first tests of this experiment and afford lessons to be learned. Other DARPA programs have used the authority but these two projects have been the most significant.

Section 845 OT Authority Expanded to All of DoD and Delegated

While the authority under Section 845 was to terminate November 30, 1996, Section 804 of the National Defense Authorization Act for FY97, Public Law 104-201, extended the authority of Section 845 through September 30, 1999. The extension also makes it available to the Secretaries of the Military Departments and any other official designated by the Secretary of Defense. The Secretary of Defense delegated his authority and assigned his responsibilities, under the amendments made to Section 845 by Section 804, to the Under Secretary of Defense for Acquisition and Technology. On December 14, 1996, the Under Secretary designated the Directors of the Defense Agencies as having the authority to use Section 845 as authorized by subsection 804(a).

Recognition of Section 845 OTs as an Alternative to Contracts

In his letter, the Under Secretary stated that Section 845 authorizes use of instruments that are alternatives to contracts for the covered prototype projects. Section 845 requires, to the maximum extent practicable, use of competitive procedures when entering into OTs. However, the stringent rules of the "Competition in Contracting Act" do not apply. To the extent that a particular statute or regulation is applicable only to a contract, it would generally not apply to an "other transaction." The Under Secretary included as an attachment to his letter a list of statutes that apply to procurement contracts, but that are not necessarily applicable to OTs.

Limited Application of Major Systems Requirements

The Under Secretary recognized that Section 845 may be used to carry out prototype projects that are directly relevant to weapons or weapon systems proposed to be acquired or developed by the Department. When a prototype project, under the authority of Section 845, is used as a precursor to a major defense acquisition program, the Under Secretary requires that he be advised of the transition strategy for follow-on contracts at least 30 days prior to award of the OT that initiates the prototype project. The transition strategy must also address how the DoDD 5000.1 and DoD 5000.2R requirements will be applied to the acquisition program.

Use of Good Business Practice and Reporting

The Under Secretary cautioned that he believes it essential that Section 845 instruments incorporate good business sense and appropriate safeguards to protect the government's interest.

This includes assurances that the cost to the government is reasonable, the schedule and other requirements are enforceable, and the payment arrangements promote on-time performance.

Also, the Under Secretary pointed out that annual congressional reporting requirements are established in 10 U.S.C. 2371 (h), as modified by Section 267 of Public Law 104-201. These requirements also apply to prototype projects under Section 845. Each military department and defense agency using Section 845 authority shall submit a report to OUSD (A&T)/DDP annually, by November 15, that includes all information required by 10 U.S.C. 2371(h), and that summarizes Section 845 lessons learned for each prototype project. The format and content for this submission were contained in an attachment to his letter. In addition, users of Section 845 may submit lessons learned at any time for inclusion in the Defense Acquisition Deskbook. The Deskbook will also be used to provide discretionary guidance and further information.

Possible Expansion of the Authority

The letter contained significant policy regarding the use of Section 845 OT authority. The Under Secretary encouraged agencies to use the flexibility provided by this authority and to issue any further guidance they deem necessary. The letter provides that if recipients delegate authority to use Section 845, the Under Secretary expects it will be to officials whose level of responsibility, business acumen, and judgment enable them to operate in this relatively unstructured environment. If the authority is used wisely, the Under Secretary states that he will request that it be extended or made permanent by the Congress.

B. AN OVERVIEW OF THE NATURE OF 845 AGREEMENTS

Source of Information for This Subsection

This Subsection B of Section VI of the report is based on information provided by Mr. Richard L. Dunn, the General Council of DARPA. He has written, on October 24, 1996, a "Memorandum of Law" (see Appendix B). In that memorandum is excerpts from testimony of a past Secretary of Defense that identifies the issues involved.

Secretary of Defense, Dr. William Perry's Comments

In June 1986 the President's Blue Ribbon Commission on Defense Management (Packard Commission) made its final report to the President. Among the distinguished members of the

Commission was Dr. William J. Perry, the then current Secretary of Defense. The summary final report contained these findings:

All too often, requirements for new weapon systems have been overstated. This has led to overstated specification, which has led to higher cost equipment. Such so-called goldplating has become deeply embedded in our system today. The current streamlining effort in the Defense Department is directed at this problem.

Developmental and operational testing have been too divorced, the latter has been undertaken too late in the cycle, and prototypes have been used and tested far too little.

In their advanced development projects, the Services too often have duplicated each other's efforts and disfavored new ideas and systems. The Defense Advanced Research Projects Agency has not had a sufficient role in hardware experimentation and prototyping.

Corollary recommendations were also contained in the report. They were:

Rather than relying on excessively rigid military specifications, DoD should make greater use of components, systems, and services available "off the shelf." It should develop new or custom-made items only when it has been established that those readily available are clearly inadequate to meet military requirements.

A high priority should be given to building and testing prototype systems and subsystems before proceeding with full-scale development. This early phase of R&D should employ extensive informal competition and use streamlined procurement processes. It should demonstrate that the new technology under test can substantially improve military capability, and should as well provide a basis for making realistic cost estimates prior to a full-scale developmental decision. This increased emphasis on prototyping should allow us to "fly and know how much it will cost before we buy."

The proper use of operational testing is critical to improving the operations performance of new weapons. We recommend that operational testing begin early in advanced development and continue through full-scale development, using prototype hardware. The first units that come off the limited-rate production line

should be subjected to intensive operational testing and the systems should not enter high-rate production until the results from these tests are evaluated.

To promote innovation, the role of the Defense Advanced Research Projects Agency should be expanded to include prototyping and other advanced development work on joint programs and in areas not adequately emphasized by the Services.

Senator Bingaman's and Senator Nunn's Comments

The following language also adds additional insight and is the principal legislative history of the measure.

Mr. BINGAMAN. Mr. President, the amendment which I am offering would allow the Advanced Research Projects Agency to use cooperative agreements authority on a pilot basis to execute some of its defense projects. DARPA already has the authority to use cooperative agreements and other transactions to implement its dual-use projects, where industry contributes its own resources and use of contracts would not be appropriate. Indeed, DARPA expects to utilize that authority extensively to implement the programs under the Technology Reinvestment Project.

My amendment would permit DARPA on a pilot basis over the next three years to experiment with use of cooperative agreements in carrying out its purely military research and development projects, to which we should not expect industry to contribute its own resources. Use of this more flexible authority is consistent with the thrust of the National Performance review which the Vice President submitted to the President yesterday and with the desire for more flexibility in the defense acquisition system. DARPA led the way in use of cooperative agreements for dual-use projects, such as the high performance computing program. I am sure the agency will make good use of this new authority and urge my colleagues to support this amendment.

Mr. NUNN. This amendment allows DARPA to use the authority in Section 2371 of title X, U.S.C. to carry out pilot projects that are directly relevant to weapon or

weapons systems. This amendment will allow DARPA to use the cooperative agreements for purely military research as a three-year test.

DARPA's Charter Amended

DARPA's charter was amended to include "a greater emphasis on prototyping in defense systems by conducting prototype projects . . . and, on request, assist the Military Departments in their own prototyping programs."

Prototyping is not new to DARPA. Prime examples include the Pegasus launch vehicle which transitioned directly into operational use. In fact, the first operational launches for the Air Force were conducted under the same contract DARPA had used in the development effort and which was transferred to and modified by the Air Force. Ceramic armor kits for light armored vehicles were prototyped and operationally tested during the Gulf War on seventy-six vehicles. Perhaps the most famous example of DARPA prototyping dates back to 1961 when a DARPA-sponsored test program fielded one thousand AR-15 rifles in Southeast Asia for six months. The AR-15 was the prototype of the M-16.

The Language of the New Law Versus the Original Law

Section 845, as amended, makes only a few changes to 10 U.S.C. 2371 as originally enacted. It provides authority for DARPA to "carry out prototype projects that are directly relevant to weapons or weapons systems proposed to be acquired or developed by the Department of Defense." Other parts deleted the requirement for cost share and limiting use to situations where standard contracts or grants or cooperative agreements are not feasible or appropriate.

Application to Prototype Projects and Weapons

Section 845's grants of authority is bound by the definition of "prototype projects" and "weapons or weapons systems proposed to be acquired."

Webster's Encyclopedic Dictionary classifies "prototype" as a noun and defines it as an original model or pattern from which subsequent copies are made or improved specimens developed. The *McGraw-Hill Dictionary of Scientific and Engineering Terms* defines "prototype" as a model suitable for use to evaluate form, design, and performance.

The same conference report which contains the amended Section 845 language contains

numerous references to “prototypes” such as: “component prototypes for insertion into current undersea weapons”; “operational prototype”; “advanced technology prototype improvements”; “flyable prototype”; “JASS high band prototype”; “prototype ground-based radar”; “prototype plant.” Clearly, Congress is aware that the term “prototype” is used in a wide variety of contexts including its dictionary definitions. However, there is no reason to believe that the authority to conduct projects involving “full-scale,” “functional,” “operational,” or “pre-production” prototypes in any way limits the authority to conduct projects of lesser scope such as technology demonstrations, sub-system, or component prototypes.

The original version of Section 845 expressly included “pilot technology demonstration projects.” Furthermore, the legislative history of the amendment to Section 845 refers to “additional flexibility in the acquisition of prototype technologies and systems” (104 H. Rpt. 563, p. 326). Thus, “prototype projects” under Section 845 includes prototype “systems” but also includes lesser projects involving sub-systems, components, technology demonstrations, and technologies.

The breadth of Section 845 is also limited by the term “weapons or weapons systems.” the statute does not define “weapons.” Again, a common sense, plain-meaning approach should be used in interpreting this phrase. A useful reference might be the United States Munitions List published by the Department of State (22 C.F.R. §121.1). If the prototype projects involve equipment of the types included on the Munitions List it would be deemed to involve a “weapon.” This is not a complete answer, however, since other items of equipment not included on the list may clearly fit the definition of a “weapon.”

Section 845 OT Authority is Extremely Broad

The statute does not require that the prototype project be for the development of a weapon. The statutory requirement is for the project to be “directly relevant” to “weapons or weapon systems proposed to be acquired or developed . . .” This emphasizes the point made above that sub-systems, components, and technologies are included in the scope of Section 845. Furthermore, this language is broad enough to include training, simulation, auxiliary, and support equipment “directly relevant” to “weapons or weapons systems.”

From the plain meaning of its language it is clear that the scope of Section 845 is extremely broad. It would at least include the major categories of equipment contained in the U.S. Munitions list: firearms; ammunition, artillery projectors; launch vehicles, guided missiles, rockets, torpedoes, bombs, and mines; explosive propellants and incendiary agents; vessels of war and special naval

vessels; tanks and military vehicles; aircraft, spacecraft, and associated equipment; military training equipment; protective personnel equipment; military and space electronics; fire control, range finder, optical and guidance and control equipment auxiliary military equipment; toxicological agents and equipment and radiological equipment; nuclear weapons test and design equipment; and, submersible vessels, oceanographic and associated equipment.

Using Commercial Items

Given the trend toward utilizing off-the-shelf components and technologies in defense systems, Section 845 prototype projects may often involve the adaption, testing, or integration of commercial items for military purposes. A significant "off-the-shelf" content does not preclude a prototype project from being conducted under Section 845. In the future, both use of off-the-shelf technology, components, and systems as well as prototyping will probably increase.

Recognition of OTs

DARPA has a five year history of interpretation and practical application of Section 2371. DARPA has made numerous reports to Congress on its use of the authority. In addition, Congress has received testimony at committee hearings, reports of the General Accounting Office, and other information on DARPA's use of both basic Section 2371 authority and Section 845 prototype authority. Congress has appropriated millions of dollars to DARPA for projects knowing that they were to be conducted using OTs. This may be viewed as ratified not only by Congressional statements but by Congress' act of appropriating millions of dollars in light of DARPA's application and interpretation of the statutes.

Competition

Competition to the maximum extent practicable is a statutory requirement of prototype projects conducted under Section 845. The requirement is not absolute but obviously by using the term "maximum extent" Congress has made a strong policy statement in favor of competition. The requirement is tempered by the practicability standard. There should be a well documented rationale for initiating Section 845 projects in the absence of competition. The statute does not

specify the type or characteristics of the competition. Thus, there is plenty of room to introduce innovative forms of competition in prototype projects.

The competition can be modeled on the competitive proposal procedures of FAR 6.102(b) and FAR Part 15 or the BAA technique authorized by FAR 6.102(d)(2) and FAR 35.016. Under the FAR, a BAA would normally not be used for a weapons systems prototype development but under Section 845 it can be. Furthermore, entirely new forms of competition can be utilized. Combinations of proposals and oral presentations could be used. Final award selection can be made only after the agreements have been negotiated in final form. Specifically tailored techniques can be adopted for special circumstances.

During the competition phase of a prototype project, a procedure for handling objections or "protests" should be developed and made known to the competitors. This is necessary because the General Accounting Office protest systems applies only to procurements conducted under the procurement statutes. The GAO will inquire into whether a non-procurement instrument was properly used, but if it finds use of a non-procurement instrument proper, GAO has no further role. A protester can always go to court but the court's only generally review protests for compliance with procurement laws and regulations and fundamental fairness.

Socio-Economic Policies, Accounting, and Intellectual Rights

Socio-economic policies implemented specifically through the procurement system do not apply to Section 845 projects. Socio-economic policies which are generally applicable such as title VI of the Civil Rights Act do apply. Government required accounting and purchasing systems are also not required.

Also a major concern of private industry is the protection of intellectual property. Neither the Rights in Technical Data provision of title 10 U.S.C. Code nor the Bayh-Dole Act (35 U.S.C. chapter 18) governing patent rights are applicable to under Section 845 OTs. Thus the government can agree to intellectual property rights tailored to each project.

Procurement Integrity

The Procurement Integrity Act (41 U.S.C. 423) does not apply. However, government employees who are involved in source selection, handling sensitive information, and making programmatic decisions are still subject to 18 U.S.C. 1905 (relating to trade secrets and sensitive business information) and 18 U.S.C. 208 (relating to conflicts of interest). Furthermore, the practice at DARPA has been to have all personnel (government and non-government) who have access to source selection and sensitive information sign non-disclosure agreements, submit

financial disclosure forms, and sign statements concerning their relationships with competitors. False statements are of course subject to the provisions of 18 U.S.C. 1001.

Prototypes and Production

Many prototype projects involving systems will be conducted with a view toward an eventual decision to go into production. Although the statutes governing survivability, lethality, operational, and other test requirements do not apply to Section 845 projects, they none-the-less serve as indications of the type of information which a prototype project should generate in order to support a decision to go into production. Section 845 prototype projects should be planned to address test issues in a manner functionally equivalent to statutory test requirements while avoiding unnecessary bureaucracy and non-value added documentation.

Current legal authority under Section 845 does not extend to production. If it is intended to transition a system from a prototype project directly into production, the project will have to generate, in addition to survivability and operational test data, life cycle cost and other data sufficient to support a special Defense Acquisition Board (or other authorized review) prior to a Milestone III decision. This issue was addressed in the earlier cited Secretary Kaminski letter wherein he stated that when a Section 845 prototype is used as a precursor to a major defense acquisition program, he wants to be advised of the acquisition strategy for follow-on contracts. He wants this transition strategy to address how DoDD 5000.1 and DoD 5000.2R requirements will be applied.

If a Section 845 systems project involves innovative business and contracting practices, advanced planning must be done to obtain appropriate waivers and exemptions for business practices that will be carried over to the production program. This might include having the project designated a pilot acquisition program in order to obtain expanded waiver authority.

Obviously, both program decision-making and production contracting would be greatly facilitated by additional statutory authority allowing an approved Section 845 prototype project to transition directly into production on the same contracting basis upon which the prototype project was conducted.

C. THE HIGH ALTITUDE ENDURANCE UNMANNED AERIAL VEHICLE (HAE UAV) PROGRAM

DARPA's first use of the 845 authority was in the High Altitude Endurance Unmanned Aerial Vehicle (HAE UAV) program. It is an Advanced Concept Technology Demonstration (ACTD) for a requirement from the Defense Airborne Reconnaissance Office (DARO). The goal of the ACTD program is to demonstrate mature or maturing technologies to the warfighters in an accelerated fashion. The "acceleration" is measured against the normal progress that would occur through the DoD major systems acquisition process defined in DoDD 5000.1 and DoD 5000.2R. ACTD programs engage the operational user early in the accelerated process in an aggressive program schedule which is based on limiting non-recurring engineering costs.

More detail on these concepts and programs can be found in a report by RAND identified in Appendix B.

Two systems are being developed: Tier II Plus (Global Hawk)—a conventional design and Tier III Minus (Darkstar)—a low observable design. Global Hawk, headed by Teledyne Ryan Aeronautical, is currently in the second phase of a four phase program. The final phase is production of 10 air vehicles. Darkstar, headed by Lockheed Advanced Development Company, with Boeing as a primary subcontractor, is currently in Phase II of a four phase program. Two vehicles are to be produced. DARPA has also awarded six other Section 845 OTs for prototype projects associated with the HAE UAV. DARPA is also using a Section 845 OT for several other projects including the Arsenal Ship Program (to be discussed in this section) and Affordable Multi-Missile Manufacturing program (2 awards).

Past UAV and tactical surveillance programs have a history of serious problems related to inadequate integration of sensors, platform and ground stations, and substantial cost overruns. Users constantly introduce performance requirements that drive up cost to the point where systems are no longer affordable.

In the HAE-UAV agreements Unit Fly-Away Price (UFP) cost limits of \$10 million (1994 dollars) per operational vehicle are absolute. While cost goals are not unique in this program, the cost is a cap and all other performance objectives are traded off to meet the most important objective; the UFP cost.

Darkstar

This initial 845 program arrangement with Lockheed is an agreement that incorporates many FAR clauses. The initial estimated cost plus fee was a little over \$120 million on a Cost Plus Incentive Fee (CPIF) arrangement. The program was for design and production of two proof of concept flight vehicles with sensors, data links, and a launch control and recording station. One vehicle was to be flight tested with payload and the second was to be a backup.

The statement of work was minimal, consisting of only six pages. In addition, initial description was contained in the contractor's proposal which included design descriptions and objectives, and a program plan.

A primary objective was to demonstrate the feasibility of developing a low-cost, low-observable, unmanned reconnaissance air vehicle system utilizing the ACTD philosophy. A firm requirement was that the design be based upon a \$10 million (FY94 dollars) unit fly-away price (UFP) for each air vehicle system. This includes all flight hardware, air frame, avionics, sensors, communications, integration, and check-out. It is intended that it be the total price paid by the government including fee. Maximum use of best commercial practices and products and use of MILSPECS and regulations as guidance only was also a key feature. The goal was to complete all within 21 months.

The agreement was designed as a cost reimbursement, incentive fee arrangement which involved a fixed fee of \$3,081,829 and total estimated cost of \$102,727,643. In addition, the contractor could earn additional fee for a total fee of \$15.4 million based upon accomplishment of established performance goals. If cost overran \$115,700,000, both DARPA and the contractor would mutually determine if continuance was beneficial. In the event of cost overrun beyond \$115,700,000, cost would be shared 50/50. The following FAR/DFARS clauses were incorporated:

FAR 52.216-07	Allowable Cost and Payment (JUL 1991)
FAR 52.216-10	Incentive Fee (APR 1984)
FAR 52.243-02	Change Cost-Reimbursement (AUG 1987) and Alternate V (APR 1984)
FAR 52-204-02	Security Requirements (APR 1984)
FAR 52-215-30	Facilities Capital Cost of Money (SEP 1987)
FAR 52-230-02	Cost Accounting Standards (AUG 1992)

FAR 42-230-05	Administration of Cost Accounting Standards (AUG 1992)
FAR 52-232-22	Limitation of Funds (APR 1984)
FAR 52.245-05	Government Property (Cost Reimbursement, Time and material, or Labor-Hour Contracts) (JAN 1986)
DFARS 252.231-7000	Supplemental Cost Principles (DEC 1991)

Global Hawk

This program was conducted in four phases. Phase I was a competitive effort with five contractor teams selected from an initial request for information on offerors' capability and approach. The teams were to design a system composed of three segments, air vehicle, ground and support. The only threshold that had to be met was a \$10 million UFP for vehicle numbers 11 through 20. Each contractor received \$4 million in DARPA funding which was matched in varying degrees by the contractor.

Original plans to select two Phase II contractors had to be scaled down to just one because of budget constraints. Teledyne Ryan won the Phase II award in May 1995 to design and build two complete air vehicles including payload and one complete ground segment with flight tests. In Phase II the contractor is to build up to eight additional air vehicles, two additional ground segments, and support a two-year field demonstration of operational capabilities.

The Phase II agreement is identified as CPIF for a target price of \$157,348,000. The target cost is \$148,177,000 and the target fee is \$9,171,000. There are performance as well as cost incentives. There is a CPFF segment for \$640,315. The statement of work is a task description document and a Preliminary System Specification, both developed during Phase I.

The agreement for Phase II is an amendment to Phase I. The Phase I contained no FAR clauses. The Phase II only called out three FAR clauses as follows:

FAR 52.243-2	Changes Cost-Reimbursement (AUG 1987) and Alternative V (APR 1984)
FAR 52.215-30	Facilities Capital Cost of Money (SEP 1987)
FAR 52.242-10	F.O.B. Origin—Government Bill of Lading or Prepaid Postage (APR 1984)

The following additional two provisions indicate business oversight approach.

1. **Cost Accounting Standards**—In performance of Phase II, TRA will maintain an accounting system and faithfully follow the cost accounting practices set forth in its existing CASB Disclosure Statement for its Aircraft Strategic Business Unit (SBU) in San Diego and its Tier II Plus Management Accounting statement for the newly established Tier II Plus SBU. TRA will consistently follow such accounting practices in accumulating and reporting cost data under this Amendment. TRA will comply with the intent of all Cost Accounting Standards contained in Appendix B of the FAR, including any modifications thereto. In the event the Cost Accounting Standards are modified and such modification requires a change to disclosed cost accounting practices which affects the cost of performance under this Amendment, it is agreed that an equitable adjustment will be made pursuant to the Changes clauses contained in Article XXIV.

2. **Audit Process**—TRA's internal auditor will audit invoices in accordance with the Internal Audit Guide for Tier II Plus Unit (Routine No. T-1) effective July 1995, to insure accuracy and that only reasonable, allocable, and allowable costs are included. A certification, duly signed by the internal auditor, will be placed on each invoice stating that the costs have been reviewed and determined to be allowable as defined in the reimbursement provisions of FAR clause 52.216-7, Allowable Cost and Payment (JUL 1981). At a frequency of twice annually, or more often if warranted, staff auditors from Teledyne, Inc. and Arthur Anderson LLP (an independent public accounting firm), will review the invoices and books and records pertaining to performance of the Phase II Agreement to insure that interests of the government and Teledyne are protected.

D. THE ARSENAL SHIP PROGRAM

Basic Requirement

This ship is a high priority program for the Navy. It is to acquire a ship which can deliver a large quantity of ordinance in support of land and littoral engagements. It is managed by a joint DARPA/Navy program office.

The basic requirement is for a ship which can deliver massive fire power, long range strike

capability, and flexible targeting from a platform that has a very small crew (0 to 50). The ship also has to be highly survivable through passive means. As a goal, the ship has to be capable of carrying over 500 vertical launch systems (VLS) cells.

A unit sale-away price (USP) of \$450 million in FY98 dollars was established as a goal with \$550 million designated as unaffordable. Performance trade-offs, therefore, had to be made with the USP and \$550 million ceiling in mind.

The very brief government work statement required proposers to conduct work statement tradeoff studies in order to develop a design for the arsenal ship which best satisfies a Concept of Operations document which was an attachment to the program solicitation, and also considers the parameters contained in a Ship Capabilities document which also was an attachment to the solicitation. Both of these requirements had to be met within the bounds of the USP of \$450 million.

Once the studies were completed, a design was to be developed for construction of an arsenal ship demonstrator. The demonstrator was to be performance tested, and if successful, five arsenal ships were to be built. An option under the contract provided for conversion of the arsenal ship demonstrator into an operational ship as a sixth asset. Also as an option, was provision for Life Cycle Support.

The Concept of Operations document was three pages in length. It described the operational concept with tables defining representative types of capability desired such as halting invasion capability, long-range strike capability, battleship dominance, and service fire support. Target sets to be countered were also included. The arsenal Ship Capabilities document which was three and a half pages in length described the design philosophy, war fighting capabilities, and general design standards, and VLS cell requirements.

Management System

The program solicitation provided that the integrated management framework (IMF) utilized for the arsenal ship program should highlight and employ streamlined processes and management systems. The government did not tell proposers the process to employ such as quality, reliability, systems engineering, and so forth. The government would accept either commercial practices or DoD practices.

The Process

The solicitation identified the government's intent to award multiple contractor teams for Phase I and then subsequently down-select to two teams for Phase II. At the end of Phase II the government intends to down-select to one contractor for construction of the demonstrator ship during Phase III. Phase IV is the performance testing and evaluation of the demonstrator ship. Phase V is the construction of the final prototype ships and conversion of the demonstrator ship to an operational prototype ship. Phase VI was to be the service life support.

Phase I agreements were for \$1 million each. Phase II was to be \$15 million each so that the two contractors could develop their proposed concepts and performance specifications into functional designs.

Phase II Downselect

On October 3, 1996, DARPA released the arsenal ship program Phase II downselect solicitation document. In that document the financial section required that the proposer should describe its methodology of accounting for cost against concept design which will meet the USP requirement.

As part of the requirement, the proposer was to include a Phase II task description document (TDD) which includes the complete scope of work which the team believes is required to execute Phase II. Required as part of this phase was a functional design report and life-cycle cost analysis.

The functional design report is to include an update on information regarding systems design and equipment requirements. It has to include an in-depth report of model tests.

Oral presentations were provided regarding the Phase II proposals and concept design. These presentations were at the proposer's facility. All teams were provided up to four hours to be able to deliver their oral presentations. Down select decisions for Phase II resulted in continuation of three contractor teams.

E. SOLICITATION, NEGOTIATION, AWARD, AND ADMINISTRATION PROCESS AND COMPARISONS

The process of solicitation, negotiation, award, and administration for the limited number of Section 845 OTs for prototypes in DARPA shares some similarities with the normal competitive acquisition process for non-commercial items, but it also has many significant differences. The similarities are that there is a full and open competitive announcement, unless otherwise justified,

and a call for proposals. These proposals are evaluated to pre-determined criteria and selections are made. FAR contract-like instruments are negotiated and program progress is overseen by a program office and a business representative. But here the similarities end.

The 845 OTs for prototypes conducted by DARPA are programs that ordinarily would be subject to DoDD 5000.1 and DoD 5000.2R requirements with all of its process oversight, reviews, and program phases and milestones. They are generally on a different oversight track. A revised streamlined track for 845 OTs is now being defined through practice. The use of the FAR is not mandatory but FAR-like clauses have been fashioned and used. Traditional government-developed work statements are not used. Rather a series of performance goals driven by an all-important affordability goal is initially established. In the DARPA programs described above a Unit Fly Away or Sail Away Price is established and accomplishment of performance goals must be achieved within the affordability goal.

Initial solicitations were to determine contractor capability to design a prototype. Proposal evaluation and selection resulted in multiple awards to competing contractor teams. Phase I of the program, which is usually four to six months in duration, involves providing seed money in equal amounts to contractors developing conceptual designs. Typically, these are milestone driven payment arrangements where milestones are carefully developed during the negotiation process. The arrangement is a series of payments for achieving agreed upon milestones. Also, typically, contractor teams (a lead contractor who issues subcontractor teaming agreements) provide more effort than paid by the government in the first phase. In a sense, therefore, these first phases are share arrangements. Conceptual designs require constant tradeoffs between desired performance and absolute cost goals.

Successful contractor teams proceeding to the second phase offer the best chance for achieving the most performance within the cost goal.

Phase IIs normally are 6 to 12 months in duration and involve critical designs, components or critical subsystem fabrication, and initial testing. Payment terms and arrangements are similar to those found on Cost Plus Incentive Fee (CPIF) multiple incentive contracts except that performance to cost tradeoffs are limited by absolute cost goals. At the end of Phase II there is typically a downselect to one contractor if multiple contractors are still participating.

In Phase III, which is normally 20 to 30 months in duration, fabrication of the prototype is accomplished. This could include field testing, planned system upgrades, and additional

prototype modification fabrication. Here payment terms are more like those found in CPIF contracts.

Phase IV is normally 12 to 24 months in duration and involves operational demo of prototypes. This phase could involve FPIF contracts.

Phase V could involve 24 to 36 months of additional effort. In this phase there could be limited production quantities at target prices. Payment arrangements here are more like Firm Fixed Price (FFP) contracts.

In this process there is program oversight by a government program office limited in size. There is no audit or field contract administration oversight. Overruns over pre-established limits were shared 50/50 and assure contractor top management oversight and interest. Product design and details are in the hands of the contractor who confer with the government program office on a collaborative partnership basis.

Program duration for the first four phases of a maximum of less than seven years is one half to one third of the time to process similar programs through the normal DAB process.

VIII. PARTICIPANTS' VIEWS

A. SCOPE OF THIS SECTION

As part of this study, participants using the authorities of 10 U.S.C. 2371 and Section 845 were interviewed to determine their perceptions of the advantages and disadvantages of the new authority. Their views are incorporated throughout this report. Highlights are summarized in this section.

A previous analysis of participants' views was conducted by the Institute for Defense Analysis (IDA) and their report was dated November 1995 (see Exhibit B). The IDA analysis covered exclusively industry perceptions of the 10 U.S.C. 2371 OT authority. This study by Cross Link Corporation concentrates on government contracting officer and program management participation with only a few industry participants interviewed. It also covers the new section 845 OT authority. However, issues discussed with participants were similar, if not identical, to those addressed by IDA. The questions asked of 10 U.S. 2371 OT participants were as shown in Exhibit A to this report. Questions asked of Section 845 participants were similar but not in the detailed format used as shown in Exhibit A.

B. USERS ENTHUSIASTIC ABOUT THE AUTHORITY

The perception of government users matched very closely to those identified in the IDA study. The following is a synopsis of general responses in no particular order. All participants were very enthusiastic when asked about their experience with 10 U.S.C. 2371 OTs. Most concluded, as found in the IDA study, that the program would not have occurred without the use of an OT since most were with companies who operated strictly in the commercial environment. Many of these commercial contractors would not have accepted a FAR-based contract. One particularly interesting comment was from a program manager who said he thought he knew what was available in his field of interest. However, as a result of the solicitation found commercial contractors, who he normally doesn't deal with, who had capabilities well beyond what he expected. He said he didn't even know about them.

C. AGREEMENT ON ARTICLES OF COLLABORATION SOMETIMES DIFFICULT AND TIME-CONSUMING

Program managers and contracting officers alike reconfirmed the difficulty of consortium members reaching agreement among themselves on their articles of collaboration. In addition, negotiating the initial agreement between the government and the consortium involved knowledge not gained through interfacing with the ordinary government contracting system. Many participants cautioned that contracting officers and program managers alike must be willing to innovate and use the flexibility provided by the program to the greatest degree in addressing and resolving very unique problems. Normal government training provided these individuals is not adequate to prepare participants to address the very unique problems which arose.

D. ADVANTAGES OF FLEXIBILITY AND EFFICIENCY IMPROVEMENT CITED BY USERS

Time and again the ability to be flexible was emphasized as one of the most important aspects of this new authority. This flexibility was not only applied in formation of the agreements, but also in administration. Government contract managers and contracting officer confirmed that these type OTs seem to result in a more efficient program from a cost and technical progress view. Many believe that the research was much more efficient than under a FAR-based contract since project personnel spent their time on the project rather than on non-value added reporting. Program managers reported a much easier interface with the consortium since discussions were non-adversarial. When problems arose both sides, the consortium and the government, worked to resolve the problem in their mutual interest.

E. TECHNICAL AND COST ISSUE REVIEWS

Most government managers believed that quarterly reviews, while more frequent than they would normally conduct on non-OT projects, were adequate and necessary for such complex projects. A few expressed concerns that in some consortiums there were too many project milestones. These milestones require initial establishing, administration, and individual decision making. In cases where there were extensive milestones, it seemed to be a reflection upon the consortium's need to obtain a steady flow of funds since many of its members were small organizations that had limited financing capability. Most program managers and contracting officers reported that because of the existence of cost share they were able to pay reduced attention to cost expenditure and maximum attention to program progress.

F. EASE OF ADMINISTRATION VARIES BY TYPES OF CONSORTIUMS

Project managers distinguish between horizontal consortiums and vertical consortiums. The horizontal consortiums were made up of individuals or organizations who normally compete against each other in the open marketplace. Vertical consortiums were typically made up of members who normally acted in a prime-sub relationship. In general, they stated that horizontal consortiums were much more difficult to establish and administer because of inherent mistrust among members who normally compete against each other in the open marketplace. In these cases intellectual property right negotiations were detailed and protracted.

G. COST SHARING A FREQUENT ISSUE

Program managers and contracting officers alike reported that cost sharing often was a contentious issue. Some participants offered less than meaningful in-kind cost shares which often raised concerns on whether the member was fully committed to performance of the work. In some cases, these issues involved very large contractors. The nature and amount of cost share was often an issue in negotiations, however, once established, collection of the cost share from participants did not seem to be a problem as all consortium members policed this area. Program managers' views differed with regard to the value of in-kind cost share. Some reported that cash was the only type cost share they liked. Others seemed more liberal in their views. When IR&D was proposed as cost share, some program managers required that the IR&D project control be assigned to the consortium. In this way if changes were made in the consortium arrangement, changes could be made by the consortium to the IR&D project without interfacing with the company bureaucracy. Other program managers did not deem this type control necessary. Most program managers, however, were in agreement that if an IR&D project was proposed as cost share, that the project should have a direct relevancy to the work of the consortium.

IX. SUMMARY

The federal government had created a system of acquisition reform that includes greater use of commercial practice, products, and services. The tools are available to make the acquisition system work better, faster, and less expensively. Many skeptics believe that real impacting changes will take a very long time. They believe that the existing acquisition system culture will result in slow and uninspired implementation of change.

Yet throughout the government one can find many organizations that exhibit innovative practice and aggressive action toward making a ponderous acquisition system work better, faster, and cheaper. One such organization in DoD is the Defense Advanced Research Projects Agency.

A characteristic of an innovative organization is a willingness to take high risk. In doing so the organization must come to grips with the consequences of risk taking. One such consequence is a possible higher than normal error rate. Often real advances cannot be made until new approaches are tried and fail. However, such innovative organizations accept failure as a method of learning. They operate within a culture where reasonable risk is encouraged, success is rewarded, and failure is expected, accepted, and then converted into knowledge.

DARPA has been one such organization. They have made significant advances by boldly trying a new process that promised the creation of major technological advances in a short time, at less than normal cost using non-traditional contractors and business arrangements. While these have resulted in many successes, there has been some expected failure. But there are many lessons to be learned from the experience.

Now all of DoD can experiment with the same tools initially made available to DARPA on an experimental basis. Users of these new tools would do well to learn the lessons gained by DARPA as they and DARPA add to the experience base now being monitored by DoD management, Congress, and others. Users need to create, within their own organizations, an environment supportive of risk taking, education through failure, and rapid improvement through escape from classic paradigms. The tools are now available and the time is right.

