REPORT OF THE

DEFENSE SCIENCE BOARD

TASK FORCE

ON

FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS (FFRDC) AND UNIVERSITY AFFILIATED RESEARCH CENTERS (UARC) INDEPENDENT ADVISORY TASK FORCE

JANUARY 1997

OFFICE OF THE UNDER SECRETARY OF DEFENSE
FOR ACQUISITION & TECHNOLOGY
WASHINGTON, DC 20301-3140

This report is the product of the Defense Science Board (DSB). The DSB is a Federal Advisory Committee established to provide independent advice to the Secretary of Defense. Statements, opinions, conclusions, and recommendations in this report do not necessarily represent the official position of the Department of Defense.

This report is UNCLASSIFIED.

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DEFENSE SCIENCE
BOARD

24 APR 1997

MEMORANDUM FOR THE UNDER SECRETARY OF DEFENSE (ACQUISITION AND TECHNOLOGY)

SUBJECT: Report of the Defense Science Board Independent Advisory Task Force on FFRDCs and UARCs

I am please to forward the report of the DSB FFRDC and UARC Independent Advisory Task Force (IATF) which has been chaired by Mr. Gordon England. The IATF was charged with reviewing and advising the Department on the objectives and guidelines for appropriate scope of work; organizational structure and size of the FFRDCs and UARCs; compliance with the annual DoD Management Plan; the sponsor's management processes; the level and appropriateness of non-DoD work; and the thoroughness of the FFRDC five-year review process.

This IATF is an outgrowth of a recommendation of the 1995 DSB Task Force on FFRDCs. Consistent with that earlier effort, the IATF found that DoD continues to have a need for FFRDCs with special relationships with the Department.

The IATF recommended that the work done by the FFRDCs be carefully defined and limited to that work which demands the special attributes of an FFRDC, e.g., unique competencies. Other work should be procured competitively, in a manner consistent with acquisition policy. The result will be to maintain for the Department the advantages of FFRDCs for certain work, while providing the best available service at the most reasonable price for other R&D.

This recommendation is consistent with the current direction of the Department, which has resulted in a decline in real terms in the cost of man-years of technical support over the past several years, while FFRDCs have continued to deliver high-quality work as judged by their customers. The IATF guidance is to encourage continuation and acceleration of that process.

Because of the unusually strong adverse reactions to this report by the senior users of FFRDC products throughout DoD, I have attached your summary comments at Appendix O. I encourage readers to consider both IATF recommendations and DoD's reaction to them.

Craig Fields
Chairman

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DEFENSE SCIENCE
BOARD

November 21, 1996

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Report of the Defense Science Board FFRDC & UARC Independent Advisory Task Force

Attached is the initial report of the DSB FFRDC & UARC Independent Advisory Task Force. The Task Force was established in November 1995 as a standing body to provide advice on DoD's management of its 11 Federally Funded Research and Development Centers (FFRDC) and 6 University Affiliated Research Centers (UARC). This report is limited to FFRDCs. The UARC review will be conducted in the early spring of 1997, with a report expected to be published in the first half of 1997.

The Task Force was briefed by all of the FFRDCs and their sponsors. It also received briefings from the OSD, GAO, DoD IG and selected private sector personnel. The Task Force visited several of the FFRDCs and reviewed relevant audits and studies, including previous DSB studies on the FFRDCs. The findings and recommendations in this report are the unanimous conclusions of the Members of the Task Force.

In meeting its assigned responsibilities, the Task Force examined both DoD management policy level issues and individual FFRDC management practices. It concluded that the policy level issues are the most important and indeed drive the individual management practices. Accordingly, this initial report places primary emphasis on the DoD level issues.

While the Task Force noted a number of positive trends (including recent cost reductions and maintenance of high quality), the Task Force also concluded that the current FFRDC management system does not provide the best available service at the most reasonable cost.

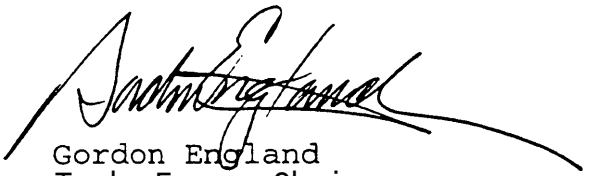
Task Force conclusions are based on findings that much of the work currently being done in the FFRDCs, while of high quality, is not of a special R&D nature that demands an FFRDC. The DoD reliance on FFRDCs is isolating it from sources of new technology, and will hinder the Department's ability to get the best technical advice in the future.

The Task Force developed several recommendations to deal with the problems that were identified. First, the Task Force recommends that the work done by the FFRDCs be more carefully defined and limited to only those special R&D activities that demand the attributes of an FFRDC. To accomplish this, the current core work statements must be significantly revised. Although some work has already been done in this area, the current core statements still remain far too general.

The second major recommendation is to insert competition into the management of this important R&D element. To do this, all the work that will no longer be in the new core work statements should be competed. In cases in which the revised core work statements result in less than critical mass for an FFRDC, the FFRDC should be terminated and all of its work should be competed.

The third major recommendation addresses the implementation of change. The Task Force recommends that the DoD effect implementation of a competition transition plan by the beginning of FY 98 and that the DoD FFRDC management plan be revised to conform to these recommended changes.

It is imperative that the DoD revise their FFRDC management practices. Competition and access to broad commercial resources are critical for the DoD to meet current needs and to ensure future military dominance.



Gordon England
Task Force Chairman

TABLE OF CONTENTS

Executive Summary

Task Force Charge

The Defense Science Board FFRDC & UARC Independent Advisory Task Force was established in November 1995 to provide advice on DoD's management of its 11 Federally Funded Research and Development Centers (FFRDC) and 6 University Affiliated Research Centers (UARC).[1]

The Task Force is charged with reviewing and advising the Department on: the objectives and guidelines for appropriate scope of work, organizational structure, and size of the FFRDCs and UARCs; compliance with the annual DoD Management Plan; the sponsor's management processes; the level and appropriateness of non-DoD work; and the thoroughness of the FFRDC five-year review process.[2]

The Task Force will also periodically review selected FFRDC and UARC programs and conduct an independent semi-annual review of progress against recommendations. This report is limited to FFRDCs. The UARC review will be conducted in the fall of 1996 and the report published in the first half of 1997.

This is the initial report of the Task Force. The findings and recommendations in this report are the unanimous conclusions of the Members of the Task Force.

Background

The current FFRDCs were established to meet specific DoD needs, e.g., to provide operations research and analyses support for the Services (Project RAND), the OSD and JCS (IDA), or to provide scientific and engineering support involving launch, space, and ground support systems. When they were created, the defined tasks for all the FFRDCs were such that other competitive sources were not available to fill the need. For example, no commercial space industry existed in 1960 when Aerospace was created to meet a clear national security need. There were, therefore, very valid reasons for the establishment of special capabilities to address these government needs. The FFRDCs were organized to address well-defined tasks and used their special characteristics to meet government needs. Costs, while of interest, were not paramount. The focus of FFRDCs was on the value of the product—for example, could the Nation develop and build a workable strategic defense against air attack? The products were immediately used by the government clients. Billions of dollars were spent on the strategic air defense system developed with the assistance of Lincoln Laboratory. RAND analysts, using operations research techniques, discovered and outlined the vulnerability of the U.S. Air Force to strategic attack. There was immediate feedback and further investigation to determine ways to reduce identified vulnerabilities, to improve air defenses, and to launch successfully reconnaissance satellites that

[1] A list of Task Force members is at Appendix K.
[2] The Terms of Reference are at Appendix J.

provided some assurance against surprise attack. These were all important needs and at the time constituted special research and development activities that merited the use of FFRDCs.

Findings

The situation that the Task Force observed during its review differs substantially from these origins. Much of the work currently being carried out in the FFRDCs is not special R&D that cannot be done elsewhere. For example, operations research is applied to issues as diverse as management of aircraft departure queues, optimal use of shared production lines in a manufacturing plant, and setting capacity levels in service industries such as car rental. Space, while still a hostile environment, has spawned a robust U.S. industry supporting both defense and commercial activities. The commercial electronics and communications industries are exploding with new information technologies, global communications networks, and applications for data transfer and analysis that were thought to be impossible only a few years ago. The DoD is faced not only with a new post-Cold War security world, but a new technology world as well.

In this new environment, the DoD often assigns to the FFRDCs on a sole-source, non-competitive basis work that could be done by others, either in the government or more likely by the private sector.[3] The assignment often appears designed to preserve the strategic relationship that is said to exist between the FFRDC and its primary sponsor, to maintain competency in areas defined as core, and ultimately to preserve the current organizational structure. According to a 1994 DoD Inspector General's report, for example, sponsors' justification for assigning work includes the unique expertise or knowledge of the FFRDC, ease and quickness of assigning the work, and the independence and objectivity of the FFRDC.[4]

Although at the time of their original establishment the individual FFRDCs may have had specific capabilities that allowed them to meet DoD needs most effectively, the current statements of core competencies are too broad. For example, strategy and doctrine, force development and application, resource management, system development and acquisition, and technology assessment and application are typical and common to several FFRDCs as well as to many private sector and government organizations. The FFRDCs, according to sponsors' evaluations, do high-quality work. Yet in many cases the work might be done elsewhere--possibly better. The Task Force is particularly concerned about the possibility that the FFRDCs no longer maintain excellence in the latest technologies, particularly software and communications technology that is developing rapidly in the private sector spurred on by competition in the market. In such cases, the FFRDCs may no longer be the best source of advice on tasks they now perform.

In response to concerns about costs, value, and the continued use of the organizations, the DoD (and the individual sponsors) has developed an oversight process to help ensure that FFRDC usage is appropriate; however, this process has become increasingly burdensome. Study plans

[3]Office of Federal Procurement Policy Letter 84-1 (see Appendix N) and FAR 35.017-1 specifically prohibit FFRDC from competing for work.

[4]Office of the Inspector General, Department of Defense, *Contracting Practices for the Use and Operations of DoD-Sponsored Federally Funded Research and Development Centers,* Report No. 95-048, December 2, 1994, p. 11.

are overseen by numerous General Officers and high-level civil servants. The FFRDCs are subject to numerous audits and reviews. The management oversight and feedback mechanisms, however, have not focused hard enough on whether any or all of the work could be accomplished better using other sources.

Conclusions

The Task Force examined both overall DoD management policy issues and specific management practices that exist at the FFRDC/Sponsor level. Based on capabilities known to exist in commercial firms in operations research, systems integration and analysis, technology assessment, and other core competencies of the FFRDCs,[5] the Task Force has concluded that the current system may not provide the best available service at the most reasonable cost.

This conclusion reflects the Task Force's concerns that these organizations are doing work that might more appropriately be done elsewhere, and that because of their special relationship with sponsors and the lack of competition in awarding their work, the FFRDCs have insufficient incentive to innovate and maintain their access to and awareness of technological innovations in the private sector.

In its examination of management policy and practices, the Task Force found that many of the problems with specific management practices identified at the FFRDC/Sponsor level are principally the result of management policy decisions at the DoD level. Accordingly, the Task Force's recommendations emphasize actions at the DoD policy level.

Recommendations

The Task Force has several recommendations to improve the current situation. These recommendations apply principally to the Studies and Analyses and Systems Engineering and Integration FFRDCs. The Task Force will make final recommendations with regard to the three FFRDC laboratories when it has completed its review of the UARCs.

Accurately Define FFRDC Work

The Department must carefully define those limited special R &D activities that demand the attributes of an FFRDC. These tasks can continue to be assigned to FFRDCs. All other tasks that do not require the attributes of an FFRDC, and for which there are other possible providers, should be competed. Congressional ceilings have already forced sponsors to discriminate more clearly those tasks appropriate for FFRDCs; this process needs to continue.

The reason for undertaking this problem redefinition and refinement is to ensure the availability of the best capabilities in the future. The DoD must manage all R&D capability to achieve

[5] Universities and major corporations have strong capabilities in these areas. Industrial engineering emphasizes operations research and decision-support systems; firms like IBM and EDS are based on systems integration and management; and major high-technology firms and a large number of specialized consulting firms depend on technology assessment and forecasting in making major investment decisions.

particular goals rather than simply to ensure the survival of particular organizations. Lincoln Laboratory was originally established to achieve a particular goal—and met that goal. MITRE was established to implement the technology that Lincoln Laboratory developed with regard to strategic air defense and did a fine job. These were distinct activities, well structured, with specific goals. The original Studies and Analyses Centers were less focused on a particular task, but they too, at the time they were established, had special analytical skills. In general, that is no longer the case. The Department needs to return to its original approach--use FFRDCs to meet its special R&D needs, and use other, more effective capabilities when available.

Many FFRDCs receive funding and tasking from sources other than their primary sponsor. The Task Force has concluded that other government agency tasking through the primary sponsor may be appropriate in some limited cases, although the system needs to be reviewed. In many cases, passing money through the primary sponsor results in delays in funding, increases FFRDC costs, and raises questions about the importance of the long-term strategic relationship with the primary sponsor.

An important part of developing an accurate definition of the problem and identifying special R&D needs that properly fit the definition for FFRDC work is restricting the core capabilities of the FFRDCs to what is uniquely needed from an FFRDC. The Task Force has carefully read the core statements of the centers. (These can be found in Appendices B through I.) The statements are too general to be usefully applied in a rigorous examination of the need to continue the individual FFRDCs, or to assign specific work tasks to them.

Revise the core statements for each FFRDC to include only those special R&D activities for which there are no alternative sources. The special R&D activities should be project specific and end result oriented rather than FFRDC capabilities oriented.[6] All included activities must have only RDT&E funding. These new core statements are to be the basis for continued contracting with the FFRDCs.

The Task Force expects that the governmental function of redefining the core capabilities statements, combined with accurately defining problems, will have the effect of significantly reducing the size of the FFRDCs in almost all cases. In particular, the activities of the Systems Engineering/Integration FFRDCs, Aerospace and MITRE C^3I, are expected to be further reduced because there are numerous other sources available to do much of the remaining work.[7] The Task Force believes that properly defining the tasks best performed by the FFRDCs and competing the remaining tasks will reduce costs and will provide DoD with better access to new technology and the best advice.

[6] OFPP Policy Letter 84-1 requires that sponsoring agreements include descriptions of the FFRDCs mission, general scope of effort, and its role in furthering accomplishment of the sponsoring agency's role, and be sufficiently descriptive to differentiate from work that should be performed by a non-FFRDC. See Appendix N for the full text.

[7] Other sources include large systems integration firms such as EDS and IBM, as well as a wide variety of smaller firms.

Authorize an independent agency, such as the Defense Science Board, the OSD Office of Acquisition Reform, or the Competition Advocates within the Services, to review the revised FFRDC core statements to assure compliance with OFPP Policy Letter 84-1.

It is important that an independent review of the core statements and an audit of work being done be accomplished to ensure compliance with established policy. The Task Force will also be examining the revised statements as a part of its future audits.

Use Competition

The use of FFRDCs results in the absence of competition. The Task Force believes that the lack of competition in awarding tasks to FFRDCs prevents sponsors from having good information on the cost and capabilities of alternative sources to meet their needs. The Task Force believes that the lack of competition for much of the work currently being done in the FFRDCs is not justified, nor in the long run is it in the best interests of the DoD.

The Task Force considered several alternatives for managing this important portion of the R&D effort. One alternative is to continue to pursue DoD's current management approach of reinforcing the rationale for the work currently being done within the construct of the FFRDCs. This rationale stresses the special relationship between the FFRDCs, their sponsors, and the rest of industry, based on their independence and lack of bias, and the breadth of their core competencies. The Task Force sees several problems with this approach. One of the most important is that the supporting rationale has become increasingly burdensome. Another alternative is to eliminate the use of the FFRDC designation in the DoD and open all this work to competition. Long-term, special relationships would still be sought, but through the terms and conditions of long-term, competitive contracts. The Task Force believes that a middle ground can emerge when the DoD refines the core statements, restricting the FFRDCs' work programs to match the limited special R&D needs that exist. However, the remaining required FFRDC structure may be unsustainable.[8]

If this is the case--that is, if the current FFRDCs shrink to a size below a critical mass in which the work load and funding available are insufficient to finance the hardware, software, and skills required to maintain core competencies—then the DoD should consider free and open competition of all current FFRDC work. Many private sector organizations already have the essential long-term relationships with clients and are accustomed to working in open systems which avoid bias toward particular vendors or technologies while focusing on meeting customer needs. Testimony to the Task Force by representatives from McKinsey, a management consulting firm, and Perot Systems, a systems integration and management firm, confirmed that they often maintain long-term relationships with major clients which include access to sensitive data, strategic decisions, and technology developments.

[8] The 1996 Management Plan for FFRDCs and UARCs (see Appendix A) expresses DoD's concern that further funding reductions could force these institutions below the level needed to maintain critical core competencies.

Develop a competition transition plan by April 1, 1997 to: 1) compete all current FFRDC work not included in the revised core statements, and 2) if the DoD concludes that the new core statements result in less than a critical mass for an FFRDC, terminate the FFRDC and compete all of the current work.

Effect implementation of the competition transition plan by the beginning of FY98.

Implementing the Change

The annual DoD FFRDC Management Plan is the operative document within the Department which provides guidance to the sponsors.[9] It is important that the Plan be revised to reflect these recommendations. Further, the potential for conflict of interest inherent in assigning the Office of OSD Studies and FFRDC Programs responsibility both for sponsoring individual FFRDCs (IDA and NDRI) and for the Management Plan and oversight of all FFRDC activities needs to be eliminated. [10]

Revise the DoD FFRDC Management Plan to reflect the above recommendations. Eliminate the dual role responsibilities of the OSD office which both sponsors FFRDCs and manages DoD FFRDC activities.

[9] The most recent Management Plan, dated May 1, 1996, is reproduced as Appendix A.

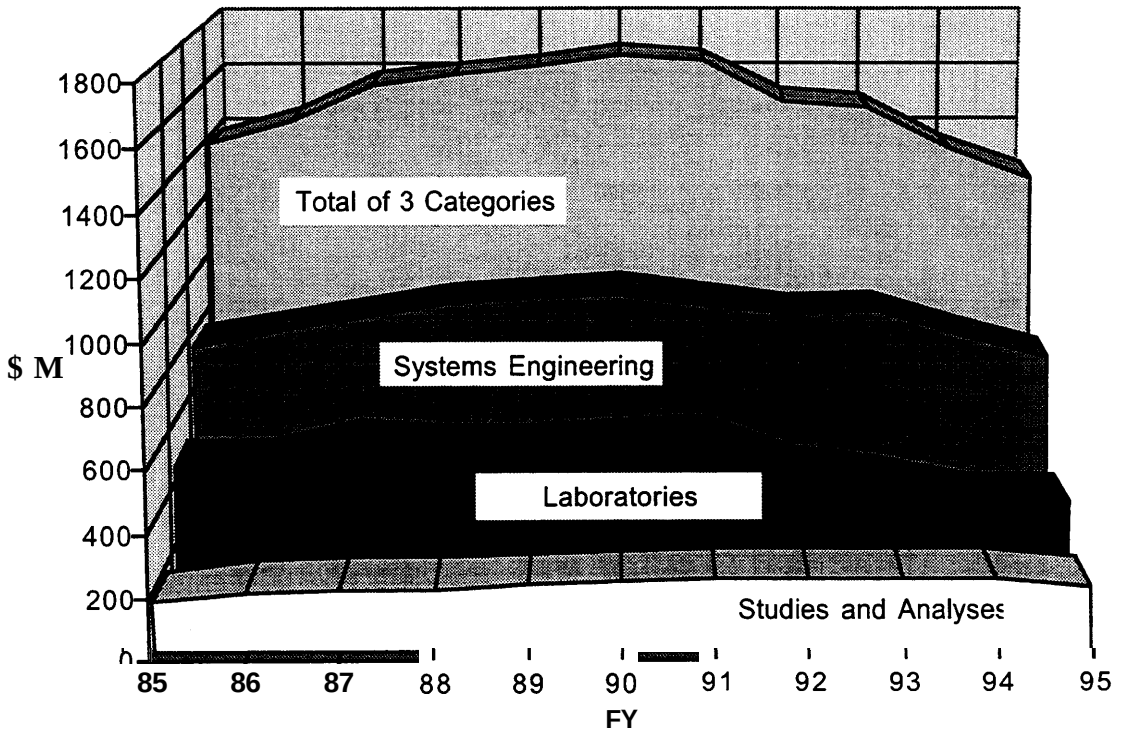
[10] The Office of OSD Studies and FFRDC Programs falls under Acquisition Program Integration, a division within the Office of the Under Secretary of Defense for Acquisition and Technology (USD(A&T)). DDR&E is also within USD(A&T).

Initial Report of the Defense Science Board (FFRDC) & University Affiliated Research Center (UARC) Independent Advisory Task Force

OVERVIEW

Between the onset of World War II and 1991, more than 70 federally funded research centers were established to support the U.S. defense effort. These centers grew out of the laboratories and research groups created by the federal government for defense research during World War II. Today eight agencies, including the DoD, fund 39 federally funded research and development centers (FFRDCs). The maximum number of such centers supporting the DoD in existence at any one time was 43, in 1961. Although DoD reviews have repeatedly affirmed a continuing need for such centers, many individual centers have been either discontinued because they were no longer required or, far more commonly, decertified as FFRDCs and continued, sometimes on a not-for-profit basis, without the FFRDC designation. Currently, there are 11 DoD FFRDCs, grouped into three categories: Studies and Analyses Centers, Systems Engineering and Integration Centers, and Laboratories.

Figure 1: Obligations by FFRDC Category
Constant 1995 Dollars



The 11 currently active DoD FFRDCs are shown in Table 1. In FY 95, they had budget authority of about $1.253 billion. They have an overall budget limit established by Congress for FY 96 of $1.163 billion. This $1.163 billion is also a ceiling, the total amount that can be spent. Less money might be spent. Funding trends over the past decade are shown in Figure 1.

Table 1: DoD's Federally Funded Research and Development Centers

FFRDC	Parent organization	Primary sponsor	FY 1995 Obligations ($ millions)	1995 MTS	FY 1996 STE (Staff Years)	FY 2000 STE (Staff Years)
Systems Engineering and Integration Centers						
Aerospace	The Aerospace Corp.	Air Force	$335	1,910	1,765.0	1,765.0
MITRE C^3I	MITRE Corporation	Assistant Secretary of Defense (C^3I)	$374	2,109	1,895.0	1,895.0
Subtotal			$709	4,019	3,660.0	3,660.0
Studies and Analyses Centers						
Arroyo Center	RAND Corporation	Army	$20	99	96.8	104.0
Project Air Force	RAND Corporation	Air Force	$24	112	113.0	113.0
National Defense Research Institute	RAND Corporation	OSD	$19	105	103.9	106.0
Center for Naval Analyses	The CNA Corporation	Navy	$47	238	233.5	266.0
IDA-Studies and Analyses/Operational Test and Eval. Ctr.	Institute for Defense Analyses	OSD	$68	377	352.5	382.3
Logistics Management Institute	Logistics Management Institute	OSD	$29	166	148.0	156.0
Subtotal			$207	1,097	1,047.7	1,127.3
Research and Development Laboratories						
Lincoln Laboratory	Massachusetts Institute of Technology	Air Force	$275	1,018	920.0	920.0
Software Engineering Institute	Carnegie-Mellon University	Defense Advanced Research Projects Agency	$29	170	155.3	188.7
IDA-Communications and Computing	Institute for Defense Analyses	National Security Agency	$33	142	133.5	150.0
Subtotal			$337	1,330	1,208.8	1,258.7
Total			$1,253	6,466	5,916.5	6,046.0

Note: Command, Control, Communication, and Intelligence (C^3I); Office of the Secretary of Defense (OSD).

MTS (Members of the Technical Staff) includes the direct professional labor of scientists, engineers, researchers, mathematicians, analysts, economists, and others who perform professional-level technical work. MTS is defined as 1,810 hours of full-time professional effort and does not include subcontracted effort.

STE (Staff Year of Technical Effort) is the new measure being used by DoD. It is defined to be 1,810 hours of paid effort for technical services and includes both FFRDC employee and subcontracted consultant technical effort.

The cost of both MTS and STE hours includes a prorated share of support staff (secretaries, technicians, office maintenance, computer services, etc.) and therefore the MTS and STE totals do not represent the total employment of the FFRDCs.

Source: OSD and the General Accounting Office.

BACKGROUND

The current FFRDCs are different in size, funding, mission, and use. Nine of the centers are run by non-profit corporations. Two (SEI and MIT Lincoln Laboratory) are run by universities. The MITRE C^3I FFRDC, Aerospace, and MIT Lincoln Laboratory are all significantly larger and funded at much higher levels than the other centers.

Most of the FFRDCs are *industrially funded*, meaning that within the financial ceilings imposed on their DoD work, the actual work is funded by the individual organizations within the DoD who wish to use their services. This funding is typically passed through to the FFRDC via a single contract that the sponsoring agency holds with the FFRDC. But some of the FFRDCs are directly funded through budget line items. RAND's Project Air Force, for example, is funded as a line item in the congressionally appropriated budget for the DoD. The Arroyo Center at RAND and the Center for Naval Analyses are also principally funded through a line item in the DoD budget. Line item funding is said to have the benefit of separating the funding decisions from the immediate Department for which a FFRDC is doing studies although, as a practical matter, the decisions on the level of funding to be requested (or, in the current case, the level-of-effort made available) each year still comes from the sponsoring agency. Industrial funding, on the other hand, is said to have the benefit of more closely associating the project sponsor with the cost of the project.

Each FFRDC has an individual contract except for the MITRE C^3I which has two contracts, one with the Air Force and one with the Army. Several of the FFRDCs have multiple agencies as users, including non-DoD work. This multiple use appears to complicate oversight (because it takes time to coordinate different objectives and schedule demands from multiple user organizations).

The government documents governing the establishment and management of FFRDCs do not define them in terms of organizational structure—indeed, OFPP Policy Letter 84-1, the basis for DoD FFRDC policy, specifically notes that "FFRDCs do not have a prescribed organizational structure." Instead, FFRDCs are defined by criteria related to the organizations' activity and their relationship to a government agency. The Letter states that all of the following criteria should be met before an activity is identified as an FFRDC:[11]

- The activity should perform, analyze, integrate, support (non-financial) and/or manage basic research, applied research, and/or development. (Specifically excluded are activities primarily engaged in routine quality control and testing, routine service activities, production, mapping and surveys, information dissemination, and performance of commercial activities [non-R&D] which are governed by OMB Circular No. A-76.)

- Performance is either upon the direct request of the Government or under a broad charter from the Government, and the results are directly monitored by the Government.

[11] See Appendix N for the full text of OFPP Policy Letter 84-1.

- The majority of the activity's financial support (70% or more) is received from the Government.
- In general, most or all of the facilities are owned by the Government or funded, under contract, by the Government.

- The activity is operated by a university, consortium of universities, other non-profit organization, or an industrial firm as an autonomous organization or as an identifiable separate operating unit of a parent organization.

- A long-term relationship evidenced by specific agreement exists between the operator of the activity and its primary sponsor.

In addition to these criteria, the Letter notes that the relationship between the activity and the Government should exhibit several other characteristics in order to qualify as an FFRDC:

- The activity is brought into existence at the initiative of a Government agency or bureau to meet some special research or development need which, at the time, cannot be met as effectively by existing in-house or contractor resources.

- Work from other than a sponsoring agency is undertaken only to the extent permitted by the sponsoring agency and in accordance with the procedures of the sponsoring agency.

- The activity has access, beyond that which is common to the normal contractual relationship, to Government and/or supplier data, employees, and facilities needed to discharge its responsibilities efficiently and effectively, whether the data is sensitive/proprietary or not.

- The primary sponsor undertakes the responsibility to assure a reasonable continuity in the level of support to the activity consistent with the agency's need for the activity and the terms of the sponsoring agreement.

- The activity is required to conduct its business in a responsible manner befitting its special relationship with the Government, to operate in the public interest free from organizational conflict of interest, and to disclose its affairs (as an FFRDC) to the primary sponsor.

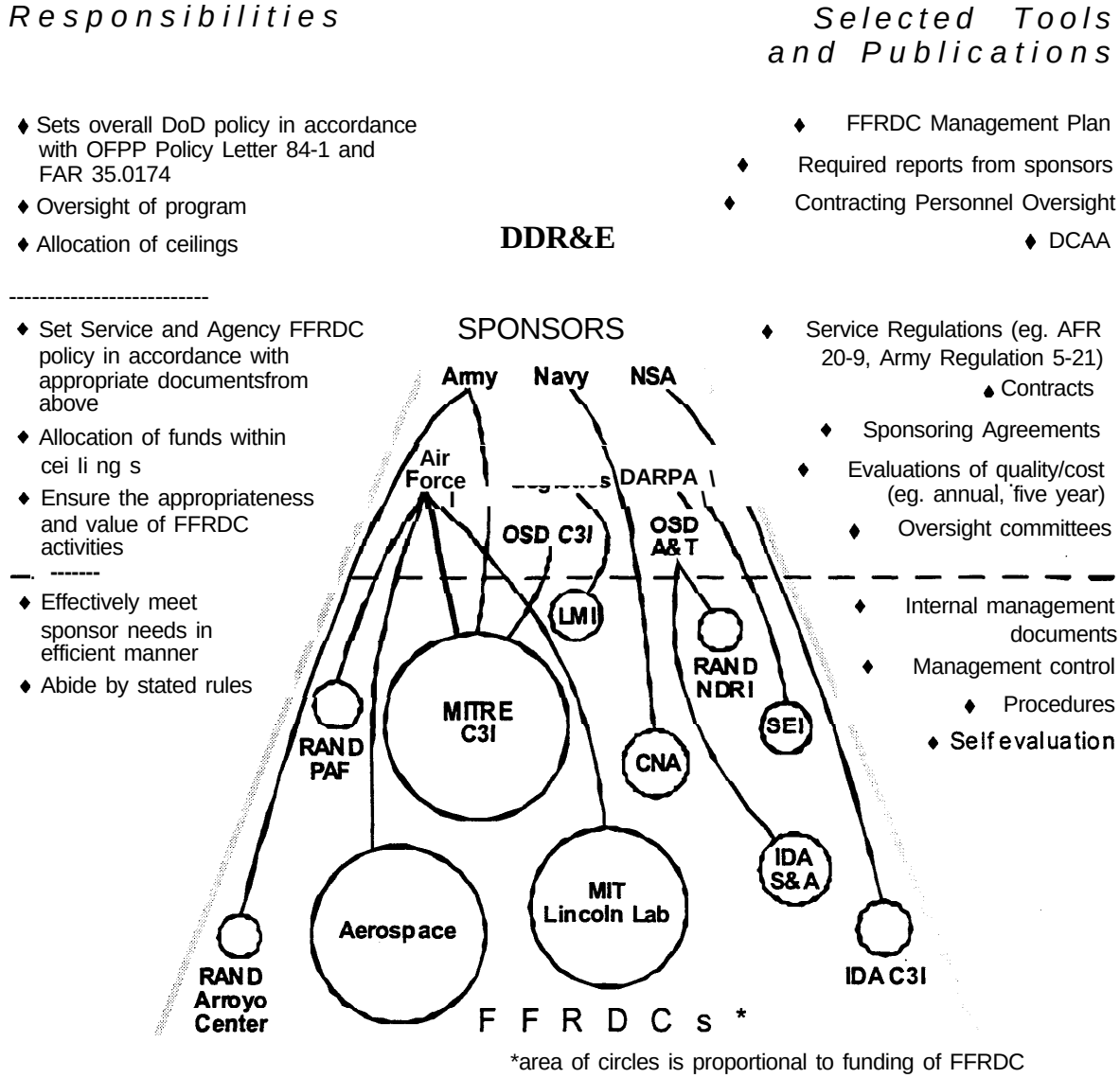
DoD FFRDC Management Structure

Overall management of the U.S. Government's FFRDCs is governed by congressional legislation and executive branch regulation. The Office of Federal Procurement Policy within the Office of Management and Budget (OMB) establishes government-wide policy on the use and management of FFRDCs. As noted above, OFPP Policy Letter 84-1 provides policy guidance on FFRDCs. This guidance is implemented in FAR 35.017.[12]

[12] Also reproduced at Appendix N.

The current DoD FFRDC management structure is outlined in Figure 2. The Director of Defense Research and Engineering (DDR&E) is responsible for developing overall policy for the DoD's FFRDCs, and in turn reports to the Deputy Secretary of Defense through the Under Secretary of Defense for Acquisition and Technology. The DDR&E communicates DoD policy and detailed implementing guidance to FFRDC sponsors through a periodically updated management plan (last updated 1 May 1996; see Appendix A). The DDR&E ensures that the Staff Years of Technical Effort (STE) are consistent with DoD policy. Establishing STE levels essentially establishes the funding level for each FFRDC. Funding is guided by the level of the overall congressional ceiling on FFRDC funding and DoD requirements. The DDR&E also monitors the mechanisms used by the FFRDC sponsors to ensure the appropriateness and value of the FFRDC activities, and oversees the implementation of the DoD FFRDC Management Plan.

Figure 2: DoD FFRDC Management



Source: DSB Task Force

The OSD, Military Services, and Defense Agencies sponsor individual FFRDCs. The primary sponsor awards and administers the 5-year contracts after establishing or subsequently revalidating the continued need for the FFRDC. Federal policy allows agencies to award these contracts non-competitively.

The sponsor of each FFRDC is responsible for ensuring that the FFRDC is being properly utilized, that work being done is consistent with the FFRDC's core statement, that the costs of the goods and services are reasonable, and that products are of high value. Sponsors are responsible for certifying the existence of the special R&D need and that there is no alternative source to meet that need. The sponsor also has the responsibility to assure a reasonable level of support to the FFRDC, consistent with the Agency's needs and the terms of the Sponsoring Agreement.

The FFRDCs and their parent institutions must meet their clients' needs in an efficient manner. Unlike a non-FFRDC, a FFRDC, brought into existence at the initiative of the Government, accepts restrictions on its ability to compete for other government or commercial business. These restrictions are intended to (1) limit the potential for conflicts of interest when FFRDC staff have access to sensitive government or contractor data, and (2) allow the FFRDC to form a special, or strategic, relationship with its DoD sponsor. The FFRDCs have their own set of management tools to ensure that these needs are being met, that funds are properly accounted for and costs controlled, and that high-quality products are produced.

The Task Force was briefed by the OSD FFRDC Management Office on the current DoD Action Plan to implement controls on the FFRDCs. The plan is summarized in Box 1.

Box 1 DoD ACTION PLAN

The Plan requires sponsors to define the "core" work of the FFRDCs in terms of mission, purpose, and capability specific to:

- Sponsor(s) mission and operations
- Strategic relationship with sponsor(s)
- Criteria for reviewing/assigning core and non-core work
- Criteria for reviewing/approving non-DoD work at FFRDCs and Parent Institutions

Sponsors were directed to identify inappropriate non-core work and develop plans to terminate such work. Reports were due to DDR&E by January 1996.

The Air Force volunteered to develop a plan for experimental competition for some work now performed by the Systems Engineering and Integration FFRDCs.

An Independent Advisory Task Force (the current Task Force) with the responsibility to review and provide advice on DoD's FFRDC management was established.

The DoD defined "core" work levels using Management Plan guidelines in terms of Staff Year of Technical Effort (STE). This procedure was used to set annual and projected core requirements that were reported to Congress.

The DoD plans to work to remove Congressionally-imposed compensation limitations unique to FFRDCs to preclude degrading high-quality support.

DoD plans to implement revised guidelines for management fee (these are included in the new Management Plan). Changes include: moving allowable costs out of fee and reducing fees accordingly; establishing consistent policies on ordinary and necessary costs; and revising regulations and management plans.

Finally, OSD plans to work to establish DoD control on "core"' as the preferred alternative to Congressionally-imposed fiscal ceilings on FFRDCs.

Source: OSD

Recent DoD Concerns

Over the years, there have been a number of concerns raised about the Government's use of its FFRDCs. In recent years complaints have included allegations that the FFRDCs were doing work that could more appropriately be done by for-profit firms. A series of studies has examined the use of FFRDCs.[13] The most recent DSB study, the Defense Science Board Task Force on the Role of Federally Funded Research and Development Centers in the Mission of the Department of Defense, reported its findings in April 1995. Key findings of that DSB report are found in Appendix M.

One of that Task Force's principal findings was that there is a lack of trust among private sector firms regarding the DoD's use of its FFRDCs arising from a lack of transparency in the Department's FFRDC management process. To address this trust issue that Task Force reported that it believed new management tools needed to be put in place to provide transparency into the DoD decision processes. It recommended that an independent review panel from outside DoD be established to systematically review and advise the Department on its management, use and oversight of its FFRDCs. This Defense Science Board FFRDC & UARC Independent Advisory Task Force was established as a result of that recommendation.

Task Force Terms of Reference

The Defense Science Board FFRDC & UARC Independent Advisory Task Force was established in November 1995 to provide advice on, and to help establish guidelines for, DoD's management of its Federally Funded Research and Development Centers and University Affiliated Research Centers. [14]

The Task Force is specifically charged with reviewing and advising the Department on:

- the objectives and guidelines for appropriate scope of work, organizational structure, size, appropriateness of customers, etc.;
- compliance with the annual DoD Management Plan for FFRDCs and UARCs;
- the various DoD sponsors' management processes for FFRDCs and UARCs;
- the level and appropriateness of non-DoD work, to include work for other than the sponsor, in addition to non-DoD work, undertaken by DoD FFRDCs and UARCs; and

[13] For example, Inspector General, Department of Defense, *Contracting Practices for the Use and Operations of DoD-Sponsored Federally Funded Research and Development Centers,* Audit Report No. 95-048, December 2, 1994; Office of Federal Procurement Policy, Office of Management and Budget, *Summary Report on the Adequacy of Federal Oversight of Federally Funded Research and Development Centers,* November 1993; and Subcommittee, on Oversight of Government Management, Committee on Governmental Affairs, United States Senate, *Inadequate Federal Oversight of Federally Funded Research and Development Centers,* July 1992.

[14] A list of Task Force members is at Appendix K. The Terms of Reference are at Appendix J.

- the thoroughness of the FFRDC Five-Year Review process.

The Task Force will also periodically review selected FFRDC and UARC programs and conduct an independent semi-annual review of progress against recommendations.

Scope

This is the initial report of the Task Force. It concentrates on the management of the Department's FFRDCs. The Task Force's review of UARC management will be conducted in the fall of 1996 with a report planned for the first half of 1997.

The OSD directive that the Task Force review and provide advice on appropriate scope of work, organizational structure, size, and appropriateness of customers, mandates that the Task Force examine the overall DoD management of these important assets, as well as the operations of individual FFRDCs and the management activities of their sponsors. Thus the Task Force has sought to understand the entire management flow from the DDR&E to the FFRDCs. The focus has had the benefit of illuminating several broad DoD management policy issues that the Task Force believes must be addressed, if the work that the FFRDCs are currently doing is to be effectively managed and FFRDCs are to continue to be available in the future. The Task Force has divided its findings into two categories: (1) **management policy issues** that affect the overall structure and relationship of the FFRDCs to the DoD and their individual sponsors, such as definition of core competencies, competition, and special relationships, and (2) **specific management practices** applied in the more generalized FFRDC management policy structure, such as funding, oversight, and five-year reviews.

Approach

In performing its tasks, the Task Force reviewed previous reports, regulations and directives related to FFRDC management, and examined documentation provided by the FFRDCs and their government sponsors. The Task Force was briefed by all of the FFRDCs' management teams, by the FFRDC primary sponsors, by some additional sponsors and by other individuals and organizations with relevant information (Table 2). The Task Force has received excellent cooperation from the FFRDCs and their sponsors.

The Task Force held its initial meeting in Washington, DC on December 12-13, 1995. At that meeting, the Task Force received briefings on overall Department of Defense management and oversight of the FFRDC from the OSD staff, and on specific FFRDC management issues from two FFRDCs (Lincoln Laboratory and the Center for Naval Analyses) and their government sponsors. The Task Force also heard from the Professional Services Council, an organization of private sector firms. At that meeting the Task Force made the decision to visit as many FFRDCs as was practical.

The Task Force subsequently visited The Aerospace Corporation on January 31, 1996; RAND Corporation on February 1; and the MITRE Corporation on March 1. A meeting was held at the

Institute for Defense Analyses on April 9. In addition to IDA and its sponsors, this meeting also included briefings from the Logistics Management Institute (LMI), the Software Engineering Institute (SEI) and their primary sponsors. The Task Force also received briefings on April 9 from two representatives of for-profit management consulting firms engaged in providing commercial (non-defense) strategic advice and support. The two representatives described long-term strategic relations in the commercial sector. The Task Force held a final FFRDC wrap-up meeting at CNA on May 22. At that meeting the Task Force heard from representatives of the DoD Inspector General's Office and the General Accounting Office, and received wrap-up briefings from several of the FFRDCs. The agendas for each of the meetings are found at Appendix L.

Meetings of the Task Force, with the exception of classified portions and Task Force organizational planning, have been open to the public.

Table 2: Meeting Schedule

Date	Location	Briefers
12-13 December 1995	U.S. Air Force Association Alexandria, VA	• OSD FFRDC Office • MIT Lincoln Laboratory and primary sponsor • Center for Naval Analyses and primary sponsor • Professional Services Council
31 January 1996	RAND Corporation Santa Monica, CA	• RAND Corporation, its FFRDCs, and their primary sponsors
1 February 1996	The Aerospace Corporation El Segundo, CA	• Aerospace Corporation and primary sponsor
1 March 1996	The MITRE Corporation Bedford, MA	• MITRE Corporation and sponsors
9 April 1996	Institute for Defense Analyses Alexandria, VA	• Institute for Defense Analyses, its FFRDCs, and primary and secondary sponsors • Logistics Management Institute and primary sponsor • Software Engineering Institute and primary sponsor • Representatives from commercial advisory firms
22 May 1996	Center for Naval Analyses Alexandria, VA	• DoD Inspector General • General Accounting Office • Additional comments from FFRDCs

FINDINGS[15]

Some Positive Trends

The consensus among those interviewed by the Task Force, both inside and outside government, is that the DoD's management of its FFRDCs has improved recently as a result of attention from top level acquisition officials. Sponsors and other users of the FFRDCs told the Task Force that they are pleased with the quality of the work being done by the FFRDCs. They view the work assigned to the FFRDCs as essential and, with few exceptions, of high quality.

The Task Force identified some positive trends. For example, almost all the FFRDCs report that the cost of Man-Years of Technical Support (MTS) has declined in real terms over the past several years. These reductions appear to have been the result of FFRDCs becoming more efficient in response to congressionally mandated ceilings. The management of several FFRDCs acknowledged the connection and noted that while they believed that their organizations would have become more efficient even in the absence of such ceilings, the ceilings had focused their attention. The FFRDCs report an awareness of the need for cost, as well as quality, control. There are a number of cost control initiatives among the centers: restructuring and reducing management positions, redirecting support staff, and eliminating non-essential activities.

While costs of MTS have been going down, the FFRDCs and their sponsors report that the FFRDCs have continued to deliver high-quality work. An examination of the most recent Five-Year Comprehensive Reviews reveals that in several instances, according to user surveys, the quality of the work has shown improvement over the period.[16] In their briefings to the Task Force, however, the centers and their sponsors expressed concern about whether they would be able to continue to provide the same level of high-quality work in the future. In particular, they are concerned that funding ceilings may constrain their ability to attract and retain high-quality staff.

Although there are positive trends, the Task Force's review of the Department's overall management of its FFRDCs raised a number of concerns that the Task Force believes are either not being addressed, even with increased DoD attention, or may be worsening because of the management controls currently being instituted by the Department. ***Fundamentally, the Task Force is concerned that current management initiatives, such as changes in definition of core statements and use of management fees, are either being insufficiently pursued or are dealing with marginal problems rather than addressing critical overall managementpolicy issues, and that the current managementpolicy is ultimately unsustainable.*** These concerns are addressed below.

[15] These findings are also mapped according to their relation to the Terms of Reference at Appendix J.
[16] See, for example, survey results for the Arroyo Center, reproduced in Appendix E, p. E-24.

General Management Policy Concerns

In accordance with the Task Force Terms of Reference, this report addresses both broad management policy issues and specific FFRDC management concerns. As the Task Force examined the overall DoD FFRDC management structure and considered individual activities within individual FFRDCs, it became clear that the general management policy issues are more important than specific management practices.

The Task Force concurs that the option for the establishment and use of FFRDCs by the Department should be retained. However, the Task Force is concerned that the attempt to place more activity than can be justified under the FFRDC structures jeopardizes both the work that must be done and the institutions themselves. Inadequate discrimination in assigning that work raises the burden placed on available resources. Moreover, the Task Force is concerned that the FFRDC structure, in which the lack of competition limits incentives to maintain cutting-edge capabilities, is not always the best available supplier of the work being done. For these reasons, the Task Force believes that the following management policy issues deserve immediate attention.

The Strategic Relationship

The Strategic Relationship between an FFRDC and a sponsor has become an important element of the DoD's justification for the use of its FFRDCs. The FFRDC strategic relationship has come to be used as shorthand to describe "stable and long-term relationships"[17] that are characterized by a depth of understanding of client problems, knowledge of client activities, and discretion that is difficult, if not impossible to duplicate. The relationship is a prominent element of the new FFRDC core capabilities statements and an important part of the new DoD Management Plan. However, the DoD FFRDC Core Definition Statements do not specify the Department's "special research or development needs" as identified in the original justification and as required by OFPP Policy Letter 84-1. The statements are all structured to the individual FFRDC Mission, Purpose, and Capabilities with emphasis on their Strategic Relationship and Core Competencies. While strategic relationships and core competencies are important criteria, they do not in and of themselves justify continuance.

The DoD reports that there are a number of organizations (FFRDCs, UARCs, and private firms) having strategic relationships with the DoD. These are shown in Table 3.

[17] Office of the Secretary of Defense, *DoD Management Plan* (B, 6, a).

Table 3

ORGANIZATIONS WITH STRATEGIC RELATIONSHIPS WITH DoD

- FFRDCs
  - Studies & Analyses: broadest charters; cross-cutting access and advice; high-level issues and interest; must minimize conflict potential
  - Laboratories: fill specific voids where no alternative R&D sources exist; technology development and transfer missions
  - Systems Engineering: focus on two mission areas; deep knowledge of architectures and programs; extensive involvement in acquisition
- University Affiliated Research Centers (UARCS)
  - University-administered laboratories that focus on specific technologies and/or mission areas
  - Similar to laboratory FFRDCs in most cases, with some systems engineering functions and missions (particularly at APL-JHU)
- For-Profit Firms
  - Small number of long-term relationships with divisions of for-profit firms: narrow charters; focus on specific systems or operations; typically systems engineering and SETA functions
  - Rely on contractual provisions and long-term relationship to limit parent corporation involvement in related areas

Source: OSD

Multiple studies[18] have indicated that the strategic relationship between an FFRDC and its primary sponsor is used to justify more of the work contracted to the FFRDCs than OFPP Policy Letter 84-1, the FAR, or customer requirements would justify. Neither document links the long-term relationship directly to special access (although both characteristics are discussed), nor does either document do more than suggest that the parties to the contract need to have an understanding that they are engaged in a long-term commitment in order to have the confidence to invest the needed effort to achieve the established goals. The strategic relationship is used in some of the Comprehensive Reviews to demonstrate that no other source possesses the same characteristics as the incumbent (e.g., the alternatives all lack the strategic relationship). In such cases, the relationship is being applied to justify the continued need for a particular FFRDC.

Applied in this manner, the strategic relationship prevents consideration of alternative sources of R&D available in the commercial marketplace because none of the other potential providers currently have the strategic relationship. The interpretation of the FFRDCs' relationships with their sponsors appears to provide a permanent advantage to the incumbent organizations. As a result, the sponsors may overlook alternatives. In today's rapidly changing technology environment, the Task Force believes this stance is detrimental to the DoD. The Task Force was briefed by personnel from commercial industry whose firms are engaged in non-defense strategic relationships and found that strategic relations similar to those in the FFRDCs are relatively

[18] A consistent finding of many reviews of FFRDCs over many years is that the review process used to select work is often not thorough enough to justify non-competitive assignment of work to them. For a summary of relevant reports, see, Appendix O, Office of the Inspector General, Department of Defense, Audit Report No. 95-048, op. cit.

common. For instance, management consultants such as McKinsey and system integrators such as Perot Systems and EDS have strategic long-term relationships with many of their customers/clients.

Competition

Per regulation, FFRDC services must be procured non-competitively. The Task Force is concerned that the lack of competition is having negative effects on FFRDC cost and quality. Lack of competition eliminates incentives for cost and performance improvement and, furthermore, limits DoD's ability to know whether other contractors could do the work better or at less cost. OFPP Policy Letter 84-1 and FAR 35 .017 preclude FFRDCs from competing with any non-FFRDC concern in response to a federal agency formal RFP for other than the operation of an FFRDC. The FFRDCs have generally been awarded their five-year contracts on a non-competitive basis (although Carnegie-Mellon University won a competition for SEI and the Air Force advertised the RAND PAF in a Commerce Business Daily solicitation in 1985). Recent audits by the DoD Inspector General found inadequate justification for many of the individual tasks assigned non-competitively to FFRDCs.[19] The Task Force has not had time to rigorously examine all of the individual projects of the FFRDCs for appropriateness, but its discussions with the centers and sponsors, and a review of the material provided on studies being conducted, leads the Task Force to conclude that considerable work being done at the Studies and Analyses Centers and at the Systems Engineering and Integration Centers does not involve a special R&D need and that there are now other sources to provide such work. For instance, the Studies and Analyses Centers work on political and military strategy that is the stock in trade of many universities and for-profit consulting firms.

Another common justification for awarding FFRDCs work is ease and speed of getting work started. This justification was also noted in the DoD Inspector General's audits, but not as the only reason for placing work with the FFRDCs.[20] However, service contracts with private sector firms can have the same ease and speed of getting work started. For instance, Task Order contracts, competed in response to specific needs and written with funding ceilings, can quickly accommodate new work requirements.

The failure to compete the wide range of tasks now being undertaken by the FFRDCs, but for which the centers do not possess unique attributes (other than the established long-term strategic relationship), puts the DoD at a disadvantage in gaining access to new information. The process of receiving bids and proposals provides significant information on relevant capabilities available and different approaches and technologies applicable to conducting the work. The lack of competition in this situation also ultimately affects the provider (either FFRDC or non-FFRDC firm) since it reduces the incentive to make essential productivity investments, and ultimately makes it difficult to stay on the cutting-edge of technological change.

The DoD has not dealt with a fundamental issue; namely, how can DoD rely on FFRDCs for a broad range of technical advice when much technology is being developed in the competitive

[19] Inspector General, Department of Defense, op.cit., p. 11.
[20] Ibid.

private sector?[21] This challenge is as great in the work done by the Studies and Analyses Centers as it is to the Systems Integration and Engineering Centers since rapidly developing technology affects communications, movement, force structure, acquisition, etc. The problem does not exist in areas where there is a special R&D need and no other source is available, but it does in areas where the work can be done by others.

The Task Force believes that the lack of competition for much of the work currently being done in the FFRDCs is not justified, nor in the long run is it in the best interests of the country. The lack of competition does not allow the sponsors to have information on the cost and capabilities of alternative sources to meet the sponsors' needs. The Task Force is concerned that in the absence of competition the DoD will not receive information on the potential impact of rapidly developing commercial technology opportunities that the DoD is attempting to exploit to meet many of its needs.

As more of the work now awarded to FFRDCs is competed, sponsors may determine a need to protect the programmatic corporate memory that resides with the FFRDC employees. Various alternatives should be examined to protect that corporate memory.[22]

Core Competencies

The Task Force supports the DoD policy aimed at defining core competencies and requiring that the FFRDCs concentrate on core work. However, current definitions remain too broad (e.g., strategy and doctrine, force development and application, resource management, system development and acquisition, technology application). (FFRDC Core Competencies are found in the Appendices.) Such definitions of core competencies do not restrict the work of FFRDCs to the specialized R&D needs of the DoD where no other source is available. In its discussion of its management process (see Appendix E) the Army is the most direct in stating that with regard to the Arroyo Center, the Army's only studies and analyses FFRDC, whatever work is decided upon for the year is, by definition, core work.[23] The other Centers are less direct, but the general nature of the current core definitions in practice have the same effect. One result is that it appears from both recent government audits, and from the Task Force panel members' own observations, that much of the work being done by the FFRDCs does not involve special research and development needs which cannot be met as effectively by existing in-house or contractor resources, but is necessary work (often not funded by R&D funds) that can be done by others.[24] Such work requires no skills that are not now available from other sources, nor does it require access to special information that could not be supplied to others. The fact that work

[21] Task Force observations here are supported by the Department of Defense IG finding that there is inadequate justification for much of the work assigned to the FFRDCs. Ibid., p. 19.

[22] For example, FFRDC employees could be given the same rights that civil service personnel are given in OMB Circular No. A-76 competitions, i.e., first right of refusal of positions for which they are qualified with the winning contractor.

[23] See Appendix E, p. E-17.

[24] The DoD Inspector General concluded that sponsors did not provide adequate justification for the non-competitive use of FFRDCs for 223 of the 229 projects reviewed. Furthermore, it found that sponsors had not conducted adequate market surveys to identify alternative sources. See, Office of the Inspector General, op.cit., p. 16. The Task Force review of FFRDC documentation confirmed the lack of adequate market surveys to identify alternative sources at the time of contract review.

that has been above congressional ceilings has often been sent to alternative sources calls into question the uniqueness of FFRDC products.

While the Task Force agrees that there are some important tasks for which organizations with FFRDC characteristics are essential, the Task Force has concluded that the actual amount of such DoD work is smaller than that currently being funded in the DoD FFRDC programs. In contrast to the situation decades ago, today operations research is a rigorous discipline in academia and fundamental to industrial engineering, there is broad understanding of space technologies, and there is an exploding commercial communications industry. Further, many firms, such as SAIC, CTA, and other defense contractors, study force structure, defense acquisition, and the other defense topics that comprise much of the FFRDCs' current core work statements. The sponsors acknowledge this and report that they contract with these other firms for all but the approximately $1.2 billion that goes to the FFRDCs. But under these circumstances, the current generalized core competencies are difficult to justify. The more tightly structured definitions of some (e.g., IDA's Communications and Computing FFRDC and MIT Lincoln Laboratory) appear more appropriate.

If the actual core competencies that constitute special R&D work that cannot be accomplished elsewhere as effectively are smaller than the current broad definitions suggest, then the DoD is confronted with the challenge of maintaining a critical mass of talent for a smaller absolute core. Again, competition and access to broad commercial resources are critical to meeting current needs and to ensuring that the resources are available to meet future needs.

Effects of Current Structure

The use of the current FFRDC structure to accomplish many non-FFRDC tasks limits the centers' and ultimately their customers' access to emerging technologies and world-class technical activities. As noted above, the Task Force is convinced that the fact that FFRDCs do not compete in the private sector technology market can limit their ability to access and understand essential technologies. This is different from the original concept of organizations meeting special DoD R&D needs unavailable from any other source.

The Burdens of Current DoD Policy

The DoD's development of a management structure for the current FFRDC structure and relationships (defining core capabilities and work, restructuring fees, further restricting competition and outside activities), and the oversight structure to ensure compliance, is becoming burdensome for both the sponsors and the FFRDCs. Without refined core statements that limit activities to only those that represent a special research and development need that cannot be met as effectively elsewhere, additional layers of oversight will only further detract from the FFRDCs' effectiveness.

In summary, while the Task Force finds agreement with some of DoD's current management policy decisions, the Task Force concludes that the current policy changes are inadequate to meet future DoD technology needs in a cost-effective manner. The Task Force believes that many of their findings regarding specific management practices (described below) will provide guidance that can help the DoD transition into a public-private/government-institution relationship that is more appropriate for the future.

Specific Management Practices

Management Plan

The Task Force's judgment is that the current DoD FFRDC Management Plan (see Appendix A) does not adequately address priorities and goals. The Task Force is concerned over the use of Staff Years of Technical Effort (e.g., level-of-effort) as a planning factor. Level-of-effort is an inappropriate way to manage FFRDC activities. It creates incentives to maintain staff levels, thereby de-emphasizing productivity improvements that could be achieved through application of new technologies.

The Report on the Department of Defense Five-Year Plan for Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Centers (UARCs) (see Appendix A) (hereafter referred to as the Five-Year Plan) that the Task Force received in late May addresses some of the concerns about the main management plan, but perpetuates some of the management problems identified by the Task Force. For example, the Five-Year Plan states that "the expertise each FFRDC offers the DoD is unique to the needs of the sponsors and does not represent duplication of effort that can be effectively eliminated by consolidation." The Task Force disagrees with the implication of the statement indicating that most of the work currently being done in the FFRDCs is unique. The $43 million in non-core work that the Five-Year Plan reports has been identified and is being transferred out of the FFRDCs appears to be only the beginning of the drawdown that is needed. There is now no plan to achieve that drawdown. Indeed, the Five-Year Plan forecasts a relatively stable future for the FFRDCs in terms of projected level-of-effort which discounts the possibility and need for productivity improvements.

Five-Year Reviews

OFPP Policy Letter 84-1 specifies that FFRDCs be reviewed periodically—a requirement met by the Five-Year Reviews—to determine that the sponsor's technical needs still exist, that no alternative sources are available, and that the FFRDC is meeting the sponsor's needs effectively and cost efficiently.

The Five-Year Comprehensive Reviews generally do not have a sufficient level of analysis of the continued need for the work that would be done by an FFRDC, the potential for using a specific alternative source, and the management of costs. The Reviews address all the issues required by FAR 35.017 and the DoD Management Plan, but the discussions are conducted in general terms rather than specifics.

The objective criteria specified in OFPP Policy Letter 84-1 to justify the establishment of an FFRDC are not being applied in the Five-Year Comprehensive Reviews to justify the continuation of an FFRDC. The Task Force found the principal criterion to be: "The activity (organization and/or facilities) is brought into existence at the initiative of a Government agency or bureau to meet some special research or development need which, at the time, cannot be met as effectively by existing in-house or contractor resources."[25] The continued need for the work, however, was usually discussed in terms of continued dangers in the post-Cold War period. There were some exceptions. The MITRE discussion was focused on the expanding need for C^3I support, the importance of information in modem warfare and the role that MITRE could play in assisting DoD in understanding the developments. The briefings to the Task Force at MITRE and Aerospace, however, suggested to the Task Force members the use of less than world-class technologies. For instance, commercial capabilities known to Task Force members in diverse areas such as display technologies, data handling and transfer techniques, and failure mode analysis appear to be more advanced than those in use at MITRE and Aerospace.

The assessments of alternative sources are insufficient. While some reviews were better than others (the Service reviews, for example, particularly the Army's, did a better job than did the OSD reviews), none of the reviews examined the cost and performance of specific alternatives even though some specific opportunities have been identified.[26] Only one of the Reviews, the Air Force review of Aerospace, considered specific alternatives, NASA and the Air Force's Phillips Laboratory, but both were determined to be inadequate. Most of the discussions were in the context of the experience and long-term relationship of the current FFRDC, and the inability to duplicate that relationship. In-house alternatives were dismissed as lacking in objectivity, influenced by Service doctrine, and burdened with low pay for equal talent. For-profit firms were dismissed because of potential conflicts of interest, a lack of broad understanding of many systems, and a perceived inability to get data from other competing sources. Non-profits and other FFRDCs were dismissed because of a lack of the broad base of talents found in the specific

[25] OFPP Policy Letter 84-1, 5c, 2a; see Appendix N.

[26] According to an IG audit, a DoD 1988 CBD announcement on renewing the IDA contract reportedly brought letters of interest from nine commercial firms. These firms were named in the report and might have been contacted and some assessment of costs and availability made. See, Office of the Inspector General, Department of Defense, *Sole Source Justification for DoD Sponsored FFRDCs*, Report No. 94-012, November 4, 1993, p. 7.

FFRDC being reviewed and lack of an on-going relationship. Some of these other non-profit sources, it was acknowledged, might take the FFRDC's place, but at a high cost. The alternative was sometimes dismissed simply because it was not the current FFRDC (the strategic relationship problem discussed earlier).

Effectiveness and efficiency were generally discussed in terms of how the work was received and used by the sponsors and other users. The discussion was generally directed toward the quality of work rather than the cost. For example, much time is spent by sponsors in reviewing the work accomplished and the work to be assigned. (The Air Force, for instance, uses a decision tree (see Appendix G) for allocating tasks to Aerospace.) The discussions, however, show little attention or analysis directed toward expected or incurred costs.

The evaluation of the FFRDCs' management of cost effective operations were largely conducted in terms of adherence to auditing rules. There were some discussions of cost control activities, but these were not the center of most of the discussions. The Task Force was unable to obtain audited relative costs of FFRDCs that would allow comparisons with for profit organizations. Requests of the auditing agency indicated that no such cost data exist.

Funding

The Task Force found that several of the FFRDCs derive much of their funding from other than the primary sponsor. For instance, LMI received more than 20% of its FY 95 funds from non-DoD sources (see Appendix D, p. D-5). The Task Force has concluded that other government agency tasking through the primary sponsor may be appropriate in some limited cases, although the system needs to be reviewed because such funding appears to increase management complexity of oversight and raises questions about the importance of the long-term strategic relationship with the primary sponsor that is said to be the basis for the FFRDC itself.

OFPP Policy Letter 84-1 and FAR 35.017 specifically state that FFRDCs should address basic research, applied research, and/or development. Furthermore, it is the Task Force's understanding that, according to federal appropriation statute, only RDT&E funds are authorized to fund R&D activities. However, the Task Force found in examining the funding sources of the FFRDCs that only 66% was RDT&E funding, and RDT&E funding does not constitute the majority of funding for some FFRDCs. Only two FFRDCs, IDA's (C^3I) and Project Air Force, were fully funded through R&D money. The LMI has the smallest amount of R&D work (14.3%) and RAND's National Defense Research Institute and the Aerospace Corporation each reported only 39% of their support coming from R&D funds. Indeed, the MITRE C^3I and Aerospace, the two largest Systems Engineering and Integration Centers, had 62.5% and 39% R&D funding respectively.

Excessive Oversight

The FFRDC oversight systems of the DoD and the various sponsors do not exhibit many of the characteristics that the DoD is now pursuing in its acquisition reform initiatives. The Task Force was troubled by the amount of time that is spent by sponsors, particularly for the Studies and

Analyses FFRDCs, in meeting to assess work progress and authorize studies, and by FFRDC management in responding to this oversight.

The Task Force is also troubled by lack of focus on costs. While the organizations have audits by DCAA and others to ensure compliance with auditing rules, cost evaluation measures, particularly to determine how FFRDC costs compare to other defense contractors and private consultants, are not available. Several of the sponsor review procedures are reported in the appendices (see, for example, Appendix B and Appendix E).

Allocation Process

The ceiling allocation process used by the DoD is based on STEs. The latest version of the DoD Management Plan states that STEs "shall be used in sizing and managing DoD-funded FFRDC work. Although the total number of STEs available will be constrained by DoD budgetary considerations and statutory requirements, STEs will provide a standard measure across all of DoD's FFRDCs for projecting DoD workload and funding requirements." Although these and other guidelines focus on maintaining core competencies and ability to perform core work, the actual process used to allocate STEs among the different categories of FFRDCs and individual FFRDCs has not been made explicit.

According to OSD, recent results of this allocation process are that Studies and Analyses Centers have taken a proportionally smaller cut (-14% between FY 90-95) than have the Systems Engineering Centers (-26%) or the Laboratories (-36%). Although both sponsors and the FFRDCs told the Task Force that Systems Engineering work requirements are greater than these cuts allow, OSD reports that these allocation differences are related to the perceived need for Studies and Analyses activities to help plan for the future. This shift continues in the Five-Year Plan. The FFRDCs complained about the process. The process may not meet changing needs, since it is difficult to understand the rationale for the allocation.

Independent Research and Development (IR&D)

FFRDCs currently use the IR&D mechanism to finance some research. However, because IR&D is used for new business development, and is interchangeable with bid and proposal funds, the Task Force believes that IR&D funding is inappropriate for FFRDCs. Funding to ensure continued expertise in a skill believed essential should be direct and approved by the sponsor and not through the IR&D mechanism, particularly since funding allocation guidelines emphasize maintenance of core competencies.

OSD Staffing

Having an OSD office responsible for both developing overall FFRDC policy and acting as the sponsor for individual FFRDCs can create potential conflicts of interest. The Office of OSD Studies and FFRDC Programs, which sponsors IDA and NDRI, falls under Acquisition Program Integration, a division within the Office of the Under Secretary of Defense for Acquisition and Technology (USD(A&T)). However, the Office of OSD Studies and FFRDC Programs is also

responsible to the DDR&E in developing overall FFRDC policy. (DDR&E is also within USD(A&T).) This office is responsible for checking over 300 task orders per year for its sponsored FFRDCs to ensure the tasks are appropriate, plus overall management policy and oversight of all eleven FFRDCs. It is difficult to see how the office could examine the many sponsor tasks to ensure that they cannot be done by other sources.

Costs

The Task Force was unable to make good cost comparisons between the FFRDCs and other organizations because relevant data was not available. The Task Force is concerned that cost comparisons are generally not available (although some were attempted in the Five-Year Reviews), and that in discussions, sponsors did not exhibit a good knowledge of the costs of products.

DoD sponsors report that they have generally not estimated the cost of in-house performance as an alternative to FFRDC performance. Nor have cost estimates typically been obtained for private sector contract performance. Fully loaded labor costs, for instance, are not calculated in a consistent way in the different FFRDCs or consistent with private contractors, so data are not available from DCAA to make meaningful comparisons.

Acquisition regulations permit technical considerations to have more importance than costs in the selection of a source for R&D performance. For non-R&D performance the emphasis is on costs of a qualified source. The absence of cost estimates of alternative performance and the lack of cost competition for the $395 million of non-R&D funding, coupled with the lack of meaningful performance metrics or emphasis on continuous process improvement efforts by the FFRDCs and their sponsors, raises a serious question for the Task Force as to the cost-effectiveness of current FFRDCs. Further, the Task Force believes that the DoD's plan to use an estimated "level-of-effort" approach will do little to control costs and provides insufficient incentive to improve productivity.

Congressional Ceiling

The Congressional ceiling on FFRDC funding appears to have been an effective management tool for controlling costs and improving effectiveness. Cost curves show improved efficiency after the imposition of the ceiling. The ceiling has caused efficiencies and dictated the development of priorities within individual FFRDCs. The Task Force believes that a careful determination of what work continues to meet the definition of special need that cannot be met as effectively elsewhere, combined with the introduction of competition in work that does not meet the revised core competencies, will allow the DoD to assure Congress that ceilings are no longer necessary.

Other Agency Tasking

Other agency tasking through the primary sponsor is appropriate, although the system needs to be reviewed. In many cases, passing money through the primary sponsor results in delays in

funding and increases FFRDC costs. This has been particularly true at MITRE. Further, multiple use at centers such as the NDRI increases the complexity of the oversight.

Acknowledge Differences

With the limiting of work to only that which fits the definition for FFRDC work per regulation, refining of core capabilities, and the mandating that FFRDCs do only appropriate work, the FFRDCs will, the Task Force believes, be reduced significantly in size. The impact on the FFRDCs' individual organizations, and their parents, will vary. RAND Corporation, for example, noted that it has a substantial non-defense effort—including a fully accredited graduate school. Other parent organizations have fewer alternatives. The DoD must carefully examine the impact of their policies on the viability of the FFRDCs and their parent organizations.

SUMMARY

The current FFRDCs were established to meet specific DoD needs, e.g., to provide operations research and analyses support for the Services (Project RAND), the OSD and JCS (IDA), or to provide scientific and engineering support involving launch, space, and ground support systems. When they were established, the defined tasks for all these FFRDCs were of such a nature that other competitive sources were not available to fill the need. For example, no commercial space industry existed when Aerospace was created to meet a clear national security need. There were, therefore, very valid reasons for the establishment of special capabilities to address these government needs. The FFRDCs were organized to address well-defined tasks and used their special characteristics to meet government needs. Costs, while of interest, were not paramount. The focus of FFRDCs was on the value of the product—for example, could the Nation develop and build a workable strategic defense against air attack? The products were immediately used by the government clients. Billions of dollars were spent on the strategic air defense system developed with the assistance of Lincoln Laboratory. RAND analysts, using operations research techniques, discovered and outlined the vulnerability of the U.S. Air Force to strategic attack. There was immediate feedback and further investigation to determine ways to reduce identified vulnerabilities, to improve air defenses, or to launch successfully reconnaissance satellites that provided some assurance against surprise attack. These were all important needs and at the time constituted special research and development activities that merited the use of FFRDCs.

The situation that the Task Force observed during its review differs substantially from these origins. Much of the work currently being carried out in the FFRDCs is not special R&D that cannot be done elsewhere. For example, operations research is applied to issues as diverse as management of aircraft departure queues, optimal use of shared production lines in a manufacturing plant, and setting capacity levels in service industries such as car rental. Space, while still a hostile environment, has spawned a robust U.S. industry supporting both defense and commercial activities. The commercial electronics and communications industries are exploding with new information technologies, global communications networks, and applications for data transfer and analysis that were thought to be impossible only a few years ago. The DoD is faced not only with a new post-Cold War security world, but a new technology world as well.

In this new environment, the DoD often assigns to the FFRDCs on a sole-source, non-competitive basis work that could be done by others, either in the government or more likely by the private sector.[27] The assignment often appears designed to preserve the strategic relationship that is said to exist between the FFRDC and its primary sponsor, to maintain competency in areas defined as core, and ultimately to preserve the current organizational structure. According to a 1994 DoD Inspector General's report, for example, sponsors' justification for assigning work includes the unique expertise or knowledge of the FFRDC, ease and quickness of assigning the work, and the independence and objectivity of the FFRDC.[28]

Although at the time of their original establishment the individual FFRDCs may have had specific capabilities that allowed them to meet DoD needs most effectively, the current statements of core competencies are too broad. For example, strategy and doctrine, force development and application, resource management, system development and acquisition, and technology assessment and application are typical and common to several FFRDCs as well as to many private sector and government organizations. The FFRDCs, according to sponsors' evaluations, do high-quality work. Yet in many cases the work might be done elsewhere—possibly better. The Task Force is particularly concerned about the possibility that the FFRDCs no longer maintain excellence in the latest technologies, particularly software and communications technology that is developing rapidly in the private sector spurred on by competition in the market. In such cases, the FFRDCs may no longer be the best source of advice on tasks they now perform.

In response to concerns about costs, value, and the continued use of the organizations, the DoD (and the individual sponsors) has developed an oversight process to help ensure that FFRDC usage is appropriate; however, this process has become increasingly burdensome. Study plans are overseen by numerous General Officers and high-level civil servants. The FFRDCs are subject to numerous audits and reviews. The management oversight and feedback mechanisms, however, have not focused hard enough on whether any or all of the work could be accomplished better using other sources.

CONCLUSIONS

The Task Force examined both overall DoD management policy issues and specific management practices that exist at the FFRDC/Sponsor level. Based on capabilities known to exist in commercial firms in operations research, systems integration and analysis, technology assessment, and other core competencies of the FFRDCS,[29] the Task Force has concluded that the current system may not provide the best available service at the most reasonable cost.

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[27] Office of Federal Procurement Policy Letter 84-1 (see Appendix N) and FAR 35.017-1 specifically prohibit FFRDCs from competing for work.

[28] Office of the Inspector General, Department of Defense, *Contracting Practices for the Use and Operations of DoD-Sponsored Federally Funded Research and Development Centers*, Report No. 95-048, Dec., 2, 1994, p. 11.

[29] Universities and major corporations have strong capabilities in these areas. Industrial engineering emphasizes operations research and decision-support systems; firms like IBM and EDS are based on systems integration and management; and major high-technology firms and a large number of specialized consulting firms depend on technology assessment and foresight in making major investment decisions.

This conclusion reflects the Task Force's concerns that these organizations are doing work that might more appropriately be done elsewhere, and that because of their special relationship with sponsors and the lack of competition in awarding their work, the FFRDCs have insufficient incentive to innovate and maintain their access to and awareness of technological innovations in the private sector.

In its examination of management policy and practices, the Task Force found that many of the problems with specific management practices identified at the FFRDC/Sponsor level are principally the result of management policy decisions at the DoD level. Accordingly, the Task Force's recommendations emphasize actions at the DoD policy level.

RECOMMENDATIONS

The Task Force has several recommendations to improve the current situation. These recommendations apply principally to the Studies and Analyses and Systems Engineering and Integration FFRDCs. The Task Force will make final recommendations with regard to the three FFRDC laboratories when it has completed its review of the UARCs.

Accurately Define FFRDC Work

The Department must carefully define those limited special R &D activities that demand the attributes of an FFRDC. These tasks should continue to be assigned to FFRDCs. All other tasks that do not require the attributes of an FFRDC as stated and required in OFPP Policy Letter 84-1 and the FAR, and for which there are other possible providers, should be competed. Congressional ceilings have already forced sponsors to discriminate more clearly those tasks appropriate for FFRDCs; the process needs to continue.

The reason for undertaking this problem redefinition and refinement is to ensure the availability of the best capabilities in the future. The DoD must manage all R&D capability to achieve particular goals rather than simply ensuring the survival of a particular organization. Lincoln Laboratory was originally established to achieve a particular goal—and met that goal. MITRE was established to implement the technology that Lincoln Laboratory developed with regard to strategic air defense and did a fine job. But these were distinct activities, well structured, with specific goals. The original Studies and Analyses Centers were less focused on a particular task, but they too, at the time they were established, had special analytical skills. In general, that is no longer the case. The Department needs to return to this original approach-use FFRDCs to meet special R&D needs, and use other, more effective capabilities for other needs.

Many FFRDCs receive funding and tasking from sources other than their primary sponsor. The Task Force has concluded that other government agency tasking through the primary sponsor may be appropriate in some limited cases, although the system needs to be reviewed. In many cases, passing money through the primary sponsor results in delays in funding, increases FFRDC costs, and raises questions about the importance of the long-term strategic relationship with the primary sponsor.

An important part of developing an accurate definition of the problem and identifying special R&D needs that properly fit the definition for FFRDC work is restricting the core capabilities of the FFRDCs to what is uniquely needed from an FFRDC. The Task Force has carefully read the core statements of the centers (see Appendices B through I). The statements are too general to be usefully applied in a rigorous examination of the need to continue the individual FFRDCs, or to assign specific work tasks to them.

Revise the core statements for each FFRDC to include only those special R&D activities for which there are no alternative sources. The special R&D activities should be project specific and end result oriented rather than FFRDC capabilities oriented.[30] All included activities must have only RDT&E funding. These new core statements are to be the basis for continued contracting with the FFRDCs.

The Task Force expects that the governmental function of redefining the core capabilities statements, combined with accurately defining problems, will have the effect of significantly reducing the size of the FFRDCs in almost all cases. In particular, the activities of the Systems Engineering/Integration FFRDCs, Aerospace and MITRE C3I, are expected to be further reduced because there are numerous other sources available to do much of the remaining work.[31] The Task Force believes that properly defining the tasks best performed by the FFRDCs and competing the remaining tasks will reduce costs and will provide DoD with better access to new technology and the best advice.

Authorize an independent agency, such as the Defense Science Board, the OSD Office of Acquisition Reform, or the Competition Advocates within the Services, to review the revised FFRDC core statements to assure compliance with OFPP Policy Letter 84-1.

It is important that an independent review of the core statements and an audit of work being done be accomplished to ensure compliance with established policy. The Task Force will also be examining the revised statements as a part of its future audits.

Use Competition

The use of FFRDCs results in the absence of competition. The Task Force believes that the lack of competition in awarding tasks to FFRDCs prevents sponsors from having good information on the cost and capabilities of alternative sources to meet their needs. The Task Force believes that the lack of competition for much of the work currently being done in the FFRDCs is not justified, nor in the long run is it in the best interests of the DoD.

The Task Force considered several alternatives for managing this important portion of the R&D effort. One alternative is to continue to pursue DoD's current management approach of

[30] OFPP Policy Letter 84-1 requires that sponsoring agreements include descriptions of the FFRDCs mission, general scope of effort, and its role in furthering accomplishment of the sponsoring agency's role, and be sufficiently descriptive to differentiate from work that should be performed by a non-FFRDC. See Appendix N for the full text.

[31] Other sources include large systems integration firms such as EDS and IBM, as well as a wide variety of smaller firms.

reinforcing the rationale for the work currently being done within the construct of the FFRDCs. This rationale stresses the special relationship between the FFRDCs, their sponsors, and the rest of industry, based on their independence and lack of bias, and the breadth of their core competencies. The Task Force sees several problems with this approach. One of the most important is that the supporting rationale has become increasingly burdensome. Another alternative is to eliminate the use of the FFRDC designation in the DoD and open all this work to competition. Long-term, special relationships would still be sought, but through the terms and conditions of long-term, competitive contracts. The Task Force believes that a middle ground can emerge when the DoD refines the core statements, restricting the FFRDCs' work programs to match the limited special R&D needs that exist. However, the remaining required FFRDC structure may be unsustainable.[32]

If this is the case—that is, if the current FFRDCs shrink to a size below a critical mass in which the work load and funding available are insufficient to finance the hardware, software, and skills required to maintain core competencies—then the DoD should consider free and open competition of all current FFRDC work. Many private sector organizations already have the essential long-term relationships with clients and are accustomed to working in open systems which avoid bias toward particular vendors or technologies while focusing on meeting customer needs. Testimony to the Task Force by representatives from McKinsey, a management consulting firm, and Perot Systems, a systems integration and management firm, confirmed that they often maintain long-term relationships with major clients which include access to sensitive data, strategic decisions, and technology developments.

Develop a competition transition plan by April 1, 1997 to: 1) compete all current FFRDC work not included in the revised core statements, and 2) if the DoD concludes that the new core statements result in less than a critical mass for an FFRDC, terminate the FFRDC and compete all of the current work.

Effect implementation of the competition transition plan by the beginning of FY98.

Implementing the Change

The annual DoD FFRDC Management Plan is the operative document within the Department which provides guidance to the sponsors.[33] It is important that the Plan be revised to reflect these recommendations. Further, the potential for conflict of interest inherent in assigning the Office of OSD Studies and FFRDC Programs responsibility both for sponsoring individual FFRDCs (IDA and NDRI) and for the Management Plan and oversight of all FFRDC activities needs to be eliminated.[34]

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[32] The 1996 Management Plan for FFRDCs and UARCs (see Appendix A) expresses DoD's concern that further funding reductions could force these institutions below the level needed to maintain critical core competencies.

[33] The most recent Management Plan, dated May 1, 1996, is reproduced as Appendix A.

[34] The Office of OSD Studies and FFRDC Programs falls under Acquisition Program Integration, a division within the Office of the Under Secretary of Defense for Acquisition and Technology (USD(A&T)). DDR&E is also within USD(A&T).

Revise the DoD FFRDC Management Plan to reflect the above recommendations. Eliminate the dual role responsibilities of the OSD office which both sponsors FFRDCs and manages DoD FFRDC activities.

Appendix A

DEPARTMENT OF DEFENSE
FEDERALLY FUNDED RESEARCH AND DEVELOPMENT
CENTER (FFRDC) MANAGEMENT PLAN
May 1, 1996

INTRODUCTION

DOD-sponsored Federally Funded Research and Development Centers (FFRDCs) represent a long-term Government investment in a unique resource for research, systems engineering, and analysis. Over the years FFRDCs have been essential contributors to maintaining the superiority of United States forces. FFRDCs perform work that is: (1) consistent with the center's mission, purpose and capabilities; (2) consistent with DoD'S needs as reflected in the center's core competencies; (3) consistent with the strategic relationship between the center and its sponsors; and, (4) cannot be performed as effectively by existing in-house, other not-for-profit, or for-profit contractor resources.

Because of the importance and unique status of FFRDCs, the DoD must ensure that their use is appropriate and that DoD has effective policies and procedures for their management.

A. PURPOSE

This plan defines DoD policies and procedures for the management and use of DoD-sponsored FFRDCs. It also provides guidelines and procedures for ensuring compliance with the Government-wide policies set forth in Office of Federal Procurement Policy (OFPP) Policy Letter 84-1, *Federally Funded Research and Development Centers*, dated April 4, 1984, and Federal Acquisition Regulation, Part 35.017, entitled *Federally Funded Research and Development Centers.*

B. APPLICABILITY

1. This plan applies to FFRDC primary sponsors, FFRDC users, and contracting activities that award FFRDC contracts.

2. DoD FFRDCs provide high-quality research, systems engineering and analytical work that is within the scope of their defined core work and draws on or sustains the strategic relationship between the FFRDC and its sponsor.

3. In addition to meeting long-term and intermediate needs of sponsors and users, FFRDCs also provide immediate, short-term assistance to address urgent high priority issues.

4. DoD FFRDCs are currently operated by universities or privately organized, not-for-profit corporations through long-term Government contracts under the authority of 10 U.S.C. 2304(c)(3)(B).

5. FFRDCs are outside the Government to permit the management flexibility necessary to attract and retain high-quality scientists, engineers, and managers, and to provide an independent perspective on the critical issues they address for their sponsors and users.

6. The nature of their mission requires that FFRDCs operate in a strategic relationship with their sponsors and users. Strategic relationships have the following characteristics:

a. FFRDCs and sponsors commit to stable and long-term relationships.

b. FFRDCs are granted access to Government and contractor information beyond that which is common to the normal contractual relationship, including intelligence data and program planning information.

c. FFRDCs bear a special responsibility to avoid actual and perceived conflicts of interest, and they accept stringent restrictions on their scope, method of operations and the kinds of efforts they can undertake either for their sponsors or for other users.

7. Strategic relationships enable FFRDCs to:

a. Develop and maintain in-depth knowledge of their sponsors' programs and operations.

b. Maintain continuity and currency in their special fields of expertise, and a high degree of competence in their staff and work.

c. Maintain their objectivity and independence.

d. Respond to the emerging needs of their sponsors and users.

8. The DoD currently sponsors eleven FFRDCs managed by eight parent organizations (see Appendix A). Each of the eleven FFRDCs fall under one of the three categories of FFRDCs defined by the National Science Foundation. This management plan recognizes the different purposes and contributions by organizations in each category The distinctions between categories of FFRDCs are an important consideration in the management approach that should be applied to each of them. The three categories as represented in the DoD are:

a. Studies and Analyses (S&A) Centers: S&A centers deliver independent and objective analyses and advice in core areas important to their sponsors in support of policy development, decision making, alternative approaches, and new ideas on issues of significance.

b. Systems Engineering and Integration (SE&I) Centers: SE&I centers provide required support in core areas not available from sponsor's in-house technical and engineering capabilities

to ensure that complex systems will meet operational requirements. The centers assist with the creation and choice of system concepts and architectures, the specification of technical system and subsystem requirements and interfaces, the development and acquisition of system hardware and software, the testing and verification of performance, the integration and interoperability of new capabilities, and continuous improvement of system operations and logistics. They often play a critical role in assisting their sponsors in technically formulating, initiating, and evaluating programs and activities undertaken by firms in the for-profit sector.

c. Research & Development (R&D) Laboratories: R&D laboratories fill voids where in-house and private sector research and development centers are unable to meet DoD core area needs. Specific objectives for these FFRDCs are to: (1) maintain over the long-term a competency in technology areas where the Government cannot rely on in-house or private sector capabilities; and (2) develop and transfer important new technology to the private sector so the Government can benefit from a wider, broader base of expertise. R&D laboratories engage in research programs that emphasize the evolution and demonstration of advanced concepts and technology, and the transfer or transition of technology.

C. DEFINITIONS

1. Primary Sponsor A specified DoD organization will be designated as a primary sponsor by the Director Defense Research and Engineering (DDR&E) for each FFRDC (see Appendix A). The primary sponsor is responsible for implementing FFRDC management policies and procedures.

2. Contracting Activity. As referred to in this plan, the DoD contracting activity is the activity that awards a contract or contracts under the authority of 10 U.S.C. 2304 for a FFRDC.

3. User. The user or tasking activity is an entity (DoD or non-DoD) that requires the services of a DoD FFRDC for performance of FFRDC work.

4. Core Work. Work appropriate for performance by a FFRDC because it is consistent with the mission, purpose and competencies of the FFRDC, and draws on or sustains a strategic relationship between the FFRDC and its sponsor.

5. Non-FFRDC Work. Work performed by the parent institution that does not comply with the definition of core work, and is, therefore, not performed within the FFRDC(s).

6. Parent Institution. An entity that contracts with the DoD to operate a FFRDC. A parent institution may also be called a parent organization.

D. POLICY

1. Policy for the Performance of Work by DOD-Sponsored FFRDCs and Parent Institutions. DoD sponsors must operate under this policy. Specific implementing instructions shall be documented in the respective sponsoring agreement.

a. FFRDC Work: A DoD FFRDC may only perform core work as defined in its core statement and in accordance with the following guidelines:

(1) All work must be approved by the primary sponsor.

(2) Work may only be accepted from DoD, other Government entities, state and municipal governments, and not-for-profit activities.

(3) No commercial work may be accepted by a DoD FFRDC.

b. Non-FFRDC Work: Parent institutions operating DoD FFRDC(s) may perform non-FFRDC work subject to primary sponsor review for compliance with established criteria mutually agreed upon by the primary sponsor and parent institution. The criteria shall be addressed in the Sponsoring Agreement. In establishing these criteria, the following guidelines shall be used by the primary sponsor:

(1) Non-FFRDC work by parent institutions should be in the national interest, such as addressing economic, social, or governmental issues.

(2) Non-FFRDC work shall not undermine the independence, objectivity, or credibility of the FFRDC by posing an actual or perceived conflict of interest, nor shall it detract from the performance of FFRDC work.

(3) Non-FFRDC work shall not be acquired by taking unfair advantage of the parent institution's operation of its FFRDC(s) or of information that is available to that parent institution only through its FFRDC(s).

(4) Non-FFRDC work may be done for public sector and not-for-profit entities. Commercial work shall not normally be accepted; however, should an exception be granted by the sponsor, such work must be non-proprietary and can not exclusively benefit any individual for-profit entity.

(5) There are no specified limits on the volume of non-FFRDC work. However, each FFRDC primary sponsor should periodically assess whether the non-FFRDC work performed by the parent institution is impairing its ability to perform its FFRDC work.

(6) Universities operating DOD-sponsored FFRDCs are not restricted from performing non-FFRDC work. Such work must be obtained, however, in a manner compliant with applicable procurement policies to ensure that work is not acquired through an unfair advantage associated with the FFRDC mission, purpose or special relationship.

c. Technology Transfer Activities. Sponsoring agreements may include authority for Research and Development Laboratory FFRDCs to participate with industry in technology transfer activities when appropriate. Sponsors must include adequate safeguards to ensure the FFRDC remains free of organizational conflicts of interest and that the conditions for establishing and maintaining the FFRDC are not compromised. The safeguards should include specific review and approval of technology transfer work by the FFRDC sponsor on a ease-by-case basis.

d. Exceptions. Requests for work performance exceptions (FFRDC and non-FFRDC) shall be directed to the primary sponsor, Service Acquisition Executive, or the component head, as applicable.

2. FFRDC Level of Effort.

a. DoD-funded Work.

(1) Staff years of technical effort (STEs) shall be used in sizing and managing DoD-funded FFRDC work. Although the total number of STEs available will be constrained by DoD budgetary considerations and statutory requirements, STEs will provide a standard measure across all of DoD's FFRDCs for projecting DoD workload and funding requirements. Appendix B contains the standard definition of STE to be used in computing workload requirements.

(2) The DDR&E will establish a workload ceiling annually by STE for each FFRDC based on: (a) sponsor needs; (b) a determination that those needs require one or more of the core capabilities of the FFRDC; and (c) the general guidelines laid out in subparagraph 2.b. below.

(3) Requests to the DDR&E for deviations from or exceptions to the established STE ceiling for any specific FFRDC shall be presented by the sponsor with appropriate justification.

b. General Guidelines. Annual levels of effort shall be based upon application of the core concept and the following category guidelines:

(1) Studies and Analyses Centers (S&A)

(a) Maintain a relatively stable level-of-effort.

(b) Maintain competency in core areas.

(2) Systems Engineering and Integration Centers (SE&I)

(a) Maintain stable core competencies.

(b) Respond to projected trends in workload and funding consistent with the budget supporting the mission area.

(3) Research and Development (R&D) Laboratories. Maintain technical expertise and related competencies necessary to address the core work and priorities of the sponsor.

c. Non-DoD Funded Work. FFRDC work funded using non-DoD appropriations will comply with the same policies and constraints as DoD-funded work and will be reported in accordance with Appendix D.

3. FFRDC Fee. FFRDCs are operated by not-for-profit or university affiliated organizations and are strictly limited by DoD in the types of work they may perform. By limiting the work that can be done by a FFRDC, the DoD limits the sources of funds available to the FFRDC to pay costs normally incurred by a business, but not reimbursed under Government cost-type contracts. As a result, fees for FFRDC work may be appropriate. In accordance with the OFPP Policy Letter 84-1, the appropriateness of paying fees to DoD FFRDCs should be addressed in their sponsoring agreements. When fees are authorized, the following guidelines are to be used.

a. The sponsor/contracting activity must make a determination that a fee is needed. This determination is to be performed annually by evaluating the FFRDC's current Application of Funds and Sources of Funds statements, and considering the following:

(1) Proportion of retained earnings that relates to the DoD contracted effort.

(2) Facilities capital acquisition plans.

(3) Working capital funding assessment based on operating cycle cash needs.

(4) Funding of unreimbursable costs deemed "ordinary and necessary" to the FFRDC's continued successful operation.

b. If a fee is determined to be needed, the sponsor/contracting activity will use the following as guidelines in arriving at the fee amount:

(1) An annual fee proposal justifying each element of fee. The proposal must:

(a) Provide sufficient visibility into each element of fee.

(b) Avoid the use of undefined and ambiguous terms, such as "miscellaneous" and "other."

(c) Not include any cost for which reimbursement, either as an incurred cost or as an element of fee, is prohibited by statute.

(d) Comply with fee reimbursement restrictions and/or limitations included in-the sponsoring agreement and/or applicable statutes and regulations.

(e) Identify, for inclusion as an element of fee, costs not reimbursable under the contract that the FFRDC can nevertheless demonstrate are ordinary and necessary to the FFRDC's successful operation.

(2) The extent to which the prior representations and justifications regarding fee have proven accurate (both as to the fee amount and to the planned uses for the fee). Unexplained or repeated failure to reasonably adhere to planned uses for fee should serve as a basis for challenging either the appropriateness and/or the magnitude of proposed fees.

(3) Costs incurred by the FFRDC that are allowable or allocable under the cost principles (i.e., commercial using FAR 31.2, not-for-profit using OMB Circular A-l22, or university affiliated using OMB Circular A-21) regulations, or statutes applicable to that FFRDC should be classified as direct or indirect (overhead/G&A) charges to the contract and not included as proposed fee elements. Exceptions may be made to this guideline with primary sponsor approval.

c. These guidelines are not intended to eliminate best practice techniques in applying the applicable cost principles, such as implementation of an award fee concept.

d. Appendix C elaborates on the process to be used in determining the need for fee.

E. RESPONSIBILITIES

1. The Director of Defense Research and Engineering (DDR&E), consistent with the provisions of this plan, is responsible to the Deputy Secretary of Defense through the Under Secretary of Defense for Acquisition and Technology to:

a. Ensure that STEs established for each of the FFRDCs are consistent with overall DoD requirements and strategy.

b. Monitor the mechanisms used by FFRDC sponsors to ensure the appropriateness and value of FFRDC efforts and activities.

c. Oversee implementation and execution of this management plan by each FFRDC primary sponsor to ensure compliance.

2. The FFRDC Primary Sponsor shall:

a. Ensure that each FFRDC is being used only for its intended purposes.

b. Ensure that the costs of the goods and services it provides are reasonable, and that it produces high-quality work of value to user organizations.

c. Review descriptions of work proposed to be done by the FFRDC and ensure that the work assigned is consistent with the FFRDC's core statement.

d. Assure the DDR&E that these provisions are being satisfied by making a specific statement in the Annual Review Assessment required in accordance with Appendix D.

F. PROCEDURES

1. Sponsoring Agreements. Primary sponsors of FFRDCs shall maintain sponsoring agreements. The specific content of these documents may vary depending on the nature of the relationship between the primary sponsor and the FFRDC. Sponsors may supplement sponsoring agreements with operating instructions; however, at a minimum sponsoring agreements must include the following:

a. Provisions for the orderly termination or nonrenewal of the contract, disposal of assets, and settlement of liabilities. The responsibility for capitalization of the FFRDC must be defined in such a manner that ownership of assets may be readily and equitably determined upon termination of the FFRDC's relationship with its sponsor.

b. A prohibition against the FFRDC competing with any non-FFRDC concern in response to a Federal agency formal Request for Proposal for other than the operation of a FFRDC. This prohibition is not required to be applied to any parent organization in its non-FFRDC operations. However, sponsoring agencies may expand this prohibition as they determine necessary and appropriate

c. A determination of whether the FFRDC may accept work from other than the primary sponsor. If non-sponsor work can be accepted, a description of the procedures to be followed will be included, along with any limitations as to the non-sponsors from which work can be accepted (e.g., other Federal agencies, State, local or foreign governments, or not-for-profit organizations).

d. A description of the procedures used to make an annual assessment to evaluate performance in the areas of technical quality, responsiveness, value, cost and timeliness. Also required is a description of the mechanism used to provide feedback to the FFRDC in order to identify and resolve any perceived or real problems.

e. When cost-type contracts are used, the sponsor should identify any cost elements or fee that require advance agreement and/or approval. Such items may include, but are not limited to personnel compensation, depreciation, various indirect costs such as Independent Research and Development, or others as deemed appropriate by the sponsor.

2. Core Statement. Primary sponsors of FFRDCs shall maintain a current core statement describing the purpose for establishing the FFRDC, the nature of the strategic relationship between the FFRDC and the primary sponsor, and a description of its mission, general scope of effort, and core competencies the FFRDC must maintain so that it can assist in accomplishing the sponsoring agency's mission. This statement must be specific enough to permit a discrimination

between work that is within the scope of effort for which the FFRDC was established and work that should be performed elsewhere.

3. Comprehensive Review. Prior to renewal of the FFRDC contract, the primary sponsor shall conduct a comprehensive review of the continuing use of and need for the FFRDC. This review must comply with Federal Acquisition Regulation, Part 35.017. The resulting determination to approve continuation or termination of the sponsorship shall be made by the head of the sponsoring agency, with the concurrence of the DDR&E, prior to the anticipated contract renewal date. Also, the sponsor shall advise the DDR&E upon the initiation of a required review and the expected date of its completion. At that time, the DDR.&E will have the opportunity to advise the sponsor of any special interest items or requirements to be addressed during the review. Appendix E contains guidelines for the conduct of comprehensive reviews. Sponsors should follow the guidelines to ensure consistency and thoroughness in the review process within the DoD.

4. Reports. DDR&E requires specified and ad hoc reports in order to comply with Congressional reporting requirements and to perform necessary oversight functions and responsibilities. The schedule and content of reports and other submissions currently required are shown in Appendix D.

G. EFFECTIVE DATE

This DoD FFRDC Management Plan is effective May 1, 1996 and replaces the DoD FFRDC Management Plan that became effective on October 1, 1994.

APPENDIX A

DoD FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS

STUDY AND ANALYSIS CENTERS

CENTER FOR NAVAL ANALYSES, Alexandria, VA SPONSOR: ASN(RD&A)

CNA's work for the Navy, Marine Corps, and other sponsors is based on its expertise in operations analysis, system requirements and acquisition., resource analysis, program planning, and policy, strategy and doctrine. Its integrated research program encompasses a broad range of issues, including -- for example -- the development and evaluation of tactics, operational testing of new systems, assessment of current capabilities, logistics and readiness, work-force management, space and electronic warfare, cost and operational effectiveness analysis, assessment of advanced technology, force planning, and strategic implications of political-military developments. CNA performs such efforts for DoN, other DoD agencies, and for non-DoD agencies in matters affecting the interests of DoN and DoD.

RAND PROJECT AIR FORCE, Santa Monica, CA SPONSOR: ASAF/A

Conducts a continuous and interrelated program of objective analyses on major cross-cutting policy and management issues of enduring concern to the Air Force, including studies on preferred means of developing and employing aerospace power; national security threats and strategies; Air Force missions, capabilities, and organizations; strategic and tactical force operations; and technology, support, and resource management.

INSTITUTE FOR DEFENSE ANALYSES (IDA), Alexandria, VA SPONSOR: USD(A&T)

Performs studies and analyses for the Office of the Secretary of Defense, Joint Staff, Unified Commands and Defense Agencies in the areas of defense systems, science and technology, strategy and forces, resource analysis, advanced computing and information processing, training, simulation, acquisition process, and the industrial base. Provides analyses of test plans, operational assessments and test results for weapons and other systems, including new and proposed equipment of all types.

RAND NATIONAL DEFENSE RESEARCH INSTITUTE, Santa Monica, CA
SPONSOR: USD(A&T)

Conducts a wide range of research and analyses in the areas of international security and economic policy; threat assessment; defense strategy and force employment options; applied science and technology; information processing systems; systems acquisition, readiness and support systems; and active-duty and reserve manpower, personnel, and training for the Office of the Secretary of Defense, Joint Staff, Unified Commands, and Defense Agencies.

LOGISTICS MANAGEMENT INSTITUTE, McLean, VA SPONSOR: USD(A&T)

Conducts studies and analyses for its primary sponsor the Office of the Secretary of Defense, Military Departments, Defense Agencies, Joint Staff, and Unified Commands. Its core mission areas are: material management, acquisition, operational logistics, facilities and environment, and force management.

RAND ARROYO CENTER, Santa Monica, CA SPONSOR: SARDA

Conducts a wide range of research, studies and analyses in the areas of strategy, force design and operations; readiness and support infrastructure; applied science and technology; manpower and training; threat assessment, and Army doctrine.

SYSTEMS ENGINEERING/INTEGRATION CENTERS

AEROSPACE CORPORATION, El Segundo, CA SPONSOR: ASAF/A

Performs general systems engineering and integration for space systems. Provides planning, systems definition and technical specification support; analyzes design and design alternatives, interoperability, manufacturing and quality control; and assist with test and evaluation, launch **support,** flight tests, and orbital operations. Appraises the technical performance of contractors.

MITRE C3I FFRDC, Bedford, MA and McLean, VA SPONSOR: ASD(C3I)

Performs general systems engineering and integration for the Command, Control, Communications, and Intelligence (C3I) community. Provides direct support through program definition; creation of plans and architectures; specification of technical requirements; system integration; analyses of design and design alternatives; integration of new capabilities into existing systems; integration of multiple legacy systems into effective systems of systems; hardware and software review; and test and evaluation. Appraises contractors' technical performance.

RESEARCH AND DEVELOPMENT LABORATORIES

SOFTWARE ENGINEERING INSTITUTE, Pittsburgh, PA SPONSOR: DARPA

SE1 is charged with bringing technology to bear on rapid improvement of the quality of operational software in software intensive systems; with accelerating the reduction to practice of modem software engineering technology and promulgating the use of this technology throughout the software community; and with fostering standards of excellence for improving software engineering practice.

MIT LINCOLN LABORATORY, Lexington, MA SPONSOR: ASAF/A

The laboratory carries out a program of research and development in a number of technologies. Program activities extend from fundamental investigations through design, development, and field test of prototype systems using new technologies.

IDA COMMUNICATIONS AND COMPUTING LABORATORY
Bowie, MD; Princeton, NJ; LaJolla, CA SPONSOR: NSA

Conducts fundamental research for the NSA in (1) cryptology, including the creation and analysis of complex encipherment algorithms, as well as in speech and signal analyses; and (2) various technologies associated with supercomputing and parallel processing including new architectures, hardware, and software (including prototypes), as well as parallel processing algorithms and applications.

APPENDIX B

STAFF YEAR OF TECHNICAL EFFORT (STE)

In calculating workload requirements to be delivered during the fiscal year, FFRDCs and primary sponsors shall use the standard definition of STE and work year shown below.

STEs apply to direct professional and consultant labor, performed by researchers, mathematicians, programmers, analysts, economists, scientists, engineers, and others who perform professional-level technical work primarily in the fields of studies and analyses; system engineering and integration; systems planning; program and policy planning and analysis; and basic and applied research.

Minimum educational requirements for STE employees and consultants are a baccalaureate degree from an accredited college or university. In rare instances, non-degree personnel may be included, but only if they possess the equivalent of a baccalaureate degree in education and experience, and are performing work of the same type and level as that performed by degreed STE employees.

A STE work year is defined to be 1,810 hours of paid effort for technical services. STE work years include both FFRDC employee and subcontracted consultant technical effort.

APPENDIX C

DETERMINATION OF FFRDC NEED FOR FEE

When the sponsor and contracting activity perform the "need" evaluation, all elements of the FFRDC's expenses (Application of Funds) should be analyzed and then compared to the projected sources of income (Sources of Funds). As an example, if income exceeded expenses for the prior fiscal year, there would be a surplus to working capital which should be considered in the following year's determination of fee needs. Such surplus should be evaluated in light of the FFRDC's working capital needs and its reasonable needs for resources to apply to other uses, such as debt retirement or compliance with financial accounting standards. If, on the other hand, expenses exceeded income for the prior year or are forecasted to do so for the current year, there may be a need to replenish the FFRDC available financial resources in order to allow it to continue efficient operations.

The sponsor's and contracting activity's recognition of the need for a fee should also consider the benefit provided to the operation and purpose of the FFRDC. Activities that benefit a parent institution as a whole (for example, use of fee to provide working capital to meet the payroll) may be appropriate if there is a benefit to DoD. Conversely, activities whose primary purpose is to benefit or enhance a non-FFRDC corporate parent or affiliate, or to expand the corporation's work for sponsors other than the DoD, shall not serve as justification for needing a fee or be used in establishing the fee amount.

The examples of cost categories that may be used to justify fees and establish fee amounts follow:

1. Working Capital: Fee may reflect the amount of funds necessary to fund the normal business operations of the FFRDC, as assessed on an operating cycle basis. Specifically, fee may reflect the working capital needs of the FFRDC. Working capital represents funds available to the FFRDC to pay current operating expenses (between the time the cost is incurred and reimbursement is received). The FFRDCs may either use their own reserves (to the extent such reserves are in liquid form) or borrow, thereby incurring interest expense, to satisfy the FFRDC's working capital needs.

2. Facilities Capital: Fee may reflect the costs of fixed asset acquisitions in accordance with capital acquisition plans that are approved by the Government as a part of the annual Fee Justification Proposal. Care should be taken to ensure that the planned capital purchases do not include items that must be charged to the contract in their entirety at the time of acquisition under the cost principles to which the FFRDC is subject. However, FFRDCs need to be able to acquire the tangible assets necessary for the effective and efficient conduct of their operations. Government and cost accounting regulations and the tax code may require that the cost of these assets be capitalized and recovered through depreciation or amortization over a period of years, even though the financial resources used to acquire them have to be committed at the time of acquisition. Such capital acquisitions justify fee to the extent of both the timing differences and

the need to service and retire debt that may have been incurred in the original acquisition transaction. Conversely, when feasible, capital equipment and real and leasehold improvements should not exceed the depreciation/amortization (equipment and building) and cost of money income.

3. Other Unreimbursed Expense: Fee may reflect costs that will be used by the FFRDC to pay for a variety of other expenses not included in the above two categories. These types of expenses must be "ordinary and necessary" to the operation of the FFRDC and should not include allowable or allocable costs (direct or indirect) that can be charged to the contract. Fee serves as the only source of funds to pay such expenses. However, if there is sufficient justification for including additional expenses in fee, that can be permitted ifjustified to the satisfaction of the sponsor. In order for these expenses to become appropriate for consideration as a fee need, they must be separately identified and justified in the annual fee proposal. The projected occurrence of such expenses does not in itself justify the allowance of fee; i.e., the FFRDC must establish that the expenses are "ordinary and necessary" for its successful operation.

APPENDIX D

REPORTING REQUIREMENTS FOR FFRDC PRIMARY SPONSORS

ANNUAL REPORTING REQUIREMENTS	DUE DATE	DESCRIPTION
Annual Report on Staff Years of Technical Effort (STE) and Funding.	15 November	Provide DDR&E with a report showing STEs and associated funding data (DoD and non-DOD). DDR&E will provide required data call format necessary for: (1) Congressional Reporting (2) Budget Estimates.
Mid-Year Status Update	30 April	Provide DDR&E a report for use in monitoring FFRDC obligations (DoD and non-DoD) per the data call format. The report should address the sponsor's ability to use and fund all authorized DoD-funded STEs; if they anticipate having excess STEs available; and if they anticipate submission of request(s) for exception(s).
Annual Review Assessment	30 days after completion of the assessment	Provide to the DDR&E a copy of the annual review assessment. The requirements for an annual assessment may be met by the Comprehensive Review during the year that a comprehensive review is required.
Changes to Sponsoring Agreement, Core Statement	Within 30 days of change implementation	Provide the DDR&E with copies of changes to the Sponsoring Agreement or Core Statement.
Comprehensive Review Notification	One year prior to Due Date of the Review	Advise the DDR&E of Comprehensive Review initiation. DDR&E will advise the sponsor of any special review requirements.
Comprehensive Review	NLT 90 days prior to renewal of the FFRDC contract	Provide to the DDR&E the results of the Comprehensive Review for the use and need of the FFRDC in accordance with this Plan (see Appendix E), OFPP Policy Letter 84-1, and FAR Part 35.017. DDR&E concurrence is required prior to renewal of the FFRDC contract.

APPENDIX E

COMPREHENSIVE REVIEW GUIDELINES FOR DoD-SPONSORED FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS

PURPOSE: The purpose of the comprehensive review is to formally analyze the use and need for the FFRDC in order to assist the head of the sponsoring agency in determining whether to continue sponsorship of the FFRDC.

This appendix provides the guidelines for reporting the results of FFRDC comprehensive reviews in accordance with this management plan, OFPP Policy Letter 84-1, and the FAR.

- Identify the FFRDC, its primary sponsor and contracting activity. Include the date and term of the FFRDC's current sponsoring agreement.

- Provide a detailed examination of the sponsor's special technical needs and mission requirements that are being performed by the FFRDC to determine whether, and at what level, they should continue to exist (FAR 35.017-4(c)(1)).

  Identify requirements for FFRDC support including known specific programs involved, the level of effort required and the types of tasks to be performed.

- Consideration of alternative sources (FAR 3 5.107-4(c)(2)):

  Specify the special research, systems development, or analytical needs, skills, and/or capabilities involved in accomplishing FFRDC tasks.

  Explain why the capabilities cannot be provided as effectively by in-house personnel, for-profit or not-for-profit contractors, university-affiliated organizations, or another existing FFRDC. Include statements on the alternatives to the FFRDC that were considered and the rationale for not selecting each of them.

- Provide a detailed assessment of the efficiency and effectiveness of the FFRDC in meeting a sponsor's/user's needs including the FFRDC's ability to maintain its objectivity, independence, quick response capability, currency in its field(s) of expertise, and familiarity with the needs of its sponsor (FAR 35.017-4(c)(3)).

  Include a summary of FFRDC accomplishments and their effectiveness in meeting user needs since the last comprehensive review. As a minimum, the quality and timeliness of the work produced, the number and dollar value of projects and programs assessed, and the user evaluations of performance should be addressed. A summary of the results of the most recent annual review should be included. All major users should participate

in this portion of the comprehensive review. Discuss any criticisms or concerns that the users had with FFRDC performance and the steps taken to resolve those issues.

- Conduct an assessment of the FFRDC management controls to ensure cost-effective operation (FAR 35.017-4(c)(4)).

  Discuss accounting and purchasing systems; overhead costs and fees; oversight actions taken to verify cost-effective operations; and other management issues as deemed appropriate.

- Provide a determination that the criteria for establishing the FFRDC are satisfied and that the sponsoring agreement is in compliance with FAR 35.017, FAR 35.017-2, and the DoD Management Plan. Include a statement addressing each of the criteria. Provide a certification that the current sponsoring agreement accurately reflects the mission of the FFRDC.

  Discuss agreements between the Government and the FFRDC. These agreements may cover such items as authorization of fees, provision of Government facilities and equipment, distribution of residual assets of settlement and liabilities in event of dissolution, maintenance of specific cash reserves, and waivers to accounting policies or regulatory requirements.

- The comprehensive review should provide a recommended course of action and be signed by the head of the sponsoring agency. DDR&E concurrence with the results of the comprehensive review is required prior to renewal of the contract or termination of the FFRDC.

DoD FFRDC MANAGEMENT PLAN AND
REPORT ON THE DEPARTMENT OF DEFENSE
FIVE-YEAR PLAN
FOR
FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS (FFRDCs)
AND
UNIVERSITY AFFILIATED RESEARCH CENTERS (UARCs)

Subsection 220(f) of the National Defense Authorization Act for Fiscal Year 1996 directs the Department to submit a Five-Year Plan to establish a framework for the future workload of each of its Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Research Centers (UARCs). The plan is required to address:

- Reduction and consolidation of the activities performed by FFRDCs and UARCs, and a framework for the future workload of such centers;
- Implementation by FFRDCs and UARCs of only core activities that require the unique capabilities and arrangements afforded by such centers (by October 1, 2000); and,
- An assessment of the number of staff years of effort needed in each FFRDC and UARC over the next five years.

Background

FFRDCs are not-for-profit, private sector organizations that maintain long-term, strategic relationships with the Department of Defense (DoD) and operate in the public interest, free from real or perceived conflicts of interest. FFRDCs maintain specific expertise in areas critical to DoD and perform research, development and analytical tasks integral to the mission and operations of sponsoring DoD components.

Similarly, UARCs are not-for-profit, private sector organizations affiliated with, or part of, universities or colleges that maintain essential research, development and engineering capabilities needed by sponsoring DoD components. The UARCs are a recent DoD designation of university affiliated laboratories doing over $2 million of core work annually for DoD using management guidelines tailored to their unique structure. They too maintain long-term strategic relationships with sponsoring DoD components in specific core areas and operate in the public interest, free from real or perceived conflicts of interest. FFRDCs and UARCs are financed through long-term, non-competitive contracts awarded by sponsoring DoD components for specified core work.

Over the past year, the Department has carefully reviewed its relationships with FFRDCs and UARCs. The Under Secretary of Defense for Acquisition and Technology (USD(A&T)) formed a senior level DoD Advisory Group, chaired by the Director, Defense Research and Engineering

(DDR&E), with senior representation from OSD, Joint Staff, military departments, and DoD agencies, to examine the issues. Also, USD(A&T) chartered an independent review of the role of DoD FFRDCs by the Defense Science Board. Both groups concluded that DoD still needs these organizations. The Defense Science Board stated ". . .the FFRDCs should be retained on the strength of their quality and the special relationships they have with their sponsors on matters which are of great importance to the Department of Defense." The internal Advisory Group reached a similar conclusion after reviewing alternatives to FFRDCs and UARCs. The bottom line is that DoD believes that FFRDCs and UARCs are doing high-quality, high-value technical and analytic work that could not be provided as effectively by other means.

The DoD has taken actions to deal with concerns, both real and perceived, that the FFRDCs and UARCs have not been right-sized; that they are working in areas beyond the core interests of the sponsoring DoD components; and that FFRDCs and UARCs are using their unique status to gain unfair competitive advantage over commercial entities. Four major initiatives have been introduced to improve the effectiveness of our management:

1. Limiting the program content of FFRDCs and UARCs to "core" work;

2. Establishing stringent criteria for the acceptance of non-core work by a FFRDC's or UARC's parent institution;

3. Chartering an independent advisory committee to review DoD's management and oversight of FFRDCs and UARCs; and,

4. Developing a new set of guidelines to ensure that fees provided to FFRDCs are based on justified need.

The DoD believes these initiatives, along with the support of the Congress, will effectively address concerns about FFRDC and UARC management and will facilitate the continued use of the critical capabilities provided by these centers, As the Department downsizes, the FFRDCs and UARCs have become increasingly important as centers of independent technical expertise and analytical support.

Reduction and Consolidation of FFRDCs and UARCs

DoD currently sponsors 11 FFRDCs and six UARCs that collectively account for about four percent of DoD's Fiscal Year (FY) 1996 Research, Development, Test and Evaluation (RDT&E) budget. The DoD Advisory Group considered and evaluated alternatives to FFRDCs (including eliminating and consolidating) in terms of risk, quality and cost. The Group determined the current number of FFRDCs appropriate for existing and anticipated Departmental needs over the next five years.

The Group also determined that reducing the number of FFRDCs through consolidation would not result in significant cost savings. On the other hand, consolidation would risk the loss of focus on the needs of FFRDC sponsors. The expertise each FFRDC offers the DoD is unique to

the needs of the sponsors and does not represent duplication of effort that can be effectively eliminated by consolidation. Each of the FFRDCs fall into one of three categories with differing arguments against consolidation.

- Studies and Analyses (S&A) Centers: There are six DOD-sponsored S&A centers. They deliver independent and objective analyses, and advise their sponsors in individually unique core areas important for policy development, decision making, alternative approaches, and new ideas on issues of significance. The amount of funding spent on these centers represents only about 18 percent of the total funding for FFRDCs in FY 1996.

- Systems Engineering and Integration (SE&I) Centers: DoD sponsors two SE&I centers. They provide required support in core areas not available from sponsor's in-house technical and engineering capabilities to ensure that complex systems will meet operational requirements. One, the Aerospace Corporation, specializes in general systems engineering and integration for space systems. The other, MITRE C3I FFRDC, performs general systems engineering and integration for the command, control, communications, and intelligence (C3I) community. The mission, purpose and core capabilities of the two centers are completely different. Consolidation is not an option.

- Research & Development (R&D) Laboratories: R&D laboratories fill voids in different technology areas where in-house and private sector research and development centers are unable to meet DoD core area needs. Specific objectives for these FFRDCs are to: (1) maintain over the long-term a competency in technology areas where the Government cannot rely on in-house or private sector capabilities; and (2) develop and transfer important new technology to the private sector so the Government can benefit from a wider, broader base of expertise. R&D laboratories engage in research programs that emphasize the evolution and demonstration of advanced concepts and technology, and the transfer or transition of technology.

The six UARCs are university research laboratories that perform basic research, design and development activities in support of their DoD sponsors' missions. Each UARC fills a void in a different technology area where in-house and private sector research and development centers are unable to meet priority DoD core area needs. Like the R&D laboratories, UARCs maintain long-term competencies in particular core areas and develop and transfer important new technology to the private sector. The Department has determined the six UARCs fulfill essential requirements for their sponsors without overlap.

Significant reductions in the size and budgets of the FFRDCs were made between FY 1991 and FY 1996. As a result of actions taken by DoD and annual cuts made by the Congress in the budget, the total funding for FFRDCs has decreased about 34 percent since FY 1991. The overall downward adjustment to the RDT&E budget during the same period was about 17 percent. The DoD has examined the current and projected size and budget of each FFRDC and UARC to determine whether they are appropriate to meet the primary needs of the sponsors and ensure the FFRDCs and UARCs maintain the core competencies necessary to meet those needs. The

Department is concerned that further reductions could force these institutions below the level needed to maintain critical core competencies.

FFRDC and UARC Performance of Core Activities

The Department, in furthering its proactive management approach, implemented a "core" work concept in FY 1995 for managing the workload of the FFRDCs and UARCs. The "core" concept is a way to ensure FFRDCs and UARCs are doing the kinds of work they should be doing and are right-sized. The "core" concept has also refined the way workload is projected and assessed, and has become the focus of the revised DoD FFRDC Management Plan.

Core Statement. For each FFRDC and UARC, the sponsoring DoD component developed a statement defining core work. The core statement is based on the mission, purpose, core competencies, and the strategic relationship that exists between that sponsor and the FFRDC or UARC. It is a dynamic document, periodically revised, to reflect evolving core requirements of the sponsoring DoD component. The core statements developed by the DoD sponsors (in FY 1995) were initially subject to USD(A&T) approval, and any changes to the approved core statements must be submitted to DDR&E for concurrence before they can become effective.

In addition, each DoD sponsor developed and applied specific core criteria to determine whether a task is within the scope of the core statement. These criteria were applied to all ongoing FY 1995 work and to each proposed task submitted for FY 1996. As a result of the program assessment, sponsors identified a total of about $43 million as non-core work in the FFRDCs and about $26 million in the UARCs. Many of these ongoing non-core tasks have been transitioned out of the FFRDCs and UARCs. Those remaining will be transitioned out by January 31, 1997.

The minimum criteria established by DDR&E for determining FFRDC/UARC "core" work are shown below.

1. **Consistency with the center's mission, purpose and capabilities.** The work assigned must be consistent with the center's basic mission and purpose, must be sponsored by an appropriate organization, and must be performed effectively using the capabilities that the center maintains.

2. Consistency with the center's core competencies. The work must fall within the center's core competencies--as specifically defined in its core statement.

3. Consistency with the center's strategic relationship. The work must be appropriate for an organization maintaining a strategic relationship with DoD, as evidenced by the need for one or more of the following:

a. Effective performance of objective, high-quality work on subjects integral to the mission and operations of sponsoring offices.

b. Freedom from real and perceived conflicts of interest caused by Service, commercial, or other involvement.

c. Broad access to information, including sensitive Government information, proprietary data from industry, and other information not normally available outside the Government.

d. Comprehensive knowledge of sponsor needs, problems and issues.

e. Responsiveness to emerging and evolving needs of sponsors.

f. Long-term continuity of knowledge on issues and problems of enduring concern, including both maintaining corporate memory when appropriate and responding to quick-response sponsor needs in areas of established expertise.

Core Workload. Given the mission of the FFRDCs and UARCs, staff years of technical effort (STEs) are the best measure for core workload. STEs apply to direct professional and consultant labor, and others who perform professional-level technical work. A STE work year is defined to be 1,810 hours of full time employee or consultant effort, including subcontracted efforts for technical services.

For FFRDCs, DDR&E will annually determine how many STEs are required by each FFRDC based on several factors, including sponsor needs, special circumstances, management strategy (e.g., core concept, acquisition reform initiatives, budget tracks), statutory direction, and the guidelines for determining workload for each category of FFRDC. The guidelines, to be applied by the FFRDC sponsor in projecting workload and funding requirements, for each category are shown below.

- Studies and analyses (S&A) centers shall maintain a relatively stable annual level-of-effort in order to maintain competency in their core areas. It is critical that S&A centers avoid the loss of continuity and expertise that arises from major changes in staff levels.

- Systems engineering and integration (SE&I) centers shall maintain stable core competencies and respond to projected trends in workload and finding consistent with the budget supporting the FFRDC mission area.

- Research and development (R&D) centers shall maintain technical expertise and related competencies necessary to address core work and priorities of the sponsor.

The process for UARCs is similar. The focus is on ensuring that annual STEs at each UARC represent those essential engineering, research, and development capabilities defined in their core statement.

From the annual workload requirements provided by the sponsors, the DDR&E will approve STE levels, consistent with overall DoD requirements and strategy, and maintain a five-year projection for planning purposes. Further, the DDR&E will monitor sponsor execution against approved STE levels and budget projections based on STE levels during the fiscal year and take action as required. Requests to the DDR&E for deviations from, or exceptions to, the established STE

level for any specific FFRDC or UARC shall be presented by the FFRDC or UARC sponsor with appropriate justification.

Management Plans. A revised DoD FFRDC Management Plan, to become effective on May 1, 1996, supports the DoD's major initiatives by establishing the policies and procedures described above for the management and use of DoD-sponsored FFRDCs. It applies to FFRDC primary sponsors, FFRDC users, and contracting activities that award FFRDC contracts. A copy of the DoD FFRDC Management Plan is attached (Attachment 1). Also effective May 1, 1996 is the DoD UARC Management Plan (Attachment 2).

Five-Year Assessment of FFRDC and UARC Requirements for STE

As a result of applying the "core" concept, the sponsors of the DoD FFRDCs and UARCs, and the DDR&E, developed five-year projections of the STE required as shown below.

FFRDCs	*FY1996* STE (Staff Years)	FY 1997 STE (Staff Years)	FY 1998 STE (Staff Years)	FY 1999 STE (Staff Years)	FY 2000 STE (Staff Years)
Studies and Analysis					
RAND-NDRI	103.9	104.0	106.0	106.0	106.0
RAND-Arroyo	96.8	100.0	104.0	104.0	104.0
RAND-Project Air Force	113.0	113.0	113.0	113.0	113.0
Center for Naval Analyses	233.5	245.0	252.0	259.0	266.0
Logistics Management institute	148.0	156.0	156.0	156.0	156.0
Institute for Defense Analyses-S&A	286.0	300.0	305.0	310.0	315.0
Institute for Defense Analyses-OT&E *(Note 1)*	66.5	70.0	68.9	68.0	67.3
Studies and Analysis Subtotal	1047.71	1088.0	1104.91	1116.0	1127.31
MITRE C^3I (Note 2)	1895.0	1895.0	1895.0	1895.0	1895.0
Aerospace	1765.0	1765.0	1765.0	1765.0	1765.0
SE&I Subtotals	3660.0	3660.0	3660.0	3660.0	3660.0
Laboratories					
MIT-Lincoln Laboratory *(Note 3)*	920.0	920.0	920.0	920.0	920.0
Institute for Defense Analyses-C^3I	133.5	144.0	150.0	150.0	150.0
Software Engineering Institute	155.3	163.0	171.2	179.7	188.7
Laboratory Subtotal	1208.8	1227.0	1241.2	1249.7	1258.7
FFRDC Subtotal	5916.51	5975.01	6006.11	6025.71	6046.0
UARCs					
Johns Hopkins University-APL	1226.0	1177.0	1130.0	1084.0	1041.0
Pennsylvania State Univ. ARL	306.0	305.0	303.0	301 .0	300.0
University of Texas-ARL	345.3	335.0	324.9	315.2	305.7
University of Washington-APL	59.2	57.4	55.7	54.0	52.4
Georgia Tech Research Institute	75.0	71 .0	64.0	65.0	60.0
Utah State University-SDL *(Note 4)*	120.0	85.0	25.0	0.0	0.0
UARC Subtotal	2131.5	2030.4	1902.6	1819.2	1759.1
FFRDC/UARC Total	8048.01	8005.41	7908.71	7844.91	7805.11

Note 1: IDA's S&A and OT&E actiiies are managed as a single FFRDC under a common contract and sponsoring agreement.
Note 2: FY 1996 includes 30 STE of "core" work for the National Photo Interpretation Center. In FY1997 funding for these STE will be assumed by DoD's National Imaging and Mapping Agency.
Note 3: STE level does not include Laboratory technical subcontracts with U.S. research-related industry in support of such Laboratory work field demonstrations, test systems, and new sensor systems.
Note 4: BMDO's sponsorship of USU/SDL will diminish as the Midcourse Space Experiment (MSX) effort ends under the current contracts during FY98. Other efforts funded through FY97 will, if continued, be through a new contract citing a different authority.

Summary

The DoD has developed a Five-Year Plan to establish a framework for the future workload of DOD-sponsored FFRDCs and UARCs. The plan reflects the proactive approach taken by USD(A&T) and DDR&E, as well as the valuable advice of an internal DoD Advisory Group and the Defense Science Board regarding DoD's management, use and oversight of FFRDCs and UARCs. The plan also emphasizes DoD's management initiatives to implement the core concept, in terms of defining core work and guidelines for core workload, and the policies and procedures developed to ensure right-sizing of FFRDCs and UARCs.

To facilitate consultation with the Services and other key members of the Department, the USD(A&T) formed the DoD Advisory Group, chaired by DDR&E with senior representatives from OSD, Joint Staff, military departments, and DoD agencies. The Advisory Group considered and evaluated alternatives to FFRDCs, including elimination and consolidation, in terms of risk, quality and cost. The Group concluded that consolidation would not result in significant cost savings and puts at risk the focus of the FFRDC on the needs of its sponsor. The Defense Science Board drew similar conclusions, finding that unique core work existed at each FFRDC requiring a special relationship between the FFRDC and its sponsor.

The DoD implemented the "core" work concept in FY 1995 as a way to ensure FFRDCs and UARCs are doing the kinds of work they should be doing. The core concept includes defining core work (core statement), establishing specific core criteria to determine whether a task is within the scope of the core statement, and projecting core workload by means of staff years (STEs). The core concept has been refined in FY 1996 and was the basis for the five-year projection of STEs for each FFRDC and UARC. The driver is the core statement which is an evolving document revised periodically to reflect changing requirements across the DoD.

The core concept has become the foundation of the revised DoD FFRDC Management Plan and the new UARC Management Plan. The plans implement DoD's management initiatives by establishing policies and procedures that apply to FFRDC and UARC sponsors, users and contracting activities that award FFRDC or UARC contracts. The plan outlines approval levels for specific actions and establishes consistent reporting requirements across DoD.

The bottom line is that DoD believes that FFRDCs and UARCs are doing high-quality, high-value technical and analytical work that could not be provided as effectively by other means. The DoD Advisory Group and Defense Science Board agree and believe FFRDCs (and UARCs) should be retained because of their quality and the special relationships they have with their sponsors on matters which are of great importance to the Department. These FFRDCs and UARCs are critically important national assets. They have provided key contributions in the past and will address critical needs now and in the future. To ensure the sustainment of these contributions, the Department has implemented proactive management on the part of sponsors and DDR&E.

Appendix B

Center for Naval Analyses

The written and oral information CNA and its Sponsor presented to the Task Force is summarized in this appendix. The Navy Sponsor presented a very supportive view of the need for the work being done by the FFRDC, and the value of CNA products.

Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers.

The Department of the Navy (DON) established the Center for Naval Analyses (CNA), its only FFRDC, to provide access to private sector scientific knowledge in support of DON decisionmakers. The Center traces its origin to 1942, making it the oldest DoD FFRDC.

The CNA has functioned as an independent entity with a contract directly with the Navy since October 1, 1990. It restructured in 1993 as The CNA Corporation (CNAC) with two divisions: the CNA FFRDC sponsored by the Department of the Navy, and a new operating unit, the Institute for Public Research (IPR) (see figure B-l).

Figure B-1: The CNA Corporation

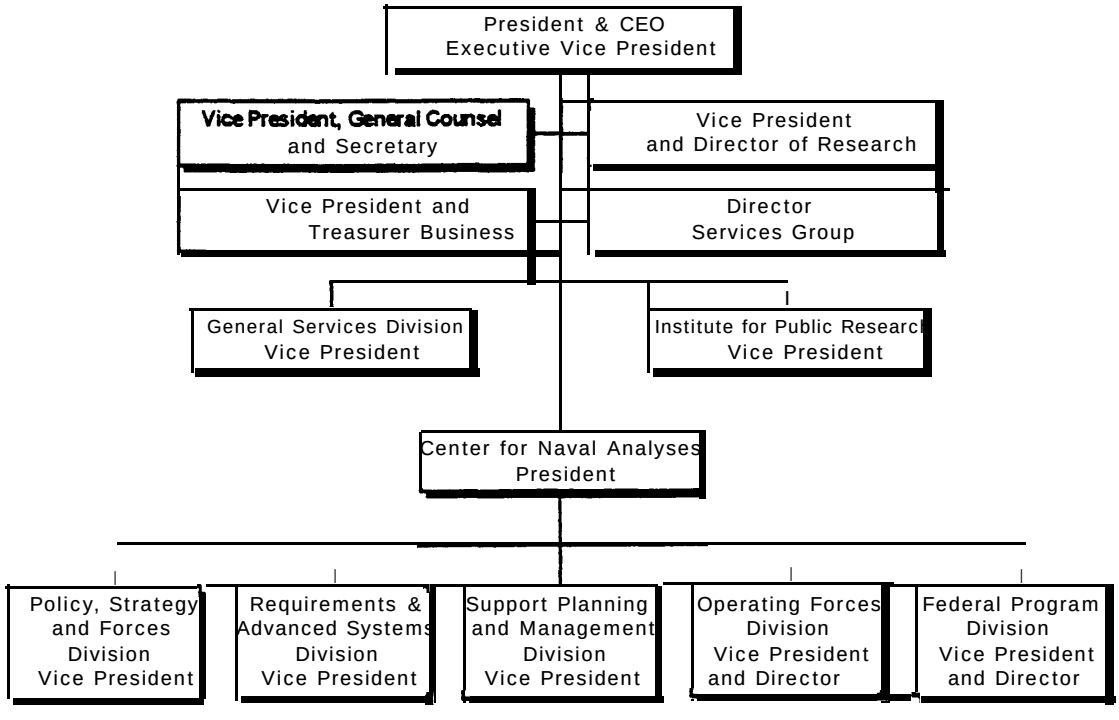
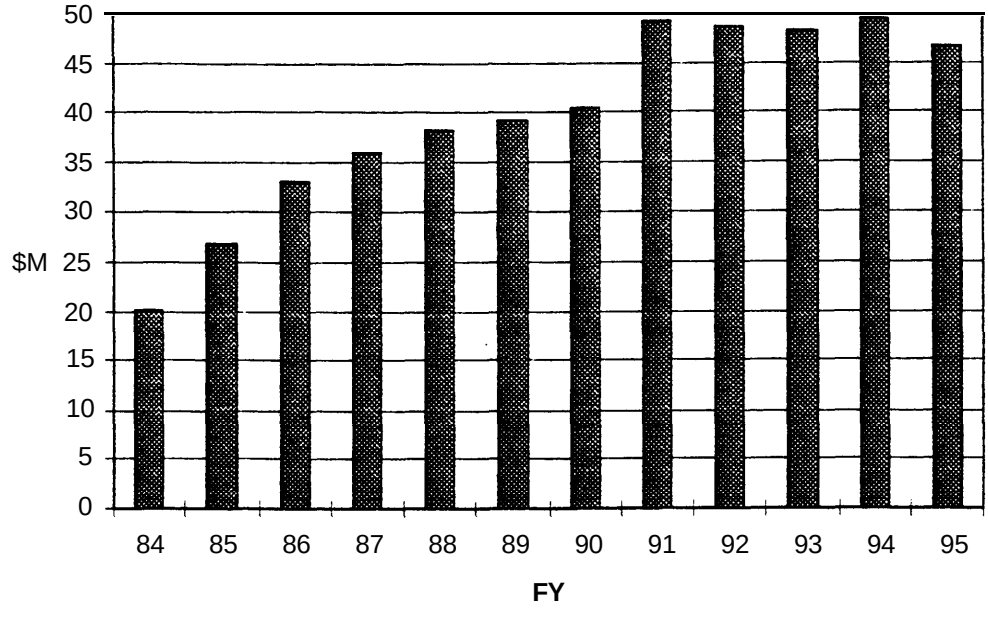


Figure B-2 shows a recent funding profile f or the CNA FFRDC. The FY 96 DoD ceiling allocation for the FFRDC is $45.9 million. Of this, $42.9 million is core funding for the Navy and Marine Corps research and about $3.0 million is for other DoD research. CNA's non-DoD work constitutes less than one percent of its FY 96 effort. The work done outside the FFRDC umbrella and within the IPR, provides analytical and support services to non-Navy clients (these clients can also include DoD non-Navy clients).

Figure B-2: CNA Funding Profile
Actual Obligations



SOURCE: Department of Defense

CNA's DoD ceiling allocation for FY 96 represents a drop of about 19% in real terms since FY 91. The overall funding limit has been set by DDR&E. DON Product Area Managers must approve sponsor requested efforts within the 11 contractually defined areas before N81 and the Office of Naval Research (ONR) authorize CNA to execute projects and programs. N81 and the ONR review technical, administrative, and budgetary aspects of individual projects.

CNA's mission, as stated in the latest contract, is to: provide an independent authoritative source of research and analysis that is focused upon the major present and future issues affecting the Navy and Marine Corps.

CNA's core competencies are:

> **Operations Analysis:** Work that helps the fleet or fleet Marine forces develop or evaluate new tactics; test or employ new equipment; or plan conduct, or learn from exercises or real-world operations.

System Requirements and Acquisition: Work that addresses the potential utility of new technologies; the relative need for new systems or capabilities; or the costs and consequences of acquiring a particular system or family of systems.

Resource Analysis: Studies or analyses of issues involving manpower and training, readiness and logistics, or installations and infrastructure.

Program Planning: Analyses intended to help DON formulate coherent and executable long-term plans covering the evolution of naval missions; the integration or improvement of naval capabilities; the acquisition of needed supplies or services; or the future size and shape of naval forces.

Policy, Strategy, and Doctrine: Broad studies intended to help DON develop, promulgate, evaluate, or refine new policies, strategies, or doctrine.

CNA's core work is defined as work that appropriately integrates CNA's mission, purpose, and capabilities; its core competencies; and the characteristics of a strategic FFRDC relationship with its sponsor. The test of appropriateness requires that the work being assigned: (1) is consistent with CNA's mission, purpose, and capabilities, (2) requires the characteristics of a strategic relationship, (3) requires at least one of CNA's core competencies, (4) could not be done as effectively elsewhere, (5) is free from real or perceived conflicts of interest, (6) could not be done by available government resources, (7) will be done mainly by CNA employees, and (8) is not an inherently governmental function.

CNA has a research staff of 230. CNA reports that its scientific staff possesses a level of education and experience across a broad range of fields and disciplines. More than 95 percent of the CNA research staff have advanced degrees, about 66 percent with PhDs. Additionally, CNA's research staff averages 16 years' experience since receiving their bachelor's degree and averages 12 years of experience related to CNA studies. CNA attempts to maintain an essential critical mass of authoritative knowledge and skills in various research areas. The strategic nature of CNA's relationship with DON has encouraged the retention of experienced analysts who specialize in naval matters and related technical subjects.

CNA personnel work with DON personnel both in Washington and at 30 Navy, 6 Marine, and 5 Joint Commands. The FFRDC and the sponsor both stress the importance of the close and long-term relationship between the FFRDC and DON personnel.

CNA reports that the CNA Field Representatives (about 40 of whom work at 24 locations around the world) provide on-scene technical analytic support that is focused on the command's priority issues and provide support for contingency planning in crisis situations. The field analysts provide analytical support during real world operations; help design reconstruct, and analyze more than a dozen major exercises per year; and assist in evaluating new equipment, developing and testing new tactics, and refining or revising naval doctrine.

CNA sees this field work as an added benefit for DON since field representatives' exposure to fleet operations adds to the realism and relevance of the studies they do when they return to CNA headquarters from their 2-year field tours.

The CNA FFRDC will perform only core work for DON and other DoD activities. Non-core work will not be conducted at CNA but can be done at IPR. CNA and its Navy sponsor have developed criteria (outlined above in the discussion of core work) to determine if work is appropriate and core for CNA.

The level and appropriateness of non-DoD work and work for other than the primary sponsor.

CNA reports that the only non-DoD work currently being conducted in the FFRDC is a study for the U.S. Coast Guard. Non-DOD work is very limited and is closely monitored by the sponsor.

Non-core work may be performed by the Institute for Public Research (IPR), the non-FFRDC division of The CNA Corporation. The following are the criteria for acceptance of work by IPR: (1) does not pose an actual or potential conflict of interest with FFRDC work, (2) will not interfere with performance of FFRDC work, (3) may draw on Corporation's technical expertise but not specific subject matter of FFRDC work (4) must be done in accordance with applicable cost accounting standards and accounting principles and will not cause non-compliance in the FFRDC, (5) work for a DoD component may not be within FFRDC's purpose, mission, general scope of effort or scope of core work, and (6) must be fully funded by sponsor or fees earned by the Corporation.

Compliance with the DoD Management Plan

The DoD Management Plan directs that the S&A FFRDCs (1) maintain a relatively stable level-of-effort, and (2) maintain competency in core areas. Staff years of technical effort (STEs) are used in sizing and managing DoD-funded FFRDC work.

The Plan states that DoD FFRDCs may only perform core work, that such work must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments) and for not-for-profit activities; and cannot include commercial work.

Parent institution operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity, and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

CNA maintained a relatively stable level-of-effort until FY 95 when it experienced a sharp reduction in its DoD funding allocation. The Center reports that it maintains a critical mass in areas of particular interest to its sponsor (although the 1995 5-year review indicates that the medical area appears to be a problem). As noted above, CNA and its sponsor have defined five areas of core competencies. These are detailed in the current contract. CNA management, however, expresses concern about their future ability to maintain a critical mass in key areas unless CNA's DoD funding ceiling is increased above the FY 95-96 level.

The FFRDC reports that it has developed a deep understanding of Navy and Marine Corps problems through its 54 years of Service association and such programs as the on-site analysts. It uses this understanding to identify and address Navy and Marine Corps work that could not be accomplished by other organizations.

CNA reports it does only core work in the FFRDC. The work done in the IPR is screened according to the criteria already outlined. CNA provides the sponsor quarterly reports of all contracts, grants, etc., of the IPR.

Sponsor's Management Processes

The relationship between the DON and CNA is governed by the Office of Federal Procurement Policy directives and the Federal Acquisition Regulation, instructions of the Secretary of Defense concerning FFRDCs, the sponsoring agreement between the DON and CNA and, of course, pertinent legislation. The CNA oversight chain is shown in figure B-3.

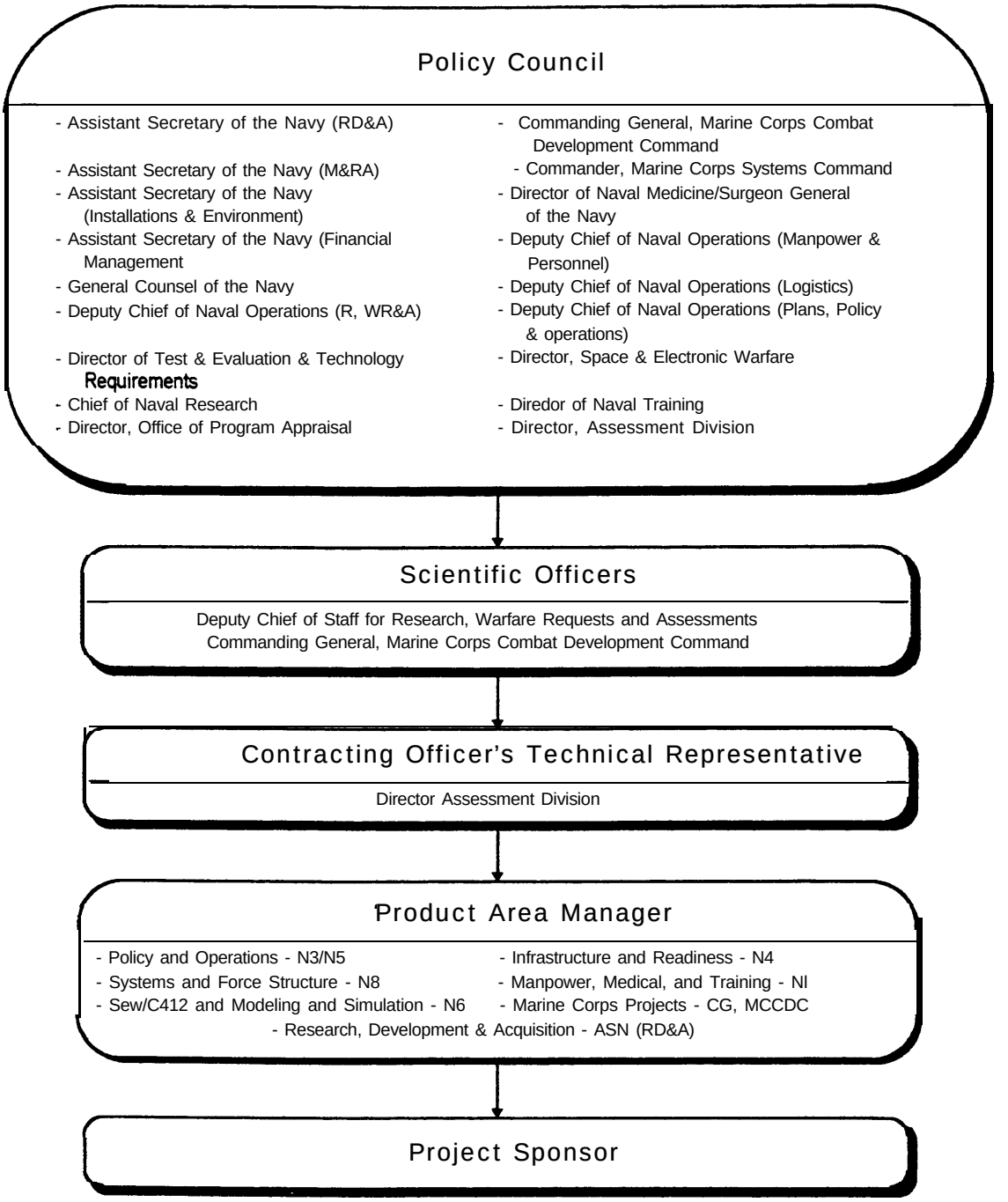
The DON's Policy Council is headed by the Assistant Secretary of the Navy (Research, Development and Acquisition) and includes the other Assistant Secretaries of the Navy, the Navy General Counsel, and pertinent Deputy Chiefs of Naval Operations and comparable Marine Corps general officers. The Policy Council reviews and approves CNA's work annually, and approves the level of resources and the plan of work for the coming year.

The Navy and Marine Corps Scientific Officers are responsible for the overall coordination of CNA's research program within those Services. The Navy's Deputy Scientific Officer, is also the Contracting Officer's Technical Representative (COTR), and is, therefore, responsible in detail for CNA's research work. The DON's Contracting Officer in the Office of Naval Research, is responsible for the overall administration of CNA's contract.

CNA's funding and research programs are divided into seven product areas and four levels of effort areas. Each product area has a three-star Navy or Marine officer, or a civilian Assistant Secretary, called a "DON Product Area Manager," who interacts with a CNA Vice President in discussing and deciding upon the annual research program for that product area. The Product Area Managers shown in the figure are allocated a dollar ceiling for the product area and prioritize the work within that area. They are responsible for review, approval, and coordination of all the work in their area. Each Product Area Manager approves, in writing, each separate project assigned to CNA during the year. In addition, the Marine Corps for over five years has convened a quarterly review conference between Marine staff and CNA at the flag officer level to

discuss progress and issues. The Navy has recently decided to convene a similar conference each quarter. There are also more frequent working meetings between CNA analysts and the DON sponsors of each project.

Figure B-3: Department of the Navy Management Oversight



SOURCE: Department of the Navy

CNA reports in writing each quarter on the cost and performance of each project under way. CNA reports it is scrutinized rigorously and regularly by various audit and investigating agencies as well-the DoD Inspector General, the General Accounting Office, the Naval Audit Service, and the Defense Contract Audit Agency are the more prominent. CNA reports it had 16 audits by these agencies in FY 1994. CNA's security arrangements are audited by DoD regularly as well. The Department of Labor also audits The CNA Corporation from time to time. (For its part, the CNA Corporation employs a private accounting firm, Grant-Thornton, as its own external auditor, reporting to the Board of Trustees.)

In considering award fees an assessment of CNA's effectiveness and efficiency is made as a part of the evaluation of the contractor's performance. Factors that are considered in the overall evaluation are: Timeliness, Quality, and Cost Effectiveness and Efficiency. Timeliness constitutes 25% of the score, Quality is 55%, and Cost Effectiveness and Efficiency is 20%.

Metrics that are used in this evaluation are shown in tables B-l, B-2, and B-3.

Table B-l: Evaluation Metrics

Evaluation Factor	Evaluation Elements	Weighting Factor
Timeliness	Submission of Project Proposals and Revisions	5%
	Adherence to Project Milestones and Final Delivery Requirements	10%
	Responsiveness to Sponsor Needs	10%
Quality	Demonstrated Understanding of Sponsor's Technical Needs and Mission Requirements	15%
	Accuracy, Thoroughness, Innovativeness, and Objective of Research	20%
	Currency of Expertise and Know Use of Appropriate Research Methodologies	20%
Cost Effectiveness and Efficiency	Control of Indirect Costs 10%	
	Manages to Budgets 10%	

Table B-2: Grading Table - Timeliness and Quality Evaluation Factors

Adjective Grade	Description	Point Range
Superior	Superlative Level of Performance, Achievement of Distinguished Results and Effectiveness. No Deficiencies	91-100
Excellent	Of Exceptional Merit; Exemplary Performance in a Timely, Efficient and Economical Manner - Very Minor Deficiencies - No Effect on Overall Performance	81-90
Good	Very Effective Performance; Fully Responsive to Contract Requirements; More than Adequate Results; Reportable Deficiencies, but with Little Identifiable Effect on Overall Performance	71-60
Satisfactory	Effective Performance; Responsive to Contract Requirements; Adequate Results. Reportable Deficiencies with Identifiable, but Not Substantial, Effects on Overall Performance	61-70
Marginal	Meets or Slightly Exceeds Minimum Acceptable Standards; Useful Levels of Performance, but Suggest Remedial Action, Reportable Deficiencies whiih Adversely Affect Overall Performance.	51-60
Unsatisfactory	Below Minimum Acceptable Standards; Poor Performance; Inadequate Resutts; Requires Prompt Remedial Action. Significant Deficiencies.	0

Table B-3: Grading Table - Cost Effectiveness and Efficiency Evaluation Factor

Adjective Grade	Description	Point Range
Superior	Superlative Level of Performance; Achievement of Distinguished Results and Effectiveness. Actual Rates for Indirect Costs are Less than Budget. All Projects are Performing within Budget	91-100
Excellent	Of Exceptional Merit; Exemplary Performance. Actual Indirect Rates are within Budget. There are only Minor Variances, less than 10%, in a Minority of Project Budgets, and No Project Varies by More than 10%	81-90
Good	Very Effective Performance; More than Adequate Results. Actual Indirect Cost Rates are within 1% of Budget. Variance in Project Budgets by Less Than 10% on a Majority of Projects, and No Project Varies by More Than 10%.	71-80
Satisfactory	Effective Performance; Adequate Results. Actual Indirect Cost Rates are within 5% of Budget. Variance in Project Budgets by More Than 10% on a Few Projects, and No Project Varies by More Than 15%.	61-70
Marginal	Meets or Slightly Exceeds Minimum Acceptable Standards. Actual Indirect cost Rates are within 10% of Budget. Variance in Project Budgets by More Than 10% on a Significant Number of Projects and at Least One Project Varies by More Than 15%.	51-60
Unsatisfactory	Below Minimum Acceptable Standards; Poor Performance; Inadequate Results; Requires Prompt Remedial Action. Actual Indirect Costs Exceed 10% of Budget in One or more Rates. Variance in Project Budgets by More Than 10% on a Majority of Projects, and two or more Projects Vary by More Than 15%.	0

The Thoroughness of the Five-Year Review

The Comprehensive Review for the Center for Naval Analyses conducted by the sponsor is lengthy. The criteria established by FAR 35.017 were used to determine the continued usefulness of CNA and its effectiveness. These are: (1) examination of the DON's

technical needs and mission requirements that are served by CNA as an FFRDC, (2) consideration of alternative sources to meet the DON's needs, (3) an assessment of CNA's effectiveness and efficiency in meeting the DON's needs, (4) an assessment of the adequacy of CNA's management in ensuring a cost effective operation; and (5) determination that the criteria for establishing CNA continue to be satisfied and that the sponsoring agreement is in compliance with the FAR 35.017-1.

The August 1995 Review details DON's technical needs and mission requirements that are currently served by CNA. The needs and mission requirements are presented in broad terms.

The discussion of whether alternative sources can meet DON's needs is very general, very short, and highly aggregated. The Review considers four categories: in-house and other government resources; universities; commercial industry; other nonprofits, and other FFRDCs. Each of these categories is shown to have some of the characteristics of CNA but is found to be deficient in at least one area and is presented as not competitive with CNA. For example:

- Government sources lack "a depth and breadth of knowledge which stems from a long term relationship."

- University sources "would not possess the necessary experience to effectively perform the work assigned to CNA."

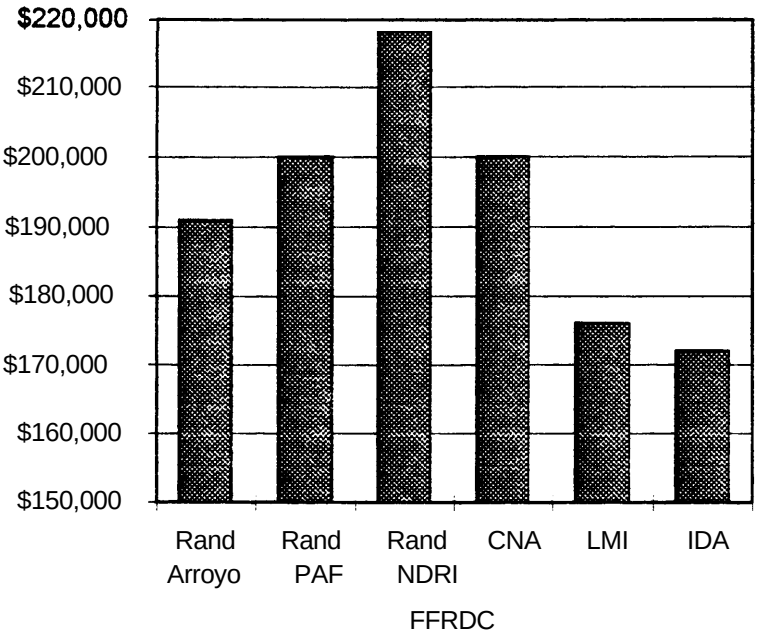
- Commercial Industry "without a guarantee of continuous funding and involvement, commercial entities cannot afford to dedicate the resources necessary to maintain currency in Naval operations, policies, doctrine and capabilities."

- As for other Nonprofits and FFRDCs, "while the Navy maintains a relationship with other systems engineering and research laboratory FFRDCs and many nonprofits, none of these relationships provide the detailed knowledge and expertise in Naval operations, policies, doctrine, and capabilities to perform the work assigned to CNA."

The effectiveness and efficiency evaluation of CNA that appears in the 5-year Review is the result of a questionnaire sent to Navy Product Area Managers. The Review includes a number of statements on savings that have occurred as a result of CNA studies. The Review notes that the Navy comments on CNA work with some exceptions (e.g., medical and training) were "extremely positive."

The assessment of CNA's management in ensuring a cost effective operation that appears in the 5-year Review consists largely of discussions of compliance with auditing rules. There is a limited comparison of overall costs of man-years with those of other FFRDCs (figure B-4).

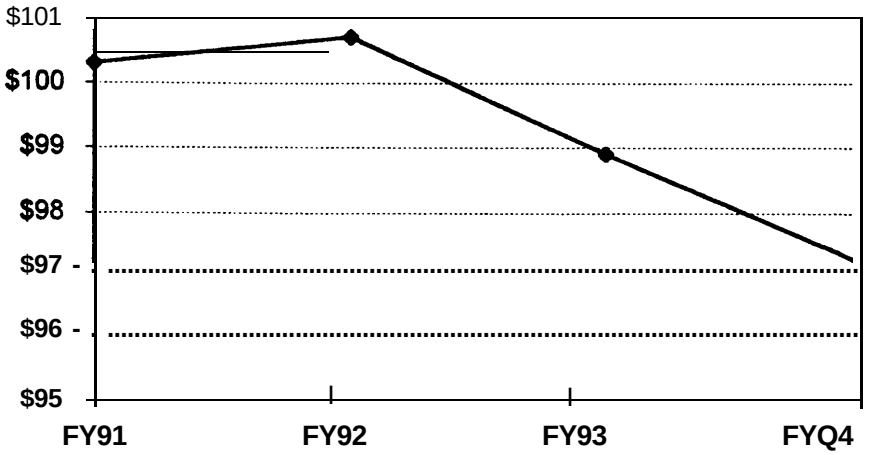
Figure B-4 : Average Cost per MTS Year for DoD Sponsored Study and Analysis FFRDCs in FY 94



SOURCE: The Department of the Navy.

The Review also shows a reduction in the average cost of CNA MTS hours (figure B-5). There is no comparison with for-profits organizations or with non-FFRDC, non-profit organizations.

Figure B-5: CNA Average Cost per MTS Hour



SOURCE: Department of the Navy

Appendix C

The Institute for Defense Analyses

The written and oral information of the Institute of Defense Analyses (IDA) and its Sponsors presented to the Task Force is summarized in this appendix. The primary sponsors of the two DoD FFRDCs and the primary user of the operational evaluation division were very supportive of the need for the work being done by the FFRDCs and the value of IDA products.

Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers

IDA was formed in 1956 at the request of the Secretary of Defense to:

> ". . .assist the Office of the Secretary of Defense, the Joint Staff, the Unified Commands and Defense Agencies in addressing important national security issues, particularly those requiring scientific and technical expertise."

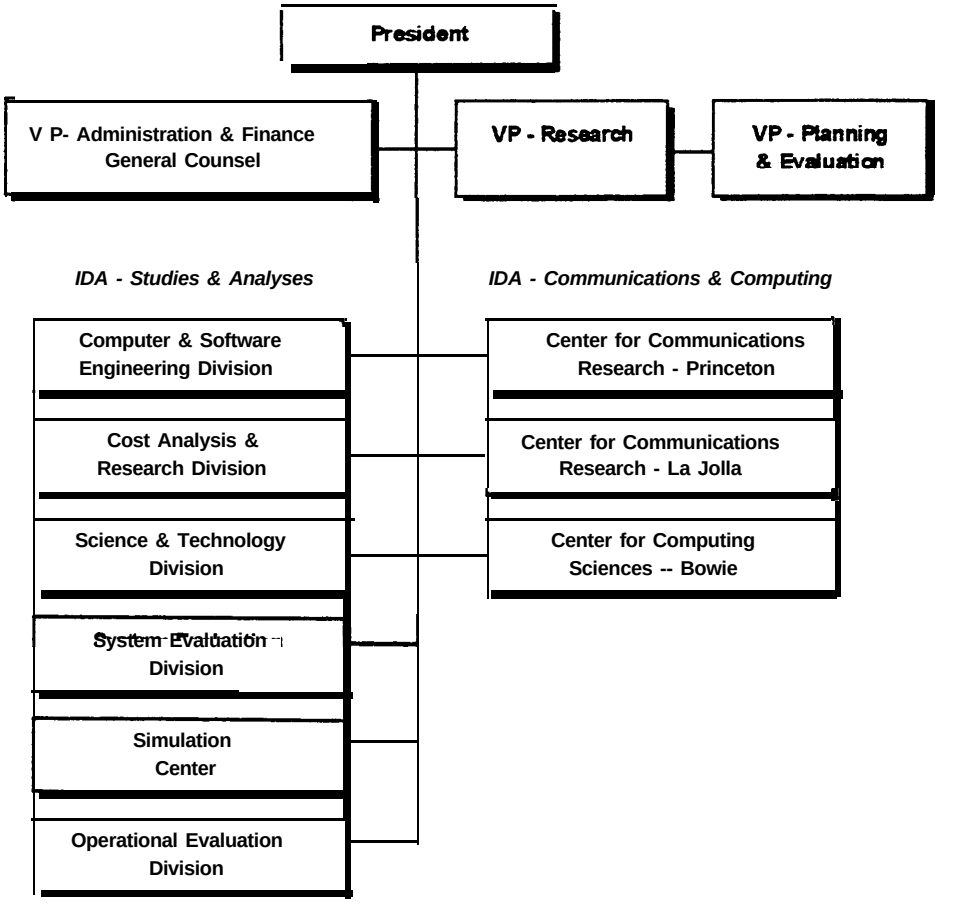
The Institute was originally chartered by a consortium of universities led by MIT. It became an independent corporation in 1968. Over the years, IDA has modified its structure in response to sponsor needs and requests and currently manages two FFRDCs, the Studies and Analyses Center and the Communications and Computing FFRDC. The current organizational structure is shown in figure C-l.

The Communications and Computing Center is sponsored by the National Security Agency. It includes the Center for Communications Research at Princeton established in 1958; the Center for Computing Sciences at Bowie established in 1984; and the Center for Communications Research at La Jolla established in 1989.

IDA's Studies and Analyses FFRDC is sponsored by the Under Secretary of Defense (A&T), with the Director, Acquisition Program Integration having day-to-day management and oversight responsibility. The Studies and Analyses Center has six divisions supporting OSD as a whole, including DARPA.

The Operational Evaluation Division is managed under the Studies and Analyses FFRDC, and works exclusively for the OSD, Director, Operational Test and Evaluation (DOTE). The Division has been providing about 70 MTS/year for DOTE.

Figure C-1: Institute for Defense Analyses

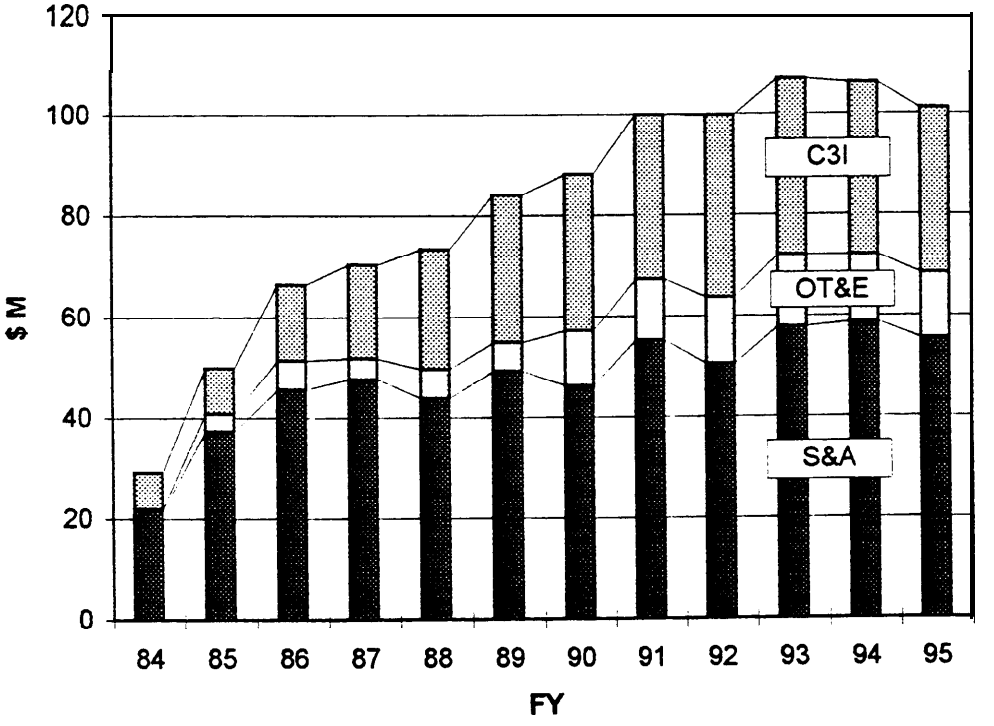


SOURCE: Institute for Defense Analyses

Each of IDA's two FFRDCs has its own sponsor and contract arrangement. Funding for the Communications and Computing Center is administered through the National Security Agency. Funding for the Studies and Analyses FFRDC comes from a variety of sources within OSD, the Joint Staff, Defense Agencies, and some limited non-DoD government work. According to the latest available Comprehensive Review (August 10, 1993), the majority of non-DoD funding came from the FBI and NASA.

IDA's recent DoD Funding Profile is shown in figure C-2

Figure C-2: IDA Funding Profile Actual Obligations



SOURCE: The Department of Defense

IDA's DoD FFRDCs are discussed below.

IDA Studies and Analyses

Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers.

The IDA Studies and Analyses Center is the direct descendent of several of the groups originally created to support the DoD's Weapons System Evaluation Group and later ARPA. It is one of several studies and analyses FFRDCs supporting the OSD. It also works for the Joint Staff, the unified commands, and defense agencies. The mission of the S&A Center remains similar to the earlier mission:

> ...to assist the Office of the Secretary of Defense, the Joint Staff, the unified commands, and defense agencies in addressing important national security issues, particularly those requiring scientific and technical expertise. IDA research requires an in-depth knowledge of Defense systems, technologies, operations, strategies, and resources.

The FFRDC's organizational structure was shown in figure C-1 above. Its stated core competencies are:

Systems Evaluations. Evaluations support decisions on acquisition and program planning, and involve assessments of military worth, system performance, technological risks, costs, and allied interoperability.

Technology Assessments. Provides scientific, technical, and analytical support related to identifying, developing and using advanced technologies. This involves assessments of technology feasibility, performance, productibility, demonstrations, and development risks.

Force and Strategy Assessments. IDA conducts assessments relating systems, operational performance, force structure, and national security strategy.

Resource and Support Analyses. IDA develops methods and models for estimating the costs to develop, procure, test, operate, and support Defense forces and systems. IDA applies these techniques when evaluating the resource consequences of Defense policy, planning, programming and acquisition decisions.

The relation of these core competencies to on-going research activities are shown in table C-1.

Table C-1: IDA Core Competencies

Svstems Evaluations	Technology Assessments
• Strategic Systems & Missile Defense	• Materials
• Tactical Systems	• Space, Air. and Missile Technologies
• C3, Surveillance and Space Systems	• Sensors, Surveillance, and Target Acquisition
• Information and Computing Systems	• Simulation
• Test & Evaluation	• Information and Computing Technologies
	• Manufacturing
	• Technology Planning and Strategy
	• International Technology Planning & Controls
Force and Strategy Assessments	**Resource and Support Analyses**
• Joint and Combined Force Planning, Operations & Assessments	• Cost Analyses
• National Security Strategy Issues	• Industrial Base and Mobilization
	• Acquisition Planning & Resource Management
	• Training and Readiness
	• Environmental Technologies

SOURCE: Institute for Defense Analyses

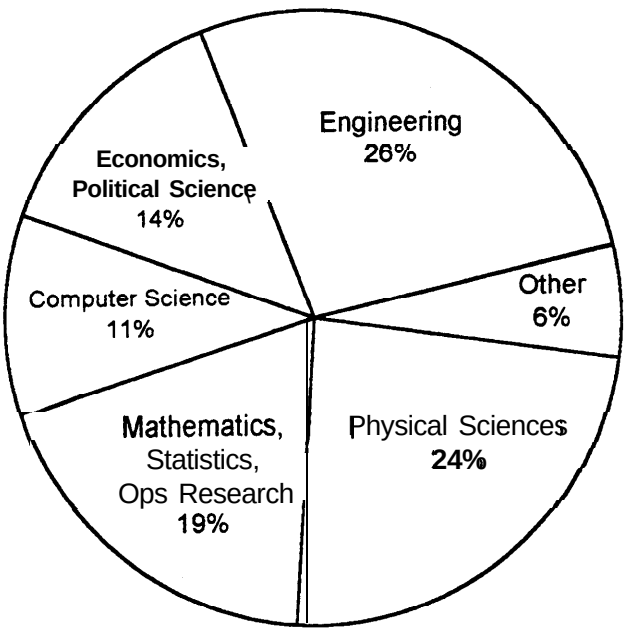
Core work is defined as that which is appropriate for IDA to conduct in pursuit of IDA's mission and charter to support DoD, and in light of the strategic relationship maintained between IDA and its sponsors. This research must: (1) be consistent with IDA's mission, purpose, and capabilities; (2) be consistent with DoD's needs for IDA work as reflected by the core competencies that IDA maintains, (3) require the long-term FFRDC special relationship between sponsors and IDA, and (4) meet an important DoD need.

IDA reports that its customers are sensitive to core competencies and there is little or no pressure for non-core work. IDA reports that in the past, some core work has developed to the point that the special FFRDC relationship and/or the core competencies of IDA are no longer required. Examples of work terminated or reduced include:

- Support of developed information systems
- Expert systems for counter-terrorism, and counter-drug data
- Support for Armed Forces Information Service
- Operating and maintaining particular models

In 1995, DoD sponsored about 377 MTS within the fiscal ceiling applied to IDA's S&A FFRDC. The composition of academic disciplines of the research staff of the S&A FFRDC is shown in figure C-3.

Figure C-3: Composition of the IDA S&A Research Staff



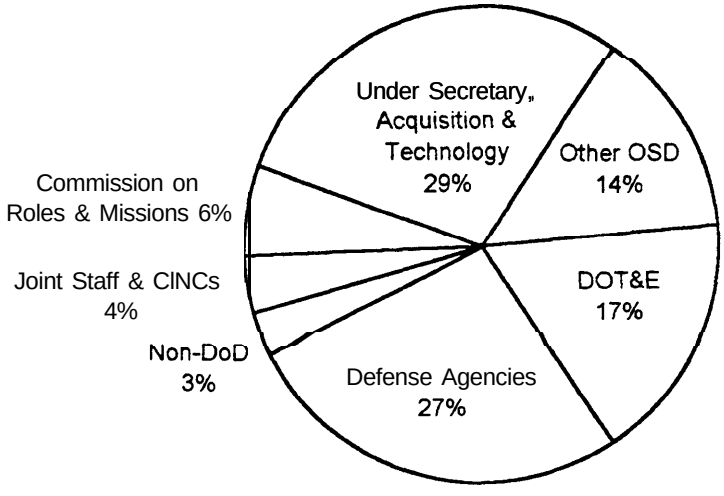
SOURCE: Institute for Defense Analyses

According to the sponsor briefing, the FY 1996 ceilings are 286 MTS for S&A and 67 MTS for T&E (subsequently changed to a total of 352.5 STE).

Fifty-seven percent of the research staff hold doctorates and another 36 percent have master's degrees.

The S&A FFRDC's funding comes from sponsor studies funds and program funds. There is no specific DA program budget line. Study funds are justified by individual sponsors and they decide what work needs to be done and who will do it. A breakout of the funding sources for FY 1995 is shown at figure C-4.

Figure C-4: S&A FFRDC 1995 Funding Sources



SOURCE: Institute for Defense Analyses

Funding for the S&A FFRDC is shown in table C-2.

Table C-2 : S&A Funding

($ millions)

	FY 1991	FY 1992	FY1993	FY 1994	FY 1995
IDA Studies and Analyses	67.3	63.7	71.9	72.0	68.4

Excludes Commission on Roles and Missions funds outside of ceiling in FY 1995 as directed by Congress.

SOURCE: Institute for Defense Analyses

IDA performs no non-core work. The stated work assignment criteria conforms to that of all the FFRDCs. The work assignment principles briefed by the primary sponsors are shown in table C-3.

Table C-3: Work Assignment Principles

- **Consistent With IDA Mission and Capabilities**
- **Consistent With IDA Core Competencies**
  - **Systems evaluations**
  - **Technology assessments**
  - **Force and strategy assessments**
  - **Resource and support analyses**
- **Require a Strategic Relationship**
  - **Long-term continuity**
  - **Conflict-free environment**
  - **Responsiveness**
  - **Familiarity with sponsors**
  - **Objective, high-quality work**
  - **Proprietary/sensitive data**
- **Meet an Important DoD Need**

Each sponsor maintains its own task formulation and approval process - all embody multiple reviews by senior officials

SOURCE: Office of the Secretary of Defense

The primary sponsor noted that each of the principal work sponsors has its own process for assigning work to IDA and provided some examples. The President of IDA generalized the process in his briefing (see box C-1). He noted that the process has become increasingly complex over the past five years. He said that it is more complex and time consuming than many arrangements with for-profits.

Box C-1: Typical Work Assignment Process

- **Sponsor provides a work statement and FFRDC justification**
- **IDA works with sponsor to prepare task order**
- **IDA VPs and Research Division Director review task order for appropriateness**
- **SES-level sponsor approves the task order and FFRDC justifications**
- **Contracting officer's representative (OSD FFRDC Programs Office) reviews task order for appropriateness and consistency with IDA core competencies**
- **Contracting office reviews task order and funding documents**
- **Competition advocate reviews justifications for use of FFRDC**
- **Director FFRDC Programs and President of IDA sign task order**

The level and appropriateness of non-DoD work and work for other than the primary sponsor

IDA reports it seeks no non-core work or non-FFRDC work. It does a modest amount of non-DoD work. Any non-sponsor work must be approved in writing by IDA's sponsor. The criteria for accepting such work is that it:

- Is national security work
- Develops and/or improves the capability to support DoD sponsor
- Represents no diversion of key talents from DoD sponsor work

IDA presented three examples:

- NASA space support system
- FBI counter-terrorism, counter drug
- DOE defense programs

Compliance with the DoD Management Plan

The DoD Management Plan directs that the S&A FFRDCs (1) maintain a relatively stable level-of-effort, and (2) maintain competency in core areas. Staff years of technical effort (STEs) are used in sizing and managing DoD-funded FFRDC work.

The Plan states that DoD FFRDCs may only perform core work, that such work: must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments) and for not-for-profit activities; cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity and credibility of the institute or call into question the freedom from conflict of interest; and not take unfair advantage of FFRDC work. The work must normally be in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

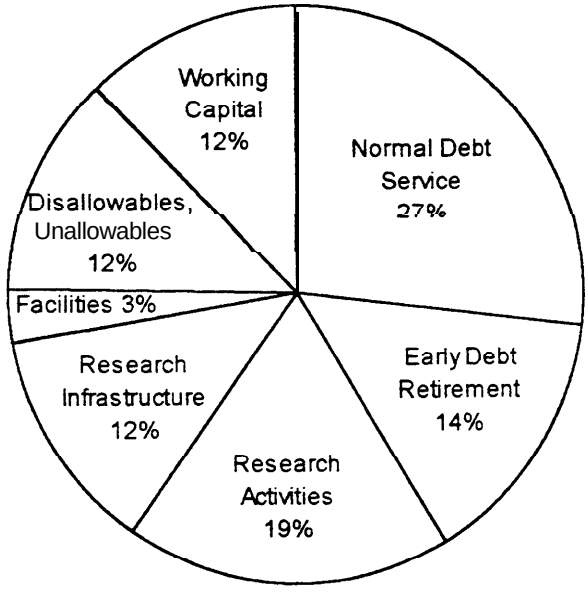
IDA reports it continues to respond to changes in user needs for the Studies and Analyses FFRDC. It adjusts to ensure "the right mix of high quality researchers in core competency areas." Research staff is projected to fall between FY 95 and FY 96, but the DoD currently projects the STE for IDA's S&A FFRDC to increase slightly between FY 96 and FY 2000.

The FFRDC conducts only core work. Non-sponsor work is approved by the primary sponsor.

IDA does not perform any non-FFRDC work.

Fees are authorized. The past use of fees is shown in figure C-5.

Figure C-5: Use of Fees 1992-1995



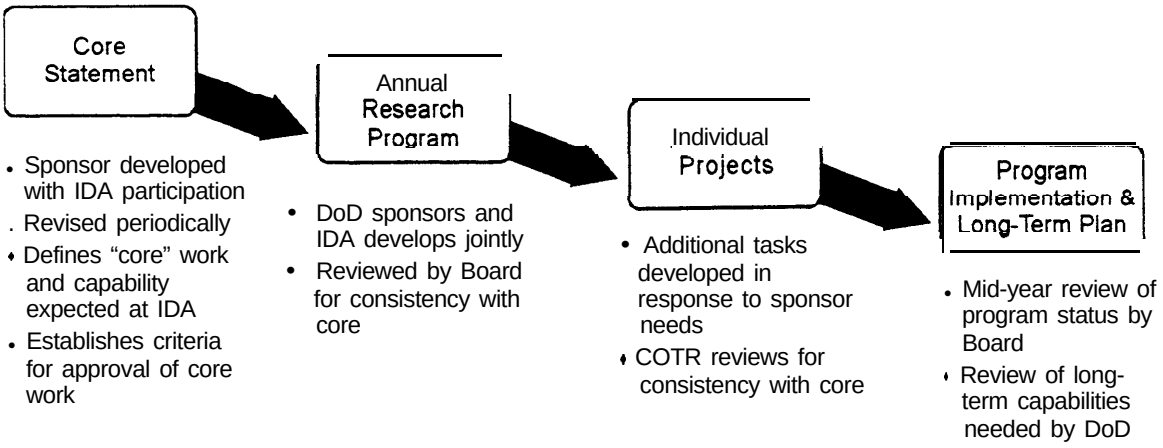
SOURCE: Institute for Defense Analyses

Sponsors' Management Process

The primary sponsor for IDA's Studies and Analyses FFRDC is the Under Secretary of Defense (A&T). The Director, Acquisition Program Integration, has day-to-day management oversight responsibility. The Director of the Office of Test and Evaluation, OSD has technical oversight over the test and evaluation work conducted in IDA's Operational Evaluation Division.

The Director, Acquisition Program Integration provides management through the FFRDC Program Office and the Contracting Officer's Technical Representative. The IDA Advisory Board, chaired by the Director, Acquisition Program Integration and including senior officials from other principal OSD, Joint Staff, and Defense Agency sponsors, recommends the multi-year level of professional effort, provides information on DoD research needs, reviews research, evaluates IDA management, and helps IDA resolve problems. A graphical description of the Research Plan and Program Process is shown in figure C-6.

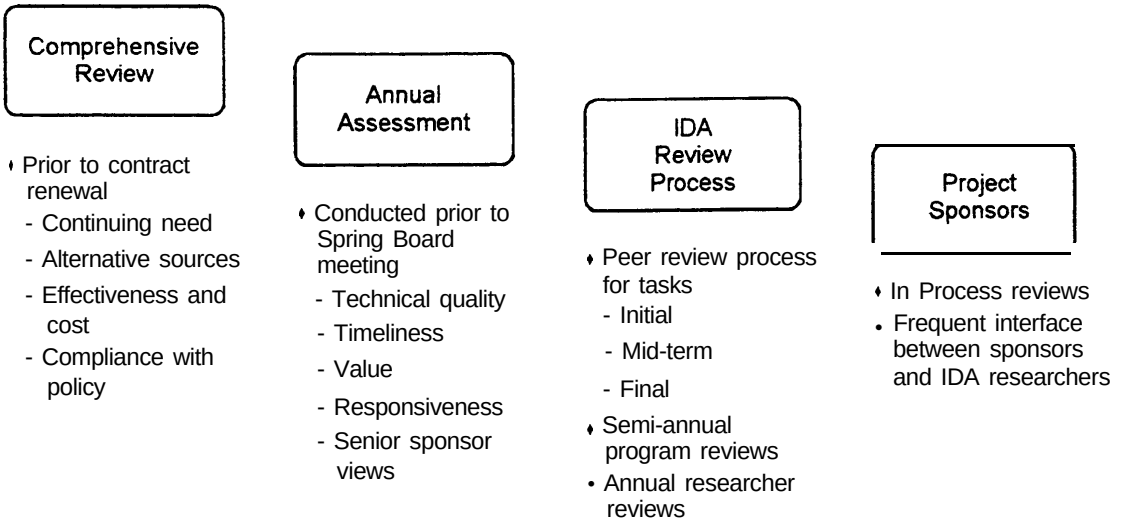
Figure C-6: Research Plan and Program Process



SOURCE: Department of Defense

A graphical description of Research Program Quality Control is shown in figure C-7.

Figure C-7: Research Program Quality Control



SOURCE: Department of Defense

IDA also reports attention to costs. The metrics used to evaluate success in achieving cost control include: support to research ratio reduced and burden rate reduced. IDA reports the "Bottom line result: Man-Year cost in constant dollars down significantly over past five years."

The Thoroughness of the Five-Year Reviews

IDA's last Five-Year Review was completed on August 10, 1993. The review was based on two surveys of the sponsor of work performed by IDA and a review of the Defense Contract Audit Agency (DCAA) audit reports for the last five years.

The Comprehensive Review reported that the changing nature of global security in a post-cold war period has increased the requirement "for thorough, in-depth analyses that are unbiased and credible."

The Review listed three broad alternative sources: in-house, other FFRDCs (specifically RAND), and for-profit contractors. The Review stated that such "resources are complementary and are used when appropriate; however, they are not a substitute for IDA's broad based cadre of recognized technical and analytical experts." Subsequent paragraphs dismissed "in-house" capabilities as "not available;" the use of other FFRDCs were viewed as impractical because the efforts would have become fragmented because "there is no other single FFRDC or group of FFRDCs that could perform the work assigned to IDA as effectively and efficiently." The use of for-profit contracts was dismissed as "constrained by conflict of interest concerns, problems in handling data proprietary to other contractors, and other competitive sensitive issues."

The Review notes that each task proposed for execution by IDA is evaluated to determine if IDA is the most effective source. The Review reports that OSD, the Joint Staff, and the various Defense Agencies, all have omnibus contracts with for-profit firms that might be available for use as alternatives to IDA.

IDA's cost and efficiency were evaluated. The Review reported that more than 300 individual tasks are accomplished by the IDA S&A FFRDC each year, and that IDA's management is taking corrective action to reduce unsatisfactory results in the limited cases where they occur. The review noted that some task sponsors believed the cost of IDA work appear high compared to some for-profit contractors. The review, however, concluded that "based on available data, IDA costs are lower than many other FFRDCs and are comparable with those of for-profit contractors with similar work force composition and other relevant characteristics." The average MTS cost at IDA was given as approximately $124K, that for RAND NDRI was estimated at $136K. Defense Supply Service--Washington reportedly showed equivalent contractor rates of $126K for senior systems analysts for one contractor and $156K for a senior operators research analyst from a second contractor.

The Review reported that the majority of task sponsors agreed that IDA's management is responsive to the needs of DoD and that the DCAA reviews between October 1989 and December 1992 revealed no major problem with IDA's internal controls. The Review recommended approval of a continuation of the contract.

Communications and Computing FFRDC

Much of the material provided for the Communications and Computing FFRDC was classified. The material presented here is an unclassified summary.

Objectives and guidelines for scope of work, organizational structure, size, appropriateness of customers

The Center is sponsored by the National Security Agency. It conducts fundamental research for the NSA in (1) cryptology, including the creation and analysis of complex encipherment algorithms, as well as in speech and signal analysis; and (2) various technologies associated with supercomputing and parallel processing including new architectures, hardware, and software (including prototypes), as well as parallel processing algorithms and applications.

The Center serves a single sponsor. It works in problem areas identified by NSA. The structure of the Center is shown in figure C-1 above.

DoD funding for the Center is shown in table C-4.

Table C-4 : DoD Funding

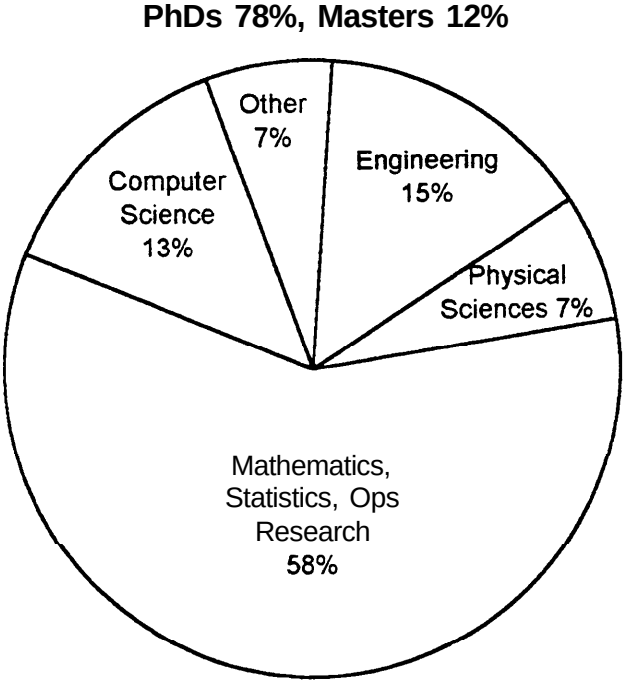
	N 1991	N 1992	N 1993	N 1994	N 1995
IDA-Communications and Computing	32.5	35.0	32.6	34.1	32.6

SOURCE: Department of Defense

There were 142 MTS involved in the Center in FY 95. The Management Plan projects 133.5 STE for FY 96 and 150 for FY 98 and beyond.

The composition of the staff is shown in figure C-8.

Figure C-8 : Composition of IDA Communications and Computing FFRDC Research Staff



SOURCE: Institute for Defense Analyses

The core competencies of the Center are:

- Cryptologic Mathematics
- Computing Sciences
- Communications Theory

The level and appropriateness of non-DoD work and work for other than the primary sponsor

The Center conducts no non-core work and although the sponsoring agreement permits it to do so, conducts no work for anyone other than NSA.

Compliance with the DoD Management Plan

The DoD plans directs Research and Development (R&D) Laboratories to maintain expertise and related competencies necessary to address the core work and priorities of the sponsor.

More generally, the Centers are directed to perform only core work. Such work must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments), and for not-for-profit activities; and cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

Sponsors are directed to ensure the FFRDC is used only for intended purposes, and that the costs are reasonable and products are of high value, sponsors review work to ensure it is appropriate to be done and they assure DDR&E that all directives are carried out.

The sponsor and IDA report that the center conducts only core work. IDA conducts no non-FFRDC work.

NSA states it is aware of the way fees are used.

NSA uses the Five-Year Review to judge the work. It reports that it has concluded that IDA provides an outstanding research program in return for NSA's investment.

Sponsors' Management Process

The NSA reports that IDA's efficiency and cost-effectiveness as a contractor are assessed by reviewing technical, management, and financial reports submitted pursuant to the contract.

The sponsor reported that the mandated ceilings have disrupted planning processes.

Thoroughness of the Five-Year Review

The contract renewal process reportedly adheres to the rules of such processes. The sponsor reports that a comprehensive review is completed and an exhaustive CICA report is prepared.

Appendix D

Logistics Management Institute

The written and oral information presented to the Task Force by both the Logistics Management Institute (LMI) and its primary sponsor is summarized in this appendix. The OSD sponsor was very supportive of the need for the work conducted by LMI and the value of LMI products. The Sponsor noted the wide range of work conducted by LMI and the critical importance of the topics LMI addresses. The Sponsor's view is that "LMI is critical to modernizing logistics by the 21st century."

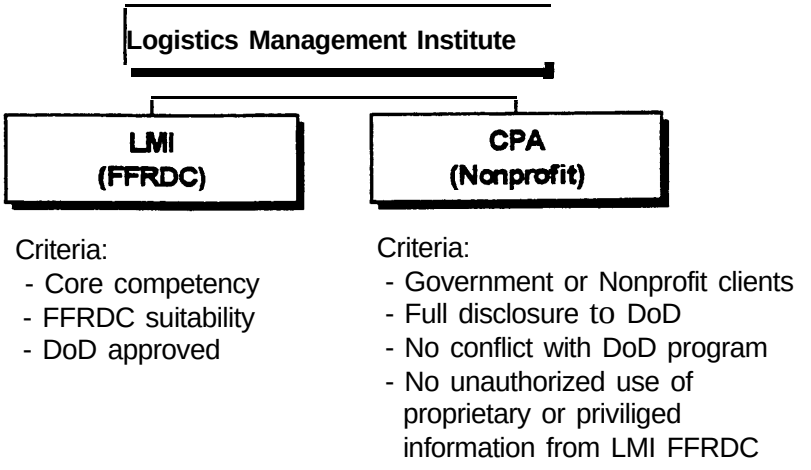
Objective and guidelines for scope of work, organizational structure, size, and appropriateness of customers.

Logistics Management Institute was established in 1961 as a nonprofit corporation at the request of Defense Secretary Robert N. McNamara to gather an expert staff to bring improved business practices to the Department's logistics operations and to serve the long-range analytical needs of the Department. Between 1961 and 1984 the Institute operated as a non-profit entity with a series of 5-year sole-source contracts. In 1983 the Department decided to establish an FFRDC for logistics research and analyses. In 1984, Logistics Management Institute was selected to operate an (FFRDC) to perform research, studies, and analyses to support the Office of the Secretary of Defense (OSD), the Joint Staff (JS), Defense Agencies, the Military Departments and Unified and Specified Commands. The primary sponsor was the Assistant Secretary of Defense (Manpower, Installations and Logistics) and successor organizations. In 1995, the Under Secretary of Defense (Acquisition & Technology) was named LMI's primary sponsor with the Deputy Under Secretary of Defense (Logistics) as the Executive Agent.

Logistics Management Institute is structured into two centers, the DoD FFRDC (LMI), and a Center for Public Administration (CPA). The organizational structure and the criteria used for selecting work in both these centers is shown in figure D-1.

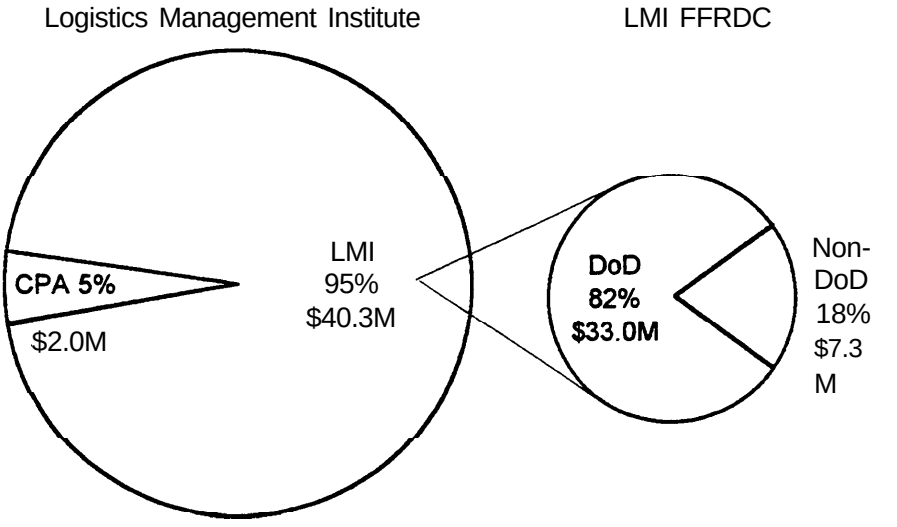
The LMI FFRDC works for its DoD and non-DoD clients under all the rules governing FFRDCs. The Center for Public Administration (CPA), established in 1994, works for both government and nonprofit clients (it conducts no work for the DoD) and operates under a full disclosure arrangement with the DoD. The CPA makes up only a small portion of the Institute's work. Total revenue for FY 1995, and its distribution, is shown in figure D-2.

Figure D-1: Logistics Management Institute



SOURCE: LMI

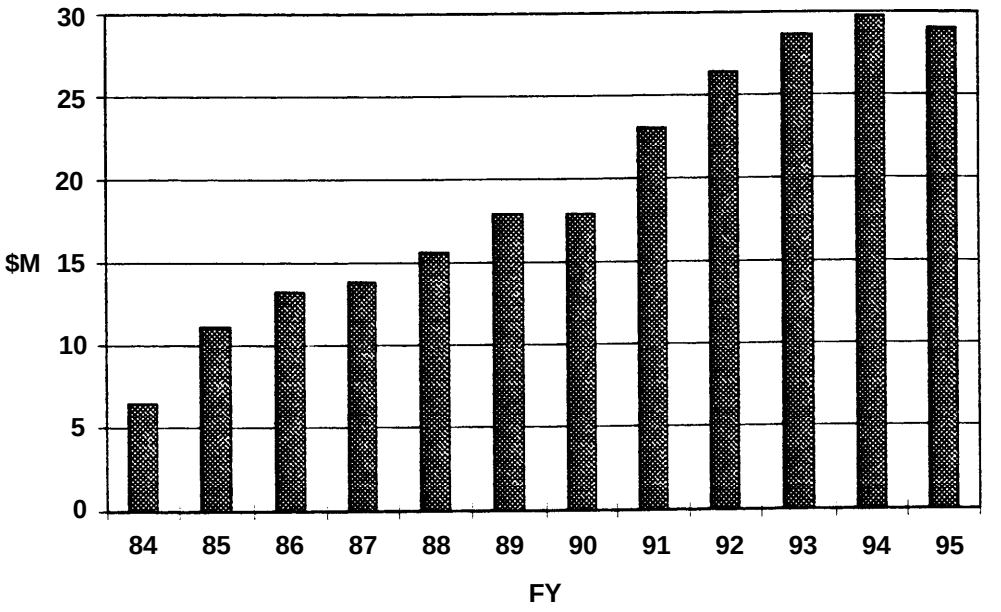
Figure D-2: LMI FY 95 Revenue/Distribution



SOURCE: LMI

Recent finding trends are shown in figure D-3.

Figure D-3: LMI Funding Profile Actual Obligations



SOURCE: Department of Defense

According to the latest Five-Year Comprehensive Review, LMI's primary mission is to provide the DoD leadership with expert information., and independent, objective analysis on a wide range of logistics, acquisition, and related infrastructure issues and policy initiatives.

To satisfy DoD'S needs, LMI states that it has developed and maintains core competencies in five areas:

Acquisition: Includes assessment of procurement policies, identification of best contracting practices, evaluation of the effects of policy changes on small businesses, analysis of industrial base issues, examination of the support implications of new procurements, and review of manufacturing technology strategies.

Facilities and Environment: Evaluation of economic impacts of realigning government facilities, assessment of construction alternatives, formulation of joint public and private financing projects, and development of environmental strategic plans.

Force Management: Encompasses development of decision support and unit readiness information systems, evaluation of force mix alternatives, and analysis and implementation of business process improvements in civilian personnel management.

Materiel Management: Includes review of inventory policies, assessment of medical distribution strategies, evaluation of equipment maintenance alternatives, reengineering of transportation management processes, development of logistics models, and enhancement of logistics systems.

Operational Logistics: Focuses on the analysis of strategic mobility programs, evaluation of new technologies for strategic mobility, assessment of wartime logistics alternatives, development of guidelines for battle damage repair, and formulation of logistics options for NATO.

Like all of the FFRDCs, LMI states that core work is defined by the combination of LMI's mission, purpose, and capabilities; LMI's core competencies; and the FFRDC strategic relationship maintained between LMI and its sponsors. LMI reports that non-core studies and analyses work will not be done by the FFRDC. The criteria used to determine if a task is appropriate core work for the FFRDC are:

- Whether the work is consistent with LMI's mission, purpose and capabilities:
    - Responsive to the most important needs and concerns of senior DoD and other government officials.
    - Meets special technical and analytic needs that cannot be met as effectively by other means.
    - Requires an in-depth understanding of logistics and acquisition issues across the Department.
    - Must be sponsored by an appropriate organization.
    - Must be performed effectively using the capabilities that LMI maintains, as described in detail above.
- Whether it requires at least one of the FFRDC's five core competencies that were outlined above;
- Whether it requires one or more of the characteristics of a strategic relationship between the DoD and LMI:
    - Effective performance of objective, high quality work on subjects integral to the mission and operations of sponsoring offices.
    - Freedom from real and perceived conflicts of interest.
    - Broad access to information, including sensitive government information, proprietary data from industry, and other information not normally available outside the government.
    - Comprehensive knowledge of sponsor needs, problems, and issues.
    - Responsiveness to emerging and evolving needs of sponsors.
    - Long-term continuity of knowledge on issues and problems of enduring concern, including both maintaining corporate memory for sponsors when appropriate and responding to quick-response sponsor needs in areas of established expertise.

In its briefing, the sponsor stated that the LMI work is needed. The sponsor also stated that-the FFRDC works on ill-defined important issues that are not amenable to well defined Statement of Work allowing for meaningful competition.

The FFRDC may work for Government Departments and Agencies other than the Department of Defense in areas directly related to the core areas described in this document, subject to the review and approval process described in LMI's sponsoring agreement and the DoD Management Plan. The FY 95 funding breakdown for DoD and non-DoD work in core areas is shown in table D-1.

The FFRDC's parent organization, the Logistics Management Institute and its non-FFRDC division the Center for Public Administration, may perform work for other organizations subject to applicable laws and regulations, and subject to the restrictions imposed by the DoD to protect the strategic relationship necessary to the operation of the FFRDC.

LMI reports that as a matter of policy, the Institute shall accept only work that is in the public interest, fully disclose non-FFRDC work to the DoD, and periodically review with DoD the appropriateness of the non-FFRDC work.

Table D-1: LMI FY 95 Funding Overview
($ Millions)

Core Competency	OSD	Military Departments	Defense Agencies	JCS & CINCS	Non-DoD	Total
Materiel Management	3.0**	2.5	2.6	0.9	4.3	13.3
Operational Logistics	0.1	3.5	0.7	1.2	0.1	5.6
Acquisition	3.0	0.3	1.4	2.0		6.7
Installations & Environment	0.9	2.5	0.2	2.3		5.9
Force Management 6.6' 1.6						8.2
Total	13.6'	10.4	4.9	2.1	0.7	39.7*

** Executive Agent, DUSD(L) is largest single sponsor @ $2.3.

SOURCE: Department of Defense

The Logistics Management Institute reports that it abides by the following restrictions on acceptance and performance of non-FFRDC work:

- Non-FFRDC work shall be free of conflict of interest with work performed for DoD.
- No unauthorized use shall be made of proprietary or privileged information gained from activities of the FFRDC.
- Acceptance and performance of non-FFRDC work shall not jeopardize the performance of work by the FFRDC.

- Performance shall be conducted in accordance with applicable cost accounting standards and accounting principles and will not cause an issue of non-compliance with government cost principles employed under the FFRDC.

Like the other FFRDCs, LMI reports that its strategic relationship to its sponsor is characterized by:

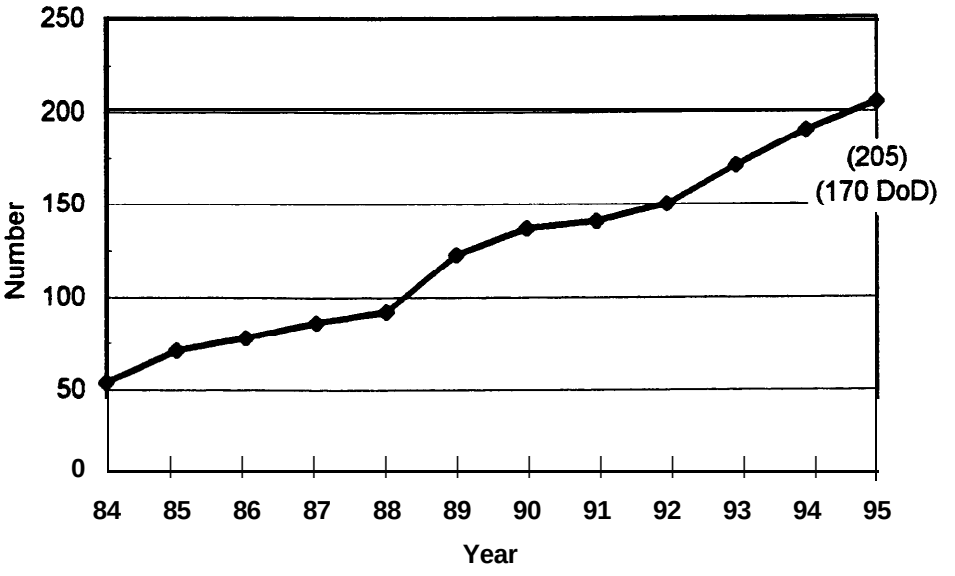
- Objective high-quality work
- Freedom for real and perceived conflict of interest
- Broad access to information
- Comprehensive knowledge of sponsor needs and problems
- Long-term continuity

LMI also adds that two other qualities are necessary:

- Flexibility
- Adaptability

LMI has a staff of 215 professionals (205 working for the FFRDC), and a 68-member administrative staff. Eighty percent of the staff hold advanced degrees; most in business, economics, engineering, and mathematics. Ten percent hold doctorates. The average research fellow has 21 years of professional experience. Staffing trends are shown in figure D-4.

Figure D-4: Staff Trends



SOURCE: LMI

LMI reports that the growth in staff is in direct response to increased DoD need, rather than any plan for growth. The Primary Sponsor reported that the demand for LMI is growing in response

to continued global commitments, tight budgets, and the downsizing and restructuring occurring within both the government and in defense industry. LMI reported it turned away $12 to $15 million in core work in FY 95 as a result of the congressionally mandated ceilings. The Sponsor stated that LMI, because of its unique long-term relationship and experience of its staff, conducts work that cannot be conducted elsewhere.

The level and appropriateness of non-DoD work and work for other than the primary sponsor.

As noted above, LMI engages in non-DoD work in both its FFRDC and in the CPA. In FY 95, $8.7 million, about 22 percent of total FFRDC funding came from non-DoD sources. LMI states that all of the work done within the FFRDC is core work--whether for DoD or non-DoD sources. Work for others within the FFRDC must be approved by the sponsor. So far in FY 96, there have been more than 25 different customers (DoD and non-DoD) in the FFRDC. Non-DoD customers include: GSA, CIA, Department of Commerce, NASA, Postal Service, Veterans Administration, and FEMA. As noted above, work done in the CPA is also subject to special rules in that it is limited to government or nonprofit clients. The work is also subject to full disclosure to DoD and cannot conflict with the DoD program. Further, LMI works to ensure that there is no unauthorized use of proprietary or privileged information from the LMI FFRDC.

Compliance with the DoD Management Plan

The DoD Management Plan directs that the S&A FFRDCs (1) maintain a relatively stable level-of-effort, and (2) maintain competency in core areas. Staff years of technical effort (STEs) are used in sizing and managing DoD-funded FFRDC work.

The Plan states that DoD FFRDCs may only perform core work, that such work: must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments), and for not-for-profit activities; and cannot include commercial work.

Parent institution operating DOD FFRDCs may perform non-FRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for “an annual fee proposal justifying each element of fee.”

LMI reports that it has an experienced staff of professionals with an average of 21 years of experience. The Institute states that it has focused on core competence for the last six years. Staff levels, as shown in figure D-4, have more than doubled over the last seven years.

As already noted, LMI reported that it complies with the DoD policy on DoD and non-DoD work, and has procedures to ensure that only core work is done in its FFRDC and that non-DoD,

non-core work conducted in the CPA conforms to the requirements stated in the DoD Management Plan.

The DoD Management Plan authorizes the use of fees and LMI's sponsor concluded a fee was appropriate in its most recent 5-year contract. LMI received a fee of 4.3 percent of cost. The Institute has not been contacted about the need for an annual fee proposal justifying the fee. The Institute is on record with DDR&E that our current contract to operate the FFRDC provides for a fixed fee for the five-year period. LMI trusts the contracting officer will honor the provision of the contract.

Sponsor's Management Process

LMI's primary sponsor is the Under Secretary of Defense (Acquisition and Technology). The Executive Agent for LMI is the Deputy Under Secretary of Defense, Logistics. The contracting activity is the Army Defense Supply Service, Washington (DSS-W).

Because of the subject it works on, LMI has a large number of customers. The Executive Agent reports that individual sponsors evaluate work, and that an annual review is conducted by numerous sponsors. Each project description contains a background statement, a scope of work, a period of performance, reporting requirements, an estimated level of effort as well as the name of a designated project monitor. The Executive Agent reports that his office performs a final review of all work assigned to LMI according to the following criteria:

- That the task described in the project statement of work meets the "Purpose, Mission and General Scope of Effort" criteria as defined in LMI's Sponsoring Agreement,
- That LMI has the ability to satisfy the DoD requirement for the project/study,
- That no other known contractors have the experienced personnel, technical expertise, absent of conflict, objectivity, and capability necessary to perform this effort as effectively as LMI,
- That the effort fully complies with applicable procurement statutes, policies, and regulations for non-competitive actions, and
- That the effort is not being undertaken at LMI to avoid competition.

The Executive Agent also reports that the LMI effort is fully reviewed as a part of the Comprehensive Service Process and as a result of IG review and routine and special audits. The latest Comprehensive Review reported that:

> Each sponsoring organization has its own review process to assure that the work is appropriate for assignment to LMI. Task sponsors assured, in the survey, that they are knowledgeable of the market place regarding the level of support these

alternative sources can provide in the studies and analyses of logistics and acquisition.

The most recent Comprehensive Review included a survey of task sponsors and project monitors, and 18 senior DoD officials who were queried about the value of LMI work. Responses were reportedly very favorable.

LMI and its Primary Sponsor report a number of management controls are in place to ensure the cost effective operation of LMI. They include oversight by the primary sponsor, DoD regulatory organizations, and the LMI management. There is also review by: the contracting office, DSS-W, the Defense Contract Audit Agency (DCAA), and the Defense Contract Management Area Office (DCMAO). The Institute's management emphasizes its own internal reviews. LMI employs the services of Deloitte & Touche for accounting services. The Institute's Trustees also have an Audit Committee and Compensation Committee who have oversight of accounting, personnel, and cost issues.

OUSD(A&T) is responsible for contract oversight of LMI and reports that LMI research is monitored and evaluated at the project and sponsor levels. LMI provides monthly cost reports on each project.

The DoD/LMI Advisory Board is responsible for ensuring that the FFRDC is being properly utilized. The Board approves the overall research agenda and addresses broad substantive and FFRDC policy concerns.

The Five-Year Review reports that the Administrative Contracting Officer (ACO) and the Defense Contract Audit Agency (DCAA) review the Institute's cost accounting and management systems. According to the last Comprehensive Review, the Defense Contract Audit Agency has found no material deficiencies in the Institute's accounting practices, the Institute is fully compliant with Cost Accounting Standards, and has operated within the guidelines detailed in its disclosure statement. Indirect rates are reviewed/adjusted and approved by DCAA annually. Costs on specific projects related to labor-hours, travel and sometimes equipment, are negotiated with the Defense Supply Service, Washington (DSS-W) contracting office at the time the task order is negotiated.

The Institute reports that it continuously seeks to improve its internal processes and has maintained relatively constant indirect rates over the past four years. It states that these rates are in line with those of most reputable commercial studies and analyses firms. The 1995 Five Year Review reported that the Member of the Technical Staff (MTS) costs for LMI are lower than those of any other FFRDC. The Institute reported it had recently abolished two senior indirect positions. Project leaders get cost information twice each month. Non-labor costs are regularly entered and project leaders have that information via electronic cost reports available daily.

The Thoroughness of the Five-Year Review

The latest Comprehensive Review of LMI is dated 30 March 1995. The Review addresses most of the points required in the new DoD Management Plan and generally covers the topics required by OFPP Policy Letter 84-1 and the FAR. It provides some discussion of the sponsor's and DoD's needs for LMI's work. Relatively detailed examples of work and results were provided for each of the core areas. The Review has a very brief and very general discussion of alternative sources that might meet the sponsor's needs. Alternatives are discussed, and dismissed, in very general terms.

An evaluation of the efficiency and effectiveness of LMI is partially included in the detailed examples of work done and the impact of that work. In addition, the sponsor reported a survey of task sponsors, project monitors, and senior DoD personnel, all of who reportedly express strong satisfaction with LMI's support. The Review complies with the earlier requirement for evaluation of the quality and cost of LMI's work, but it does not appear to fully comply with the New Management Plan's level of desired analysis reporting "the number and dollar value of projects and programs assessed."

Management controls to ensure a cost-effective operation are discussed only in general terms and appear to be based more on assurance of proper cost accounting (compliance with DCAA rules), than with a careful comparison of costs. The Review does report that LMI MTS cost is the lowest of any of the FFRDCs.

Appendix E

The RAND Corporation

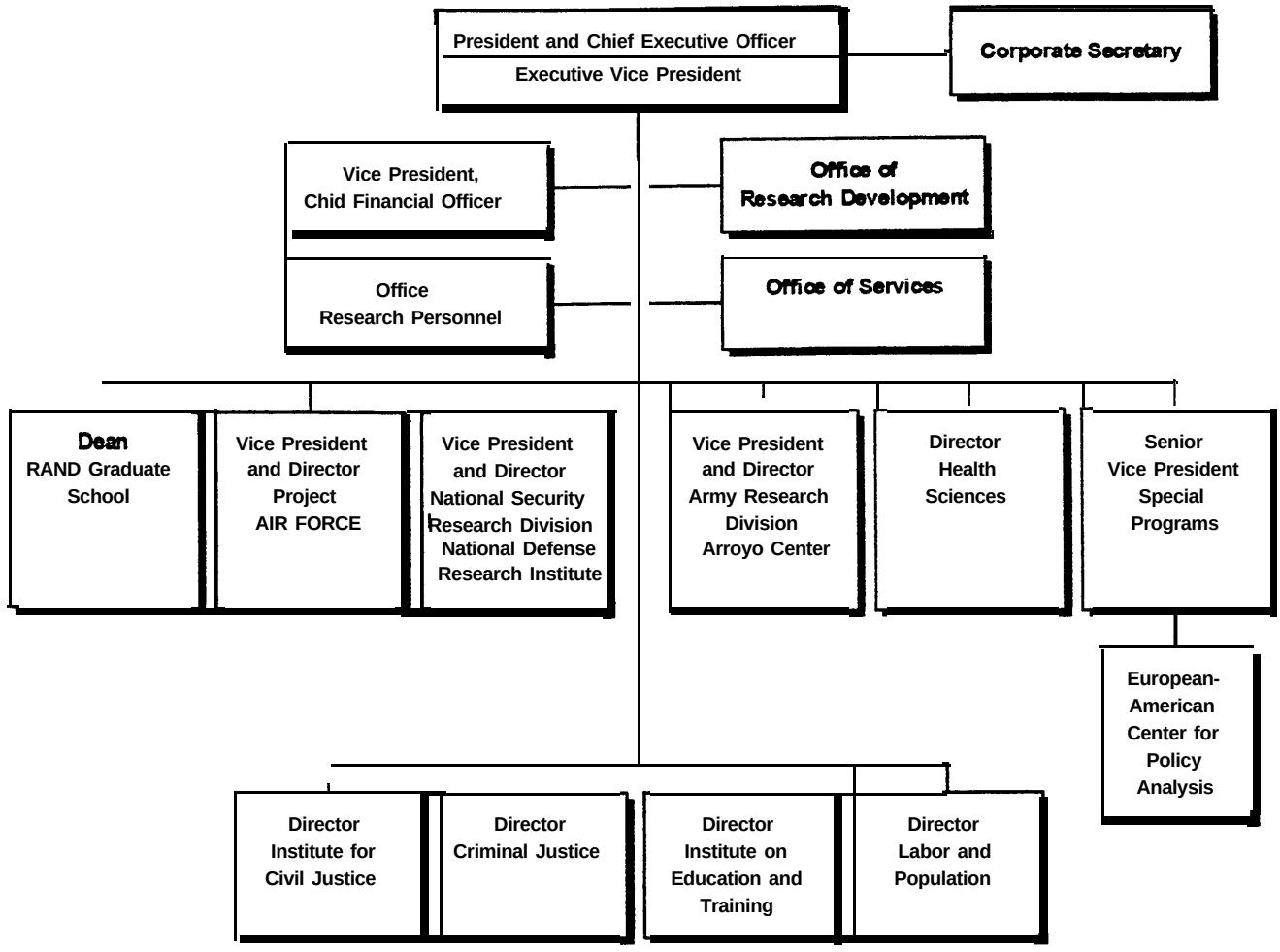
The RAND Corporation is a private, non-profit corporation with headquarters in Santa Monica, CA. RAND was incorporated in May 1948, with initial capital donated by The Ford Foundation, after a two-year gestation period as Project RAND conducted under a special and experimental contract between the Army Air Forces and Douglas Aircraft Company. In 1950, when RAND began expanding from its Project RAND contract, it established, at the suggestion of the Air Force, a smaller contract with the Atomic Energy Commission. RAND also began work for OSD in the late 1950s. In 1959, RAND began work with ARPA and NASA. At that point, the Air Force announced that it intended to freeze its support of RAND at its then current dollar level.

In 1961 RAND added the National Science Foundation and the National Institutes of Health to its clients. As the decade of the 1960s continued, RAND worked for OSD, various defense agencies, and the Agency for International Development. In addition, it received grants and contracts from other federal agencies, non-profit organizations, and the City of New York for studies on a wide range of social, economic, and methodological issues (including transportation, housing, health care, communications, urban development, and others). Project RAND, funded by the Air Force, shifted during this period from being 95 percent of RAND's budget to 68 percent: RAND had over a dozen different clients.

By 1976, RAND's research for the Department of Defense accounted for only about half of the institution's total revenue. In that year, the DoD limited the FFRDC designation to RAND's Air Force research contract, which was renamed, Project AIR FORCE. RAND's other research for DoD--performed mainly for OSD and defense agencies--was thereafter conducted under several separate long-term contracts. In 1984, that research was consolidated by DoD into one contract, given an FFRDC designation, and named the National Defense Research Institute (NDRI). DoD also established new oversight arrangements for that work, including a new senior advisory group. Around the same time, the Army transferred its FFRDC, the Arroyo Center, from the Jet Propulsion Laboratory to RAND. In 1992, RAND won a competition for a fourth FFRDC, the Critical Technologies Institute, which was created by Congress to serve the Office of Defense Technology Policy. In addition to the research within the FFRDCs, RAND conducts policy research for other government agencies, private foundations, and donors through its other institutes and programs. RAND does no research that will become proprietary to private sources. RAND also operates a fully accredited Ph.D. program The RAND Graduate School, which was established in 1970 (see figure E-1 for organization).

Each of RAND's DoD FFRDCs has its own sponsor, contracting arrangement, and charter. Each is supported by a five-year contract. Project AIR FORCE and the Arroyo Center receive line-item funding from their Service sponsors. The NDRI receives funds on a project basis from its primary sponsor, the Office of the Secretary of Defense, and from the Joint Staff.

Figure E-l: The RAND Corporation



SOURCE: RAND Corporation

Each RAND FFRDC is overseen by an advisory group that determines the general direction of that FFRDC's research, reviews and evaluates its products, and may help set its budget level.[1] For Project AIR FORCE and the Arroyo Center, the majority of the members of the board are military officers at the general officer level with some senior civilian members. In 1996, the board for the National Defense Research Institute was composed entirely of senior civilian members from the Office of the Secretary of Defense.

The total revenue from clients reported by RAND for 1995 was $106.8 million. Of this, 86 percent came from government sources, both federal and local, 10 percent from foundations, and 4 percent

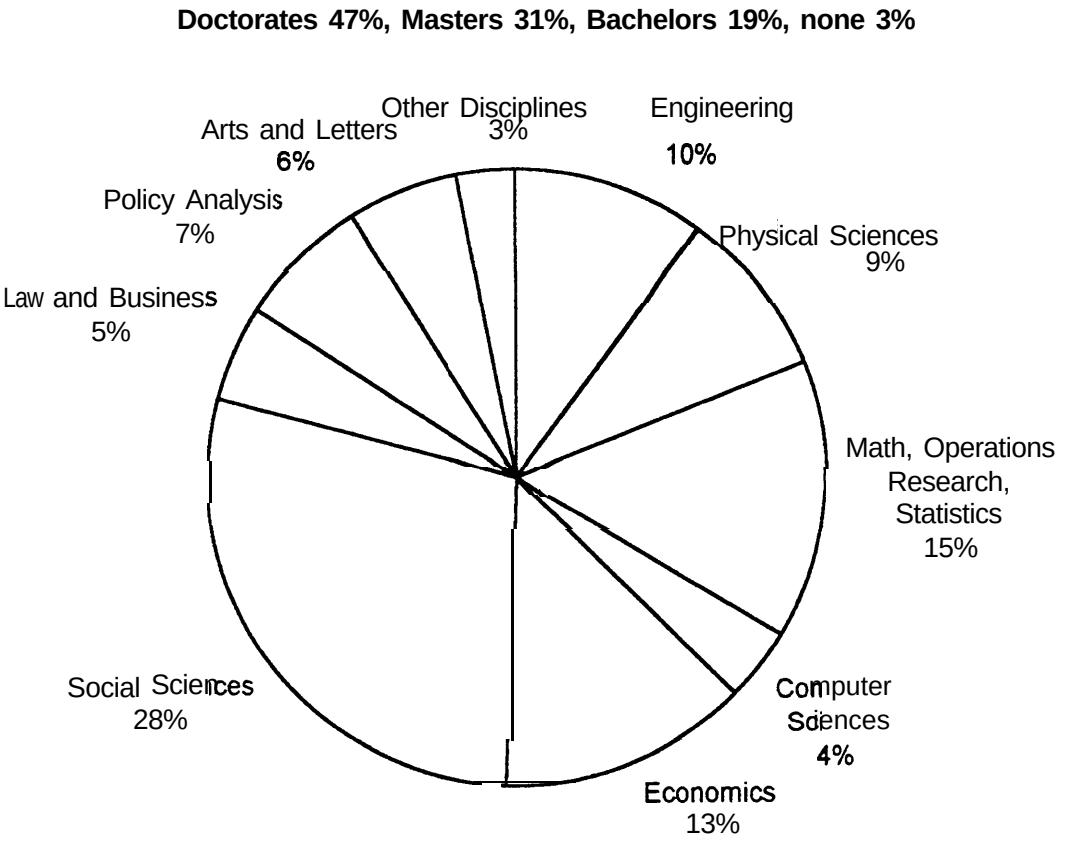
[1] Project AIR FORCE budget is determined by the POM/PB process.

from other sources. National security (DOD and the intelligence community) made up 67 percent of RAND's revenue.

The largest segment of RAND's non-DOD work is in the area of Health Sciences (13% of total). RAND also conducts studies in education, labor and population, technology policy, civil justice, criminal justice, and other subjects.

The RAND Corporation, including the FFRDCs, had a total of 1,091 resident staff at the end of FY 95. RAND reached its peak employment in 1957 when it had 2,605 people. This included a significant training effort for the Air Defense Directorate that was later spun off to form the Systems Development Corporation. Fifty-eight percent of the FY 95 staff were professional, 24 percent research support, and 18 percent general support. There were also 65 visiting fellows (graduate and military) and both resident and non-resident consultants contributing a total of approximately 115 FTE of effort.

Figure E-2: Composition of RAND Research Staff, 1995



SOURCE: RAND

Overall, the technical staff is highly educated (Figure E-2). Forty-seven percent have Ph.D. degrees, while 31 percent have Masters, and only 3 percent having no degrees. One third have degrees in

engineering, mathematics, operations research, or one of the sciences. The remainder have degrees in social sciences, economics, and a large number of other disciplines and fields. RAND has a matrix structure. The staff are not assigned to a particular division or institute, but may work across them. The manpower numbers (MTS) shown in the RAND DoD FFRDCs are ceilings that can be filled by personnel from the entire RAND staff.

The overall average professional salary at RAND is about $76,500. In FY 95, the multiplier was 1.456 for “benefits” (including paid leave) and 1.794 for “overhead,” for a total multiplier of 2.628. This does not include fee; the RAND fee for FY 95 ranged from 5.74 to 6.00 percent. The total fee for the DoD FFRDCs in both FY 94 and FY 95 was about $4 million. With fee added in this would produce a multiplier of 2.779 to 2,786 for a man-year cost of $212,593 to $213,129.

Over the past five years the labor costs at RAND have been relatively stable while benefits and overhead multipliers have grown slightly

The three DoD FFRDCs are discussed in detail below.

Project AIR FORCE

Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers.

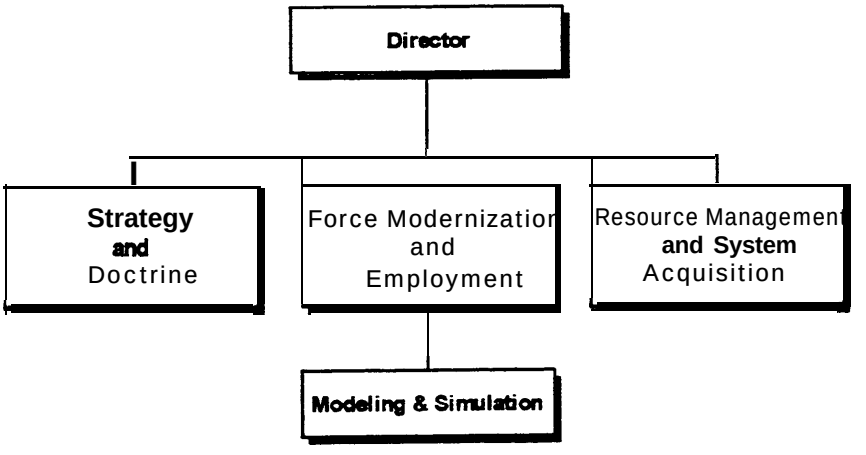
Project AIR FORCE as noted above, is the direct descendant of the research begun by the Army Air Forces in 1948 at the Douglas Aircraft Company. That work, known as Project RAND, was transferred to the independent, non-profit RAND Corporation when it was established in 1948. Project RAND was renamed Project AIR FORCE in 1976 to distinguish the FFRDC contract from the rest of RAND.

The mission of PAF as stated in the Sponsoring Agreement is to:

- conduct a continuous interrelated program of objective analysis on major cross-cutting policy and management issues of enduring concern to the Air Force
- maintain expertise on, and an institutional memory about, Air Force operations and policy
- explore long-term issues and questions that will become vital areas of concern in the future
- provide timely short-term assistance on urgent problems consistent with PAFs demonstrated expertise.

The Project Air Force (PAF) organizational structure is shown in figure E-3.

Figure E-3: Project Air Force FFRDC



SOURCE: RAND

PAF core capabilities and related areas of expertise are shown in table E-1.

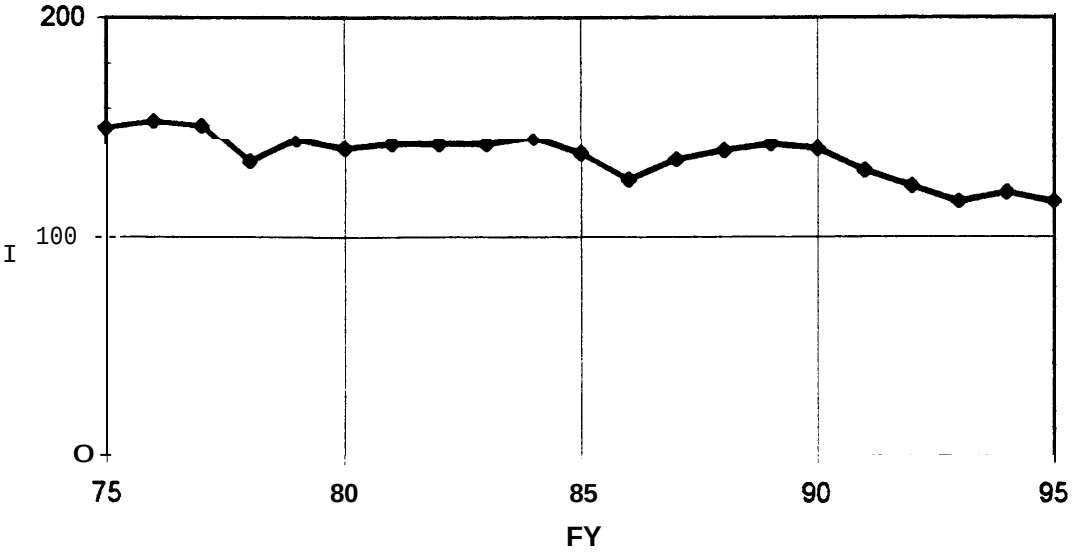
Table E-1: PAF Core Capabilities and Areas of Expertise

Strategy and Doctrine and Resource Management	Force Development Application	
Emerging global and regional threats and their implications for Air Force operations • regional political and military developments • defense strategy, including arms control and deterrence • defense planning Air Force and joint doctrine	Application of new technologies and concepts of operations and force modernization strategies • combat aircraft • space-based operations • C4I, surveillance, targeting, info warfare • mobility • manpower • weapons • modeling and simulation	Integration of sustainment and support activities to increase operational capabilities • logistics • R&D and acquisition • industrial base • privatization/outsourcing • cost analysis
Base Force Analysis Asymmetric Strategies	Desert Shield/Desert Storm Modernizing Bomber Force	Acquisition Reform Lean Logistics

SOURCE: RAND

PAF has remained relatively stable in size, even during the defense buildup of the early 1980s. The trends in PAF size are shown in figure E-4.

Figure E-4: Historical Level of Effort (MTS) for PAF



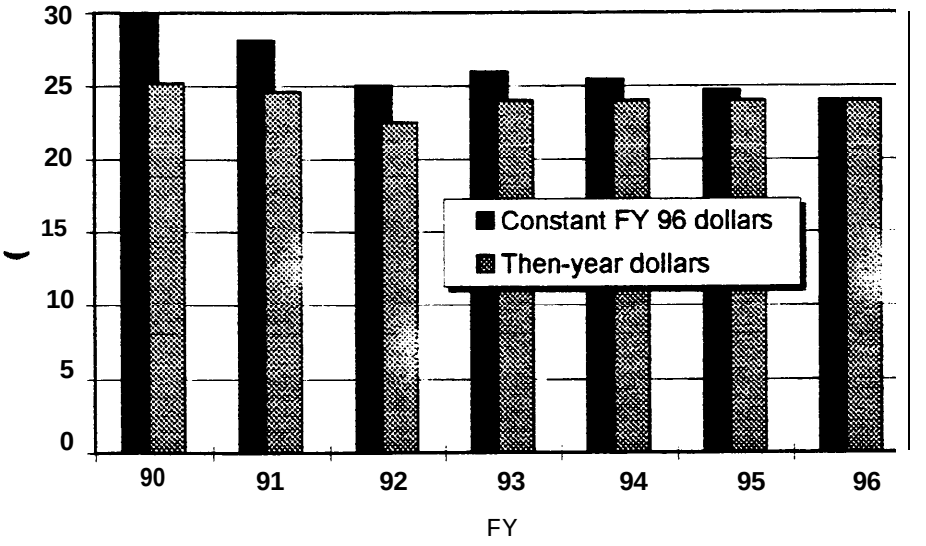
SOURCE: RAND

In conducting integrated research, PAF reports that it forms multi-disciplinary study teams drawn from nearly 600 RAND analysts representing a broad range of academic disciplines. The majority of the staff are located in RAND's Santa Monica, California headquarters; approximately ten percent are housed in the Washington D.C. office. The RAND staff is supplemented by other professionals acting as consultants on a part-time basis.

PAF briefing noted that the congressional ceilings had: disrupted the Air Force plan for PAF level-of-effort; had curtailed research on personnel and training, the international security environment, and modeling and simulation; and had diverted management time for research to other matters.

Funding is shown in figure E-5.

Figure E-5: Project Air Force Funding



SOURCE: U.S. Air Force

Funding for Project AIR FORCE comes entirely from a single line item in the defense budget. For the last four years (FY 93 through FY 96) this amount has been $24 million. Project AIR FORCE currently has a ceiling of 113 MTS, along with appropriate support personnel For FY 96, a Project AIR FORCE MTS is calculated to cost $212,389[2].

The criteria the Air Force uses for measuring the appropriateness of work to be placed at PAF is shown in table E-2.

[2] Calculated from the current level of effort, with a $24 million budget supporting 113 MTS.

Table E-2: Criteria for Measuring Appropriateness of PAF Research

Acceptance Criteria	Constraint Criteria
Does the proposed research:	Work assignment has constraints. It is unacceptable to use PAF:
• Fall within PAF's purpose, mission, scope, or special competency?	• Simply because proposed research cannot be met by existing alternatives
• Require access beyond norm?	• as convenience for work others could perform
• Require objectivity, independence, freedom from bias or conflict of interest?	• because in-house staff is fully employed
• Help to maintain research balance?	• because other contract vehicles not readily available
• Maintain PAF core competencies and/or allow exploration of emerging issues?	• PAF cannot compete with a non-FFRDC
• Contribute to an integrated perspective on the issues	

SOURCE: U.S. Air Force

The level and appropriateness of non-DoD work and non-sponsored work undertaken by the FFRDCs and UARCs.

The sponsoring agreement states that PAF may accept work from other agencies if the work is determined to be within the purpose, mission, and general scope of the FFRDC, and is consistent with 48 CFR 17.502 and 17.504(e), and is specifically authorized by the Air Force sponsor.

RAND reports that the only current customer for PAF is the Air Force. The PAF briefing noted that it can, and has, accepted non-sponsor work on rare occasions (an example given was a 1989 NASA request for help on the President's Space Exploration Initiative which was approved by the Air Force Advisory Group).

Compliance with the DoD Management Plan

The DoD Management Plan states that annual levels of effort shall be based on application of the core concept and for S&A FFRDCs, guidelines that include: (1) maintaining a relatively stable level-of-effort, and (2) maintaining competency in core areas. St&years of technical effort (STEs) are used in sizing and managing DoD-funded FFRDC work.

The Plan states that DoD FFRDCs may only perform core work, that such work: must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments) and for not-for-profit activities; cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity and credibility of the institute or call into question the freedom from conflict of

interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

AS figure E-4 shows, PAF has had a relatively stable workforce. The PAF briefing, however, reported a need to stabilize at a "level appropriate to mission and Air Force needs." But PAF can also call on assets from other parts of RAND to meet its needs. For example, the Center does collaborative research in regional sources of conflict, logistics, and analytic methods and modeling. PAF management stated that the effective size of PAF is shaped by the:

- range of critical issues confronting senior leadership of Air Force
- depth required for quality and timely research, especially in technical areas
- breadth of PAF mission and requirement to maintain expertise on Air Force as a whole
- need to provide research assistance on time-urgent problems

The goal of 125 MTS set in PAF's most recent Comprehensive Review reflected these considerations. Currently, the critical mass is reportedly being eroded by the reductions in both PAF level of effort, and the losses in the pool of expertise in other RAND DoD FFRDCs.

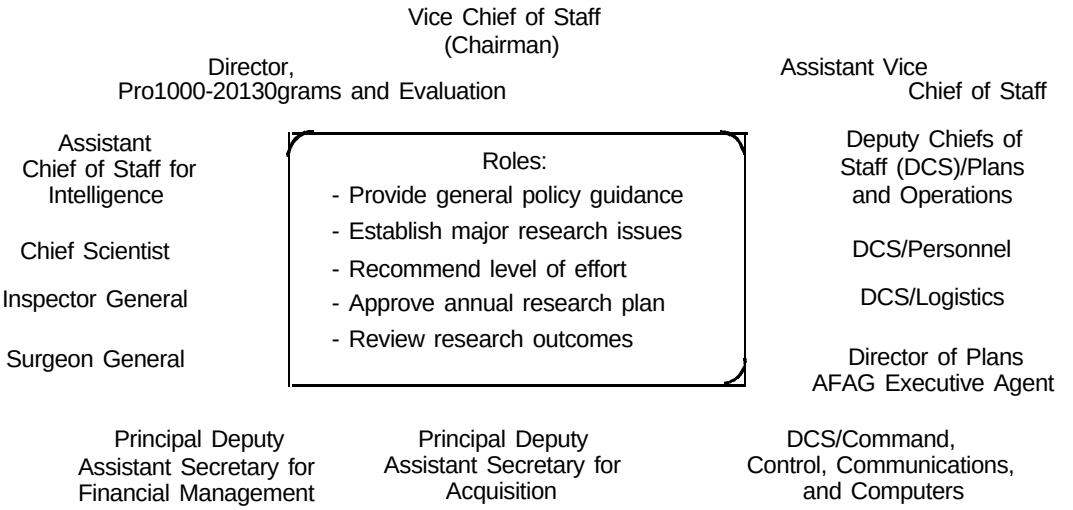
PAF states that it focuses on core work requiring its unique expertise. It does not undertake narrow operational or technical analyses, nor routine support activities. It also does not conduct isolated studies outside the Center's areas of expertise, or provide direct staff assistance.

PAF is authorized fees in its sponsoring agreement. RAND has used most of its fee for investments in its human capital; exploratory research, extensions and derivations of sponsored projects, and staff development. RAND management expressed concern that the new management guidelines that restructure fee determination will "eliminate an important means of rewarding good performance and, over time, ...would weaken the institutional independence that our clients have come to value." The Air Force and OSD disagree with this view.

Sponsor's Management Processes

The Air Force sponsor for Project Air Force is the Assistant Secretary of the Air Force, Acquisition. Oversight is provided by the Air Force Advisory Group consisting of the Vice Chief of Staff as the Chairman and senior military and civilian personnel in the Department of the Air Force (see figure E-6). The panel provides general policy guidance, establishes major research issues, approves the annual research plan and reviews research outcomes. The panel also recommends what PAF's level-of-effort should be each year.

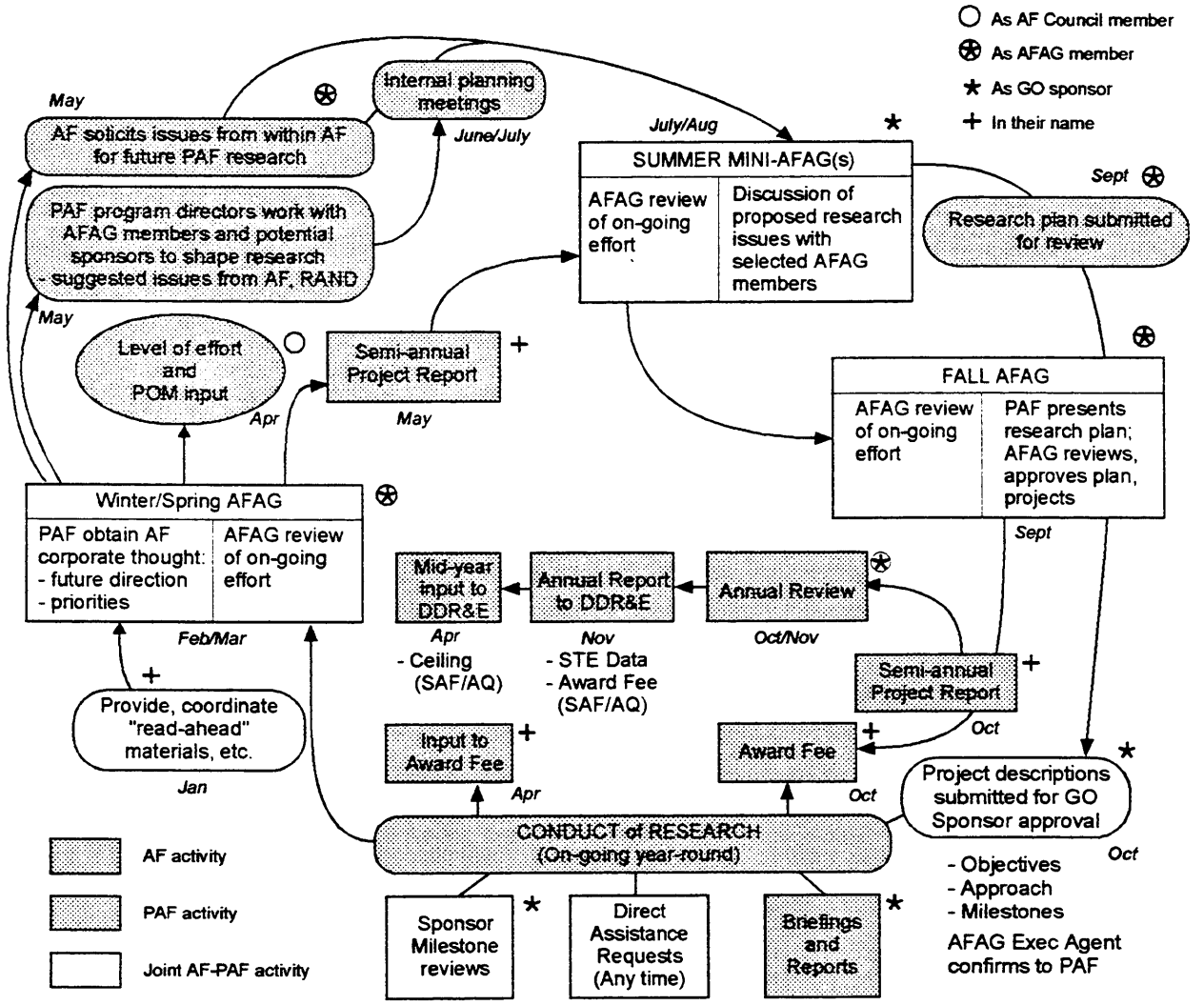
Figure E-6: Air Force Advisory Group



SOURCE: U.S. Air Force

The PAF planning process is outlined in figure E-7.

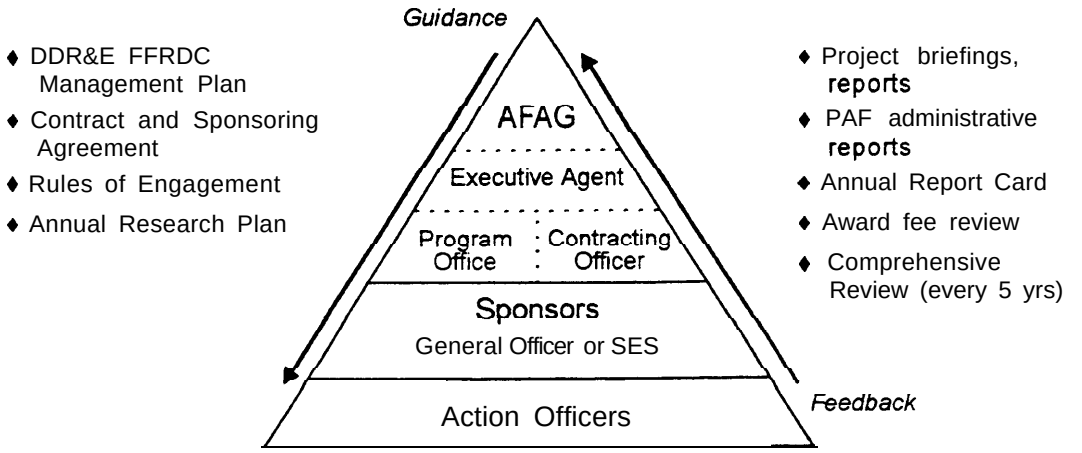
Figure E-7: Annual Research Planning Cycle (FY)



SOURCE: U. S. Air Force

The Air Force oversight process is illustrated in figure E-8. Metrics used in the annual and five-year reviews are shown in table E-3.

Figure E-8: Air Force Management Oversight



SOURCE: U.S. Air Force

Table E-3 : Metrics Used in Annual and Five Year Reviews

Annual review	– technical quality – responsiveness – value – timeliness
Award (semi-annual)	– communication (60%) – research clarity and utility (25%) – efficiency/effectiveness (15%)
Comprehensive Review (every five years)	- mission needs - alternative sources - effectiveness - management and cost - compliance

The Air Force reports it has an ongoing process of both internal and external reviews to ensure that PAF is a cost effective operation. This process involves the Procuring Contract Officer (PCO), local Administrative Contracting Officer (ACO), and resident Defense Contract Audit Agency (DCAA) auditor performing continuing reviews of the PAF management process. The PCO has the responsibility to ensure that sufficient Air Force expertise is available to objectively evaluate the PAF performance. Further, the PCO has delegated administration of the contract to the ACO. The ACO provides assistance in the performance of this oversight function at RAND Corporation in Santa Monica CA. The ACO performs contract surveillance and verification of costs in accordance with AFSCR 70-3, *Administration of Contracts Awarded to Federally Funded Research and Development Centers.* AFSCR 70-3 provides the policy pertaining to the

administration of FFRDC contracts and details the responsibilities of the ACO. The ACO further relies on functional area experts to perform verification that the required research has been performed. One of the resources used by the ACO to verify the accuracy of costs claimed is the DCAA auditor; however, the ACO retains primary responsibility for determining that the costs claimed by PAF are reasonable and accurate. Finally, purchasing systems reviews, compensation reviews, overhead audits, budgetary system reviews, billing system reviews, internal controls audits, incurred costs audits, Cost Accounting Standards (CAS) compliance testing audits, property control system surveys, annual wage and salary reviews, estimating systems reviews, and subcontract reviews are periodically conducted by resident and Defense Contract Management Agency personnel to further ensure PAF's cost effectiveness.

The Thoroughness of the Five-Year Reviews

The latest comprehensive review was signed in November 1994. The review examines mission needs, alternative sources, effectiveness, management, cost and compliance. It was conducted in accordance with OFPP Policy Letter 84-1 and Federal Acquisition Regulations 35.017.

The Review examined the Air Force's special technical needs and mission requirements to determine if PAF was still needed, and if so, at what level. The examination reviewed current and future Air Force needs, and stated that the requirement for independent support from an organization with a broad understanding of Air Force problems was as great as ever. The Service reported that an independent research agent with the capabilities of an FFRDC-like organization was essential. It noted that in 1985 the Air Force had opened the RAND contract up in a Commerce Business Daily solicitation, and "The fact that PAF contract was awarded to the RAND Corporation demonstrates that at that time RAND was the best qualified source."

The Review's consideration of alternative sources of support is based primarily on an examination of the strengths that RAND's PAF brings to the table, and secondarily on an examination of possible in-house and private sector providers.

The Review states that an in-house organization would probably not be sufficiently independent, would have difficulty performing cross-functional interdisciplinary research and developing a corporate memory. These factors and inadequate compensation prevent in-house provision of services; conflict of interest problems would probably eliminate a for-profit firm; and the cost of re-establishment in another not-for-profit organization makes another not-for-profit an unattractive alternative. There are no reported specific alternatives, rather the alternatives are discussed in general terms.

PAF efficiency and effectiveness are examined in terms of customer interaction, quality of research, and management effectiveness. These assessments are conduced semiannually by polling the general officer (or SES) project sponsors. They are asked to evaluate PAF's performance in the areas of "Communications" and "Research Clarity and Utility." The PAF program office evaluates PAF's management effectiveness. Evaluation criteria are shown in box E-1.

The assessment of FFRDC management to ensure cost-effective operations outlines the overall Air Force process for examining costs. The Air Force reported that a recent DDR&E evaluation

compared MTS rates of the eleven DoD FFRDCs with three representative Contract Advisory and Assistance Services (CAAS) contractor labor rates. The RAND FFRDCs (i.e., PAF, Arroyo, NDRI) reportedly had salary rates that were almost 4% lower than the next lowest salary rate, and that were over 34% lower than the highest salary rate. The total, fully loaded, annual MTS labor rate for the RAND FFRDCs were reportedly almost 3% below the mean of the rates compared.

The Review listed a number of steps PAF had taken to upgrade its cost-effectiveness. It reorganized into new structure, worked closely with the Air Force Sponsor, and, in addition RAND constantly examines the corporate overhead rates.

The Review concluded that the Center met all the needs of the Air Force, and recommended renewal.

BOX E-1: Project AIR FORCE Assessment

Project Name:
RPN: FY 93 MTS: Project Status:
Sponsor: Project Officer:

AWARD FEE EVALUATION AREAS AND CRITERIA
AREA 1: COMMUNICATION

Assesses RAND/PAF's interaction with the customer. Accounts for 60% of the total score. This category considers, but is not limited to:

- initiative and Cooperation: RAND/PAF's ability to interrelate with the Air Force to develop a rapport that results in mutually agreeable methods of attaining research objectives.
- Responsiveness: RAND/PAF's ability to respond to sponsor queries and concerns, with special emphasis on quality and rapidity.
- Timeliness and Frequency: RAND/PAF's ability to keep the sponsor apprised of the status, direction, and issues concerning on-going research, and the ability to provide a meaningful, two-way forum.

AREA 2: RESEARCH CLARITY & UTILITY

Assesses the quality of RAND/PAF's research, accounts for 25% of the score. This category considers, but is not limited to:

- Clarity of result: Data and analysis support the conclusions of the research.
- Utility: The research is pertinent to Air Force policy making and/or decisionmaking.

AREA 3: EFFICIENCY/EFFECTIVENESS

Assesses RAND/PAF's management effectiveness. Accounts for 15% of the total score. It considers, but is not limited to:

- Cost control: the contractor's ability to control costs.
- Data: the contractor's ability to submit data in a timely manner as requested by the government.

THE ARROYO CENTER

Objectives and guidelines for scope of work, organizational structure, size and appropriateness of customers.

The Arroyo Center was transferred from the Jet Propulsion Laboratory to RAND in 1984. It is the Army's only studies and analyses FFRDC. The Center has a MTS of 104 professionals. The stated mission of the Arroyo Center is to provide objective, independent analytic research on major policy, technical, and management issues that represent mid- to long-term concerns for the Army. The Arroyo Center also provides a balanced, arms-length perspective on current controversial problems while maintaining expertise on and institutional memory about Army operations and policy.

The organizational structure is shown in figure E-9.

Figure E-9: Arroyo FFRDC

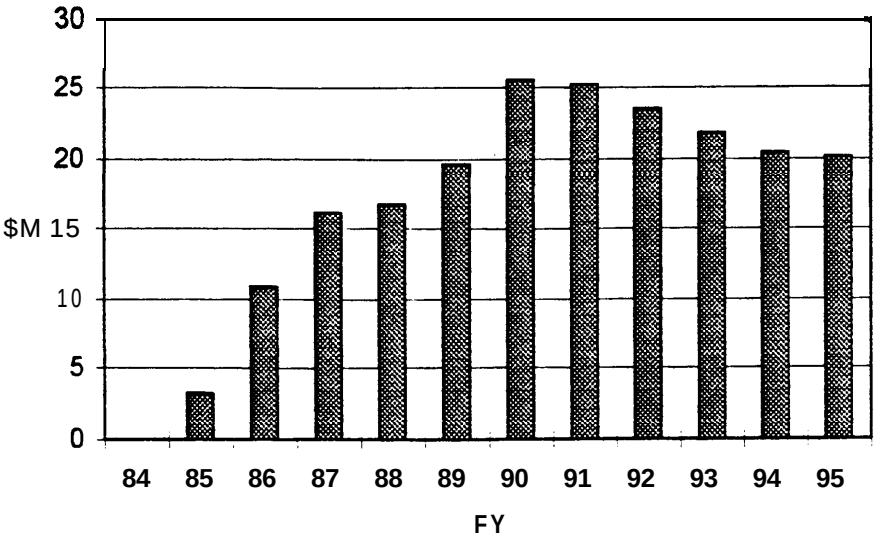
SOURCE: RAND

The bulk of the Arroyo's funding comes from a single program element in the Army's defense budget. In FY 1995, the Arroyo Center had a funding level of $20.1 million. Funding has declined steadily from its peak of $25.5 million in 1990 (figure E-10).

The Center receives funding through two channels, a CORE Program Element and customer reimbursable funds. The CORE funding is based on a specified level of effort. This funding is entered into the programming and budgeting cycle and is projected for six years. The second method of receiving funds is through customer-reimbursable funds. In this case a customer requests support and transfers funds to pay for the research. These efforts must meet the criteria established for the use of the Arroyo Center, be free of conflict of interest, and be approved by the Executive Agent. The total annual funding is now limited by the congressionally-imposed ceiling.

Funding for the Arroyo Center is not limited to RDT&E funds. It may cross several program elements or appropriations.

Figure E-10: Arroyo Funding Profile Actual Obligations



SOURCE: Department of Defense

Core work is divided into four programs corresponding to the Center's four areas of core competence: 1) Strategy and Doctrine, 2) Force Development and Technology, 3) Military Logistics, and 4) Manpower and Training. These Core Competencies are briefly outlined below.

- Force Development and Technology. The Arroyo Center identifies and assesses ways in which technological advances and new operational concepts can improve the Army's ability to meet a range of operational demands in the future. This work involves assessments of a technology's feasibility, performance, cost, and risk. It focuses on helping the Army determine how to maintain its technological edge.

- ***Manpower and Training.*** Maintaining high-quality soldiers requires personnel policies that accomplish the key objective of the military personnel system: attracting and maintaining the right people, and then training and managing them in a way that maximizes their capabilities.

- ***Military Logistics.*** Under this core competency, the Arroyo Center identifies and analyzes researchable issues with a view toward how improvements in the Army's logistics capabilities can help maximize its combat effectiveness, given current and likely future constraints on resources. Work in this area addresses the problems involved in supporting and providing resources for Army combat units, the logistics system, and the sustaining base.

- ***Strategy and Doctrine.*** The Arroyo Center provides analyses of problems in the international environment that affect U.S. national security in general and Army operations in particular. To this end Arroyo conducts research on emerging threats to U.S. interests and focuses, in particular, on what the dramatically shifting power

> relationships in the post-Cold War world will mean for future strategic concepts, for security planning, and for the Army's future roles, structure, and doctrine. In terms of core competence, the Arroyo Center and RAND maintain regional expertise to provide threat assessments involving long-term political and military developments in regions where U.S. national security interests are or may be involved.

The Army and the Arroyo Center state that the Center only does core work. Indeed, only core work can emerge from the Arroyo oversight process. The Center reports that:

> For any given fiscal year, what constitutes that year's core work in the Arroyo Center is determined in advance by the senior leadership of the Army according to a specific set of procedures. Core work is defined annually in the process of these leaders applying special "strategic relationship" criteria and other work-filtering requirements to proposed Arroyo Center projects, as discussed below; deciding which projects meet the requirements and which of those can be accomplished within available resources; and, finally, approving the overall list of Arroyo projects for the forthcoming year."

The criteria for determining core work is:

- Consistency with Arroyo's Mission, Purpose, and Capabilities
- Consistency with Arroyo's Core Competencies
- Consistency with Arroyo's Special FFRDC Relationship

The level and appropriateness of non-DOD work, and non-sponsored work undertaken by the FFRDCs and UARCs.

Government work for other than the Army must be approved by the Arroyo Center Policy Committee. There is currently no non-DoD work conducted at the Arroyo Center. The sponsoring agreement stipulates that the Center "will perform no work for private industry or foreign governments."

Compliance with the DoD Management Plan

The DoD Management Plan states that annual levels of effort shall be based on application of the core concept and for S&A FFRDCs guidelines that include: (1) maintaining a relatively stable level-of-effort, and (2) maintaining competency in core areas. Staff years of technical effort (STEs) are used in sizing and managing DoD-funded FFRDC work.

The Plan states that DoD FFRDCs may only perform core work, and that such work must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments), and for not-for-profit activities. It cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence,

objectivity, and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

The Army and the Arroyo Center have outlined and reported four areas of core competency. The Army has stated in its latest Arroyo Center acquisition plan that 104 MTS will satisfy Army FFRDC needs.

Fees are authorized. The Army has anticipated an annual fee of 6% in its projections, but RAND must submit a need for fee proposal. RAND reports that the FY 96 fee is less than 5.25% and that it does not project the fee to be as high as 6.0% anytime during the current contract.

The level of funding has been declining. This has reportedly had an impact on the ability to retain a critical mass in some areas.

No non-core work will be done because all work done is defined as core work.

Sponsor's Management Processes

Oversight is provided by an Arroyo Center Policy committee. The Committee consists of a mix of personnel from Department of Army organizations and U.S. Army commands (table E-4). The committee is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army for Research, Development and Acquisition. Most of the personnel on the board are general officers.

Table E-4: Arroyo Center Policy Committee

Vice Chief of Staff of the Army
Deputy Chief of Staff Operations
Deputy Chief of Staff Personnel
Deputy Chief of Staff Logistics
Director Program Analysis and Evaluation (Executive Agent)
Assistant Secretary of the Army (Research Development and Acquisition)
Assistant Secretary of the Army (MRA)
DUSA (OR)
Deputy Chief of Staff Intelligence
Commander Forces Command
Commander Army Materiel Command
Commander Training and Doctrine Command
Commander USA Special Operation Command

SOURCE: U.S. Army

The Army leadership determines, in advance of the next fiscal year and prior to approving an Arroyo Center work program, which major issues the Arroyo Center should address. This decision is made by the Arroyo Center Policy Committee.

Once the ACPC has indicated which major issues the Arroyo Center should focus on during the forthcoming fiscal year, the Arroyo Center develops a research agenda of potential studies and analyses that is rooted in the ACPC's guidance. This agenda is then compared with the work program developed by the Army's Studies Program Coordination Committee (SPCC), which is chaired by the Deputy Undersecretary of the Army for Operations Research, who also sits on the ACPC. The SPCC oversees Army studies and analyses undertaken both by in-house Army assets and by external (e.g., for-profit) sources. The purpose of comparing the Arroyo Center-proposed and SPCC-monitored work is to eliminate unnecessary duplication of research efforts and resources, to re-filter the assignment of core and non-core work within the Army, and to review the application of the criteria for assigning core work to an FFRDC. Following this comparison and review, the ACPC meets to approve or modify the Arroyo Center's proposed research agenda.

The Army conducts an annual project survey at the conclusion of each research cycle. The survey asks each project sponsor to evaluate the objectives of the research, timeliness of the products produced, overall quality of the research effort, credibility of the results, methods for analysis, ability to display data in a meaningful manner, and usefulness of the products. The survey also asks sponsors to provide an overall evaluation of the Arroyo Center. These surveys are distributed in the second quarter of the fiscal year for evaluation of the projects completed in the previous fiscal year.

According to the Army, the Annual Project Survey is the most important assessment tool for the Army in evaluating Arroyo Center performance. The surveys provide each project sponsor with the opportunity to evaluate the Arroyo Center's performance on individual project. The results of these surveys are briefed to the Arroyo Center Policy Committee before being transmitted to the Arroyo Center Director for further review.

The Army reports its assessment of Arroyo's management is continuous and reviewed twice annually, spring and fall, by the Arroyo Center Policy Committee. The overall operation is governed by *Army Regulation 5-21.*

The Army's assessment to ensure a cost-effective operation involves activities by:

- Procuring Contract Officer (PCO) assigned to Defense Supply Services - Washington
- Administrative Contracting Officer (ACO) located in El Segundo, CA
- Contracting Officers Representative (COR) assigned to the Pentagon
- Defense Contract Audit Agency (DCAA) located in Santa Monica, CA

These people provide review and oversight over the day-to-day operations of the contract and the Center's management controls.

Thoroughness of the Five-Year Reviews

The latest Comprehensive Review of the Arroyo Center was completed in December 1994. The Review examines mission needs, alternative sources, effectiveness, management, and costs. The Army states that it was conducted in accordance with OFPP Policy Letter 84-1 and Federal Acquisition Regulation 35.017.

The Review outlines current Army needs by topic area (Roles & Missions, Force Structure, etc.) and by organization (Assistant Secretary of the Army for Research, Development and Acquisition, Forces Command, etc.) The document notes the types of research support that might be needed. It matches these areas to the broad core competency areas that the Army has asked the Center to concentrate upon. It concludes that the Arroyo Center is still needed-at a level of 104 MTS.

The Review considers in-house, for-profit, not-for-profit, universities, and other FFRDCs as alternatives. In-house capabilities are dismissed because of lower salaries for equal skills, the influence of doctrine and training on research, and the constant turnover that would accompany the use of uniformed personnel.

The Review notes that for-profit firms already "provide over 50% of the Army's study and analysis research." They are dismissed in this case because they may have limited independence and objectivity. They may not offer the interdisciplinary approach, long-term perspective and in-depth knowledge that Arroyo now has. They are also lacking in qualities that might make them a "trusted agent," and are not given "access to proprietary and otherwise distribution-limited information."

Universities are dismissed because they do not retain the full-time dedicated staff with the range of capabilities. The Review notes that other FFRDCs now provide about 20% of the research support required by the Army-but these are primarily in special areas such as C^3I. The Arroyo Center has all the attributes the Army needs and desires.

Effectiveness and efficiency are discussed first through examples of research on different topics, and the successtil use of that research. Efficiency is considered in the context of the results of the Army's Annual Project Survey where project sponsors are asked to evaluate: the objectives of the research, timeliness of the products produced, overall quality of the research effort, credibility of the results, methods of analysis, ability to display data in a meaningful manner, and usefulness of the products. A copy of the survey and the FY 91-93 results are shown in box E-2. The favorable responses show a decided improvement over the three years (figure E-11).

Box E-2: Arroyo Center Project Evaluation Survey

Project Name: *project*

Sponsor: *address*

Please answer the following questions for the above mentioned project. If additional paper is used to respond to the narrative questions, indicate the questions being addressed.

Please return the completed survey to: Manpower and Force Program Analysis Division
ATTN: MAJ Wildasin RM 36179
Chief of Staff
200 Army Pentagon
Washington, DC 20310-0200

The Arroyo Center developed objective useful to the sponsor by:	Strongly Agree A	Agree B	Neutral C	Disagree D	Strongly Disagree E	Unable to Evaluate X
1. Showing an understanding of sponsor problem.						
2. Considering alternative views of all significant groups involved in sponsor process.						
3. Developing a clear statement of purpose.						
4. Investigating the background thoroughly.						
5. Considering ail explicit and implicit constraints when formulating the problem statement.						
6. Outlining the problem in a logical framework.						
7. Defining the key issues.						
8. Creating a new and original perspective.						
The Arroyo Center used time efficiently by:	Strongly Agree A	Agree B	Neutral C	Disagree D	Strongly Disagree E	Unable to Evaluate X
9. Establishing milestones linked to sponsor requirements.						
10. Completing milestones in time to make a difference.						

	Strongly Agree A	Agree B	Neutral C	Disagree D	Strongly Disagree E	Unable to Evaluate X
The Arroyo Center produced a quality product by:						
11. Developing a set of logical assumptions						
12. Linking assumptions to existing constraints.						
13. Developing an adequate range of alternative scenarios and approaches relative to sponsors needs						
14. Collecting appropriate information to solve the problem.						
15. Collecting enough information to resolve all the issues.						
16. Using appropriate methods to collect information.						
17. Collecting data without disrupting sponsor/Army operations.						

	Strongly Agree A	Agree B	Neutral C	Disagree D	Strongly Disagree E	Unable to Evaluate X
The Arroyo Center maintained credibility by:						
18. Considering all competing views.						
19. Applying assumptions, constraints, and methods consistently.						
20. Defining the correct criteria.						
21. Applying a suitable measure of the criteria.						
22. Implementing the correct methodology.						
23. Using data to verify the conclusions						
24. Conducting a comprehensive literature review.						
25. Collecting the right information.						
26. Gathering data from the right sample.						
27. Relating this data to similar past work.						
28. Coordinating with others doing similar work.						
29. Avoiding duplication.						

The Arroyo Center analyzed the data by:	Strongly Agree A	Agree B	Neutral C	Disagree D	Strongly Disagree E	Unable to Evaluate X
30. Reducing the data to a comprehensive level.						
31. Using the correct analytical procedures.						
32 dentifying all sources of data.						
33. Including all pertinent information.						
34. Providing a statement of the reliability of the data.						
35. Furnishing evidence of the validity of the proposed findings.						

The Arroyo Center displayed the data by:	Strongly Agree A	Agree B	Neutral C	Disagree D	Strongly Disagree E	Unable to Evaluate X
36. Presenting findings clearly without ambiguity.						
37. Balancing the use of text and visual aids.						
38. Avoiding the use of jargon.						
39. Ensuring that users understood how the problem statement, literature review objective, methods, and analyses were linked together.						

Use of Findings

	Yes	**No**	**N/A**
40. Did the Arroyo Center personnel ensure that the sponsor knew how to use the findings/results in an appropriate manner?			
41. Did you as the sponsor use the product provided?			
42. If you have not yet used the product, do you intend to ever use them? If Yes, please explain how and when. If No, please explain why you do not intend to use product.			

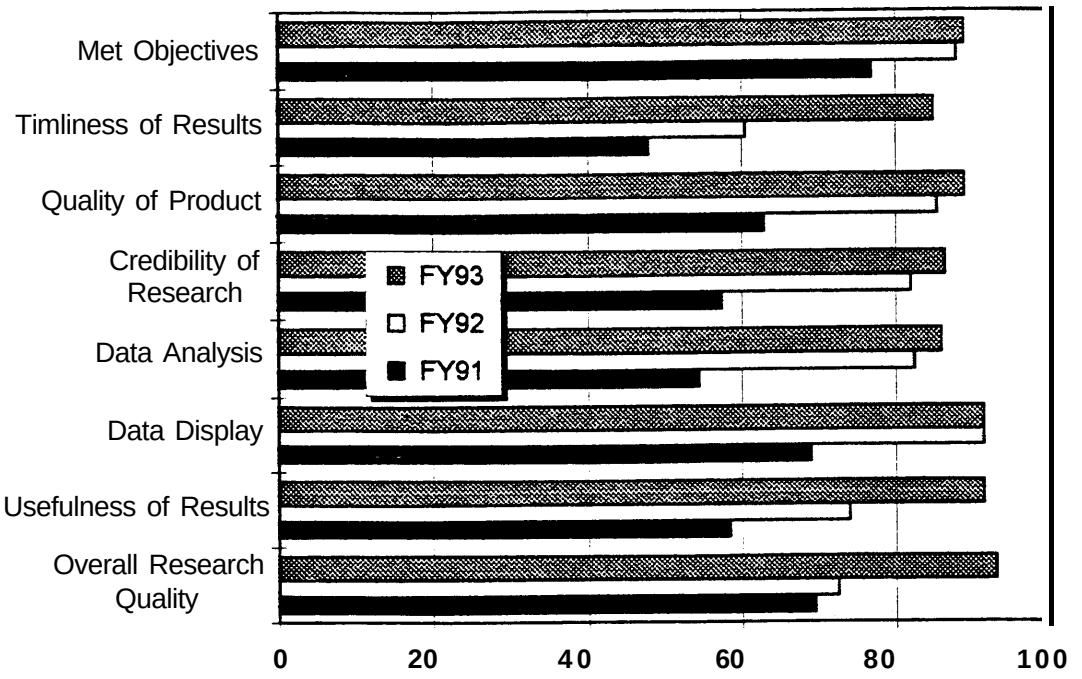
	Yes	**No**	**N/A**
43. In your opinion were the findings worth the level of the effort? If not, why not?			
44. Would you use the contractor again in the same manner? Please Explain			

45. What would you do differently if you used this contrctor in the future?

46. I would rate the Arroyo Center product as:

A. Excellent
B. Above Average
C. Average
D. Below Average
E Poor

Figure E-11: Arroyo Survey Results % of Favorable Response



SOURCE: U.S. Army

The Review also assessed the Center's management controls to ensure a cost-effective operation. It outlined the chains of oversight, discussed accounting and purchasing systems and overhead costs and management fees. The Review noted RAND management improvements (principally reduction in travel costs) and Army oversight actions (steps to focus research, establishment of a working group to help set the research agenda, an improved final review and coordination of research) aimed at cost control.

The Review concluded that the Center meets all the needs of the Army and recommended contract renewal.

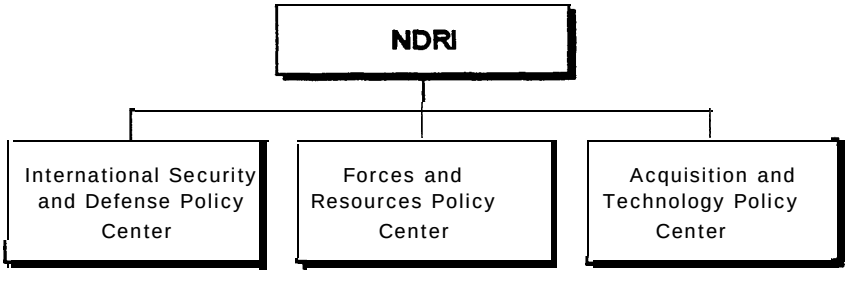
The National Defense Research Institute

Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers

The National Defense Research Institute (NDRI) was established at RAND in 1984 as a separate FFRDC to consolidate all the work being done for DoD (other than that being done for the Army and Air Force) into one contract, planning process, and oversight arrangement.

The FFRDC is currently staffed at a level of 104 MTS, along with appropriate support personnel. For FY 1996, a NDRI MTS is calculated to cost $210,577[3] The most recent report to Congress on DoD FFRDC management forecasts a future NDRI staff effort of 106 STE (Staff Year of Technical Effort--the new term for Man-Year of Technical Staff). The NDRI was recently reorganized The new organizational structure is shown in figure E-12.

Figure E-12: National Defense Research Institute FFRDC



SOURCE: RAND

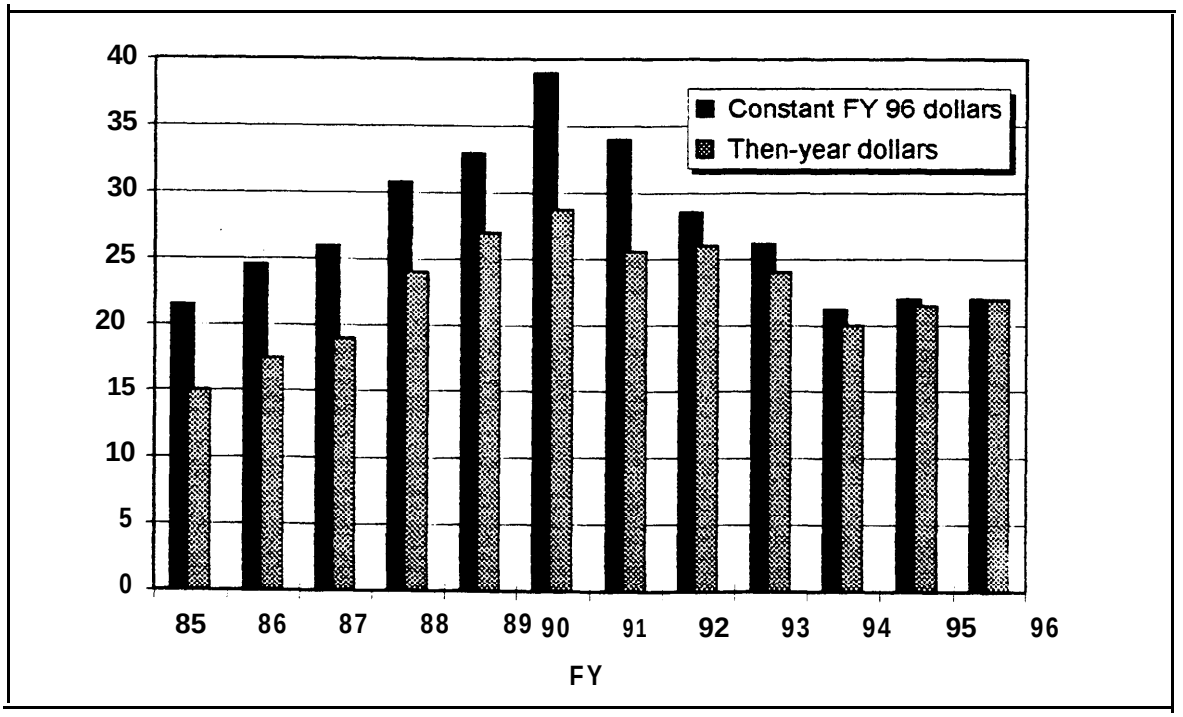
NDRI serves the long-term analytic, planning and innovation needs of OSD, the Joint Staff, and other defense agencies. It is intended to fulfill the following objectives:

- to conduct a sustained research program,
- to establish a reservoir of expertise,
- to allow flexible response, and
- to provide unbiased analysis.

There is no specific budget line for NDRI. Instead, users fund projects as the projects are needed. The primary source of funds is the OSD studies fund. Alternate sources can also be used. While the Office of the Undersecretary of Defense provides most of the funding, over 20 different DoD organizations sponsor studies at NDRI. NDRI funding has declined noticeably since its 1990 peak and in real terms current funding level is back near what it was in FY 1987 (figure E-13).

[3] Calculated with a $21.9 million budget for the 104 MTS.

Figure E-13: NDRI Funding Profile



SOURCE: Department of Defense

NDRI's core competencies are listed in table E-5.

Table E-5: NDRI "Core" Competencies

- **International Strategy and Defense Policy:**
  - Regional expertise
  - International security structures
  - Defense doctrine and strategy
  - Non-military instruments of power
  - Strategic planning

*** Forces and resources policy:**

  - Force planning and structure
  - Personnel management
  - Training
  - Health care
  - Budget analysis
  - Resource management and resource management models
  - High-level logistics

*** Acquisition and technology policy:**

  - Weapons
  - Information
  - Other critical technologies
  - Industrial base issues
  - Acquisition policy
  - Cost Analysis
  - Modeling and simulation theory

Source: Office of the Secretary of Defense

The NDRI management states that the Center does not do non-core work. This is assured through a process that includes review by the NDRI Advisory Board. The process is discussed later under Sponsor's Management Process. The process for accepting work is outlined in table E-6.

Table E-6: NDRI Work Acceptance Process

*

NDRI Mission and Capabilities

Core Competencies

- International strategy and defense policy
- Forces and resources policy
- Acquisition and technology policy

Strategic Relationship

- Long-term continuity
- Flexibility and adaptability
- Independent and objective
- Familiarity with sponsor missions
- Responsiveness
- Proprietary and sensitive data

Important DoD need

Source: Office of the Secretary of Defense

Work must be appropriate to NDRI's mission and capabilities. It must be among the three broad areas of core competence. It must be in accordance with the strategic relationship with their clients, and the work must be deemed important to the DoD. The criteria for project selection is listed below.

(1) Consistency with NDRI's mission, purpose, and general scope of effort;

(2) Applicability of special expertise or competence at NDRI that would indicate it is the most effective source;

(3) Need for objectivity and independence, and freedom from real or perceived conflicts-of-interest;

(4) Importance and complexity of the problem or issue in the sense that it calls for an integrative, cross-cutting, or interdisciplinary approach;

(5) Relationship to and support for the goals of the overall NDRI research agenda, and opportunity for complementary with other NDRI research underway;

(6) Opportunity for innovation and research capital building to support current and future needs (including quick-response capability) of the sponsor community;

(7) Requirement to acquire or have access to privileged, proprietary, competition-sensitive, or otherwise restricted data (including information not available to contractors).

The level and appropriateness of non-DoD work and work for other than the primary sponsor.

NDRI may accept work for non-DoD federal agencies if work (1) is determined to be consistent with its mission and within its general scope, (2) is in compliance with FAR Part 17.502 and 17.504(e), and (3) is specifically authorized by the primary sponsor. Work that is considered to be non-core work will not be performed in the NDRI or in the other two RAND DoD FFRDCs.

Compliance with the DoD Management Plan

The DoD Management Plan states that annual levels of effort shall be based on application of core concept and for the S&A FFRDCs guidelines that include: (1) maintaining a relatively stable level-of-effort, and (2) maintaining competency in core areas. Staff years of technical effort (STEs) are used in sizing and managing DoD-funded FFRDC work.

The Plan states that DoD FFRDCs may only perform core work, that such work must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments), and for not-for-profit activities. It cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity, and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

The sponsor reports that the NDRI Advisory Board "ensures funding is sufficient to retain required core capabilities." There appears to be some difference of opinion about that level. The level of effort has been relatively stable, but a RAND document reports that:

> The FY 1996-2000 research effort suggests that NDRI requires no less than 120 MTS to maintain essential core capabilities and carry out both long-range and quick-response research in the policy issue areas specified. At the same time, 120 MTS provides for no significant surge capacity in any area without curtailing work in other areas. Experience shows that every year NDRI is asked to undertake at least one extraordinary effort, whether commissioned by the Secretary of Defense or mandated by Congress. DoD and NDRI management can accommodate this type of surge or special need by committing funding above the level required to maintain 120 MTS. However, below 120 MTS, not all policy issue areas can be supported to the depth and degree of excellence expected of a studies and analysis FFRDC, and the sponsor community and NDRI advisory board will need to consider which issue areas will not receive NDRI's analytical support.[4]

As noted above, NDRI conducts only core work. Work for other than OSD, the Joint Staff, or the defense agencies must be within the core and must be approved by the primary sponsor. RAND may do other work—and does. As with the other RAND Centers, a fee is authorized.

The current ceiling is 104 MTS. The new DoD management plan envisions 106 STE.

Sponsors Management Process

The primary sponsor for NDRI is the Under Secretary of Defense (Acquisition and Technology), who is responsible for ensuring that NDRI:

- Is used for intended purposes
- Costs of services are reasonable
- Produces high-quality work of value to users

The day-to-day management and oversight is delegated to the Director, Acquisition Program Integration. The Director:

[4] NDRI Research Plan for 1996-2000, June 1995, AR-5935-OSD, RAND Corporation, p. 6.

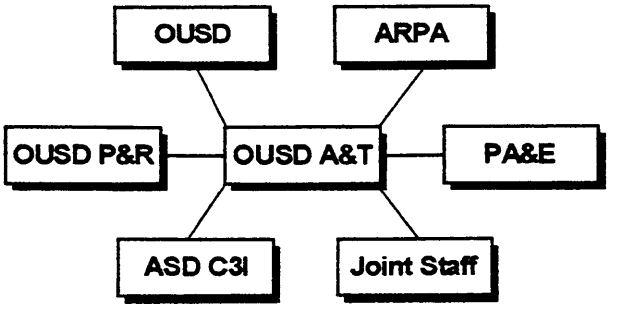
- Designates membership and chairs NDRI Advisory Board
- Provides day-to-day management through FFRDC program office and Contracting Officers' Technical Representative

The NDRI Advisory Board

- Recommends multi-year level of effort in terms of professional person-years
- Provides information as to DoD research needs, interests and priorities, to include issues that cut across and bridge mutual interests
- Reviews and approves long-term research plan and annual research program--ensuring that research is in compliance with "core" definition
- Identifies funding for the program from the OSD studies budget and other available sources
- Evaluates semi-annually with NDRI management the current research effort and makes corrections as needed
- Reviews annual assessment of individual research projects and in coordination with NDRI, takes action to resolve problems

The NDRI Advisory Board is shown in figure E-14.

Figure E-14: NDRI Advisory Board

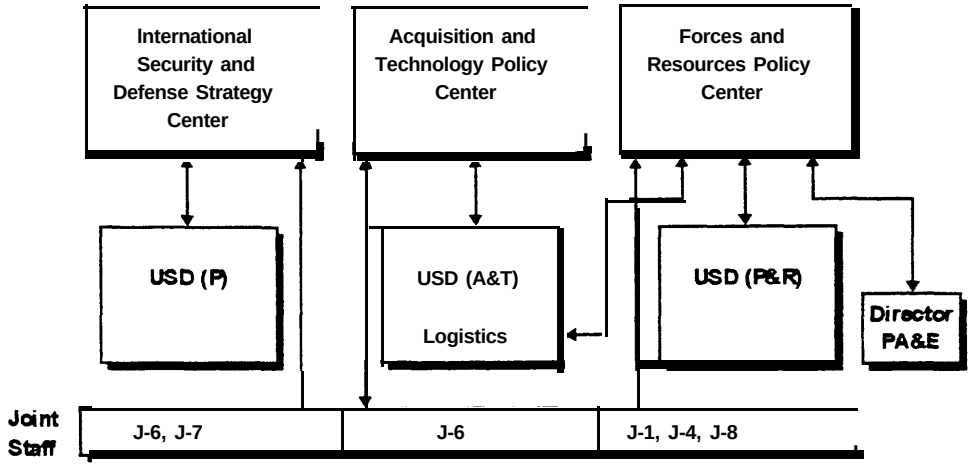


SOURCE: Office of the Secretary of Defense

The NDRI Advisory Board constitutes the final component in defining NDRI's core research. This Board, which is responsible for NDRI governance, oversees the research planning process. In particular, the NDRI reports that it helps develop and approves the long-term research plan and the annual research program, which constitutes NDRI's core research for the year. With respect to the research planning process, it has three primary responsibilities. (1) It is responsible for ensuring that what constitutes NDRI's core research is indeed aligned with the current requirements of the sponsor community. As those requirements change with time, so will the details of what constitutes the core research program. (2) The Board is responsible for ensuring that NDRI is used only for essential core work. (3) It is responsible for ensuring that the capability required to accomplish this core work is maintained.

The broad range of sponsors for individual projects operate with different centers within the NDRI. This is illustrated in figure E-l 5.

Figure E-15: National Defense Research Institute Center-Sponsor Alignment



SOURCE: RAND

The Executive Agent conducts an annual assessment to evaluate technical quality, responsiveness, value, cost, and timeliness as is specified in the DoD FFRDC Management Plan.

For the annual assessment, a survey of project sponsors is conducted. The survey gathers data on sponsors' perceptions of the technical quality, responsiveness, value, and timeliness of NDRI work. The Executive Agent compiles and analyze the survey inputs.

The Executive Agent reports the results of the assessment to the Advisory Board and to NDRI. The Advisory Board reviews the assessment with NDRI, provides feedback, and resolves any real or perceived problems.

NDRI also tracks the timeliness of all key deliverables specified in the project descriptions, and reports regularly to the Executive Agent any significant delays along with planned remedial actions.

Costs are evaluated annually by the Defense Contract Audit Agency as required by the NDRI contract.

Changes in the details of the annual assessment procedures can be made by agreement between NDRI and the Advisory Board.

Thoroughness of the Five-Year Review

The latest NDRI Comprehensive Review is dated October 1, 1994. The Review examined mission needs, alternative sources, effectiveness, management, and costs. The Sponsor states that it was conducted in accordance with OFPP Policy Letter 84-1 and Federal Acquisition Regulations 35.017.

The Review is relatively short. It addresses sponsor requirements in terms of the varied needs of the different offices using NDRI. These needs, it says, tend to cluster into: (1) international security and defense strategy, (2) manpower and other resources, and (3) acquisition and technology policy. The discussion outlines global trends in these three areas and discusses the need for an organization that can address such subjects, and also has a set of general attributes as listed below:

- a sustained, integrated, and comprehensive research effort
- the ability to perform cross-cutting and integrative analysis
- the ability to produce high quality, useful research
- a long term perspective
- an interdisciplinary research approach
- is responsive and flexible
- a deep understanding of sponsor needs
- the ability to generate new ideas and bring fresh perspectives
- modeling and simulation capability

Alternative sources are very briefly considered, but dismissed because "NDRI is specifically capable and specialized to address issues that require cross-cutting integrated, interdisciplinary solutions, and issues that require a higher degree of independence, objectivity, and freedom from real or potential conflicts of interests than other sources can provide." NDRI is not used if other sources can provide the work. The Review also briefly notes the standard limitation on alternative sources in general.

The discussion of effectiveness and efficiency is based on a survey sampling of 76 randomly selected completed projects (of the 260 completed during the contract). The results showed that sponsors were generally "extremely pleased with the efforts of NDRI and all recommended renewal of the contract." Studies have been viewed as of "high quality." The Review notes that NDRI has a broad range of technical capabilities, and a responsive, independent research voice.

There were also some reported criticisms. Timeliness was identified as a problem. NDRI proposed ways to improve on its delivery.

Management controls were discussed in terms of general oversight from OUSD (A&T), the NDRI Advisory Board, and its working group. The 5-member Advisory Board replaces a 13-member Defense Advisory Group that was viewed as ineffective.

The report noted that DCAA reviewed RAND's management of NDRI, and found RAND's operations adequate.

RAND itself has reduced the NDRI senior management structure, improved responsiveness with a Washington presence, improved the project planning and approval process, and lowered cost per MTS 3% between FY 93 and FY 94.

The overall Review conclusion was that the NDRI was performing well and the contract should be renewed.

Appendix F

The MITRE Corporation

The information that MITRE and its DoD FFRDC's primary and secondary sponsors presented to the Task Force is summarized in this appendix. The sponsors were very supportive of the type of work MITRE did for them, the continued need for that work, and the quality of MITRE's products.

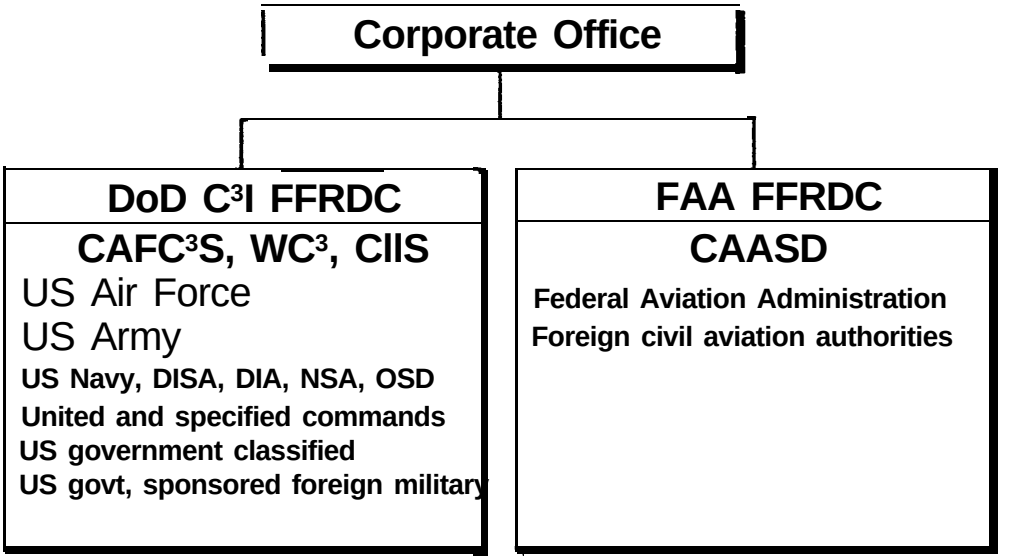
OVERVIEW

The objectives and guidelines for scope of work, organizational structure, size, appropriateness of customers.

The MITRE Corporation currently operates two FFRDCs: the DOD'S C^3I FFRDC and the Federal Aviation Administration's Center for Advanced Aviation System Development. About 85% of its current work program is in the C^3I FFRDC. Within the C^3I FFRDC, more than 90% of the work is for the Department of Defense, and the remainder is for other elements of the intelligence community. About half of the C^3I FFRDC effort is for the U.S. Air Force. Prior to the division of the Corporation on January 29, 1996, MITRE also worked for a variety of Federal agencies and state, local, and foreign governments.

The MITRE Corporation was established in 1958 as a non-profit institution. It was formed from a division of Lincoln Laboratory and had the job of implementing and integrating the Semi-Automatic Ground Environment (SAGE) System that had been developed at Lincoln Laboratory. Through the following decades, the MITRE-operated C^3I research facility has been a central point of C^3I for the DoD. The facility was sponsored solely by the Air Force--although it had additional users--until 1990. At that time, the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD(C^3I)) was designated the primary sponsor of the MITRE C^3I FFRDC, with the Air Force designated as the sponsor of the MITRE Bedford C^3I Division and the Army designated as sponsor of the MITRE Washington C^3I Division. Until early 1996, MITRE's corporate structure consisted of two FFRDCs (one DoD and one FAA) and two other operating centers (the Center for Information Systems, and the Environment, Resource, and Space Center). In 1996,the non-FFRDC civil work was split off to form Mitretek Systems, Inc. (a non-profit company), leaving MITRE with two FFRDCs (see figure F-1).

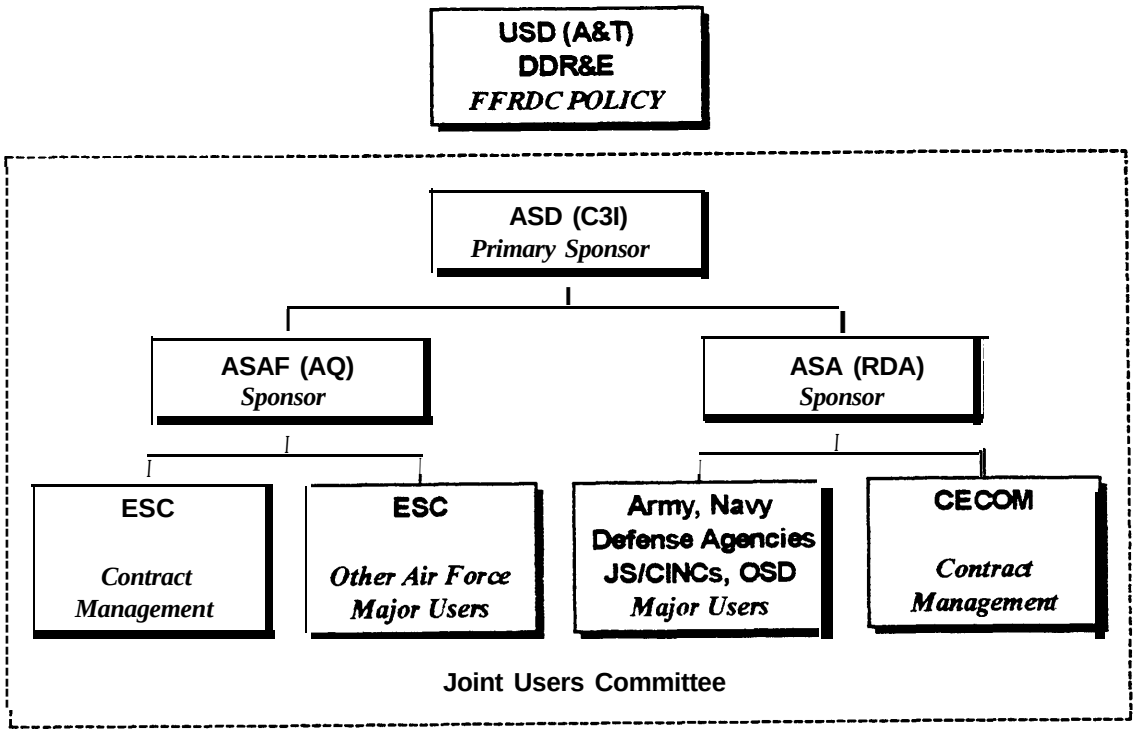
Figure F-1: The MITRE Corporation



SOURCE: MITRE

The ASD(C^3I) who is the primary sponsor, the Air Force, and the Army work together as a team to manage the Government's use of the C^3I FFRDC. The ASD(C^3I) and the ASA (RDA) jointly chair the Joint Users' Committee (JUC) which was established in 1990. The JUC sets priorities for the FFRDC by allocating its ceiling among various DoD elements. The Air Force recently began participating on the Committee. The Air Force also retains its review of MITRE in the context of its contract with the Center. The Air Force (through its Electronic Systems Center (ESC)) and the Army (through its Communications-Electronics Command (CECOM)) each manage a major contract with the MITRE Corporation; in general, Air Force work is funded through the ESC contract and other DoD work is funded through the CECOM contract. Management direction and oversight is provided by the various users, who fund MITRE activities from their own budgets. The ASD(C^3I), ESC, and CECOM work together to provide oversight and quality assurance over the FFRDC's work (see figure F-2).

Figure F-2: Government Management of MITRE

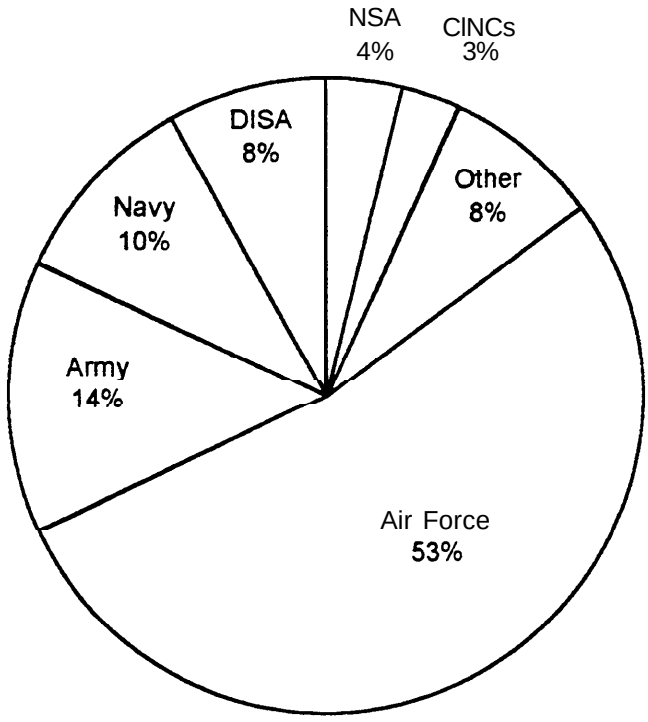


SOURCE: Department of Defense

MITRE is intimately integrated with the Air Force's ESC. The Center shows MITRE as one of three elements of its work force: 49% are in-house military and civil service personnel, 27% are other support contractors, and MITRE is 24%; MITRE represents 44% of the ESC technical work force. ESC stated that the organization does not feel that it is being allowed to use MITRE as much as needed. Similarly, the other users of the C^3I FFRDC have work demands that exceed the ceiling.

The DoD work mix for the C^3I FFRDC is shown in figure F-3.

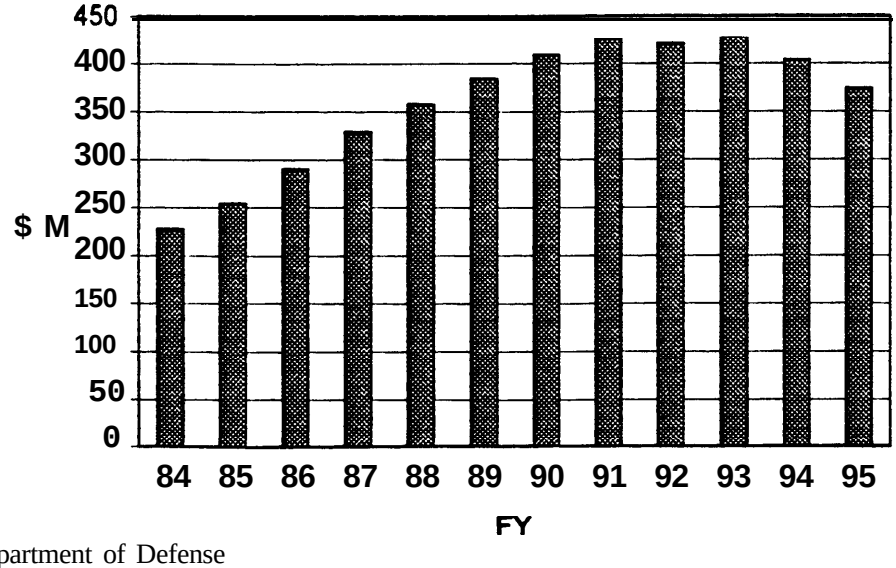
Figure F-3: C3I FFRDC Work Distribution



SOURCE: MITRE

The sponsoring agreement conforms to the FAR requirement that the total non-U.S. Government funding (including CRADAs) not exceed 30% of the total FFRDC's funded support. The funding profile for MITRE is shown in figure F-4.

Figure F-4: MITRE Funding Profile Actual Obligations



SOURCE: Department of Defense

Since 1993, MITRE's total revenues have declined. MITRE's estimated 1996 revenues after splitting the company are $455 million, including work in both the DoD and the FAA FFRDCs. The DOD'S FY 96 ceiling allocation is $341.6 million. The FY 96 ceiling allocations for the C^3I FFRDC are:

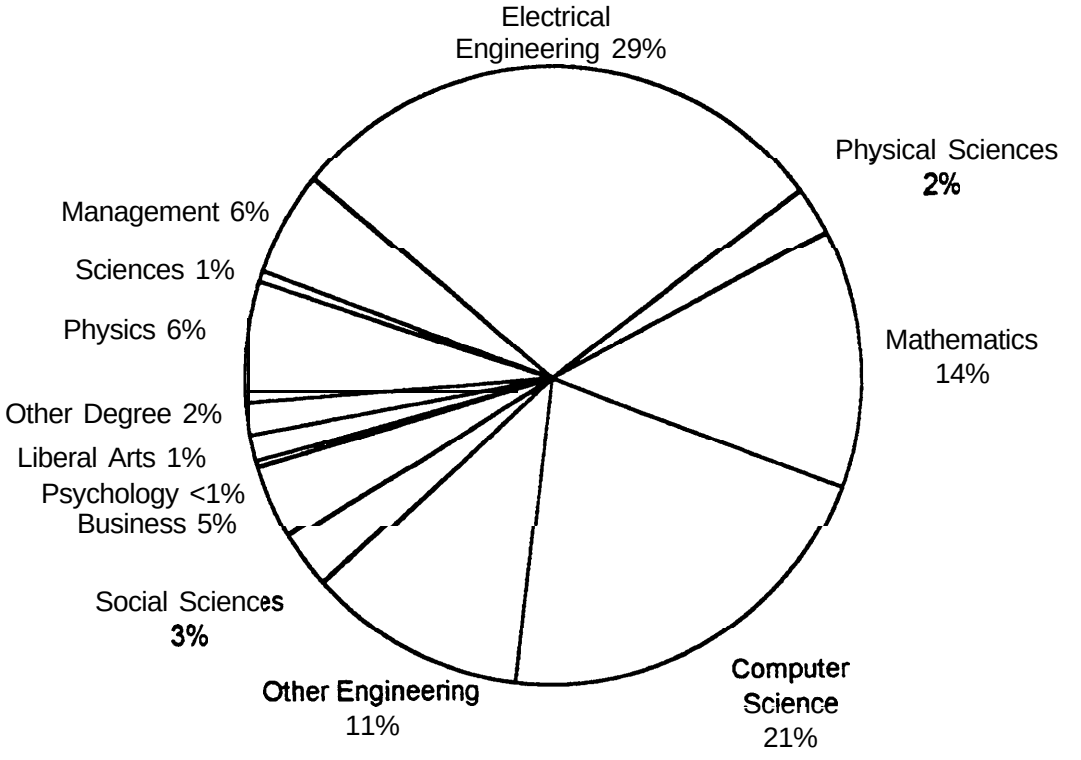
Air Force Contract		$184,323,000
Army Contract		
Army	$47,984,700	
Navy	36,233,800	
DISA	27,245,900	
NSA	12,420,000	
Joint Staff/CINC	14,460,000	
DIA	3,470,900	
CIO	2,192,200	
OASD (C^3I)	5,998,000	
Other DoD	7,281,500	
Total Army Contract		157.287.000
		$341,610,000

In addition, the C3I FFRDC's FY 1996 work program is expected to include non-ceiling projects that total about $50 million. Customers are the CIA and countries engaged with DoD in foreign military sales.

MITRE has a total employment of about 4,700. About 2,750 are technical staff. A total of 2,300 MTS are assigned to the C^3I FFRDC. Among the total MITRE technical staff, 41 percent are electrical engineers and other types of engineers, 21 percent are computer scientists, and 20 percent are physicists and mathematicians (see figure F-5).

Figure F-5: Composition of MITRE Research Staff

Doctorates 15%, Masters **57%, Bachelors 27%, other 1%**



SOURCE: MITRE

The total cost of all MITRE C^3I FFRDC work, divided by the number of technical staff years of effort delivered, is about $189,000. MITRE notes that this includes a variety of direct costs such as project-related travel, equipment purchases, and support labor, which private industry does not normally include when it quotes a "cost per staff year." This cost, when adjusted for inflation, has declined each year since 1991. ESC noted that its analysis of burdened staff costs showed that MITRE is comparable to commercial contractors for individuals with equivalent skill and experience.

The C3I FFRDC's mission is to provide the DoD Command, Control, Communications, Computers and Intelligence, Surveillance and Reconnaissance (C^4ISR) general systems engineering task, engineering support and systems integration support for the Services, the Unified Commands, the Joint Staff, the Defense Agencies and the Office of the Secretary of Defense. The purpose of the C^3I FFRDC is to provide the DoD the capability to access the private sector's systems engineering capabilities from an organization which operates in the public interest. The scope of the C^3I FFRDC activity extends across the functional responsibilities of the C^3I mission area on a worldwide basis and includes systems research and planning, system design technical management, research and experimentation in selected fields. The sponsoring agreement states that, "While serving the immediate needs of the many individual work programs it supports, the C^3I FFRDC directs its work program towards achieving DoD'S vision of an integrated C^4ISR

capability based upon a system of systems that supports joint U.S. and coalition military operations."

MITRE reports that an extraordinary depth and breadth of knowledge and experience in the C^3I domain and its underlying enabling technologies, together with expertise in operational needs analysis, engineering processes and integration techniques, form the basis of MITRE's unique core competencies. The C^3I FFRDC core competencies are:

System of Systems Engineering: Provides the architecture and planning and development, internal and external interface definition, modeling and simulation analysis, and integration and testing necessary to support the development of a single, integrated C^4I system of systems. This single integrated system provides for interoperability across all systems to support effective joint operations.

Systems Development and Acquisition: Provides operational requirements analysis and evaluation, mission threat analysis, risk assessment, and technical performance analysis and assessment to support acquisition planning, program preparation and evaluation, and program milestone and design reviews for all C^4I systems. Additionally, it provides a technical, unbiased perspective, not available in the for-profit sector, on emerging C^4I technologies, available commercial off-the-shelf products, and associated implementation risks with the development and acquisition of complex C^4I systems.

Process Implementation: Provides technical expertise to support acquisition reform initiatives such as military specifications and standards reform as well as to support proof of concept prototyping in support of C^4I systems. The C^3I FFRDC provides the broad technical expertise on available and emerging computer-based tools to enable realistic definition of complex systems architectures required to improve system performance and implementation.

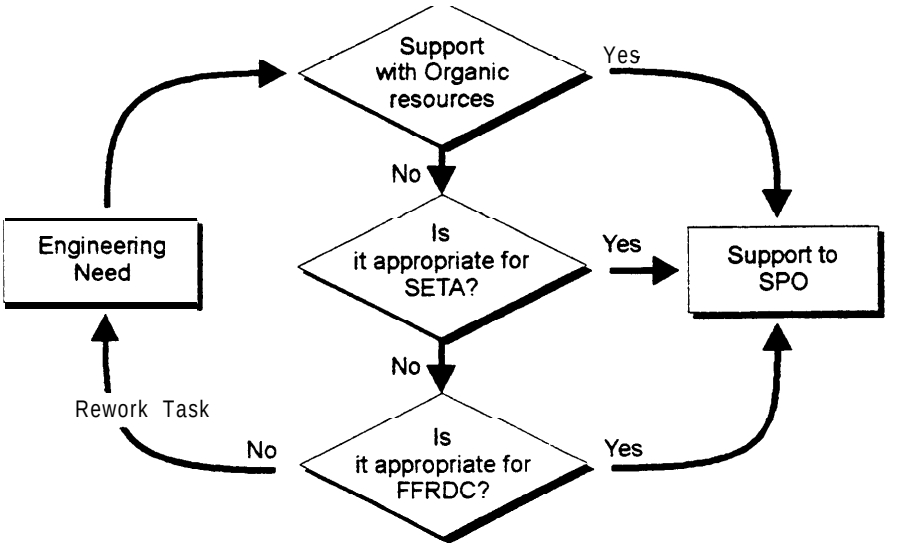
Technology Application: Provides state-of-the-art assessments of opportunities, alternatives, and risks to support technology application in current or developing C4I systems. Additionally, it provides the expertise and broad technical background to assess emerging technologies, and to address critical C^4I problems of present and future systems.

Architectures and Interoperability: Provides an in-depth knowledge of emerging C^4I technologies and an end-to-end understanding of the C^4I mission area as they relate to C^4I architectures and interoperability. The C^3I workforce possesses competencies in migration of legacy systems, integration of operations and intelligence, sustainment and modernization.

Core work is defined as that which meets a three-part test. Core work must (1) be consistent with the C^3I FFRDC's mission, purpose, scope, and capabilities; (2) be within the C^3I FFRDC's core competencies; and (3) adhere to the criteria which collectively comprise the special relationship between the DoD and the C^3I FFRDC.

The criteria for selection of work are shown in figure F-6.

Figure F-6: Criteria for Work Assignment



SOURCE: Department of Defense

The Air Force selection process was revised and core functions were developed in 1994. All work is examined, priorities are set, impact and analysis are completed and a "cut"line of work is established. A general officer or civilian equivalent is required for approval to initiate new work. Army criteria for work selection are similar.

The level and appropriateness of non-DoD work, and non-Sponsored work undertaken by the FFRDCs and UARCs

MITRE can accept non-core work, but only if approved in advance by the primary sponsor and if the work meets the acceptance criteria set forth in the sponsoring agreement. Only core work is conducted in the C^3I FFRDC.

Any C^3I FFRDC work performed for non-DoD users, including foreign governments, requires prior written approval of the primary sponsor. The primary sponsor may permit the work through either a direct purchase or a transfer of funds to either the Air Force or the Army.

Compliance with the DoD Management Plan

The DoD Management Plan guidelines for Systems Engineering and Integration Centers include:

- Maintaining stable core competencies
- Responding to projected trends in workload and funding, consistent with the budget supporting the mission area

The Plan states that DoD FFRDCs may perform only core work, and that such work must be approved by the primary sponsor; can be accomplished only for DoD, other government entities (including state and municipal governments) and not-for-profit activities; and cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity, and credibility of the institution or call into question the freedom from conflict on interest; not take unfair advantage of FFRDC work; and normally be in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying the need for each element of fee."

MITRE reports that the funding ceiling has been too low for several years, a problem exacerbated by repeated Congressional actions to reduce the ceiling further. There is a "queue" of core work for which funding is available but precluded by the ceiling. In FY 1996 this queue was on the order of one-third of the size of the ceiling. Nevertheless, if Congress permits DoD to implement its plan to maintain a relatively stable level of effort over the next few years, MITRE believes that it can maintain its core competencies and provide quality work for those DoD programs able to justify their work within the assigned ceiling. Apart from the loss of value caused by the inability to fit all core work under the ceiling, MITRE reports that the reductions in ceiling and the accompanying reductions in force (RIFS) have increased voluntary attrition, as qualified personnel have concluded that their career prospects would be brighter elsewhere. MITRE is concerned about this trend.

The C^3I FFRDC's focus is on work that cannot be done elsewhere. As figure F-6 shows, the work done at MITRE is, by definition, done only at MITRE. For example, the Air Force states that it will:

> Only assign tasks to MITRE when the role is appropriate. MITRE will not be used if the government or industry can do the job effectively and without a conflict of interest. The approved Technical Objectives and Plans (TO&P) must clearly define and document a single MITRE project role, and define MITRE's relationships with other contractors on projects or programs in which MITRE has a role. In addition, the TO&P must be formalized within an appropriate enabling clause in the pertinent contract.

As noted above, MITRE can perform non-core, non-FFRDC work. The guidelines in the sponsoring agreement conform to those stated in the DoD Management Plan.

Fees are authorized. The government has some input into the use of fees. The Air Force has quarterly reviews of fees. The fees are negotiated annually. A comparison of actual and anticipated fee use is made in the next year's negotiation. Base fee (ordinary and necessary expenses) has been cut to less than 1%.

According to the primary sponsor, "the sponsors plan to maintain a long-term, stable C^3I FFRDC, which will respond to changes in workload and funding consistent with the trend in research, development, and procurement positions of the DoD budget for the programs/systems within the C^4ISR mission area."

Sponsor's Management Process

The ASD (C^3I): (1) implements policy guidance received from Congress, SecDef, USD(S&T), and DDR&E; (2) provides management oversight and direction, technical review, and policy guidance for the MITRE C^3I FFRDC; (3) defines the MITRE C^3I FFRDC core work and sets overall priorities; (4) allocates and reallocates dollar ceiling on the basis of inputs from DDR&E and advice from the Joint Users Committee (JUC) on user needs; (5) provides guidance to the Air Force and Army (secondary sponsors) on the use of the C^3I FFRDC and other policy matters requiring enforcement by means of contract provisions or actions; (6) enters into, interprets, and modifies as necessary the FFRDC sponsoring agreement, which defines the mission of the C^3I FFRDC and the mutual obligations arising out of the special relationship between the FFRDC, the MITRE Corporation, and DoD; (7) receives input from the JUC and from various auditors on the quality of the C^3I FFRDC work and management; (8) conducts comprehensive reviews of the MITRE C^3I FFRDC at least once every 5 years; and (9) serves as focal point for FFRDC interactions within DoD.

The JUC reviews the needs for the MITRE C^3I FFRDC and makes input to ASD (C^3I) on ceiling allocation requirements, reviews user feedback on the C^3I FFRDC's performance, and recommends areas needing attention by ASD (C^3I) and/or MITRE management. The Research and Technology Subcommittee reviews proposed C^3I FFRDC "mission-oriented investigation and experimentation" (MOIE) projects in the light of user needs and determine the annual MOIE program.

The Air Force Electronic Systems Center (ESC) and Army Communications Electronics Command (CECOM) serve as secondary sponsors. They (1) negotiate and administer contracts; (2) manage the day-to-day contracting relationships with the C^3I FFRDC; (3) act as focal points to assemble and prioritize Air Force and other DoD (respectively) needs for C^3I FFRDC support; (4) review all government requests for support from the C^3I FFRDC to determine whether there is adequate justification for making use of an FFRDC; (5) review documentation for C^3I FFRDC work to ensure conformance with regulations and core definition; (6) obtain and analyze customer satisfaction information ("report cards") and provide assessment to the primary and secondary sponsors as well as to MITRE management on the C^3I FFRDC's performance.

The Air Force, in its spring review, considers Service needs, ceilings, all sources of systems engineering and integration, and past performance evaluations to develop budget development material. This is reviewed by the Commander, Air Force Materiel Command and approved by the Assistant Secretary of the Air Force, Acquisition.

The focal points for major users: (1) assemble and prioritize needs for MITRE C^3I FFRDC support; (2) review requested work to ensure compliance with the core work statement; and (3) participate as members of the JUC.

The individual government project officers: (1) determine the needs for C^3I FFRDC support; (2) provide funding for C^3I FFRDC support; and (3) define the objectives of individual C^3I FFRDC projects in the light of government program objectives, and work with MITRE project leaders to establish and adjust project plans and priorities; provide evaluations of MITRE project performance to MITRE project leaders, managers of the supported government programs, MITRE management, and the secondary sponsors.

Several factors impact a program's budget formulation. The Department's Planning, Programming, Budgeting, and Execution cycle is central to planning and executing the funding for each program. Since the C^3I FFRDC is "industrially funded," programmatic funding decisions directly affect the amount of C^3I FFRDC support a program can afford. Program managers and MITRE project leaders work together to negotiate the appropriate amount of support to the program. Once a funding level is agreed upon, ceiling must be available in order for the support to fit within the C^3I FFRDC's work program. The availability of ceiling may also affect the amount of C^3I FFRDC support.

MITRE is evaluated quarterly by the Air Force and annually by all other sponsors.[1] The C^3I FFRDC is rated in several areas including:

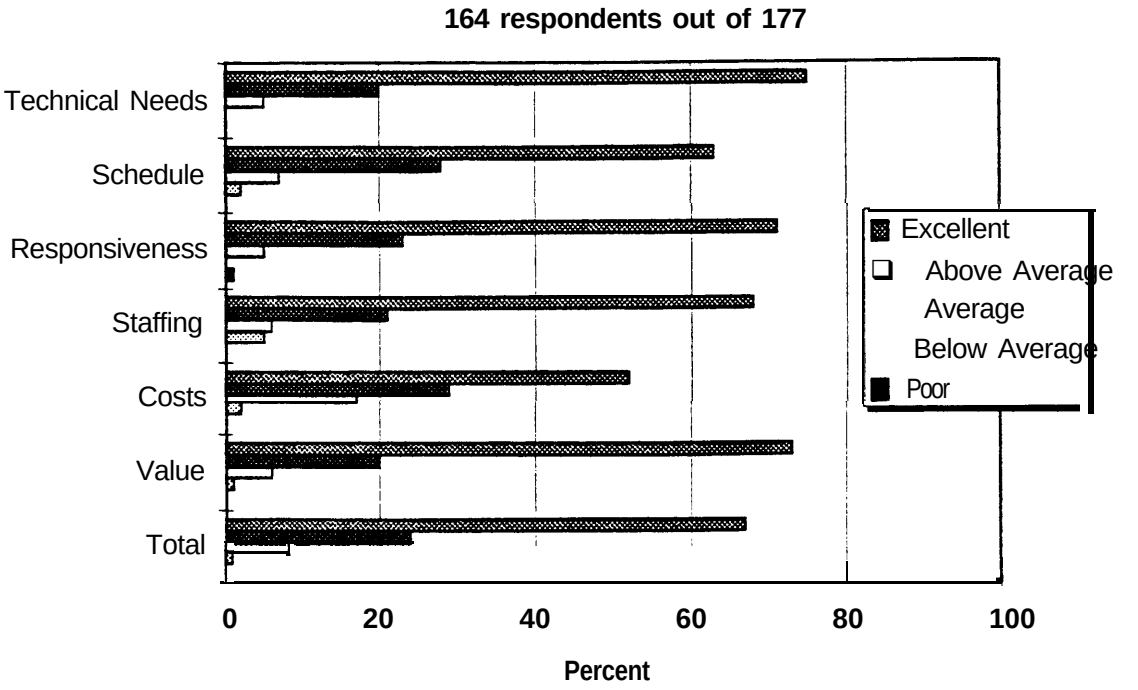
1. Meeting Technical Needs
2. Project Milestones and Schedule
3. Responsiveness to Changes
4. Project Staffing
5. Managing Costs
6. Value of FFRDC
7. Summary Appraisal

Each rating is on a five category scale, ranging from excellent to poor. The Air Force's quarterly reviews supplement an annual assessment. The annual assessment examines customer satisfaction for each user and the results are reviewed by the ESC Commander and the MITRE President. It includes a six part scale.

An evaluation by the Army is shown in figure F-7.

[1] The Commander, Electronic Systems Center reviews all projects being supported in his System Program Offices at these reviews.

Figure F-7: Army Performance Evaluation Report Total



SOURCE: U.S. Army

In 1994, MITRE's work on the Army contract was rated on 164 different projects out of 177 projects and subtasks. The program ratings were: 68 percent excellent, 24 percent above average, 8 percent average, 1 percent below average, and one-tenth of a percent poor. The ratings by agency were universally high, with ASD/C3I giving the highest excellent rating (86%) and the Army providing the lowest (57%) although it provided no significant rating below average (three-tenths of a percent below average, none poor). As the same rating system has been used for the last three years, it is very easy to see that the overall ratings have improved noticeably since FY 1992 (57% excellent).

The Thoroughness of the Five-Year Reviews

The Comprehensive Review for The MITRE C^3I FFRDC conducted by the sponsor is lengthy. The criteria established by FAR 35.017-4(c) were used to determine the continued usefulness of MITRE and its effectiveness. These are listed below.

- Examination of the special technical needs and mission requirements that are by the MITRE C^3I FFRDC;
- Consideration of alternative sources to meet the DoD's needs;
- An assessment of MITRE's effectiveness and efficiency in meeting the DoD's needs;
- An assessment of the adequacy of MITRE's management in ensuring a cost effective operation; and
- Determination that the criteria for establishing MITRE continue to be satisfied and that the sponsoring agreement is in compliance with the FAR 35.017- 1.

The latest Comprehensive Review was approved on June 11, 1993. It was conducted by a C^3I Task Force under the auspices of ASD(C3I).

The Review concluded that the need for a C^3I FFRDC had not changed since the establishment of MITRE in 1958. The Review noted that the 1991 conflict in the Persian Gulf had demonstrated the growing importance of the FFRDC's mission. The C^3I budget was growing. The Review stated the C^3I FFRDC provided a means for the DoD to better access commercially available hardware and software. The Center had access to a wide variety of systems, both military and commercial. Its special status facilitated interaction with industry. The Review outlined the manner of work-planning used by the C^3I community to place work in the C^3I FFRDC, and the use of Industrial Funding.[2] These approaches were cited as evidence the community thinks that the Center remains vital to meeting a growing DoD technical need.

The Review considered "in-house," for-profit, not-for-profit (non-FFRDCs) and other FFRDCs (DoD and non-DoD). The discussion of alternatives was conducted in general terms with no analysis conducted of specific alternatives. At one point the narration noted that "at this time, it is impossible to accurately estimate the cost of bringing all the work performed by the MITRE C^3I FFRDC in-house." Further, the Review noted that because in-house salary levels are low and in-house engineering strength is low, there was no reason to consider in-house as a viable option.

For-profit firms were perceived to have conflicts of interest. Further, citing a 1961 congressional report, the Review stated that no single firm was capable of having the breadth of talent necessary. The principal argument against other sources was that each task requires a sole-source certification that finds that no other source can do the particular task. In this context, the Review notes that the alternative source issue is confronted, and justified, on a daily basis.

The assessment of the C^3I FFRDC's efficiency and effectiveness was based on: (1) an assessment from high level users; (2) a determination of the overall value of services received; (3) a bottom-up analysis from project managers; and (4) sponsor and JUC assessments. The Review outlines the on-going evaluation process. The primary sponsor also assembled the review data for FY 1990, FY 1991, and FY 1992 MITRE projects. All major Air Force and Army contract deliverables were reviewed and summarized. These and other summary reviews were included as attachments of the Review. The examination of the full set of past and current project reviews lead to the conclusion that the work conducted by the Center was highly effective and efficient "particularly due to the special relationship DoD has with MITRE's C^3I FFRDC." This relationship was noted as a further justification for the continued need and use of MITRE.

The Review's assessment of management of a cost-effective operation states that "DoD has an on-going process, both internal and external, to assure the MITRE C^3I FFRDC is and remains cost effective," and that the process has confirmed that MITRE's management is cost consciousness. The Review discusses the oversight procedure, outlining responsibilities, and noting DCAA's role. An attachment details MITRE's internal cost control activities. Several

[2] Industrial Funding refers to the practice of each user funding its C^3I FFRDC work for various Program Elements rather than a single Program Element on Budget Line.

examples are given of cost saving measures. An explanation of salary levels is provided and all projects are also evaluated on costs. DoD concluded that no problems were observed in this area by sponsors during the period under review.

Finally, the Comprehensive Review determined that the original criteria for establishing the MITRE C^3I FFRDC continues to exist today. The primary criteria for an entity performing systems engineering functions is that the entire organization must not be allowed to compete or form business partnerships (e.g., consortium) with any "for-profit" organization. MITRE enjoys this "trusted agent" status because the entire Corporation (both FFRDC and non-FFRDC centers) has never competed with any "for-profit's organization. To do otherwise, the Review contends, would create a perceived conflict of interest and most likely deprive the entity of access to proprietary and privileged data. The Review goes on to say that "the organization must refrain from any aspect of development or production, since this would tend to destroy its ability to be technically objective, and that the organization must be composed of outstanding scientists and engineers integrated into a professional team that is without peer in its specialized field." Further, that "the professional entity accomplishing these functions must have a close and continuing relationship with the DoD, and it must have a single-minded, purposeful dedication to both the DoD and its special field of interest." The Review concludes that the MITRE Corporation and the MITRE C^3I FFRDC satisfy all of the above criteria.

Appendix G

The Aerospace Corporation

The written and briefing material presented by the Aerospace Corporation and its sponsor are summarized below. The sponsor was very supportive of the role of the Corporation, the need for the work being done, and the high quality of that work.

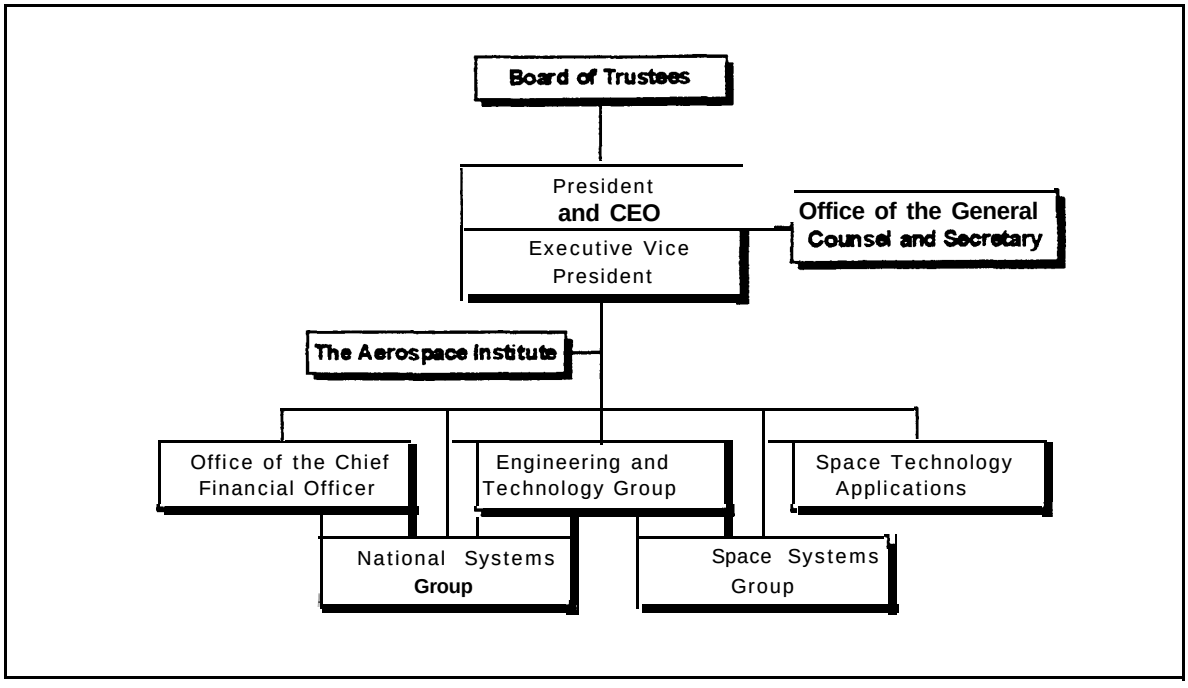
The objective and guidelines for scope of work, organizational structure, size, and appropriateness of customers.

The Aerospace Corporation is a private nonprofit mutual benefit corporation chartered in the State of California. It was established in 1960, and as its primary activity, operates an FFRDC in support of Air Force and national security space programs. The FFRDC sponsor is the Assistant Secretary of the Air Force for Acquisition (SAF/AQ), with day-to-day management by the Air Force Space and Missile Systems Center (SMC). The Corporation has supported efforts on launch vehicles for Projects Mercury and Gemini, NASA's Viking and Voyager programs, the Ballistic Missile Program, and the Space Shuttle. The Corporation currently supports all DoD launch vehicles, Air Force military communications satellites, weather satellites, early-warning satellites, the Global Positioning System (GPS), other National Security space systems, and ballistic missile defense. Participation in non-defense programs, including NASA has in the past been as high as 18% of technical support, and was about 5% in FY 95 and 6% in FY 96. Aerospace carries out work for DoD, NASA, the Department of Transportation, other federal and local government agencies, and some foreign countries and international organizations.

The Aerospace Corporation's structure is shown in figure G-1.

Aerospace FFRDC's mission is to support the Nation's national security space efforts, particularly those executed by the USAF. The mission involves applying the full resources of modern science and technology to achieve continuing advances in military space and space related systems which are basic to national security; to provide national security space efforts with an organization which is objective, possesses high technical competence, and is characterized by permanence and stability; to provide a vital link between the U.S. Government and the scientific and industrial organizations in the country with a capability and an interest in the space field; and, through its unique role, to help to ensure that the full technical resources of the nation are properly applied to developing highly reliable and cost effective space and space related systems, and that the potential advances in the space field are realized in shortest possible time.

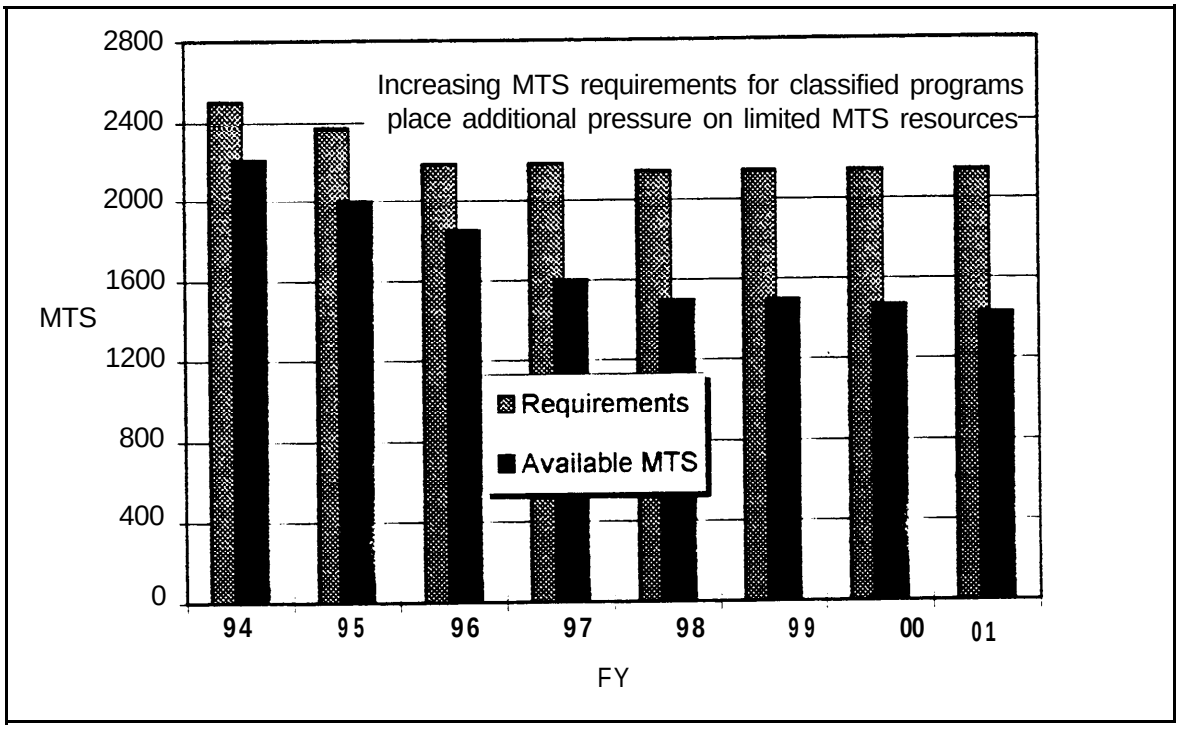
Figure G-1 : The Aerospace Corporation



SOURCE: The Aerospace Corporation

The Aerospace FFRDC is intimately integrated with the Space and Missile Systems Center (SMC) and other national security space customers. Indeed, SMC states that "Aerospace is an integral part of SMC." To meet current SMC needs, the Air Force has divided a workforce roughly into thirds: the military and government employees accounting for one-third, the Systems Engineering and Technical Assistance (SETA) contractors another third, and Aerospace making up the final third. The SMC commander stated that he has a greater requirement for Aerospace than is allowed under the current ceiling. SMC's projected program requirements for Aerospace, for example, are 20 percent above the available MTS. SMC's requirements versus the available support from Aerospace is shown in figure G-2.

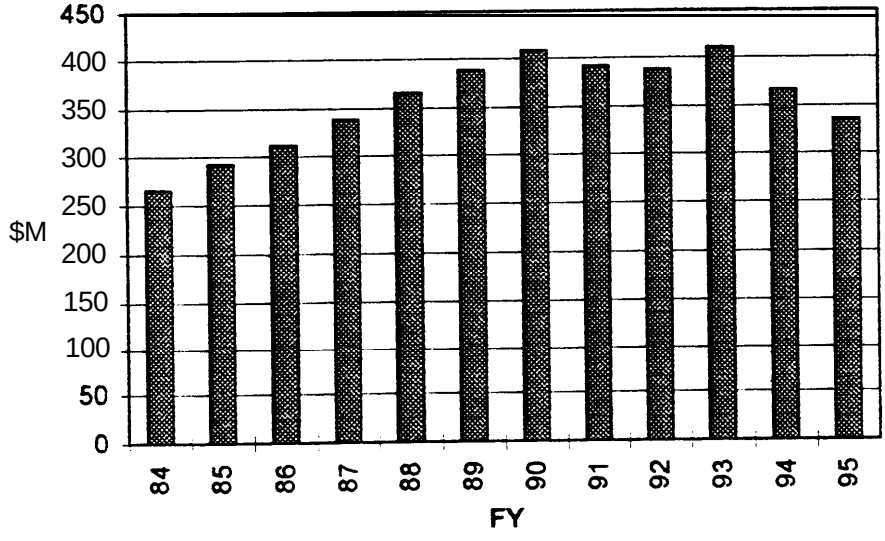
Figure G-2: DoD MTS Requirements versus Available Aerospace MTS Support



SOURCE: U.S. Air Force

Aerospace funding has been declining (figure G-3). It is $306 million for FY 96. In constant dollars, FY 95 funding was about the same as in FY 82, although Aerospace reports the scope of space programs supported is now much larger.

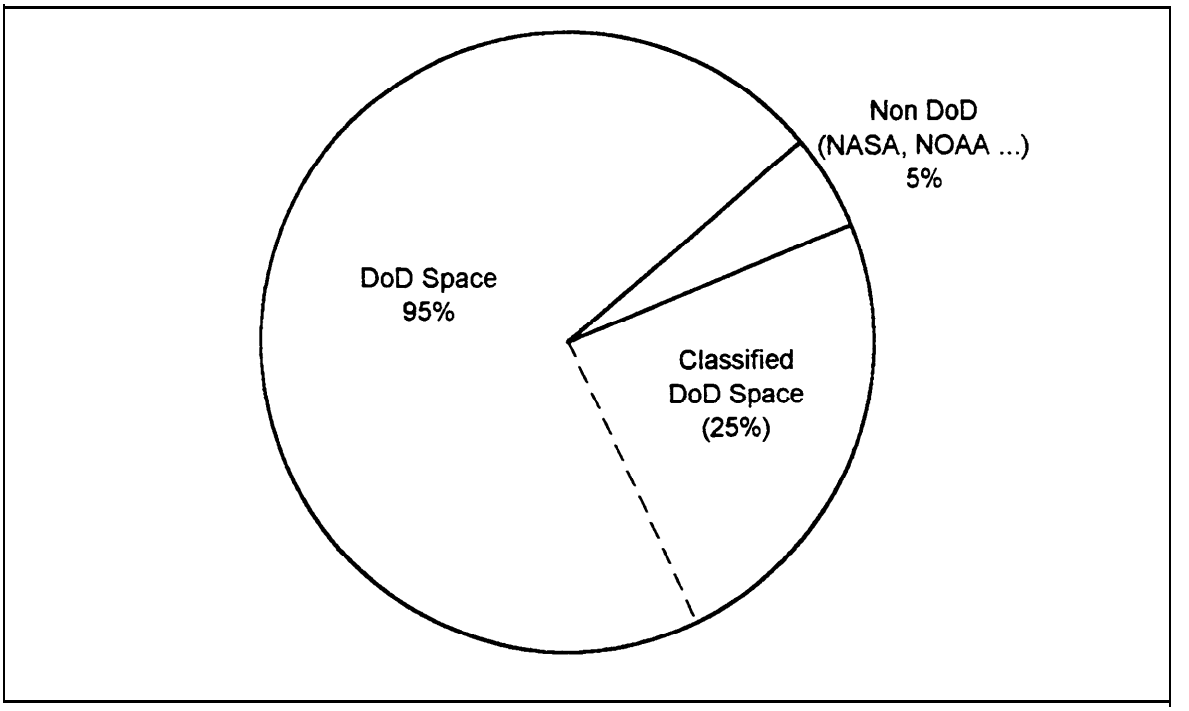
Figure G-3: Aerospace Funding Profile Actual Obligations



SOURCE: Department of Defense

The DoD remains the primary source of funds for Aerospace. In 1995, of the $349.7 million Aerospace received, only 5% came from non-DoD sources. Sixty-two percent came from SMC, another 1% from other Air Force offices, 28% from "classified" programs (it is assumed that some of this was Air Force funds) and 3% from other DoD sources (figure G-4). Federal Acquisition Regulations (FAR 35.001) on FFRDCs state that the organizations will receive at least 70% of their financial support from the government Aerospace is far below the 30% limitation on non-US. Government funding (currently less than 2%), and is not being encouraged to diversify.

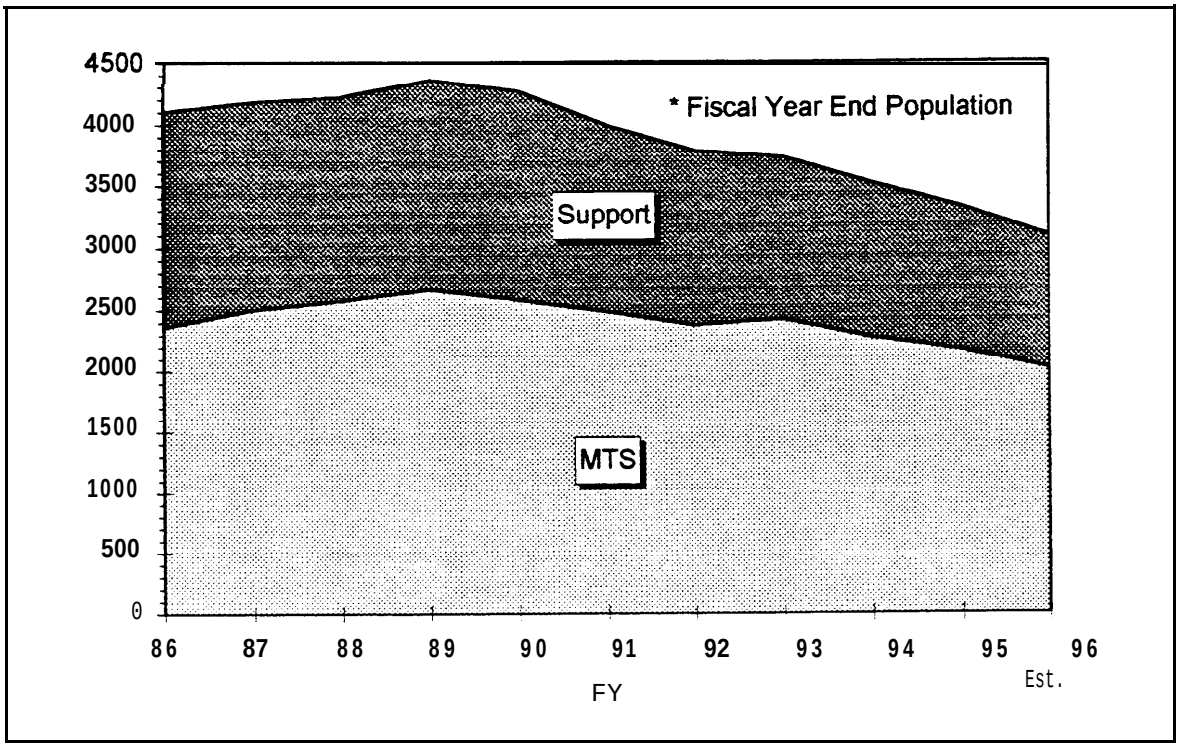
Figure G-4: Aerospace Technical Effort FY 95



SOURCE: The Aerospace Corporation

The Aerospace staff has declined along with the budget decline (figure G-5). Non-technical staff has been reduced preferentially. As of November 1995, Aerospace's entire work force had declined 29% from a high of 4,257 in November 1990 to 3,034. More than 1,000 people were retired early or laid-off. Two-thirds of the current staff are technical staff. Of the technical staff, 27% have Ph.D. degrees and 43% have masters. Only 2% have no degree. Twenty-four percent are electrical engineers, 21% are mechanical and aeronautical engineers, and 21% are physicists and mathematicians.

Figure G-5: Aerospace Corporation Population



SOURCE: The Aerospace Corporation

The loaded rate for Aerospace labor have also declined during this period. In 1995 the cost of an MTS per year was $175,000. The average salary of MTS is $81,500 a year while the average salary of support staff is $42,700 a year. The total cost per man-year at Aerospace slowly and steadily declined in real terms since 1986. Overhead rates have been declining since 1990.[1]

According to the presentation of core capabilities, Aerospace provides support not available from the USAF's in-house technical and engineering capabilities. The Sponsoring Agreement states that the Corporation shall perform scientific engineering, and technical oversight tasks in the following areas:

- General Systems Engineering and Integration (GSE&I)
- Technical Review (TR)
- Selected Research Development, Test and Evaluation (SRDT&E)
- Plans and systems Architecture (R&SA)
- Mission Oriented Investigation and Experimentation (MOIE)
- Multi-Program System Enhancement (MPSE)
- Engineering Methods (EM)
- Foreign Technology Support (FTS)

[1] The Aerospace documentation shows that from 1987 to 1991, MTS rates in constant 1995 dollars have declined to 92.7% of what they were in 1987.

Aerospace's specific core competencies are:

- Launch certification
- System of systems engineering
- Systems development and acquisition
- Process implementation
- Technology application

The Air Force Sponsor stated that the criteria for core work for Aerospace is that it is consistent with:

- Aerospace's mission, purpose, and capabilities
- The Air Force's need for Aerospace's core competencies
- The FFRDC special relationship between the Air Force and Aerospace

Other factors that relate to the core work are the special (long-term) relationship between the Air Force and the Aerospace Corporation which is characterized by:

- Broad, deep knowledge of space technologies and systems
- Detailed knowledge of all space systems, both in development and operational
- Application of processes for architectures, acquisition, T&E
- In-depth understanding of the operational role of all space systems
- Substantial involvement with developers and users

The criteria for using the Aerospace FFRDC according to the Sponsoring Agreement are shown in table G-l.

Table G-1: Criteria for Work Assignment to an FFRDC

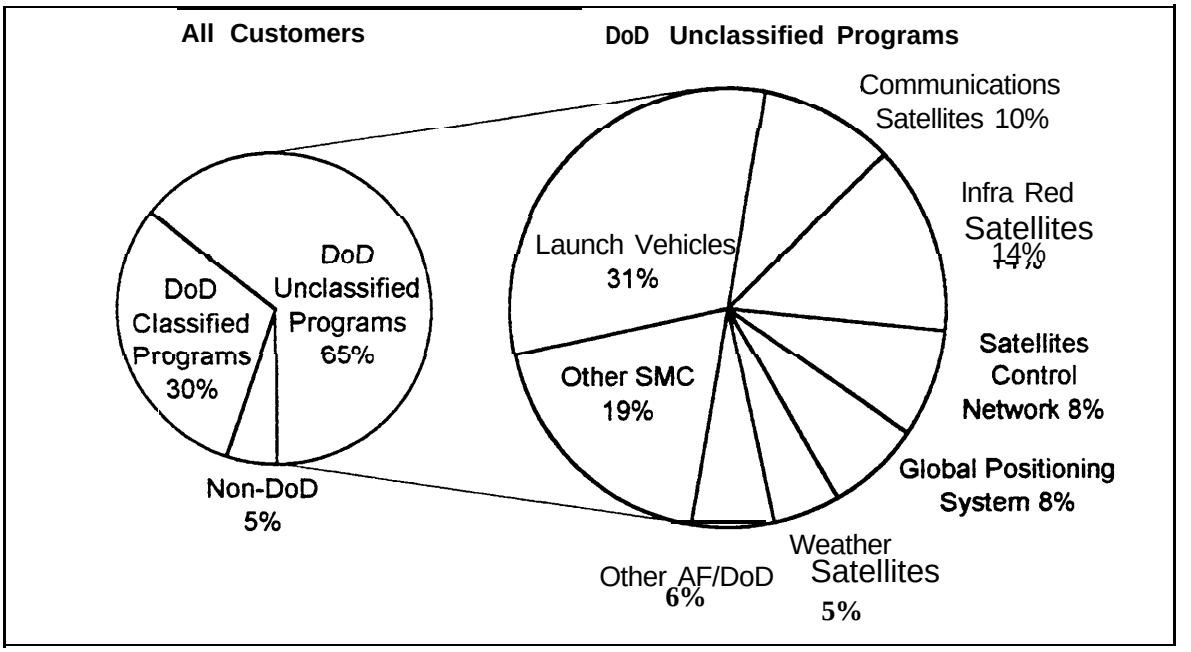
Freedom from bias for design hardware, or approach
- Need for state-of-the-art information
- Access to DoD planning information
- Access to intelligence
- Need for industry proprietary data
- Access to industry proposals
- Need for extensive background information
- Need for diversified skills
- Need for outstanding specialists in specific fields
- Continuity of effort
- Need for large special facilities

SOURCE: U.S. Air Force

The FFRDC reports that the program manager defines tasks and certifies in writing to the SMC chief engineer that the criteria have been applied and validated, and that there are no alternative government or industry sources.

The customer breakdown and the work breakout for Air Force managed tasks for FY 96 are shown in figure G-6.

Figure G-6: Aerospace MTS Customers (FY 96)



SOURCE: U.S. Air Force

The Sponsor stated that the Aerospace FFRDC has no non-core work.

The appropriateness of non-DOD work, and non-sponsored work undertaken by the FFRDCs and UARCS.

Aerospace can do non-sponsor and non-DoD work. There is currently about 3% non-sponsor DoD work and 6% non-DoD work for FY 96. The sponsor reports that government and commercial work is approved by SMC. Commercial work must be in the national interest, must be non-competitive with industry capabilities and must not create any reasonable perception of potential conflict-of-interest. The justification for all work must address:

- Aerospace unique qualifications
- A sole source justification based on the sponsoring agreement
- The benefit to SMC,. the Air Force, the Nation
- The requesting organization and its present relationship to SMC

Some examples are shown in table G-2.

Table G-2: Examples of Non-Sponsor Work

- NASA (52%)
  - Space Station, Hubble, Cassii
- NOAA (13%)
  - NPOESS
- International (6%)
  - CNES Ariane 5
  - Norway - launch site environmental assessment
  - Korea - space engineering training

Source: The Aerospace Corporation

Compliance with the DoD Management Plan

The DoD Management Plan states that annual levels of effort will be based on the application of the core concept and guideline fee for Systems Engineering and Integration Centers that include: (1) maintaining stable core competencies, and (2) responding to projected trends in workload and funding consistent with the budget supporting the mission area.

The Plan states that DoD FFRDCs may only perform core work, that such work: must be approved by the Primary Sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments) and for not-for-profit activities; cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity and credibility of the institute, or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

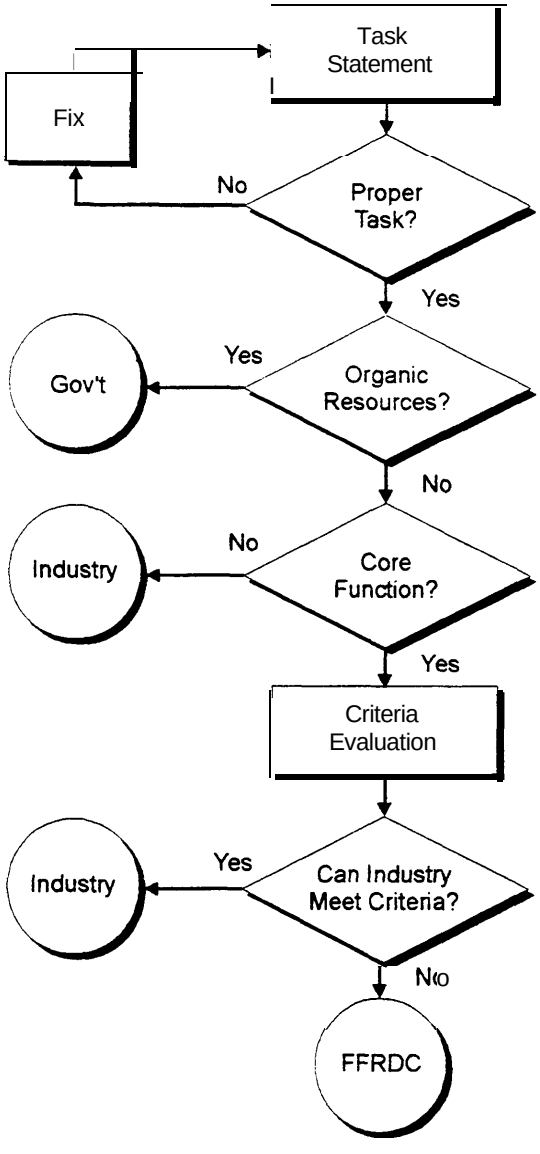
Fees may be authorized The Plan calls for "an annual fee proposal justifying each element of fee."

The FFRDC and the sponsor both stated that the FFRDC is currently capable of maintaining core competencies in critical areas, but neither is sure they can continue to do so in the future. The sponsor noted a gap between MTS required and MTS available under the current congressional ceiling—2,174 MTS required, and 1,765 MTS delivered in FY 1996.

Figure G-2 indicates that the MTS decline has been less steep than the overall dollar decline and that much of the personnel decline has come in the support staff.

The sponsor provided a decision tree for task allocation that focuses Aerospace work on areas that cannot be met by either other industry or government organizations, and are therefore core work (see figure G-7).

Figure G-7: Decision Tree for Task Allocation



SOURCE: U.S. Air Force

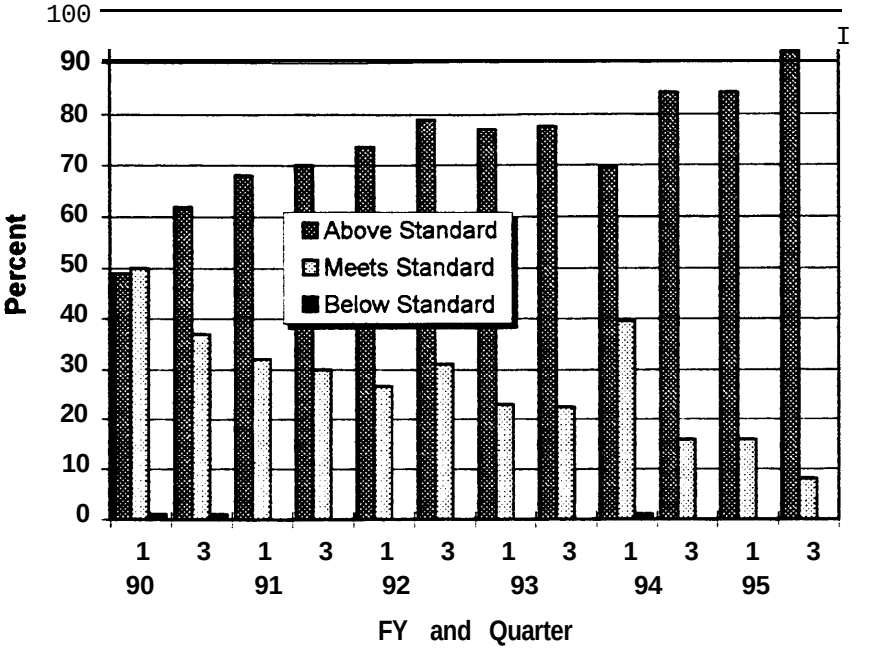
The criteria for selection of projects, discussed earlier, also help limit work to that considered appropriate for Aerospace. Non-Sponsor, non-core work can be accepted by Aerospace, but outside the FFRDC, and only after the limits of such work have been negotiated with the sponsor.

Sponsors Management Process

The Air Force Sponsoring Agreement details the management responsibilities of both Aerospace and the Air Force Sponsor. Day-to-day Air Force management is the responsibility of the Air Force Space and Missile Systems Center (SMC). SMC is responsible for setting the broad program direction; oversight of ongoing development programs; review of annual work plans and manpower allocation; recurrent assessment of Aerospace FFRDC efficiency and effectiveness; evaluation of the work performed by the Aerospace FFRDC; and resolution of the intraprogram conflicts involving the Aerospace FFRDC.

Figure G-7 outlined how task allocation is made. SMC has a system to evaluate Aerospace's work. According to SMC, customer satisfaction ratings are consistently "superior." SMC says that the most common complaint is "I can't get all the Aerospace MTS I need!". Beyond these obvious statements of satisfaction, there is an semi-annual evaluation system based around the award fee. In the last four years (FY 91 to FY 95) from 70% to more than 90% of Aerospace's work has been rated above standard and 30% to 10% is rated as meeting standard, with a generally increasing trend in the fraction of work rated "above standard." No work has been rated as below standard since FY 90. (See figure G-8).

Figure G-8: Semi Annual Evaluation of Aerospace Performance by Customers



SOURCE: The Aerospace Corporation

The ranking system evaluates the following areas as either "above standard", "meets standard", or "below standard" :

1. Effectiveness of Aerospace Management Approach
2. Problem Solving Ability
3. Responsiveness to Program Needs
4. Adequacy of Aerospace Support
5. Technical Competence and Objectivity
6. Initiative and Cooperations of Supporting Team
7a. System Program Office (SPO)/Aerospace Working Relations, Management Level
7b. System Program Office (SPO)/Aerospace Working Relations, Working Level
8a. Work Force Capability, Key people
8b. Work Force Capability, Supporting MTS
9. Visibility of Aerospace Support
10. Technical Accomplishments
11. Overall Quality of Aerospace Effort

As a part of the management structure, the award fee is set up to provide an incentive to managers to "enhance the technical and cost effectiveness of the FFRDC." Furthermore, Aerospace stated that it does have a clear quantitative and comparative measure of its overall performance: the success of its launches compared to U.S. commercial launches, and the early life success records of satellites.

The Thoroughness of the Five-Year Reviews

The Comprehensive Review for the Aerospace Corporation conducted by the sponsor is lengthy. The criteria established by FAR 35.017 were used to determine the continued usefulness of Aerospace and its effectiveness. These are listed below.

- Examination of the technical needs and mission requirements that are served;
- Consideration of alternative sources to meet the DoD's needs;
- An assessment of Aerospace's effectiveness and efficiency in meeting the DoD's needs;
- An assessment of the adequacy of Aerospace's management in ensuring a cost effective operation; and
- Determination that the criteria for establishing Aerospace continues to be satisfied and that the sponsoring agreement is in compliance with the FAR 35.017-l.

The latest Comprehensive Review is dated October 27, 1993.

The Review examined the long-term needs of the Air Force for general engineering support of military space systems. The Review considered both non-classified and classified systems. It noted the risks and costs associated with military space and discussed the specific programs that continue to need support. Some of these are new systems requiring Aerospace to stay on the cutting-edge of technology. Others are legacy systems that require corporate knowledge that Aerospace retains. The Review of need also addressed the potential of segregating out portions of the overall military space program, and reported that such segregation created both technical and conflict of interest problems.

The Review looked at some specific alternative sources. It stated that the best-qualified in-house alternative was NASA. The Review used a recent (1990) NASA capabilities review to analyze this alternative. The Review also considered the Air Force's Phillips Laboratory. Neither NASA, nor the Laboratory were believed to be adequate alternatives.

For-profit firms were examined in less detail. The analysis centered on problems in the for-profit industry--"financial interests, conflict of interest, and lack of communications" were judged to have detrimental effects on programs. The analyses also used estimated cost-savings from Aerospace analysis of contractor programs to show the need for objective analyses. For-profit firms were dismissed for reasons of conflict-of-interest, objectivity, independence, and stability and lack of a sufficient range in technical capabilities.

Non-profit organizations were considered (including other FFRDCs) but these were deemed to be too expensive and lacking in the critical skills. The assessment of efficiency and effectiveness is relatively short (7 pages). The evaluation is based on a survey of 130 individual users/projects. The Review discussed the long-term evaluation system and its use by Aerospace and Air Force management. The Review also noted the excellent launch success rate for missions supported by Aerospace, and the estimated cost-savings involved.

The Review of management controls to ensure cost effective operations outlined corporate organization to oversee costs, and discussed overall auditing and management controls. It reviewed a number of specific actions taken to increase the cost effectiveness of operations and noted that cost per MTS had been falling steadily in real terms since 1986.

Appendix H

Software Engineering Institute, Carnegie-Mellon University

The material presented by the Software Engineering Institute (SEI) and its Primary Sponsor are summarized in this appendix. The sponsor presented a very supportive view of the need for the type of work that is being done by the FFRDC and the value of SEI's products.

Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers.

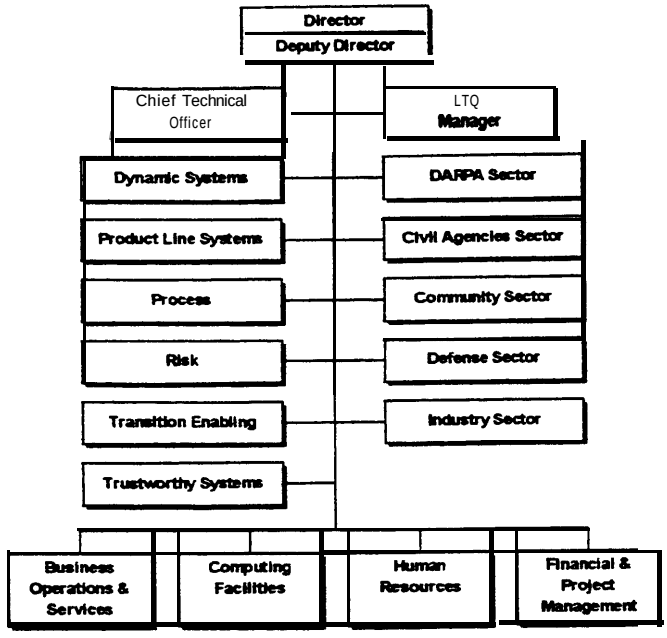
The Software Engineering Institute was established in 1984 at Carnegie Mellon University through a competitive procurement process initiated by the DoD with the approval of Congress. The Center was proposed as a response to the rapid growth of mission-critical software systems being put into DoD equipment that were a growing element of the budget and taking an increasingly large element of technical capability to support them. A DoD Joint Service Task Force chartered to review embedded software problems proposed the establishment of a Software Engineering Institute to bridge the gap between R&D activities and the exploitation of those techniques in systems. A subsequent report by IDA validated the need for such an organization and recommended that the Institute be an FFRDC.

The SEI's mission is to: (1) bring the most effective technology to bear on rapid improvement of the quality of operational software in DoD software intensive systems; (2) accelerate the reduction to practice of modem software engineering technology; (3) promulgate the use of this technology throughout the software community; and (4) foster standards of excellence for improving software engineering practice.

The Defense Advanced Research Projects Agency (DARPA) is the primary sponsor. The Air Force Electronic System Command (ESC) serves as the Administrative Agent.

SEI's structure is shown in figure H-1.

Figure H-1 : Software Engineering Institute



SOURCE: Software Engineering Institute

Table H-1 shows funding trends over the last four years. The FY 96 budget is $33.3 million.

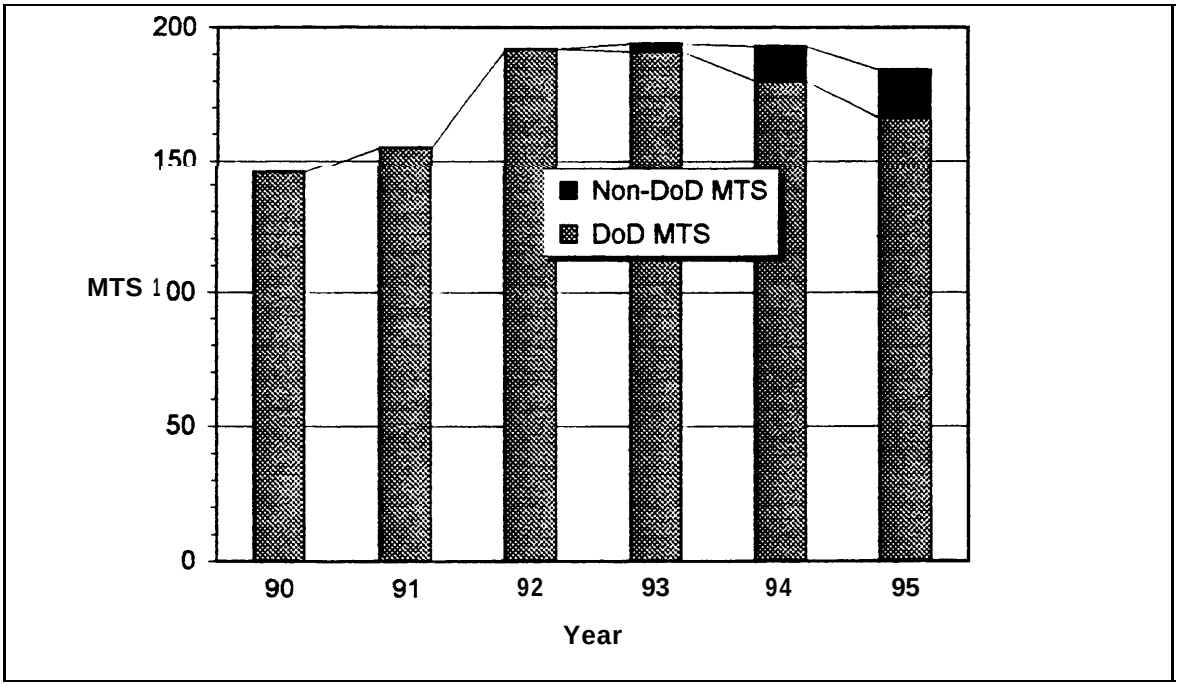
Table H-1: Income by Source

($M)	FY 1992	FY 1993	FY 1994	FY 1995
Total DoD Funds	34.9	31.8	30.6	28.7
Total Non-DoD	---	.5	2.3	3.1
Total SEI Revenue	35.07	32.4	32.9	31.8
DoD Ceiling	35.07	36.24	35.8	28.7

SOURCE: Software Engineering Institute

SEI had a staff of 184 total MTS in 1995 (166 DoD MTS, 18 non-DoD MTS). Personnel trends are shown in figure H-2.

Figure E-2: SEI Personnel History



SOURCE: Software Engineering Institute

Twenty-eight percent of the research staff held doctorates, 40% Masters, 27% Bachelor's and 5% lacked a college degree. About 65% of the staff came from industry.

The cost of MTS have been relatively stable and has fallen slightly in real terms over the past three years. SEI notes that 15% of MTS labor is provided through an affiliate program at no cost to the government, but SEI still provides support for that labor so MTS expenditures appear higher than they actually are.

The SEI reports that it possesses core competencies in **software engineering and the supporting software technology**, and **technology transition.**

Software engineering and the supporting software technology is rapidly evolving. The SEI technical program currently encompasses work in four broad areas of interest and significance to the software engineering community: **software process, risk management, disciplined engineering**, and **trustworthy systems.**

Software process focuses on software process improvement based on process modeling, representation, measurement, and supporting technology to define and manage processes, whether automated or human directed. **Risk management** focuses on defining and modeling processes for assessing and managing software development risks. **Disciplined engineering** focuses on methods and tools for engineering software systems. **Trustworthy systems** focuses on the importance of trustworthy software, computer systems, and their potential vulnerability to disruptive or otherwise criminal activities.

Technology transition aims at encouraging the use of best practices throughout the software community. This includes enabling activities to mature the infrastructure of the software engineering profession and transition software engineering strategies and methods. Maturing the infrastructure focuses on establishing and improving the structures needed to support a software engineering profession with the expectation that such an infrastructure assists in disseminating improved software engineering practices. Transition strategies and methods activities focus on ensuring that effective software engineering technology transition practices are used by the entire software engineering community.

SEI will not accept non-core work. SEI reports that core work is defined by the combination of SET's purpose, mission, and capabilities, SEI core competencies, and the strategic relationship maintained by SEI and its sponsors.

To be consistent with the purpose, mission, and capabilities, work should be:

- targeted to bringing an engineering discipline to the way software is acquired, developed, and maintained.
- targeted toward transitioning the use of software engineering and supporting technology.
- involve work to research, evaluate, mature, or transition promising technology.

The work must be consistent with SEI core competencies of software engineering, supporting software technology, or technology transition.

The work should require one, or a combination of, the following characteristics.

- knowledge of sponsors' needs and problems.
- knowledge of the technical opportunities that will address sponsors' needs and problems.
- objectivity from real or perceived biases or conflicts of interest.
- demonstrated ability to protect proprietary data that industry does not give freely.
- ability to protect information sensitive to government acquisitions.
- ability to provide in-depth knowledge of sponsor's programs and operations.
- high quality and value of work.

- relationship with and ability to influence the software engineering infrastructure.

The work must be sponsored by an appropriate organization. SEI may accept work from: the DoD, other federal agencies, state or local governments, and nonprofit organizations. The SEI may enter into Cooperative Research and Development Agreements (CRADA) with industry, subject to DARPA approval.

As noted above, all work is core work. SEI reports that in 1995 53% of its work was for DoD exploratory R&D, 37%, DoD development R&D, and 10% non-DoD--much of the non-DoD work is for the FAA.

The level and appropriateness of non-DoD work and work for other than the primary sponsor.

In FY 95, about 10% of the work was for non-DoD customers-primarily the FAA. All such work is approved by the sponsor. This work is considered core work.

Compliance with the DoD Management Plan

The DoD plans directs Research and Development (R&D) Laboratories to maintain expertise and related competencies necessary to address the core work and priorities of the sponsor.

More generally, the Centers are directed to perform only core work, and such work must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments), and for not-for-profit activities. It cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity, and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for “an annual fee proposal justifying each element of fee.”

The SEI has complied with the requirements of the DoD Management Plan. Additionally, the SEI offers the following comments:

SEI expressed concern that the congressional limits stopped the SEI planned and managed growth before it was able to mature. The original ceiling of 250 software engineers, which was never reached, has been reduced to 155. This represents an actual reduction of 20% from the 1993 staffing level of 192—a loss of nearly 40 experienced professionals.

SEI states that it does only core work and that all work is approved by the sponsor. SEI does work with industry as a part of CRADAs. SEI states that the work it does with non-DoD

customers (including industry) is core work that would appear to conform with the spirit of the DoD Management Plan directive. There is an elaborate procedure of oversight of the work that SEI does. The sponsor reviews and approves all technical program plans. Costs are reviewed twice each year.

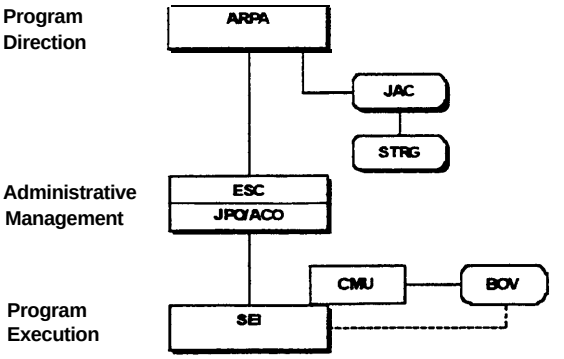
As an educational institution, Carnegie Mellon University is excluded from the stricter interpretations of limitations on the work that parent institutions may undertake.

The SEI operates under a cost reimbursement, no fee contract.

Sponsor's Management Process

A graphical representation of SEI Management Oversight is shown at figure H-3.

Figure H-3: SEI Management Oversight



SOURCE: Software Engineering Institute

DARPA is the Primary Sponsor. ESC is Administrative Agent for DARPA. There is an on-site JPO to provide day-to-day administration. DARPA provides strategic guidance for basic R&D (about 53% of the work), DARPA provides general guidance for TO&P tasking (about 47% of the work). ESC monitors the implementation of this guidance.

Additional oversight is provided by a Joint Advisory Committee and a Senior Technical Review Group (STRG). The JAC is responsible for advising DARPA in several areas including: SEI strategy, and current and proposed programs. The JAC also is responsible for assisting SEI in implementing policies. The STRG provides technical advice to the JAC and DARPA on SEI technical objectives and priorities and helps review programs plans and progress. SEI also uses advisory and working groups to provide customer guidance and technical reviews of projects. A Financial/Program Management Review is held three times/year. A detailed technical review is held four times/year.

SEI activities are also reviewed by its Board of Visitors and by program technical advisory boards and working groups that include representatives of both government and industry.

SEI operates under a two-year operating plan and a five-year strategic plan that is approved by DARPA. Tasks are documented and approved by ESC. Budgets are based on approved work in the Strategic Plan. Budgets are prepared annually and updated every 2 months.

SEI work is evaluated annually by customers. The metrics for evaluation include:

- Expectations met
- Timeliness
- Usefulness
- Value/Cost
- Innovativeness
- Overall performance

The sponsor feedback process includes responses from customers, and interaction with SEI to ensure implementation of sponsor recommendations.

The Thoroughness of the Five-Year Review

The latest Comprehensive Review was completed in 1994. It addresses the six areas required by FAR 35.017 and the DoD Management Plan.

An independent Blue Ribbon Panel chartered by DARPA produced a Report which provided input to DARPA's Comprehensive Review. The Review concluded that the DoD faces major challenges in reducing costs of military systems; that the state-of-practice in software engineering within the DoD community is far behind the state-of-the-art in the commercial world; that SEI had made major contributions to improving the DoD practices and that the growing need (some software is more complex and more costly) validated the continued requirement for SEI.

The Review examined the increasing importance of embedded software, and the growing portion of the DoD budget devoted to software (expenditures have grown from $7 billion/year to $35 billion/year over the last decade). The Review noted a need to accelerate the transfer of technology and a need to develop improved management of software problems. It outlined several problems that SEI had helped solve and discussed the continued usefulness of the organization. The Review noted that "the DoD'S technical needs and mission requirements in software engineering still exist, and if anything are even more challenging than ever."

The analysis of alternative sources included discussions of (1) government organizations, (2) industry organization, (3) other universities, and (4) other FFRDCs. The analysis of possible government sources centered on a discussion of SEI staff. The Review noted that SEI hired personnel with extensive industry experience. Government was unlikely to be able to have that experience. Further, there is no government agency charged with software engineering technology transition.

The analysis of industry alternatives was general in nature. It included discussions of projects in which SEI was able to work with several competing firms (software for flight simulators). The

Review noted that proprietary and competitive concerns would inhibit industry from sharing their solutions to technical problems.

The analysis of other universities noted that others might be able to play the same role, but judged the start-up costs to be excessive. Here the Panel noted that SEI had been established through a competitive process. The Panel stated that it did not believe that re-competition was in the best interest of government because of expected costs.

Other FFRDCs were also briefly considered and rejected because they are generally focused on other work.

The analysis ended with a discussion of the uniqueness of SEI: the SEI is an objective broker of information; is able to keep proprietary/sensitive information; is an unbiased source; has critical mass of top caliber software professionals; provides a central repository for information; has necessary core competencies in critical software technologies.

The Review had an extensive discussion of SEI's effectiveness and efficiency in meeting the sponsor's needs. It reported a number of specific costs savings flowing fiom SEI work on specific projects. It outlined work with organizations on the transfer of technology, noted the advisory boards and working groups that SEI participated in and its education initiatives. Judgments on efficiency were based on the results of survey responses of customers. SEI had good scores on these surveys-including judgments on costs.

The assessment of the management of the SEI to ensure a cost-effective operation discussed the processes of DARPA and ESC to monitor costs and ensure that performance is commensurate with these costs. As noted above, costs are a part of the overall assessment done by each project sponsor. These data are tabulated and examined by the principal sponsor. The Review noted the survey asks for both a rating of overall "costs incurred for work done," and whether the projects were implemented in a cost-effective way.[1] The Review outlined a number of processes that SEI and its parent institution were conducting to ensure a cost-effective operation-monitoring salary increases, reducing travel costs, and other actions, including internal financial reporting and reviews.

The Review also noted the SEI leveraged its technical staff and used its resident affiliate program to increase the research staff effort.

Finally, the Review listed the Joint Program Office, Office of Naval Research, and DCAA reviews of the cost effectiveness of the SEI and CMU.

[1]Responses to the "costs incurred for work done" questions consistently received a high percentage of acceptable answers.

Appendix I

MIT Lincoln Laboratory

The material that Lincoln Laboratory and its primary sponsor presented to the Task Force, along with information from additional sources, is summarized in this appendix. The Sponsor was very supportive of the need for the work conducted by Lincoln Laboratory and the quality of that work.

OVERVIEW

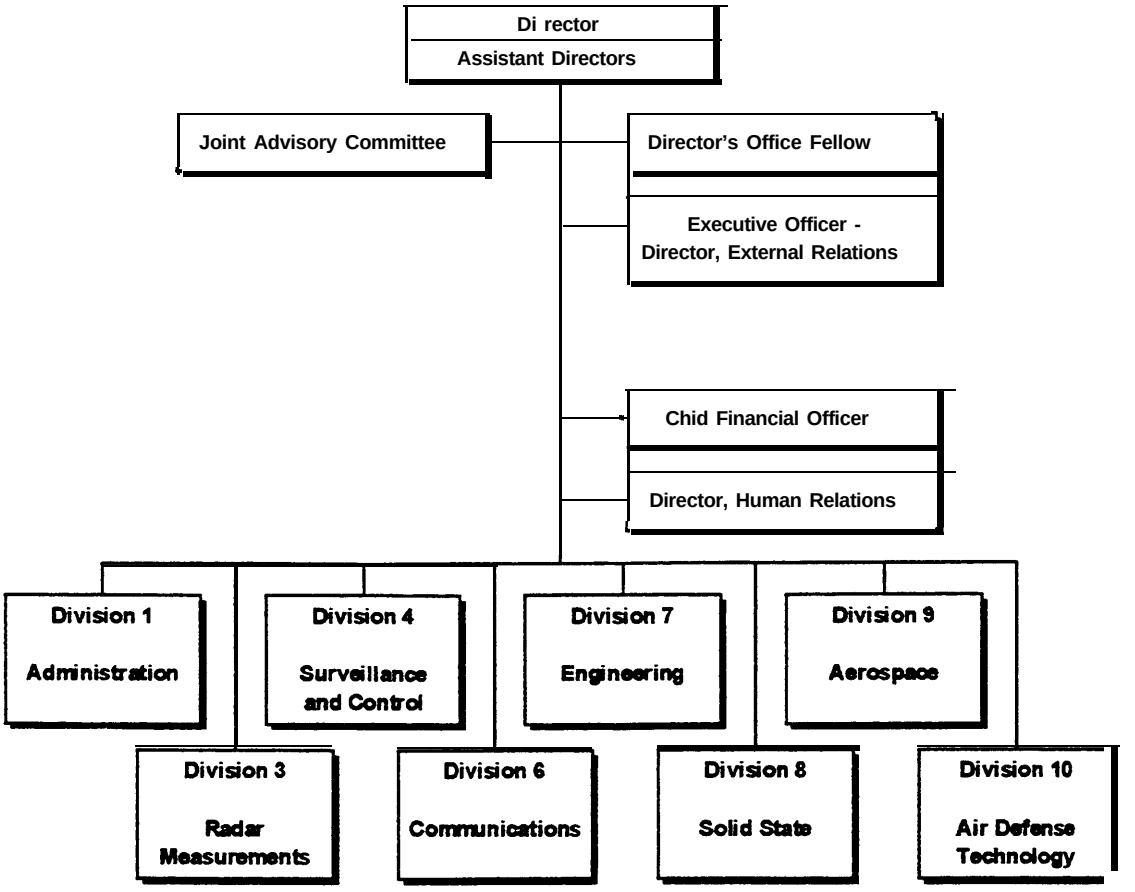
Objectives and guidelines for scope of work, organizational structure, size, appropriateness of customers.

Lincoln Laboratory is the largest DoD FFRDC laboratory. Project Lincoln was established in 1951 at the joint request of the Air Force, Navy, and Army following the Project Charles study, and directed to develop a prototype continental air defense against Soviet air attack. According to the sponsoring agreement, the Laboratory's current mission "is to carry out a program of research and development pertinent to national defense with particular emphasis on advanced electronics." The Air Force is the primary sponsor and provides the largest percentage of the work of the laboratory. Contracting is primarily accomplished through the Air Force Materiel Command's Electronics Systems Center.

Lincoln Laboratory is operated by MIT which has management oversight and participates in mutual research activities with Lincoln Laboratory. MIT management provides general policy, financial accountability, and reviews Laboratory activities. MIT has never received a fee for the operation of Lincoln Laboratory. A DoD Joint Advisory Group reviews and approves the Laboratory program annually.

The Laboratory structure is shown in figure I-1.

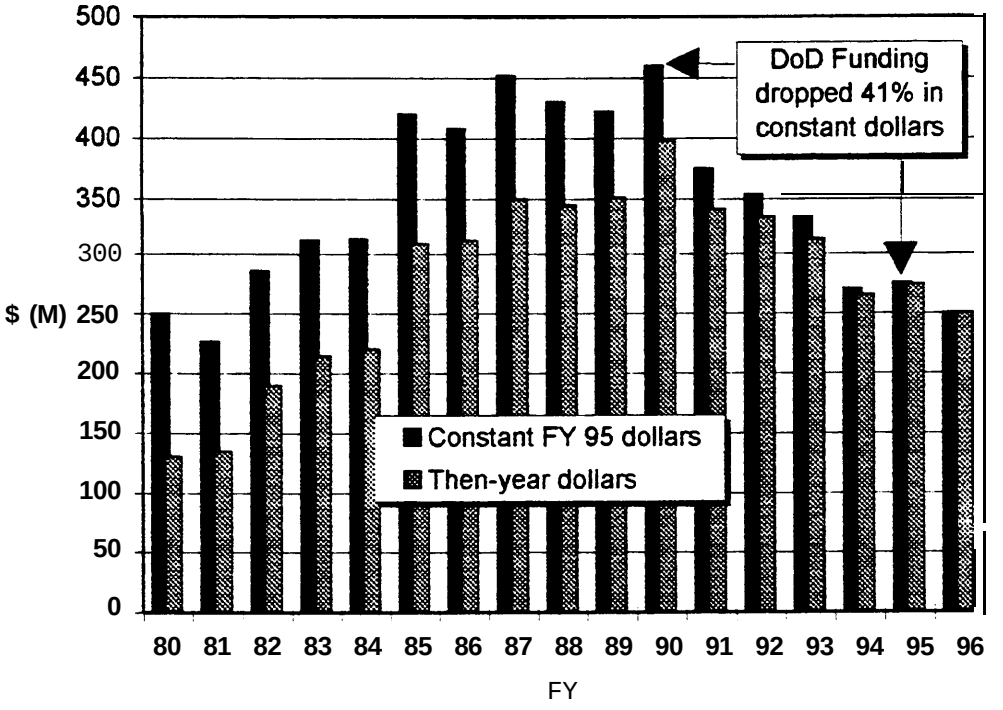
Figure I-1: MIT Lincoln Laboratory



SOURCE: Lincoln Laboratory

Figure I-2 shows Lincoln Laboratory's DoD funding. The FY 1995 DoD funding ceiling was $274.9 million, a decline in real terms of about 41% since fy 1990. In constant 1995 dollars, Lincoln Laboratory's DoD funding is back down to about 1982 level.

Figure I-2: Lincoln Laboratory Funding Profile



SOURCE: Lincoln Laboratory

DoD is the primary source of funds for Lincoln Laboratory. DoD funding in 1994 comprised 84% of Lincoln Laboratories funding. The breakout of DoD money is shown in table I-1.

Table I-l: MIT Lincoln Laboratory
FY 95 Budget vs. FY 96 (est.)*

Sponsor	$M	
(No. of Programs)	FY 95	FY96 (EST)
Air Force (46)	83	76
Navy (22)	24	17
Army (22)	63	55.5
DARPA (37)	35	34
BMDO (3)	8	9
Special (6)	45	33
DoD Line (9)	15	16
Other DoD (6)	6	-9
Total DoD (151)	274(1)	250

(1) Includes $5M Deobligations

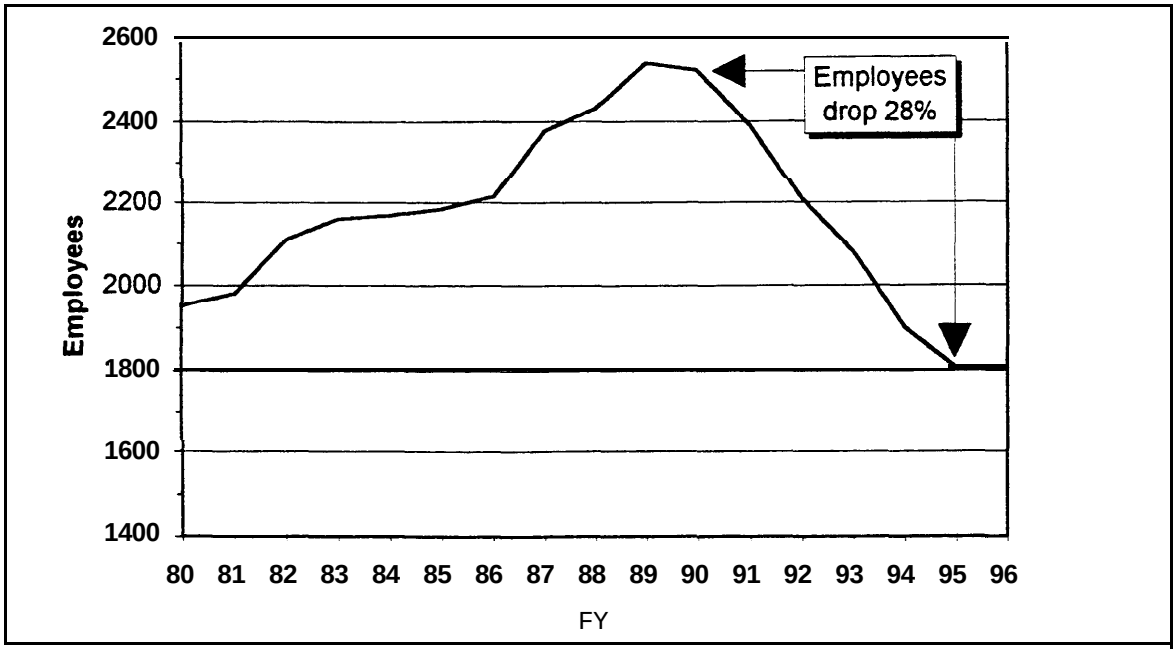
* By Sponsor and Number of Programs.

SOURCE: U.S. Air Force

Lincoln Laboratory's major civilian customers are the Federal Aviation Administration (FAA) and the National Oceanic and Atmosphere Administration. The Center also works directly with industry in Cooperative Research and Development Agreements (CRADA). There is a limitation in the sponsoring agreement that the total non-U.S. Government funding (including CRADAS) will not exceed 30 percent of the total laboratory's funded support.

Lincoln Laboratory employees number approximately 1,800 on DoD programs. The 1995 MTS was 1,018. The new DoD Plan envisions a total of 920 STE for Lincoln. Manpower trends are shown in figure I-3.

Figure I-3 : Lincoln Laboratory Employment Trends

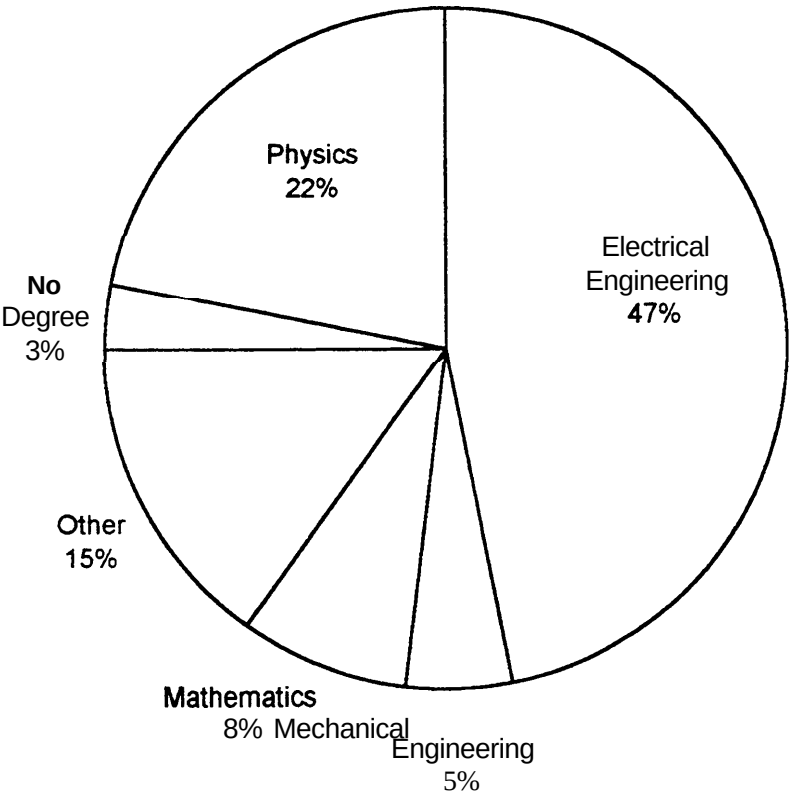


SOURCE: Lincoln Laboratory

The Laboratory reported that its personnel are the key to success. The composition of the technical staff by degree and academic discipline is shown in figure I-4. The Laboratory counts the interaction with the students, staff, and faculty of MIT as one of its strengths.

Figure I-4: Composition of Technical Staff

Doctorate 55%, Masters 29%, Bachelors 13%, No Degree 3%



SOURCE: Lincoln Laboratory

The Laboratory told the Task Force that a great deal of effort is expended on personnel in ensuring top hires and constantly outplacing personnel. The total annual turnover rate at Lincoln Laboratory is around 5 percent. Lincoln Laboratory has a performance ladder ranking system for its technical staff, and states that weak performers are asked to leave.

Lincoln Laboratory's core work is research and development across the range of electronic technology for surveillance, identification, and communications; with particular emphasis on the application of these technologies to national defense problems of:

- Location, tracking, characterization, analysis and identification of moving and fixed targets by radar, optical, acoustic, and other means;

- Communications at all operational levels which are reliable, secure, and survivable, including tactical, long-range, and strategic; and

- Development of advanced electronic devices, including materials, components, subsystems, and prototype fabrication.

The work in these areas spans systems conception, technology development and hardware demonstration, technology transfer to industry, independent expert consulting and quick reaction assistance.

In carrying out its core work Lincoln Laboratory organizes its activities into different mission areas. These have evolved over time and are expected to change in the future. Current mission areas include:

Ballistic Missile Defense: Research and development related to ballistic missile defense and offense technologies.

Communications: Research and development related to short- and long-range military communications systems, including space-, air-, shipboard- and ground-based terminals.

Space Control: Research and development related to satellite surveillance and identification from Earth-based sensors, and surveillance of targets moving on or near the surface of the earth from space.

Air Defense: Research and development related to air defense activities.

Surface Surveillance: Research and development related to battlefield surveillance and target detection, signal intercept techniques, and tactical communications.

Advanced Electronics Technology: Research and development related to advanced electronics for application to defense programs.

The breakout of the current focus of specific work in these general areas is shown in table I-2.

Table I-2 : MIT Lincoln Laboratory Mission Objectives/Future Focus

MISSION AREAS:	BALLISTIC MISSILE DEFENSE	AIR DEFENSE	SURFACE SURVEILLANCE	SPACE CONTROL	COMMUNICATIONS
TRUST:	TMD SENSOR TECH., FIELD MEASUREMENTS, & DATA ANALYSIS	DETECTION AND I.D. OF L.O. AIRBORNE VEHICLES	DETECTION AND I.D. OF GROUND TARGETS	DETECTION AND I.D. OF SPACE OBJECTS	LONG-RANGE AJ/. AND LPI COMMUNICATIONS TO MOBILE PLATFORMS
FOCUS:	INTEGRATED TMD SYSTEM TESTING, NMD READINESS	ADV. SIGNAL PROC., ECCM TECHNIQUES, WIDE-AREA DEFENSES, SEEKER ARCH.	IMAGING RADAR, ATR, FOLIAGE-PENTRATION	GRD.-BASED RADAR, GRD.-BASED/SPACE -BASED OPTICAL/IR SENSORS	ADVANCED EHF COMM SYSTEMS, HIGH-CAPACITY OPTICAL NETWORKS

SOURCE: Lincoln Laboratory

The Laboratory reports that core laboratory work is defined by the combination of the Laboratory's mission, purpose, and capabilities, by Lincoln Laboratory's core competencies, and by the FFRDC special relationship maintained between the Laboratory and the DoD. Core work has the following characteristics:

Consistency with Lincoln Laboratory's Mission, Purpose, and Capabilities. The work assigned to Lincoln Laboratory must be consistent with its basic mission and purpose, must be sponsored by an appropriate organization, and must be performed effectively using the capabilities that Lincoln Laboratory maintains, as described previously. Lincoln Laboratory may conduct core work for non-DoD entities when it is directly related to the core areas defined in this paper; this work is conducted subject to the review and approval process described in Lincoln Laboratory's Sponsoring Agreement.

Consistency with Lincoln Laboratory's Core Work. The work assigned to Lincoln Laboratory must fall within Lincoln Laboratory's core work as described previously, including research and development of electronic technologies.

Consistency with Lincoln Laboratory's Special Relationship. The work assigned to Lincoln Laboratory must be appropriate for an organization maintaining a strategic relationship with the DoD, as evidenced by the need for one or more of the following:

- Objective, high-quality work on subjects integral to the mission of the sponsor
- Freedom from real or perceived conflicts of interest
- Broad access to information of a sensitive nature to the sponsor
- Comprehensive knowledge of sponsor needs and problems
- Long-term continuity of knowledge of sponsor issues

Work is accepted that conforms to the core requirements and is within the scope of the research areas currently being pursued. All work is approved by the Joint Advisory Committee. According to the Sponsoring Agreement, "Any agency of the U.S. Government or other entity included Sections 5(1) or (2) may request the laboratory to undertake studies or development programs not included in the program originally accepted by the JAC. Such projects will require approval of the JAC before final acceptance by the laboratory."

Non-DoD sponsorship currently amounts to 18 percent of staff and is limited by policy to 30 percent.

The level and appropriateness of non-DoD work and work for other than the primary sponsor.

All non-DoD federally sponsored work is performed on the Air Force contract unless specifically authorized by ESC/AX, e.g., where a non-DoD federal sponsor requests a separate agreement. Non-

DoD federally sponsored work must be consistent with the DoD Plan for Administration of Lincoln Laboratory and with the Sponsoring Agreement.

The Sponsoring Agreement provides that: Support to non-US. Government organizations may be performed under separate contract, grant, or agreement. According to the agreement, such work is limited to state and local government agencies, educational institutions (including MIT, under interdepartmental transfer in place of a separate contract, grant, or agreement), US. allies/foreign governments, and non-profit organizations. Support to non-U.S. Government organizations may be provided only where the scope of the laboratory support represents work of a pre-competitive, collaborative, R&D nature consistent with the objectives of advancing technology and/or transferring technology developed at the laboratory. The total non-U.S. Government funding (including CRADAs) may not exceed 30 percent of total laboratory's funded support during any fiscal year.

The Sponsoring Agreement also covers Cooperative Research and Development Agreements (CRADAs). CRADAs must be consistent with the charter and mission of Lincoln Laboratory. ESC may approve CRADAs provided that the Lincoln Laboratory CRADA partner agrees that (a) it may not submit a proposal as either a prime contractor or a subcontractor for any future acquisition which identifies that Lincoln Laboratory or Lincoln Laboratory's technology will contribute to the performance of any resulting contract; and (b) it may not use Lincoln Laboratory's services in the performance of any contract.

The Agreement states that Lincoln Laboratory will not receive money from partners for any services rendered in areas where a reasonable perception of the transaction might suggest that Lincoln's provision of advice to its government sponsors might be biased thereby.

Lincoln Laboratory also participates in technology transfer activities supporting a number of government programs. The Laboratory submits all technology transfer proposals to the contracting office (ESC/AX) for review and approval.

Compliance with the DoD Management Plan

The DoD plans directs Research and Development (R&D) Laboratories to maintain expertise and related competencies necessary to address the core work and priorities of the sponsor.

More generally, the Centers are directed to perform only core work, and such work must be approved by the primary sponsor; can only be accomplished for DoD, other government entities (including state and municipal governments), and for not-for-profit activities. It cannot include commercial work.

Parent institutions operating DoD FFRDCs may perform non-FFRDC work, but such work must conform to some specific guidelines: be in the national interest; not undermine the independence, objectivity, and credibility of the institute or call into question the freedom from conflict of interest; not take unfair advantage of FFRDC work; and normally work in the public sector, although commercial work may be accepted if the sponsor agrees.

Fees may be authorized. The Plan calls for "an annual fee proposal justifying each element of fee."

Sponsors are directed to ensure the FFRDC is used only for intended purposes, ensure that the costs are reasonable and products are of high value; review work to ensure it is appropriate to be done and assure DDR&E that this is all being done.

Lincoln Laboratory states that it does maintain a capability in a broad range of technical areas, consistent with DoD needs. It specifies six specific mission areas in which it has core competencies. The ability to continue to maintain competencies may be hampered by the ceilings. These ceilings have had their most direct impact through their effects on the necessary purchase of experimental equipment.

All work is approved by the sponsor and is in compliance with the DoD Management Plan.

There is no fee.

The sponsor's management to ensure product and cost control is outlined below.

Sponsor's Management Processes

The primary sponsor of Lincoln Laboratory is the Air Force. The administrative guidance and support are provided by a Joint Advisory Committee (JAC), which is comprised of representatives of the Air Force, Army, Navy, ARPA BMDO, and DDR&E. The composition of the committee is shown in table I-3 below. The committee is responsible for what work is accepted, oversight of work, funds, and products.

Table I-3: Joint Advisory Committee Membership

- Director of Defense Research and Engineering: JAC Chair
- Assistant Secretary of the Air Force (Acquisition)
- Assistant Secretary of the Army (Research, Development and Acquisition)
- Assistant Secretary of Navy (Research, Development and Acquisition)
- Director, ARPA
- Director, BMDO
- JAC Executive Group (EG) Chair (HQ AFMC/ST)
- JAC Administrative Agent-Executive Director, Electronics Systems Center

SOURCE: U.S. Air Force

The JAC meets once each year to approve the program. A JAC Executive Group (table I-4) also meets once a year and helps develop the program for the JAC approval.

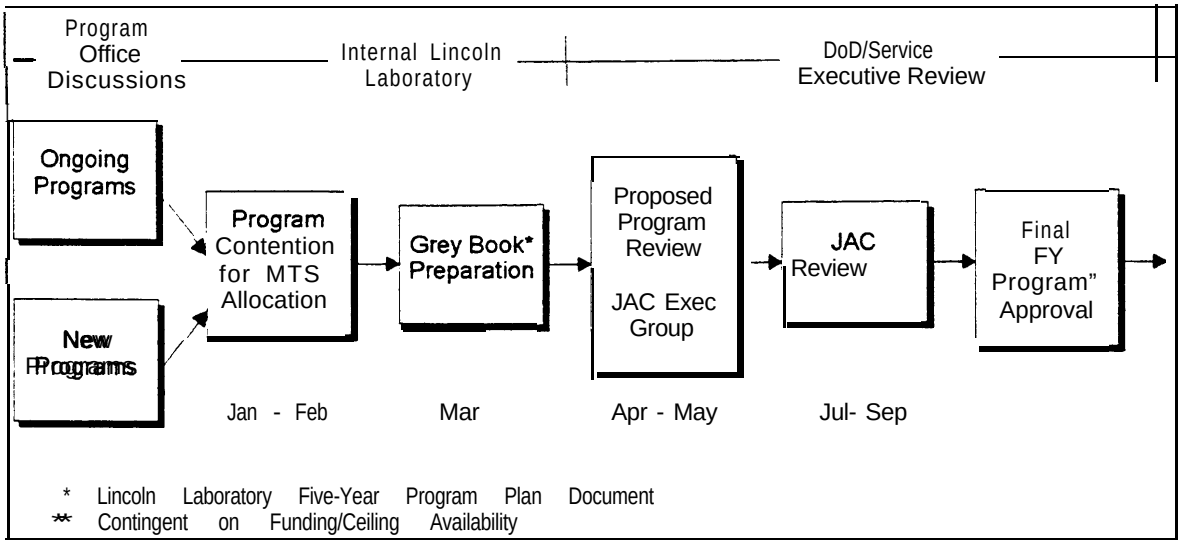
Table I-4: Joint Advisory Committee Executive Group Membership

- Chair -- Director of Science and Technology, Air Force Materiel Command (AFMC/ST)
- Vice Chair - Executive Director, Electronic Systems Center (ESC/CD)
- Navy - Chief of Naval Research
- Army -- Director for Space & Strategic Technology, Office of Assistant Secretary of the Army (RD&A)
- DARPA - Technical Assistant to the Director
- BMDO - Deputy Director
- National Security Agency
- Air Force - SMC/XR (Space and Missile Center Plans)
  -- RL/CD (Chief Scientist -- Rome Laboratory)
  -- AFOSR/ST (Director of Technology Secretariat)

SOURCE: U.S. Air Force

The yearly program proposal review and approval process is shown at figure I-5.

Figure I-5: Yearly Program Proposal Review and Approval Process



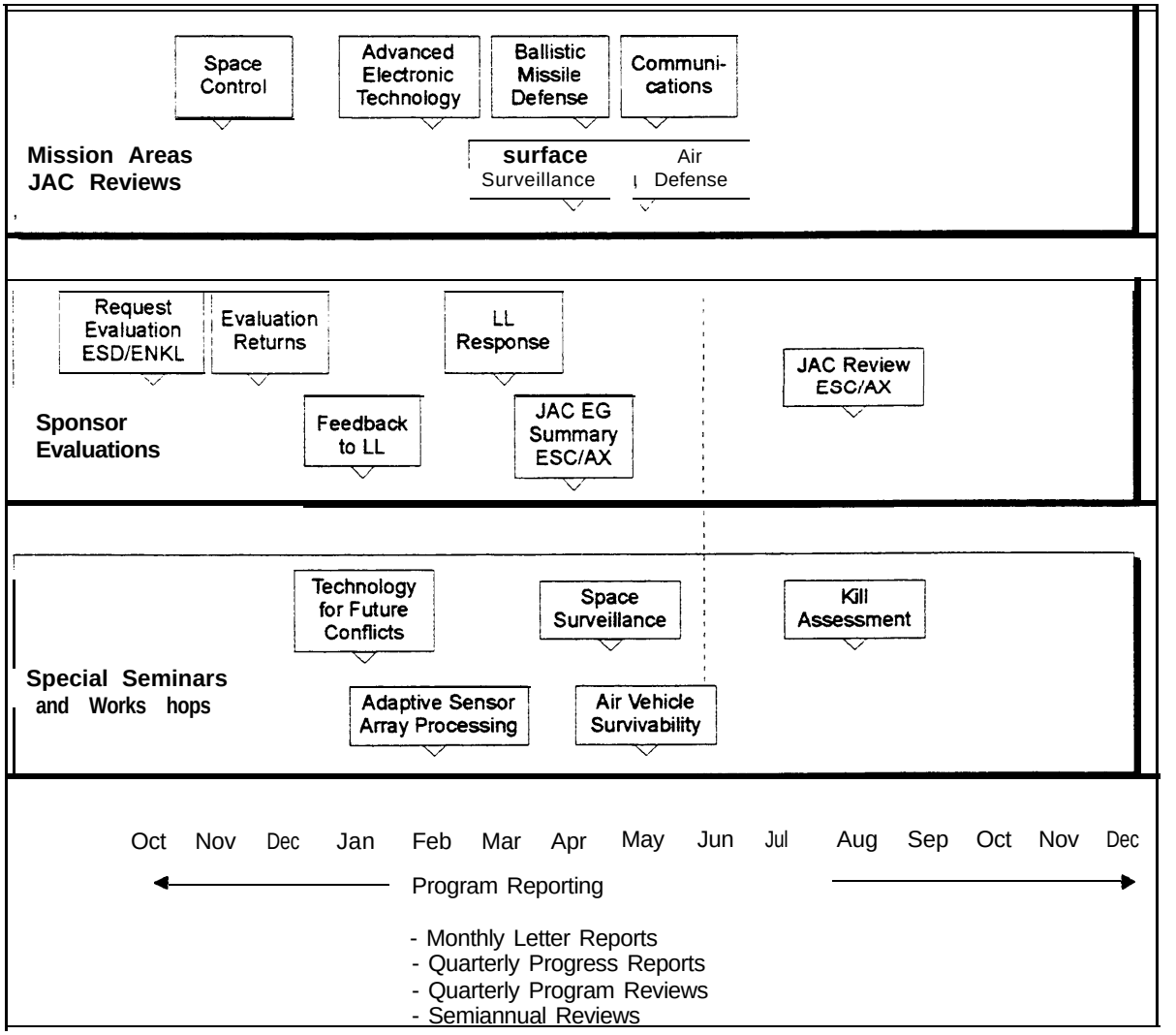
SOURCE: Lincoln Laboratory

The Sponsoring Agreement notes that all DoD work is to be performed on the Air Force contract unless specifically authorized by ESC/AX. On approval by the JAC, the Air Force Lincoln Laboratory Project Office (ESC/AX) prepares a Technical Objectives and Plans (TO&P) document or modifies an existing TO&P document which will reflect the approved program.

The program sponsor is expected to monitor the program directly; to provide technical direction (through appropriate contractual channels); to provide sponsor feedback of the Lincoln Laboratory efforts annually through ESC/AX; and to interact frequently with the laboratory as the program is carried out. Within the practical limits of available funds, the program sponsor agrees to provide all necessary support for the program.

The program oversight process is shown in figure I-6.

Figure I-6: MIT Lincoln Laboratory Program Oversight



SOURCE: Lincoln Laboratory

All sponsors evaluate the work done for them. These evaluations are consolidated by the sponsor and provided as feedback to Lincoln Laboratory.

To provide the maximum dissemination of technical information concerning the laboratory's programs, the JAC EG sponsors a series of annual technical seminars by the laboratory covering all of the

laboratory's major programs and related technology efforts grouped by appropriate areas (e.g., military satellites, communications, etc.). Attendance at these seminars is by invitation, extended by the JAC EG, to members of the Executive Group, program sponsors, industry, and persons from other DoD, other government and FFRDC organizations. These Seminars are designed to provide peer review and validate the technical direction of the laboratory. In addition to disseminating program information through the technical seminars, the laboratory publishes its program results in technical reports, deposited in DTIC.

To provide the JAC and the JAC EG with descriptive and budget material to assist their annual reviews of the laboratory's programs, Lincoln Laboratory prepares annually a document outlining the laboratory's proposed programs and associated budgets for the three ensuing fiscal years. This document is reviewed by program sponsors prior to submission to the JAC EG. Further, to assist interaction with sponsors, and to assist the JAC EG, and the JAC with long-range planning for the laboratory's operations and programs, the laboratory prepares five-year projections of its major programs or areas of work. The five-year projections are included in the program document and is updated annually in preparation for the JAC EG meeting. This program will be presented to the JAC EG for tentative acceptance and establishment of a financial plan. The program, with revisions by the JAC EG, will be referred to Massachusetts Institute of Technology within 45 days of submission for further consideration by the laboratory who will prepare a program consistent with the financial plan and program guidance provided by the JAC EG. This revised program is presented to the JAC for approval not later than August for the ensuing fiscal year.

The Thoroughness of the Five-Year Review

The most recent Comprehensive Review of the MIT Lincoln Laboratory is dated August 3, 1994. The Review addressed the topics required by FAR 35.017: technical needs, efficiency and effectiveness in meeting those needs, alternative sources, and adequacy of the FFRDC management in ensuing a cost effective operation.

The Review discusses the continued need to develop new defense systems. It specifies technology needs in the area of solid state electronics, radar and optical sensors, surgical processing, surveillance, military satellite communications, spacecraft, analog and digital integrated circuit technology, air traffic control, signal intercept technology, high energy laser beans controls, laser devices, optics, antennas, electromagnetic propagation, and strategic and tactical systems and countermeasures. The Review states that these needs are validated in the extensive interaction with the DoD user community, and examined yearly through the Laboratory seminar services, and oversight process.

The Laboratory's effectiveness and efficiency are addressed in a discussion of the Annual Sponsor Feedback evaluation that is required from each government sponsor. The results of the process are summarized and specific problem projects are discussed in more detail to include the evaluations of those projects and the Laboratory response. The overwhelming assessment of the evaluation process is that the Laboratory is fulfilling its technical responsibilities in an outstanding manner. The main criticisms are on financial reporting with the projects.

The assessment of alternative sources noted that such sources are used when they can meet the long-term research and development requirements of the sponsor on individual tasks. The FFRDC is only used when other sources are not available. The actual discussion of alternative sources is very general and points out the long-term investments that the govemment has made in the Laboratory's physical plant and personnel and the high cost to replace that investment. The Sponsor did not do a detailed assessment of the costs of changing the provider, but noted the outstanding capability that currently exists and the absence of any need to change and incur these new costs. Close out cost alone are $236 million.

The review of management for cost-effective operations reviews the responsibilities for financial oversight and the review systems in place.

Appendix J

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON. D.C. 20301-3010

ACQUISITION AND
TECHNOLOGY

OCT 3 0 1995

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference -- Defense Science Board FFRDC and UARC Independent Advisory Task Force

You are requested to establish a Defense Science Board FFRDC and UARC Independent Advisory Task Force to review and provide advice on DoD'S management of its Federally Funded Research and Development Centers (FFRDC) and University Affiliated Research Centers (UARC). This Task Force should be comprised of individuals from outside the Government who will help establish guidelines and conduct an independent semi-annual review of progress against recommendations.

The Task Force should review and advise the Department on:

- **the objectives and guidelines for appropriate scope of work, organizational structure, size, appropriateness of customers, etc.;**
- **compliance with the annual DoD Management Plan for FFRDCs and UARCs ;**
- **the various DoD sponsor's management processes for FFRDCs and UARCS ;**
- **the level and appropriateness of non-DoD work, to include non-sponsored work in addition to non-DoD work, undertaken by DoD FFRDCs and UARCs;**
- **the thoroughness of the FFRDC five year review process; and**
- **periodically review selected FFRDC and UARC programs.**

The Task Force should submit its first report by March 31, 1996.

The Director, Defense Research and Engineering will sponsor this Task Force and provide support as may be necessary. Mr. Gordon R. England will serve as its Chair. Mr. Charles Kimzey will serve as the Task Force Executive Secretary and CDR Robert C. Hardee, USN will serve as the DSB Secretariat representative. It is not anticipated that this Task Force will need to go into any 'particular matters" within the meaning of section 209 of Title 18, United States Code, nor will it cause any member to be placed in the position of acting as a procurement official.

Paul Kaminski

Paul G. Kaminski

Findings Relationship to Terms of Reference Findings

- ***Objectives and guidelines for scope of work, organizational structure, size, and appropriateness of customers***

- ***Compliance with the DoD Management Plan***

- ***Sponsors' management process***

- ***The level and appropriateness of non-DoD work and work for other than the primary sponsor***

- ***The Thoroughness of the Five-Year Reviews***

Appendix K

Defense Science Board FFRDC & UARC
Independent Advisory Task Force

Mr. Gordon R. England, ***Chairman***
GRE Consultants, Inc.
4408 Lost Creek Boulevard
Aledo, TX 76008
TEL: 817/560-2203
FAX: 817/560-2298

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Systems Group
Texas Instruments, Inc.
P.O. Box 401, MS-3425
Lewisville, TX 75067
TEL: 214/462-6400
FAX: 214/462-6423
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Information Technology Industry Council
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202/737-8888
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Mr. Arthur E. Johnson
Group Vice President
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FAX: 703/287-3340

Mr. Herman E. Shipley, Consultant
3800 N. Fairfax Drive, Apt. 1809
Arlington, VA 22203- 1706
TEL: 703/527-7270
FAX: 703/276-2620

Government Representatives

Mr. Charles Kimzey, Executive Secretary
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Falls Church, VA 22041
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DSB Secretariat Representative
Defense Science Board, OUSD (A&T)
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Washington, DC 20301-3 140
TEL: 703/695-4157
FAX: 703/697-1860
E-mail: hardeerc@acq.osd.mil

Appendix L: Meeting Agendas

AGENDA

DEFENSE SCIENCE BOARD
FFRDC/UARC Independent Advisory Task Force

U.S. Air Force Association
1501 Lee Highway
4th Floor Conference Center
Arlington, VA 22204
703/247-5800

December 12-13, 1995

December 12, 1995

8:30	Welcome	General John Shaud, USAF (Ret) Executive Director U.S. Air Force Association
8:35	Task Force Introductions	Mr. Gordon England Task Force Chairman
8:45	Task Force Mission	The Honorable Anita Jones, Director Defense, Research & Engineering
9:30	Government Conflict of Interest Requirements	Mr. Calvin Vos, Senior Attorney Standards of Conduct Office Office of the General Counsel
9:40	DSB FFRDC Task Force (April 1995)	Mr. A. Thomas Young Former President, Martin Marietta; Retired Executive Vice President, Lockheed Martin
11:00	Committee Discussion	Mr. England
12:00	Lunch	
1:00	DoD FFRDC Management Plan	Mr. Robert Nemetz, Director Studies and FFRDC Programs Office of the Secretary of Defense
2:30	Break	

2:45	Committee Discussion	Mr. England
4:00	Industry Perspectives on FFRDC Management	Mr. Bert Concklin, President Professional Services Council
5:00	Adjourn	

December 13, 1995

8:30	Sponsor' s Management Process	Dr. Donald Daniel Deputy Director Science and Technology Directorate U.S. Air Force Materiel Command MIT Lincoln Laboratory Sponsor
9:15	FFRDC Management Process	Mr. Donald MacLellan Assistant Director MIT Lincoln Laboratory
10:00	Break	
10:15	Sponsor's Management Process	Capt. W. S. Slocum, Deputy Director Assessment Division, N81B Center for Naval Analyses Sponsor
11:00	FFRDC Management Process	Dr. Robert J. Murray President Center for Naval Analyses
11:45	Committee Discussion	Mr. England
12:30	Adjourn	

AGENDA

DEFENSE SCIENCE BOARD
FFRDC/UARC Independent Advisory Task Force

THE AEROSPACE CORPORATION
2350 East El Segundo Blvd.
El Segundo, CA

JANUARY 31, 1996

8:00	Task Force Assembles	Task Force Aerospace Executive Council SMC Senior Leadership
8:15	Task Force Introductions and Terms of Reference Task Force Chairman	Mr. Gordon England
8:20	UNCLASSIFIED Aerospace and SMC briefings and discussions Aerospace (2 hours) SMC (1 hour)	Mr. EC. (Pete) Aldridge, Jr. President and CEO Lt. Gen. Lester L. Lyles Commander, SMC
10:30	Break	
11:30	Public attendees depart for lunch	
11:45	Task Force, Executive Council and guests depart for lunch	
1:00	Classified Portion of the visit. Facilities Tour and other Discussions	Task Force Mr. Aldridge
2:45	Closing discussions	Mr. Gordon England Task Force Chairman
3:30	Task Force departs	

AGENDA

DEFENSE SCIENCE BOARD
FFRDC/UARC Independent Advisory Task Force

THE RAND CORPORATION
1700 Main Street
Santa Monica, CA

FEBRUARY 1, 1996

8:00	Introductions and Opening Comments	Gordon England Task Force Chairman
8:15	Introductory Overview of RAND	James Thomson, President and Chief Executive Officer Michael Rich, Executive Vice President
8:45	National Defense Research Institute (NDRI) Sponsor's Management Process	Robert Soule Principal Deputy Director, PA&E, OSD
9:15	NDRI's Management Process	David Gompert, Vice President and Director, NRDI
10:15	Break	
10:30	Arroyo Center Sponsor's Management Process	Maj. Gen. David Heebner, Director Program Analysis and Evaluation U.S. Army Staff
ll:oo	Arroyo Center's Management Process	James Quinlivan, Vice President and Director, Arroyo Center
12:oo	Break to prepare for working lunch	
12:15	Project AIR FORCE Sponsor's Management Process	Maj. Gen. Robert Linhard Director of Plans U.S. Air Force Staff
12:45	Project AIR FORCE's Management Process	Brent Bradley, Vice President and Director, PAF
1:45	Break // Begin Closed Session	

2:00	Cross-cutting Issues	James Thomson, President and CEO Michael Rich Executive Vice President
2:45	Wrap-up	Gordon England Task Force Chairman
3:00	Facility Tour	
4:00	Adjourn	

AGENDA

DSB TASK FORCE VISIT TO MITRE
THE MITRE CORPORATION
202 Burlington Road
Bedford, MA 01730
"A" Building

March 1, 1996

8:00	Introductions	Mr. Gordon England Task Force Chairman
8:10	Welcome and MITRE Overview of Corporate History, Split, Structure, Sponsors	Mr. Vic DeMarines MITRE President/CEO
9:15	Primary Sponsor Briefing	Mr. Tony Valletta Deputy ASC (C3I)
9:45	MITRE Briefing on C3I Challenge and Response	Mr. Vic DeMarines
10:15	Break	
10:30	Army Briefing on Army use of MITRE and Management of DoD Work	Mr. Vic Ferlise Deputy to Commanding General, Army CECOM
11:00	Air Force Briefing on Air Force Use of MITRE and Management of Air Force Work	Lt. Gen. Franklin Commander, Air Force ESC
11:30	MITRE Briefings on C3I FFRDC Core Work and MITRE Operations, Business and Financial Practices and Metrics	Mr. Vic DeMarines, et al.
12:15	(Break to pick up box lunch in meeting area)	
1:15	MITRE summary	Mr. Vic DeMarines
1:30	Discussion and Wrap Up	Mr. Gordon England
2:00	Tour of MITRE Facility. For Task Force members, Government officials, and MITRE escorts only. Demonstrations of several MITRE projects that integrate new COTS (commercial off-the-shelf) capabilities with existing DoD systems.	
4:00	Adjourn	

AGENDA

DEFENSE SCIENCE BOARD
FFRDC/UARC IndependentAdvisory Task Force

Room 123, Building 2001
Institute for Defense Analysis
1801 North Beauregard Street
Alexandria, VA 2231 l-1772

April 9, 1996

8:45	Introductions	Mr. Gordon England Task Force Chairman
9:00	IDA Organization and Management Briefing	General Larry D. Welch (USAF Ret.) President, IDA
9:45	IDA Sponsor Briefing	Mr. Irving Blickstein Director, Acquisition Program Integration, OSD Hon. Philip Coyle, Director Operational Test and Evaluation, OSD
10:30	Break	
10:45	LMI Sponsor Briefing	Mr. Roy Willis Principal Deputy Under Secretary of Defense (Logistics)
11:15	LMI Organization and Management Briefing	General William G.T. Tuttle (USA Ret.) President, LMI
12:00	Lunch	

12:35	DoD Management Briefing	Mr. Robert Nemetz Director, OSD Studies and FFRDC Programs
2:00	SEI Sponsor Briefing	Mr. Robert J. Kent Director, ESC Software Center
2:30	SEI Organization and Management Briefing	Dr. Larry Druffel Director, SEI
3:00	Panel Discussion Strategic Relationships, Access to Proprietary Data and Conflict of Interest	Mr. John Stewart McKinsey & Company; Mr. William Harmon Perot Systems
5:00	Adjourn	

AGENDA

DEFENSE SCIENCE BOARD
FFRDC/UARC Independent Advisory Task Force

Center for Naval Analyses
4401 Ford Avenue
Board Room
Alexandria, VA

May 22, 1996

8:00	Welcome	Dr. Robert Murray President, CNA
8:15	Introduction and Agenda	Gordon England Chairman
8:30	DoD Inspector General FFRDC Audits	Garold E. Stephenson Audit Program Director
9:30	General Accounting Office FFRDC Audits	Charles W. Thompson Asst. Dir., Defense Acq. Issues Nat'1 Sec'y Int'l Affairs Div.
10:30	Break	
10:45	DoD FFRDC Management Plan	Robert Nemetz Director, OSD Studies and FFRDC Program
11:45	RAND	James Thomson President & CEO, RAND
12:30	Lunch	*All*
1:15	Center for Naval Analyses	Dr. Robert Murray President, CNA
2:00	Logistics Management Institute	Gen. William Tuttle President, LMI
2:45	Break	

3:00	MITRE	Victor DeMarines President & CEO, MITRE
3:45	Discussion	Gordon England Chairman
4:30	Adjourn	

Appendix M

Report of the Defense Science Board Task Force on the Role of Federally Funded Research and Development Centers in the Mission of the Department of Defense

The Task Force was established in 1994 and reported its findings in April 1995. One of its key findings was that there is a lack of trust on how the DoD uses its FFRDC's. This arises from a lack of transparency in the Departments' FFRDC management process. To address this trust issue, and still retain the highly valued intimacy of FFRDCs with the government, the Task Force reported that it believed that new management tools needed to be put in place to provide public visibility into the DoD decision processes. The Task Force recommended that, at a minimum, an independent review panel involving highly respected personnel from outside of DoD be established to systematically review and advise the Department on its management, use, and oversight of its FFRDCs. The DSB FFRDC/UARC Independent Advisory was established as a result of this recommendation.

The Report of the Task Force contains a number of other findings that are important to the conduct of the current Task Force. These findings are summarized below.

First, the Task Force concluded that DoD continues to have a need for FFRDC-like organizations who have special relationships with the Department and include the following characteristics:

- have unique competence and quality,
- are closely integrated with their sponsor,
- adhere to strict constraints to minimize conflicts of interest, to promote objectivity, and to ensure independence from interests that may conflict with sponsor interests, and
- maintain continuity of relationship sufficient to establish "corporate memory" in topics of critical interest to the sponsor.

Second, the Task Force reported that the set of organizations now designated as DoD FFRDCs are judged to be of high quality, as viewed by their sponsors, other private sector organizations, and the Task Force. However, the congressionally mandated salary constraints that are unique to FFRDCs were viewed as inappropriate and the Task Force wrote that the constraints will lead to a significant degradation in the competence and quality of the individuals and the organizations.

Third, the Task Force concluded that there is a "core" work effort at each FFRDC which requires the special relationships described above. The Task Force stated that it did not have confidence that this work could be offered for full and open competition without losing some of the essence and value of the service. The Task Force noted, however, that

other, "non-core" efforts at some of the FFRDCs do not demand the special FFRDC relationship and should be offered for open commercial competition to the private sector.

Fifth, the Task Force noted the problem of trust mentioned earlier. This problem arises from the DoD use of its FFRDCs that has translated into a serious management and political issue. Even though there appeared to be a high degree of trust in the quality of the FFRDCs work, a significant distrust of DoD's management, use, and oversight of its FFRDCs was noted. The Task Force noted a specific concern that the FFRDCs might gain unfair advantage through their special relationship which results in work being sourced to them that could as effectively and appropriately have been openly competed for. The Task Force reported that the internal government decision process that allocates this work is not accessible for review by those who feel the inequity of the outcome. The Task Force recommended an independent review to advise DoD on its management and oversight of the FFRDC.

Sixth, the Task Force concluded that all the FFRDCs should be retained, but the Task Force concluded that the diversification of either FFRDCs or their parent corporations into areas of work outside their core domain should be limited to that which DoD judges to be in the best interest of the country.

Finally, the Task Force argued that this solution will not be effective so long as an artificial cap, which does not represent the natural need of the Department for these capabilities and the ability of the FFRDCs to serve that need, exists on the FFRDC work.

The Task Force outlined three basic options available to the DoD for improving its acquisition of FFRDC-like services:

- **Option 1** is to work harder at preserving the original FFRDC concept. The Task Force stated that under this option, the DoD would define and refine the scope of work to assure that it fits the "core" criteria of work for the FFRDCs, redouble its internal effort to limit sole sourcing to the FFRDCs to that criteria, and augment the internal process with the independent review panel. Diversification of effort by an FFRDC or its parent to work outside of its core domain would be approved only if in the best interests of the country. When these conditions were in place, the congressionally mandated ceilings would be lifted to allow for a level of effort corresponding to the needs of the government and the capabilities of the FFRDCs.

- **Option 2** would allow the non-profit parent of an FFRDC activity to contain a clearly separated non-FFRDC segment that would be free to compete for work outside of the FFRDC domain, so long as the effort did not violate the conflict of interest requirements of the FFRDC activity.

- **Option 3** would terminate the use of the FFRDC designation in the DoD and make all of this work eligible for competition. Long term, intimate relationships would still be sought with private sector organizations, but the mechanism for achieving such

relationships would be the terms and conditions of long-term (up to U-year) contracts, rather than the conditions defined by the FAR for FFRDCs.

The DSB Task Force on the Role of FFRDCs unanimously recommended Option 1 for the Laboratory and Studies and Analyses FFRDCs. The Task Force concluded that the argument for special relationships is strong, the risk of the competitive process for their functions high, and the controversial work content of these FFRDCs low.

The conclusions on The Aerospace Corporation and MITRE, however were more difficult. Here the Task Force noted that the nature of the work is similar to that which many for-profit companies are capable of doing and the amount of work is substantial. The Task Force reported that after extensive debate, it achieved consensus on the desirability of Option 1 for Aerospace and MITRE as well. The value of the special relationship was judged to be a paramount factor. The Task Force members concluded that both Option 2 and 3 would risk the loss of those relationships.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON. D.C. 20503

OFFICE OF FEDERAL
PROCUREMENT
POLICY

APR 4 1984

OFPP POLICY LETTER 84-1

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Federally Funded Research and Development Centers

1. Purpose. This policy letter establishes Government-wide policies for the establishment, use, periodic review, and termination of the sponsorship of Federally Funded Research and Development Centers (FFRDCs).

2. Supersession. Memorandum from the Chairman to the Members of the Federal Council for Science and Technology, dated November 1, 1967, which set forth criteria for identification of FFRDCs and the requirement for a master Government listing of these centers, is superseded by this policy letter.

3. This policy letter is being issued pursuant to Sections 6(a), 6(d)(1) and 6(d)(8) of the Office of Federal Procurement Policy Act, as amended, 41 U.S.C. 405 (a), (d)(1) and (d)(8), which empower the Administrator of OFPP to prescribe Government-wide procurement policies and to complete action on the recommendations of the Commission on Government Procurement.

4. Background. The Departments of Energy, Defense, Health and Human Services, the National Aeronautics and Space Administration and the National Science Foundation currently sponsor a total of 34 FFRDCs. Non-sponsoring departments and agencies also utilize these FFRDCs. Federal funding of FFRDC's currently exceeds 4 billion dollars per year.

In 1967, a Government-wide policy for the identification and maintenance of a master listing of these FFRDCs was issued (reference paragraph 2 - Supersession). In 1972, the Commission on Government Procurement recommended that the Federal Government keep open the option to organize and use FFRDCs to satisfy needs that cannot be satisfied effectively by other organizational resources. The Commission also recommended that agency heads periodically review the continuing need for existing FFRDCs and approve any proposal for new FFRDCs, with specific attention paid to the method of ultimate termination of sponsorship. This policy letter is based on the executive branch consideration of the Commission's recommendations.

5. Definitions

Primary Sponsor -- The executive agency which manages, administers or overall use of the FFRDC.

b. Sponsor means an executive agency which funds and monitors specific work of a continuing nature with an FFRDC and is party to a sponsoring agreement. Multiple sponsorship of an FFRDC is possible so long as one agency agrees to act as the primary sponsor for administrative purposes.

c. Federally Funded Research and Development Center (FFRDC).

(1) FFRDCs do not have a prescribed organizational structure. They can range from the traditional contractor-owned/contractor-operated or Government-owned/contractor-operated (GOCO) organizational structures to various degrees of contractor/Government control and ownership. In general, however, all of the following criteria should be met before an activity is identified as an FFRDC:

(a) Performs, analyzes, integrates, supports (non-financial) and/or manages basic research, applied research, and/or development. (Activities primarily engaged in routine quality control and testing, routine service activities, production, mapping and surveys, and information dissemination, even though otherwise meeting the requirements of paragraph 5.c., are specifically excluded from FFRDC designation).

(b) Performance of the functions in 5.c.(1)(a) is either upon the direct request of the Government or under a broad charter from the Government, but in either case the results are directly monitored by the Government. However, the monitoring shall not be such as to create a personal services relationship, or to cause disruptions that are detrimental to the productivity and/or quality of the FFRDC's work.

(c) The majority of the activity's financial support (70% or more) is received from the Government with a single agency usually predominating in that financial support.

(d) In general, most or all of the facilities are owned by the Government or funded, under contract, by the Government.

(e) The activity is operated, managed and/or administered by either a university or consortium of universities, other non-profit organization or industrial firm as an autonomous organization or as an identifiable separate operating unit of a parent organization.

(f) A long term relationship evidenced by specific agreement exists or is expected to exist between the operator, manager, or administrator of the activity and its primary sponsor.

(2) In addition to the above criteria, the relationship between the activity and the Government should exhibit the following characteristics in order to qualify for FFRDC identification:

(a) The activity (organization and/or facilities) is brought into existence at the initiative of a Government agency or bureau to meet some special research or development need which, at the time, cannot be met as effectively by existing in-house or contractor resources.

(b) Work from other than a sponsoring agency is undertaken only to the extent permitted by the sponsoring agency and in accordance with the procedures of the sponsoring agency.

(c) The activity, whether the operator of its own or a Government-owned facility, has access, beyond that which is common to the normal contractual relationship, to Government and/or supplier data, employees, and facilities needed to discharge its responsibilities efficiently and effectively, whether the data is sensitive/proprietary or not.

(d) The primary sponsor undertakes the responsibility to assure a reasonable continuity in the level of support to the activity consistent with the agency's need for the activity and the terms of the sponsoring agreement.

(e) The activity is required to conduct its business in a responsible manner befitting its special relationship with the Government, to operate in the public interest free from organizational conflict of interest, and to disclose its affairs (as an FFRDC) to the primary sponsor.

6. Policy.

a. General. Agencies will rely, to the extent practicable, on existing in-house and contractor sources for satisfying their special research or development needs consistent with established procedures under The Economy Act of 1932 (31 USC 1535), other statutory authority or procurement/assistance regulations. A thorough assessment of existing alternative sources for meeting these needs is especially important prior to establishing an FFRDC. This Policy Letter does not apply to the performance of commercial activities. Performance of commercial activities is governed by OMB Circular No. A-76.

b. Establishment of an FFRDC. In establishing an FFRDC, the sponsoring agency shall ensure that:

(1) Existing alternative sources for satisfying agency requirements cannot effectively meet the special research or development needs (6.a).

(2) At least three notices are placed over a 90-day period in the Commerce Business Daily and The Federal Register indicating the agency's intention to sponsor an FFRDC and the scope and nature of the effort to be performed by the FFRDC.

(3) There is sufficient Government expertise available to adequately and objectively evaluate the work to be performed by the FFRDC.

(4) Controls are established to ensure that the costs of the services being provided to the Government are reasonable.

(5) The responsibility for capitalization of the FFRDC has been defined in such a manner that ownership of assets may be readily and equitably determined upon termination of the FFRDC relationship with its sponsor(s).

(6) The purpose, mission and general scope of effort of the FFRDC is stated clearly enough to enable differentiation between work which should be performed by the FFRDC and that which should be performed by a non-FFRDC.

Sponsoring Agreements. When FFRDCs are established, long-term Government relationships are encouraged in order to provide the continuity that will attract high quality personnel to the FFRDC. This relationship should be of a type to encourage the FFRDC to maintain currency in its field(s) of expertise, maintain its objectivity and independence, preserve its familiarity with the needs of its sponsor(s), and provide a quick response capability. A contract is the generally preferred instrument under which an FFRDC accomplishes effort for its sponsor(s). However, there may be instances where other legal instruments may be appropriate. A written agreement of sponsorship between the FFRDC and its sponsor or primary sponsor where more than one sponsor is involved may be used in addition to the contract or other legal instrument under which an FFRDC accomplishes effort. The specific content of a sponsoring agreement will vary depending on the situation. However, there are certain areas common to all situations that must be addressed. The following requirements must be addressed in either a contract, a sponsoring agreement or sponsoring agency's policies and procedures.

(1) Mandatory Requirements

(a) A delineation of the purpose for which the FFRDC is being brought into being along with a description of its mission, general scope of effort envisioned to be performed, and the role the FFRDC is to have in accomplishment of the sponsoring agency's mission. This delineation must be consistent with the definition of an FFRDC set forth in paragraph 5.c(1)(a) and will be sufficiently descriptive so that work to be performed by the FFRDC can be determined to be within the purpose, mission and general scope of effort for which the FFRDC was established and differentiated from work which should be performed by a non-FFRDC. This delineation shall constitute the base against which changes in an existing FFRDC's purpose, mission or general scope of effort will be measured.

(b) Provisions for the orderly termination or nonrenewal of the agreement, disposal of assets and settlement of liabilities. The term of the sponsorsing agreement will not exceed five years but can be renewed, as a result of periodic review, in not to exceed five year increments.

(c) A prohibition against the FFRDC competing with any non-FFRDC concern in response to a Federal agency formal Request For Proposal for other than the operation of an FFRDC. This prohibition is not required to be appiied to any parent organization or other subsidiary of the parent organization in its non-FFRDC operations. However, sponsoring agencies may expand this prohibition as they determine necessary and appropriate.

(d) A delineation of whether or not the FFRDC may accept work from other than the sponsor(s). If non-sponsor work can be accepted, a delineation of the procedures to be followed along with any limitations as to the clients (other Federal agencies, State or local governments, non-profit or profit organizations, etc.) from which work may be accepted. Limitations and procedures with respect to responding to requests for information as to an FFRDC's capabilities or qualifications are inherently a part of the "work for others" question and will be addressed by the sponsoring agency.

(2) Other Requirements As Appropriate

(a) When cost type contracts are used, the sponsor(s) should identify any cost elements which will require advance agreement. Such items may be, but are not necessarily limited to, salary structure, depreciation, various indirect costs such as independent research and development or others as determined appropriate by the sponsor(s).

(b) Where fees are determined by the sponsor(s) to be appropriate, considerations which will affect their negotiation should be identified. Such considerations may be, but are not necessarily limited to, weighted guidelines, risks, use of Government furnished property and facilities, needs or others as determined appropriate by the sponsor(s).

(c) Other provisions as determined appropriate by the sponsor(s).

d. Changing the Basic Scope of an Existing FFRDC's Sponsoring Agreement. in changing the purpose, mission and general scope of effort to be performed or role of an existing FFRDC as set forth in its sponsoring agreement (see 6.c.(1)(a)), the sponsoring agency shall make such changes consistent with its statutory authority and the requirements for establishing a new FFRDC as set forth in paragraph 6.b.

Use of the FFRDC by the Sponsor or Primary Sponsor in the Case of Multiple Agency Sponsorship. The sponsor, or primary sponsor in the case of multiple sponsorship, will ensure that all work it places with its FFRDC(s) is within the purpose, mission, and general scope of effort of the FFRDC (paragraph 6.c.) and in accordance with this Policy Letter. This includes work a sponsoring agency agrees to accept from a non-sponsoring Federal agency under the provisions of The Economy Act of 1932 (31 USC 1535) or other statutory authority. Sponsoring agencies must comply with applicable procurement or assistance statutes, policies and regulations for non-competitive actions before placing work which is outside the scope of the sponsor's contractual or sponsoring agreement with an FFRDC.

f. Use of an Existing FFRDC by a Non-Sponsoring Federal Agency. Non-sponsoring Federal agencies may use an FFRDC only if the terms of the FFRDC's sponsoring agreement or contract permit work from other than a sponsoring agency. Where use by a non-sponsor is permitted by the Sponsoring-Agreement, the work must require the special relationship of an FFRDC as defined in paragraph 5.c. and either be treated as a direct procurement (action) or processed under The Economy Act of 1932 (31 USC 1535) or other statutory authority. Work processed under The Economy Act of 1932 (31 USC 1535) or other statutory authority must clearly fall within the purpose, mission and general scope of effort established by the sponsoring agency for the FFRDC (paragraph 6.c.). Processing under the Economy Act or other statutory authority is subject to agreement by the receiving agency. Non-sponsoring agencies must fully comply with procurement or assistance statutes, policies and regulations for non-competitive actions prior to placing work directly with a specific FFRDC. The FFRDC must comply with the procedures established by the sponsoring agency (paragraph 6.c.(1)(d)) before accepting work from a non-sponsoring Federal agency.

g. Use of an Existing FFRDC by Other Than a Federal Agency. Work from other than a Federal agency may be accepted only to the extent permitted by the sponsoring agency. The FFRDC must comply with the procedures established by the sponsoring agency (paragraph 6.c.(1)(d)) before accepting work from other than a Federal agency.

h. Consulting Services. Agencies sponsoring FFRDC work which constitutes consulting services, as defined by OMB Circular No. A-120, will comply with the provisions of that Circular.

i. Production/Manufacturing. FFRDCs will not be asked to perform quantity production and manufacturing work unlessauthorized by legislation. Such activities as breadboarding, modeling or other tasks inherent to R&D are permissible.

j. Periodic Review. Prior to renewal of a sponsoring agreement, agencies shall conduct a comprehensive review of their use and need for each FFRDC that they sponsor. Where multiple agency sponsorship exists this review will be a coordinated interagency effort. When the funding for an FFRDC is a specific line item within the sponsoring agency's budget, the comprehensive review may be done in conjunction with the budget process or the review may be done separately. The sponsoring agency(s) shall apprise other agencies who use the FFRDC of the scheduled review and afford them an opportunity to assume sponsorship in the event the current sponsorship is determined no longer appropriate. Final approval to continue or terminate an agency's sponsorship arrangement with a given FFRDC as a result of this review. shall rest with the head of that sponsoring agency. The results of this review will be formally documented. The periodic review should include:

(1) An examination of the agency's special technical needs and mission requirements to determine if and at what level they continue to exist.

(2) Consideration of alternative sources to meet the agency's needs. Such consideration will include compliance with the Notice and Publication requirements of P.L. 98-72 (15 USC 637(e)) prior to renewal of the contract or Sponsoring Agreement unless otherwise exempted.

(3) An assessment of the efficiency and effectiveness of the FFRDC in meeting the agency's needs.

(4) An assessment of the adequacy of the FFRDC management in assuring a cost effective operation.

(5) A determination that the guidelines of section 6 are being satisfied.

k. Termination or nonrenewal of an FFRDC Relationship. When a sponsor's need for the FFRDC no longer exists, the sponsorship may be transferred to one or more Government agencies, if appropriately justified. Otherwise it shall be phased out, the assets disposed of and all liabilities settled as provided by the terms and conditions of the sponsoring agreement.

7. Action Requirements.

a. Not later than September 30, 1984, each agency currently sponsoring an FFRDC will review the terms of its existing agreements with the FFRDCs for compliance with this policy letter. Where existing agreements do not comply with this policy letter the primary Sponsor will develop a schedule to bring the agreements into compliance not later than the next contract renewal or five years from the effective date of this policy letter, whichever comes first.

b. Where the review required by 7.a. reveals that a clear statement of the purpose, mission and general scope of effort, as described in paragraph 6.b.(6) and 6.c.(1)(a), does not exist, the sponsoring agency shall ensure such a statement is developed not later than September 30, 1984.

c. The primary sponsor will notify the Office of Science and Technology Policy prior to designating any new organization as an FFRDC (paragraph 6.b.), changing the basic scope of effort of an existing FFRDC (paragraph 6.d.) or changing.the status of an existing FFRDC (paragraph 6.k.).

d. The National Science Foundation will maintain a master Government list of FFRDCs based upon the definition in this Policy Letter.

e. FFRDCs will be identified by their primary sponsors who will provide information, including funding data, on the type of R&D being performed by the FFRDCs to the National Science Foundation upon their request for such information.

f. Each agency head is responsible for ensuring that the provisions of this policy are followed.

8. Effective Date. The Policy Letter is effective (60 days after publication in the Federal Register).

9. Implementation. Aspects of this policy letter requiring implementation will be covered by the Department of Defense, the General Services Administration and the National Aeronautics and Space Administration in the Federal Acquisition Regulation not later than 180 days from the date of this policy letter. Implementation will be written so as to be compatible with the requirements, as of the date of this policy letter, of FAR 17.6 “Management and Operating Contracts” when the arrangement with an FFRDC constitutes a management and operating contract.

10. Information Contact. All questions or inquiries about this policy letter should be submitted to the Office of Management and Budget, Office of Federal Procurement Policy, telephone (202) 395-6810.

11. Sunset Review Date. This policy letter will be reviewed no later than six years after its effective date for extension, modification, or rescission.

Donald E. Sowle
Administrator

35.017 Federally Funded Research and Development Centers

(a) *Policy.*

(1) This section sets forth Federal policy regarding the establishment, use, review, and termination of Federally Funded Research and Development Centers (FFRDCs) and related sponsoring agreements.

(2) An FFRDC meets some special long-term research or development need which cannot be met as effectively by existing in-house or contractor resources. FFRDC's enable agencies to use private sector resources to accomplish tasks that are integral to the mission and operation of the sponsoring agency. An FFRDC, in order to discharge its responsibilities to the sponsoring agency, has access, beyond that which is common to the normal contractual relationship, to Government and sup plier data, including sensitive and proprietary data, and to employees and facilities. The FFRDC is required to conduct its business in a manner befitting its special relationship with the Government, to operate in the public interest with objectivity and independence, to be free from Organizational conflicts of interest, and to have full disclosure of its affairs to the sponsoring agency. It is not the Government's intent that an FFRDC use its privileged information or access to facilities to compete with the private sector. However, an FFRDC may perform work for other than the sponsoring agency under the Economy Act, or other applicable legislation, when the work is not otherwise available from the private sector,

(3) FFRDC's are operated, managed, and/or administered by either a university or consortium of universities, other not-for-profit or nonprofit organization, or an industrial firrm, as an autonomous organiation or as an identifiable separarc operating unit of **a** parent organization.

(4) Long-term relationships between the Government and FFRDC's are encouraged in order to provide the continuity that will attrach high-quality personnel to the FFRDC. This relationship should be of a type to encourage the FFRDC to maintain currency in its field(s) of expertise. maintain its objectivity and independence, preserve its famiiiarity with the needs of its sponsor(s), and provide a quick response capability.

(b) Definitions.

"Nonsponsor," as used in this section, means any other organization, in or outside of the Federal Government, which funds specific work to be performed by the FFRDC and is not a party to the sponsoring agreement

"Primary sponsor," as used in this section, means the lead agency responsible for managing, administering, or monitoring overall use of the FFRDC under a multiple sponsorship agreement.

"special competency," as used in this section, means a special or unique capability, including qualitative aspects, developed incidental to the primary functions of the FFRDC to meet some special need.

"Sponsor" means the executive agency which manages, administers, monitors, funds, and is responsible for the overall use of an FFRDC. Multiple agency sponsorship is possible as long as one agency agrees to act as the "primary sponsor." In the event of multiple sponsors, "sponsor" refers to the primary sponsor.

35.017-I Sponsoring agreements.

(a) In order to facilitate a long-term relationship between the Government and an FFRDC, establish the FFRDC's mission, and ensure a periodic reevaluation of the FFRDC, a written agreement of sponsorship between the Government and the FFRDC shall be prepared when the FFRDC is established. The sponsoring agreement may take various forms; it may be included in a contract between the Government and the FFRDC, or in another legal instrument under which an FFRDC accomplishes effort, or it may be in a separate written agreement. Notwithstanding its form, the sponsoring agreement shall be clearly designated as such by the sponsor.

(b) While the specific content of any sponsoring agreement will vary depending on the situation, the agreement shall contain, as a minimum, the requirments of paragraph (c) of this subsection. The requirements for, and the contents of, sponsoring agreements may be as further specified in sponsoring agencies' policies and procedures.

(c) As a minimum, the following requirements must be addressed in either a sponsoring agreement or sponsoring agencies' policies and procedures:

(1) A statement of the purpose and mission of the FFRDC.

(2) Provisions for the orderly termination or nonrenewal of the agreement, disposal of assets, and settlement of liabilities. The responsibiiity for capitalization of an FFRDC must be defined in such a manner that ownership of assets may be readily and equitably determined upon termination of the FFRDC's relationship with its sponsor(s).

(3) A provision for the identification of retained earnings (reserves) and the development of a plan for their use and disposition

(4) A prohibition against the FFRDC competing with any non-FFRDC concern in response to a Federal agency request for proposal for other than the operation of an FFRDC. This prohibition is not required to be applied to any parent organization or other subsidiary of the parent organization in its non-FFRDC operations. Requests for information, qualifications or capabilities can be answered unless otherwise restricted by the sponsor.

(5) A delineation of whether or not the FFRDC may accept work from other than the sponsor(s). If nonsponsor work can be accepted, a delineation of the procedures to be followed, along with any limitations as to the nonsponsors from which work can be accepted (other Federal agencies, State or local governments, nonprofit or profit organizations, etc.).

(d) The sponsoring agreement or sponsoring agencies' policies and procedures may also contain, as appropriate, other provisions, such as identification of-

(1) Any cost elements which will require advance agreement if cost-type contracts are used; and

(2) Considerations which will affect negotiation of fees where payment of fees is determined by the sponsor(s) to be appropriate.

(e) The term of the agreement will not exceed 5 years, but can be renewed, as a result of periodic review, in increments not to exceed 5 years.

35.017-2 Establishing or changing an FFRDC.

To establish an FFRDC, or change its basic purpose and mission, the sponsor shall ensure the following:

(a) Existing alternative sources for satisfying agency requirements cannot effectively **meet the special** research or development needs.

(b) The notices required for publication (see 5.205(b)) are placed as required.

(c) There is sufficient Government expertise available to adequately and objectively evaluate the work to be performed by the FFRDC.

(d) The Executive Office of the President, Office of Science and Technology Policy, Washington, DC 20506, is notified.

(e) Controls are established to ensure that the costs of the services being provided to the Government are reasonable.

(f) The basic purpose and mission of the FFRDC is stated clearly enough to enable differentiation between work which should be performed by the FFRDC and that which should be performed by non-FFRDC's.

(g) A reasonable continuity in the level of support to the FFRDC is maintained, consistent with the agency's need for the FFRDC and the terms of the sponsoring agreement.

(h) The FFRDC is operated, managed, or administered **by** an autonomous organization or as an identifiably separate operating unit of a parent organization, and is required to operate in the public interest, free from organizational conflict of interest, and to disclose its affairs (as an FFRDC) to the primary sponsor.

(i) OMB Circular A-120 is complied with when applicable, and quantity production or manufacturing is not performed unless authorized by legislation.

0) Approval is received from the head of the sponsoring agency.

35.017-3 Using an FFRDC.

(a) Al1 work placed with the FFRDC must be within the purpose, mission, general scope of effort, or special competency of the FFRDC.

(b) Where the use of the FFRDC by a nonsponsor is permitted by the sponsor, the sponsor shall be responsible for compliance with paragraph (a) of this subsection. The nonsponsoring agency is responsible for making the determination required by 17.502 and providing the documentation required by 17504(e). When permitted by the sponsor, a Federal agency may contract directly with the FFRDC in which case that Federal agency is responsible for compliance with Part 6.

35.017-4 Reviewing FFRDC's.

(a) The sponsor, prior to extending the contract or agreement with an FFRDC, shall conduct a comprehensive review of the use and need for the FFRDC. The review will be coordinated with any co-sponsors and may be performed in conjunction with the budget process. If the sponsor determines that its sponsorship is no longer appropriate, it shaII apprise other agencies which use the FFRDC of the determination and afford them an opportunity to assume sponsorship.

(b) Approval to continue or terminate the sponsorship shall rest with the head of the sponsoring agency. This determination shall be based upon the results of the review conducted in accordance with paragraph (c) of this subsection.

(c) An FFRDC review should include the following

(1) An examination of the sponsor's special technical needs and mission requirements that are performed by the FFRDC to determine if and at what level they continue to exist.

(2) Consideration of alternative sources to meet the sponsor'sneeds.

(3) An assessment of the efficiency and effectiveness of the FFRDC in meeting the sponsor's needs, including the FFRDCs abiiity to maintain its objectivity, independence, quick response capability, currency in its field(s) of expetise, and familiarity with the needs of its sponsor.

(4) An assessment of the adequacy of the FFRDC management in ensuring a cost-effective operation.

(5) A determination that the criteria for establishing the FFRDC continue to be satisfied and that the sponsoring agreement is in compliance with 35.017-l.

35.0174 Terminating an FFRDC.

When a sponsor's need for the FFRDC no longer exists, the sponsorship may be transferred to one or more Government agencies, if appropriately justified. If the FFRDC is not transferred to another Government agency, it shall be phased out.

35.0176 Master list of FFRDC's.

The National Science Foundation (NSF') maintains a master Government list of FFRDCs. Primary sponsors will provide information on each FFRDC, including sponsoring agreements, mission statements, funding data, and type of R&D being performed, to the NSF upon its request for such information.

35.017-7 Limitation on the creation of new FFRDC's.

Pursuant to 10 U.S.C. 2367, the Secretary of Defense, the Secretary of the Army, the Secretary of the Navy, the Secretary of the Air Force, the Secretary of Transportation, and the Administrator of the National Aeronautics and Space Administration may not obligate or expend amounts appropriated to the Department of Defense for purposes of operating an FFRDC that was not in existence before June 2, 1986, until (a) the head of the agency submits to Congress a report with respect to such center that describes the purpose, mission, and general scope of effort of the center and (b) a period of 60 days, beginning on the date such report is received by Congress, has elapsed.

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3010

ACQUISITION AND
TECHNOLOGY

APR 23 1997

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Report of the Defense Science Board Independent Advisory Task Force on Federally Funded Research and Development Centers and University Affiliated Research Centers

This memorandum provides DoD comments on the January 1997 report of the Defense Science Board's (DSB) Independent Advisory Task Force on Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Research Centers (UARCs). The comments are based on reviews by the senior users of FFRDC work, including the Service Vice Chiefs and Acquisition Executives. The Director of Defense Research and Engineering coordinated the review effort. Also, I personally reviewed the report and fully support the observations and conclusions that follow.

The reviewers disagreed with the report's findings and recommendations. For example, the Army Vice Chief of Staff and Assistant Secretary (Research, Development and Acquisition) commented that "the Army non-concurs with the recommendations contained in the subject report ... The Army would welcome constructive recommendations relating to its management policies and procedures in order to continue developing the trust. . . that FFRDCs are being properly managed and utilized. We believe that this report fails to assist us in achieving that objective." Similarly, the Air Force Vice Chief of Staff and Assistant Secretary (Acquisition) said "we completely disagree with the entire premise of the task force's findings and recommendations. The key findings are not well substantiated and contradict our ongoing experience. . . . We recommend that the Department ignore the recommendations of the task force and disband the group." Finally, the OSD Principal Deputy, PA&E said "I have reviewed the DSB task force report and disagree with its findings and recommendations. The key findings do not reflect the importance of study and analysis (S&A) centers to PA&E. In addition, the report contradicts the findings and recommendations of the Defense Science Board's 1995 review of FFRDCs, without a full explanation."

In my experience, this report is disappointing. I say that not because I disagree with the findings -- which I do -- but because the task force did not examine the subjects we requested it to, and because the task force seemed ill-informed on the issues that it did address.

We established this task force to review and advise DoD on management practices for FFRDCs and UARCs. We were looking for suggestions on how to improve the ways in which DoD sponsors and users interact with FFRDCs and UARCs to ensure that we get the best value

from these organizations. Instead, the task force focused on broad management policy issues for FFRDCs. Many of the task force's findings are not well substantiated or documented, and they contradict my own experiences and the experiences of the majority of sponsors and users of FFRDC research products throughout DoD. They also ignore or are inconsistent with the results of a recent internal review of FFRDCs, as well as the previous DSB Task Force Report on FFRDCs of April 1995. Overall, it is my sense that the current task force was neither established nor staffed to address broad policy issues regarding FFRDCs, and its findings on these subjects are questionable.

Several of the findings seem to have followed from the task force's misunderstanding of why DoD maintains FFRDCs. The task force wrongly assumed that FFRDCs are maintained only to conduct work for which there are no alternative sources. Based on this assumption, the task force recommended that DoD eliminate all research at FFRDCs whenever it can be shown that alternative sources exist among for-profit firms. But that misses the point. FFRDCs are critical national assets because: (1) they maintain long-term strategic relationships with their DoD sponsors; (2) they perform research, development and analytic tasks that are integral to the mission and operations of DoD sponsors; (3) they maintain "core" competencies in areas important to their sponsors, performing high quality, objective work that could not be carried out as effectively by other private or public organizations; and (4) they operate in the public interest, free from real or perceived conflicts of interest. The DSB task force largely ignored these reasons DoD maintains FFRDCs, and they reached flawed conclusions as a result.

I might note that maintaining long-term strategic relationships is one area where DoD has been in front of the commercial sector in its acquisition practices. Successful commercial firms are moving increasingly in the direction of establishing long-term, strategic relationships with their key suppliers. They have found the result is often a higher quality product, at lower overall costs, in contrast to the previous practice of changing suppliers based on recurring, short-term low bids. DoD has long realized this benefit from FFRDCs.

I am not arguing that competition is inappropriate. The Department uses competitive processes to obtain the overwhelming majority of the goods and services that we require. But there are some circumstances and some kinds of work, for which the value provided by a strategic relationship far outweighs the potential gains of competition. The task force did not have sufficient familiarity with FFRDCs to recognize that these organizations represent one of those circumstances.

Two other task force misconceptions are worth noting. First, the task force implied that DoD customers were unaware of the benefits of alternative sources. Nothing could be further from the truth. DoD now uses for-profit industry to conduct most of its RDT&E work of all kinds, with less than 3% going to the Systems Engineering and Studies and Analyses FFRDCs covered in this report. FFRDC sponsors are quite familiar with the capabilities of alternative sources, and they use them when it is appropriate to do so.

Second, the task force was concerned that FFRDCs might not be able to keep pace with fast-moving technologies -- particularly in software and communications -- and that DoD might make an investment mistake as a result. Here, the task force seemed to misunderstand how sponsors use

FFRDCs, and how FFRDCs fit into the overall mix of DoD research capabilities. It's obvious that the Department cannot, and does not, rely on a handful of organizations for its technology innovation. Because of their access to proprietary information from numerous commercial firms, FFRDCs are often used to help assess the value, costs, and risks of technology developments. Thus, FFRDCs act as trusted advisors helping DoD incorporate the best technologies developed in the commercial sector.

Finally, the Air Force's recent experience with the proposed Aerospace - SAIC merger provides perspective on the task force's recommendations. The Air Force considered a variety of alternatives similar to what the task force proposes -- such as limiting the FFRDCs to a stricter definition of their core competencies and competing the remaining work. The Air Force concluded that such a change would "negatively impact the trusted agent role the Aerospace FFRDC has served for over 36 years and is not in the best interest of the U.S. Government." In the Air Force's view, separating pieces of Aerospace's work for competition would reduce the quality and value of the overall space support effort. Although discrete pieces of Aerospace's work could be performed by individual for-profit contractors, it is the unique synergism between all elements of the FFRDC that makes Aerospace a critical asset. Other for-profit firms that had routinely shared proprietary information with Aerospace opposed the merger as well, reflecting concerns about conflicts of interest that would arise if the Air Force attempted to break-up the unique FFRDC mission and offer some of it up for competition. Similar reviews of the other FFRDCs -- many of which have broader charters and more extensive access to sensitive information than Aerospace -- would produce similar results.

In summary, I believe -- and this belief is held widely in the Department, both by civilian and military leaders -- that FFRDCs are doing high-quality, high-value technical and analytical work that could not be provided as effectively by other means. I also believe that we have put in place a sound management approach. FFRDCs are sized consistent with essential sponsor requirements, acquisition reform initiatives, and defense strategies and budgets. The annual workload is based on DoD needs for the individual core competencies maintained at each FFRDC, and we have a established a 5-year plan for the required staff-years of technical effort. We intend to continue to review and update this plan We have informed Congress of these steps, and we will continue to keep the relevant Committees abreast of our management plans and actions. Based on my conversations with members and staff, I believe the Congress will support these DoD initiatives.

The problem is that the DSB task force went beyond its mandate and the conclusions in those areas were flawed due to misperceptions regarding the FFRDC concept and what constitutes appropriate work. The task force has proposed radical solutions to problems that don't exist. Rather than helping us figure out ways to manage these critical resources most effectively, the task force proposes to dismantle high-quality, high-value defense capabilities that are serving the national interest. With the exception of several suggestions regarding specific management practices, the task force's recommendations have little value. To ensure that the Department's observations and conclusion are clearly represented in the report, I have also asked the Executive Director of the DSB to include this memorandum in the "printed for distribution" version.

Paul Kaminski

Paul G. Kaminski