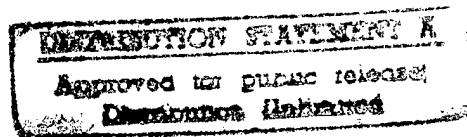


A Research and Development Management Approach  
Report of the Committee on Application of OMB  
Circular A-76 to R and D

(U.S.) Federal Coordinating Council for Science,  
Engineering, and Technology, Washington, DC



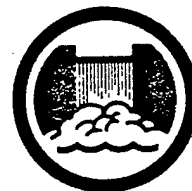
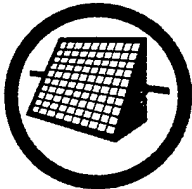
31 Oct 79

DTIC QUALITY INSPECTED 2

19970415 050

# A Research and Development Management Approach

---



Report Of The  
Committee On Application Of OMB  
Circular A-76 To R&D  
October 31, 1979

---

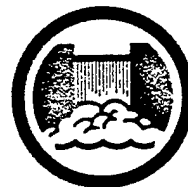
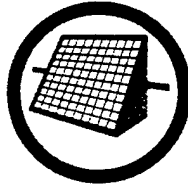
FEDERAL COORDINATING COUNCIL FOR SCIENCE,  
ENGINEERING, AND TECHNOLOGY  
WASHINGTON, D. C. 20500

REPRODUCED BY  
NATIONAL TECHNICAL  
INFORMATION SERVICE  
U. S. DEPARTMENT OF COMMERCE  
SPRINGFIELD, VA. 22161

|                                                                                                                                                                                                                                                                                                                    |  |               |    |                                                         |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------|----|---------------------------------------------------------|--|
| <b>REPORT DOCUMENTATION PAGE</b>                                                                                                                                                                                                                                                                                   |  | 1. REPORT NO. | 2. | 3. Recipient's Accession No.<br><b>PB 87 170053</b>     |  |
| 4. Title and Subtitle<br>A Research and Development Management Approach,<br>Report of the Committee on Application of OMB<br>Circular A-76 to R&D                                                                                                                                                                  |  |               |    | 5. Report Date<br>October 31, 1979                      |  |
| 7. Author(s)<br>Federal Coordinating Council for Science, Engineering,<br>and Technology/Office of Science & Technology Policy                                                                                                                                                                                     |  |               |    | 8. Performing Organization Rept. No.<br>None            |  |
| 9. Performing Organization Name and Address<br>Office of Science and Technology Policy<br>Executive Office of the President<br>Washington, D.C. 20500                                                                                                                                                              |  |               |    | 10. Project/Task/Work Unit No.                          |  |
| 12. Sponsoring Organization Name and Address<br><br>(Same as above)                                                                                                                                                                                                                                                |  |               |    | 11. Contract(C) or Grant(G) No.<br>(C) None<br>(G) None |  |
|                                                                                                                                                                                                                                                                                                                    |  |               |    | 13. Type of Report & Period Covered                     |  |
| 15. Supplementary Notes                                                                                                                                                                                                                                                                                            |  |               |    |                                                         |  |
| 16. Abstract (Limit: 200 words)<br>A report of the Federal Coordinating Council for Science, Engineering, and<br>Technology Ad Hoc Committee on the application of OMB Circular A-76--policies<br>for acquiring commercial or industrial products and services for Government<br>use--to research and development. |  |               |    |                                                         |  |
| 17. Document Analysis a. Descriptors                                                                                                                                                                                                                                                                               |  |               |    |                                                         |  |
| b. Identifiers/Open-Ended Terms                                                                                                                                                                                                                                                                                    |  |               |    |                                                         |  |
| c. COSATI Field/Group                                                                                                                                                                                                                                                                                              |  |               |    |                                                         |  |
| 18. Availability Statement<br>Available<br>National Technical Information Service<br>5285 Port Royal Road<br>Springfield, Virginia 22161                                                                                                                                                                           |  |               |    | 21. No. of Pages                                        |  |
| 19. Security Class (This Report)<br>Unclassified                                                                                                                                                                                                                                                                   |  |               |    | 22. Price                                               |  |
| 20. Security Class (This Page)<br>Unclassified                                                                                                                                                                                                                                                                     |  |               |    |                                                         |  |

# **A Research and Development Management Approach**

---



Report Of The  
Committee On Application Of OMB  
Circular A-76 To R&D  
October 31, 1979

---

FEDERAL COORDINATING COUNCIL FOR SCIENCE,  
ENGINEERING, AND TECHNOLOGY  
WASHINGTON, D. C. 20500

EXECUTIVE OFFICE OF THE PRESIDENT  
FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY  
WASHINGTON, D.C. 20500

October 31, 1979

Dr. Frank Press  
Director  
Office of Science and  
Technology Policy  
Executive Office of  
the President  
Washington, DC 20500

Mr. James D. Currie  
Acting Administrator  
Office of Federal Procure-  
ment Policy/Office of  
Management and Budget  
Executive Office of the  
President  
Washington, DC 20500

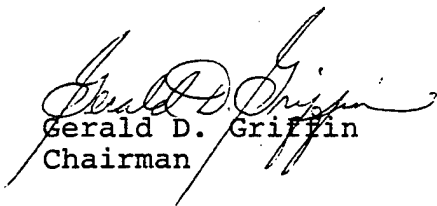
Gentlemen:

I herewith transmit the report of the FCCSET Ad Hoc Committee on the Application of OMB Circular A-76 to R&D.

The report summarizes the Committee's findings in a relatively brief manner. Much additional background and discussion material was compiled and will be archived for future reference.

We are hopeful that you will find the information in our report useful in generating supplemental policy related to the performance of R&D activities by in-house or contracted sources.

Sincerely,

  
Gerald D. Griffin  
Chairman

Enclosure

## EXECUTIVE SUMMARY

### Introduction

Office of Management and Budget Circular No. A-76, "Policies for Acquiring Commercial or Industrial Products and Services Needed by Government" establishes the general policy of the Government to buy the products and services it needs and to provide them, using Government resources, only on an exception basis. The policy recognizes, as one of the few exceptions, that certain activities are inherently governmental in nature and should be performed by Federal employees. The need for research and development activities as a Government function is recognized by the Circular through the inclusion of an "in-house core capability" in the area of research, development and testing. It was also recognized that additional guidance was required to apply the A-76 policy to research and development activities and an interagency committee under the auspices of the Federal Coordinating Council for Science, Engineering and Technology was established to study the issues and recommend guidelines for consistent and uniform agency implementation.

The report discusses the nature of research and development funded by the Government and the differences between research and development and other Government functions. The larger degree of discretion in the selection of who performs the work, which is

inherent in research and development, is explored and management procedures for the determination of Government functions in research and development are advanced. The categories of research and development activities which may require the performance of research and development by Government employees are discussed as well as the factors which most influence the magnitude of the required research and development effort.

#### Conclusions and Recommendations

The Committee agrees with the general policy contained in A-76 but does not believe that a single rigid set of criteria can or should be applied to size all Government research and development organizations. The ultimate size and character of an agency's internal research and development capability is determined by the public laws which result from an exhaustive process of review and approval by the agency, the President and the Congress. Within the research and development capability provided by law, Federal managers must consider two groups of factors in making the discretionary decision on whether to perform an activity internally or by contract. The factors in the first group are those categories of activities a research and development agency must perform, notwithstanding cost, in order to carry out the agency's mission. Representative categories developed by the Committee are:

|                                                                                 |
|---------------------------------------------------------------------------------|
| The reader should consult Appendix C for detailed explanation of each category. |
|---------------------------------------------------------------------------------|

(a) The performance of agency mission-oriented studies, technical analysis and evaluation.

(b) The development, management and maintenance of agency-specific research and development expertise for long-term needs.

(c) The performance of independent test and evaluation.

(d) Support of the acquisition and assistance process, i.e., providing a "smart buyer" capability.

(e) The maintenance of a corporate memory in agency-specific research and development.

(f) The maintenance of a capability to respond to agency emergencies, trouble-shooting requirements and quick reaction situations.

(g) Internal performance clearly intended by the Congress.

(h) Government personnel required to staff large and/or unique national research and development facilities.

The factors in the second group are those reasons, in addition to cost, for making governmental discretionary decisions on whether to perform research and development activities internally or by contract. Representative reasons developed by the Committee are:

(a) A conscious Government decision to maintain or establish a specific research and development capability in either Government or the private sector.

(b) The agency judges that the likelihood of success in the research and development effort, based on past performance, is much greater if performed either internally or by contract.

(c) The decision is driven by the total amount of research and development activities the agency has to perform when traded off against Presidential and Congressional desires and the realities of budgets, personnel skills, and urgency of the research and development need.

(d) In the interest of national security either internal or contract performance of a research and development task is deemed appropriate.

(e) The location and availability of key technical personnel, facilities, or recognized experts in a particular field will influence the decision to perform internally or by contract.

(f) Corporate economic and labor conditions can affect the availability of non-Federal sources of research and development.

It should be emphasized that the inclusion of both groups of factors above in determining internal versus contract performance

of research and development activities does not represent a disregard for the economy-in-Government intent of A-76. The Committee is in agreement with the policy embodied in A-76 and believes that Federal managers should seek to provide necessary Government research and development activities at the lowest possible cost. The Committee concludes, however, that the decision to perform research and development activities with Federal employees rather than by contract can seldom be made only by a comparison of cost. Rather, Federal managers must exercise their discretionary governmental authority in selecting the proper mix of internal and contract performers in meeting the Nation's needs in research and development.

To foster consistency at the policy level in the implementation of A-76 and some degree of visibility in the process, the Committee has recommended the preparation of a research and development management approach by each agency with a research and development mission. The judgment of the agency head and his or her top managers will always be a factor in shaping the research and development management approach. The Committee feels, however, that by focusing the attention of agency top managers on the policy and process involved in determining the agency's Government functions in research and development, the best interests of both the agency and OMB Circular A-76 will be served. The Department of Defense does not concur in

this recommendation and its dissenting view is given in Chapter 6.

The Committee recommends that the research and development management approach document(s) be prepared prior to the application of A-76 to research and development and has included an example of the logic process an agency might use as a point of departure in preparing its research and development management approach. The Committee further concludes that sufficient mechanisms for the review of executive agency decisions are already in place and recommends that no additional mechanisms for the review of research and development management approaches be created.

The Committee concludes that the definition of in-house core capability in research, development and testing on a Government-wide basis is impractical due to the wide diversity in Government research and development activities. The Committee feels, however, it is both practical and desirable to determine Government functions in R&D on an agency-by-agency basis. The Committee has, therefore, recommended the deletion of all references to in-house core capability in A-76 and has suggested appropriate language for inclusion in the A-76 definition of Government functions.

Finally, the Committee suggests that there is no need for procedural differences in the handling of existing activities,

new starts, expansions and R&D activities in excess of Government functions in R&D. The Committee further recommends that paragraph 7 of A-76, which addresses the interagency use of excess products and services, be revised to make it clear that it does not refer to the interagency use of governmental functions.

## CONTENTS

|                                                                               |      |
|-------------------------------------------------------------------------------|------|
| Letter of Transmittal                                                         | iii  |
| Executive Summary                                                             | v    |
| Contents                                                                      | xiii |
| Chapter 1 - Introduction                                                      | 1    |
| Chapter 2 - The Nature of Government Funded R&D                               | 11   |
| Chapter 3 - Government Functions in R&D                                       | 23   |
| Chapter 4 - Factors that Influence the Size of<br>Government Functions in R&D | 31   |
| Chapter 5 - Managing Government Functions in R&D                              | 39   |
| Chapter 6 - Dissenting View                                                   | 53   |
| Appendices                                                                    |      |
| A. Committee Charter                                                          | 61   |
| B. Ad Hoc Committee Members                                                   | 65   |
| C. Categories of Internal R&D Activities                                      | 67   |
| D. OMB Circular A-76                                                          | 75   |
| E. List of Abbreviations                                                      | 91   |
| F. List of References                                                         | 93   |

## Chapter 1

### INTRODUCTION

#### A-76 Sets the Stage

"In a democratic free enterprise economic system, the Government should not compete with its citizens. The private enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on competitive private enterprise to supply the products and services it needs." With these words, the March 29, 1979, revision to Office of Management and Budget (OMB) Circular A-76, "Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government," reaffirmed the general policy of the Government to buy the products and services it needs and to make them, using Government resources, only on an exception basis.

#### Government Functions

One of the few exceptions to the basic "buy" policy is the recognition of, "certain functions inherently governmental in nature, being so intimately related to the public interest as to mandate performance<sup>1/</sup> by Federal employees."<sup>2/</sup> These functions include the

---

<sup>1/</sup> The terms performance and conduct of research and development are used throughout the report. The conduct of research and development is meant to imply both the performance of and contracting for research and development. Performance on the other hand is meant to imply the actual accomplishment of the research and development activity.

<sup>2/</sup> OMB Circular A-76, "Policies for Acquiring Commercial and Industrial Products and Services Needed by the Government," March 1979, p. 4.

management of Government programs requiring value judgments, the selection of program priorities, the direction of Federal employees, Federal regulatory activities, the collection and disbursement of Federal revenues, the administration of public trusts, and in-house core capabilities in the area of research, development and testing.

The inclusion in the recent A-76 revision of an in-house core capability in research and development (R&D)<sup>3/</sup> organizations as a Government function not only recognized the fundamental role of R&D in Government but also acknowledged that R&D required by the Government is provided by both public and private sector sources. R&D is unusual in this respect. Normally, Government functions are performed by Federal employees using Government-owned equipment and facilities. Government R&D, however, as pointed out in Chapter 2, depends on the synergistic interaction of public and private R&D institutions. Further, the nature of the specific agency<sup>4/</sup> R&D requirements, the technologies involved and the influence of the President, the Congress and history have combined to produce a variety of approaches to providing Government the essential R&D it requires. The participation

---

<sup>3/</sup> The term R&D is used here and throughout this report in a very general sense. It includes the concepts of Basic Research, Applied Research, Technology Development, Concept and Demonstration Development, Full Scale Development and Science and Technology Base as defined in Sections 44 and 55 of OMB Circular A-11. In particular, the full range of activities encompassed by the Department of Defense Research Development Test and Evaluation (RDT&E) appropriations are included herein as R&D.

<sup>4/</sup> The word agency is used throughout the report in a general sense. It should be interpreted as agency, department or appropriate subelement.

of both public and private sector R&D institutions and the variety of successful approaches to meeting Government's R&D requirements, highlight the higher degree to which discretionary governmental authority must be exercised in conducting Government R&D as opposed to other Government activities.

#### Discretionary Authority in R&D

The degree of discretion inherent in the conduct of Government R&D has been a subject of concern both within and outside the Federal establishment. In transmitting the revised A-76 Circular to the Heads of Executive Departments in March of 1979, OMB said, "While agencies with a need for in-house R&D capability can consider a 'core capability' in this area as a 'governmental function,' additional guidance is needed to ensure some consistency in determining and justifying the size of that core capability and applying the Circular to R&D requirements, in excess of that level of capability." Speaking to the Federal Laboratory Consortium in October of 1977, Gerald Busch of the Lockheed Corporation said, "...we agree that the in-house labs (Department of Defense) have a vital role to play, but we assert that the private sector also has a vital role to play in developing the technology base,<sup>5/</sup> advancing the state-of-the-art, and providing the competition in ideas as well as price upon which our national interests depend."

---

<sup>5/</sup> Technology base is a subset of R&D as used in this report. See Footnote 3.

The concern over the level of discretion in determining public versus private sector roles in Government R&D has been exacerbated over the last decade by the prevailing economic climate. Table 1 shows that inflation has steadily eroded the buying power of Government R&D funds and in addition, a decreasing percentage of the total Federal budget has been allocated to Government R&D. Figure 1 shows the recent trends in Federal R&D obligations and the growth in intramural<sup>6/</sup> R&D that non-Federal sources point to with concern. Contrary to those private sector concerns, however, Table 2 points out that the Federal complement of scientists and engineers has actually been reduced and that the intramural growth has been the result of maintaining a relatively fixed institutional base in the face of inflated costs.

#### The Committee's Approach

In trying to define core capability as a stand-alone and compartmented function, the Committee had difficulty in arriving at a meaningful definition which could be applied to all agencies that have an internal R&D capability. As seen in Table 3, there are many Government agencies that conduct some level of R&D. These agencies vary widely in their mission and purpose. For example, the nature and reasons for an internal R&D capability in heart disease research

---

<sup>6/</sup> The National Science Foundation (NSF) definitions of intramural and extramural performers are assumed herein. These definitions can be found in "Federal Funds for Research, Development, and Other Scientific Activities," Volume XXVI, NSF78-300.

at the National Institutes of Health (NIH) bear little resemblance to the nature and reasons for the internal conduct of military weapons RDT&E by the Department of Defense (DOD). To attempt a definition of R&D core capability applicable to such a diverse set of conditions leads to one that is necessarily so broad and general that its usefulness would be questionable.

This difficulty in definition brings home the point that all of Government's R&D, like other functions of Government, is not monolithic in nature but, rather, is a compilation of extremely different activities. The Committee reached the consensus that in order to wisely address public policy related to the different R&D activities of Government, they must be addressed in their individual parts rather than in broad and sweeping terms. For this reason, the Committee found it helpful to think in terms of "Government functions in R&D" on an agency-by-agency basis rather than attempting to define "R&D core capability" on a Government-wide basis. Thinking in terms of Government functions in R&D rather than R&D core capability is, perhaps, only a cosmetic difference since R&D core capability is a Government function as defined in A-76. However, the Committee had an easier time in defining a top-down policy approach applicable to all agencies when it focused on answering the question, "What are each agency's Government functions in R&D?"

The Committee found that this approach also alleviated much of the difficulty in dealing with the gray area between "discretionary

application of Government authority" and "in-house core capability," both Government functions as defined in A-76. Those "discretionary" activities that are generally understood as administrative and Government functions which cannot be performed in the private sector are fairly straightforward to locate organizationally and the personnel associated within them can be identified. However, for those personnel on the front lines of the R&D enterprise, the task of separating the "discretionary application of Government authority" and "R&D core" activities is more difficult. Government organizations and personnel can, on the one hand, be directing and evaluating private sector R&D performance and, on the other hand, be managing similar R&D activities that are performed by Government employees. The particular division between discretionary and R&D core activities for an organization is far from static and a snapshot taken today would, in all probability, not be representative after six months or less in some cases.

For these reasons the report speaks in terms of "Government functions in R&D" rather than R&D core capability. The issue at hand then becomes how to select those R&D activities that are to be exceptions to the policy in A-76 and performed by Federal employees.

TABLE 1

FEDERAL R&D OBLIGATIONS  
(Dollars in Millions)

| <u>Fiscal Year</u> | <u>Real Year<br/>Dollars(1)</u> | <u>Constant 1967<br/>Dollars(2)</u> | <u>R&amp;D Outlays as %<br/>of Total Outlays(3)</u> |
|--------------------|---------------------------------|-------------------------------------|-----------------------------------------------------|
| 1968               | 15921                           | 15279                               | 9.5                                                 |
| 1969               | 15641                           | 14245                               | 8.9                                                 |
| 1970               | 15340                           | 13190                               | 8.0                                                 |
| 1971               | 15545                           | 12815                               | 7.6                                                 |
| 1972               | 16498                           | 13167                               | 7.2                                                 |
| 1973               | 16800                           | 12622                               | 7.1                                                 |
| 1974               | 17415                           | 11791                               | 6.8                                                 |
| 1975               | 18988                           | 11779                               | 6.0                                                 |
| 1976               | 20724                           | 12155                               | 5.6                                                 |
| 1977               | 23929                           | 13184                               | 5.7                                                 |
| 1978               | 26237                           | 13427                               | 5.9                                                 |

(1) Federal Funds for Research and Development, Vol. XXVII, Appendix C (NSF 78-312), p. 167.

(2) Deflated using CPI. See Economic Report of the President, 1979, p. 239.

(3) Federal Funds for Research and Development, Vol. XXVI (NSF 78-300), p. 3.

TABLE 2

FEDERAL R&D RESOURCES  
(Dollars in Millions)

|      | Total (1) | Extramural | %    | Intramural (1) | %    | Personnel<br>Costs (2) | Federal<br>S&E's (3)<br>(Thousands) |
|------|-----------|------------|------|----------------|------|------------------------|-------------------------------------|
| 1968 | 15921     | 12428      | 78.1 | 3493           | 21.9 |                        | 68.1                                |
| 1969 | 15641     | 12138      | 77.6 | 3503           | 22.4 |                        | 69.9                                |
| 1970 | 15340     | 11485      | 74.9 | 3855           | 25.1 |                        | 69.8                                |
| 1971 | 15545     | 11389      | 73.3 | 4156           | 26.7 |                        | 66.5                                |
| 1972 | 16498     | 12016      | 72.8 | 4482           | 27.2 | 2540                   | 65.2                                |
| 1973 | 16800     | 12181      | 72.5 | 4619           | 27.5 | 2708                   | 62.3                                |
| 1974 | 17415     | 12600      | 72.4 | 4815           | 27.6 | 2715                   | 65.0                                |
| 1975 | 18988     | 13591      | 71.6 | 5397           | 28.4 | 2908                   | 64.5                                |
| 1976 | 20724     | 15014      | 72.4 | 5710           | 27.6 | 3058                   | 65.3                                |
| 1977 | 23929     | 17787      | 74.3 | 6142           | 25.7 | 3328                   | 64.5                                |
| 1978 | 26237     | 19672      | 75.0 | 6565           | 25.0 | 3583                   | 65.0                                |

(1) Federal Funds for Research and Development, Vol. XXVII, Appendix C (NSF 78-312), p. 167.

(2) Federal Funds for Research and Development, Vols. XXII-XXVII.

(3) National Patterns of R&D Resources (NSF 78-313) p. 45 and Science Indicators 1976  
(NSB 77-1), p. 206.

TABLE 3

## CONDUCT OF RESEARCH AND DEVELOPMENT BY MAJOR DEPARTMENTS AND AGENCIES

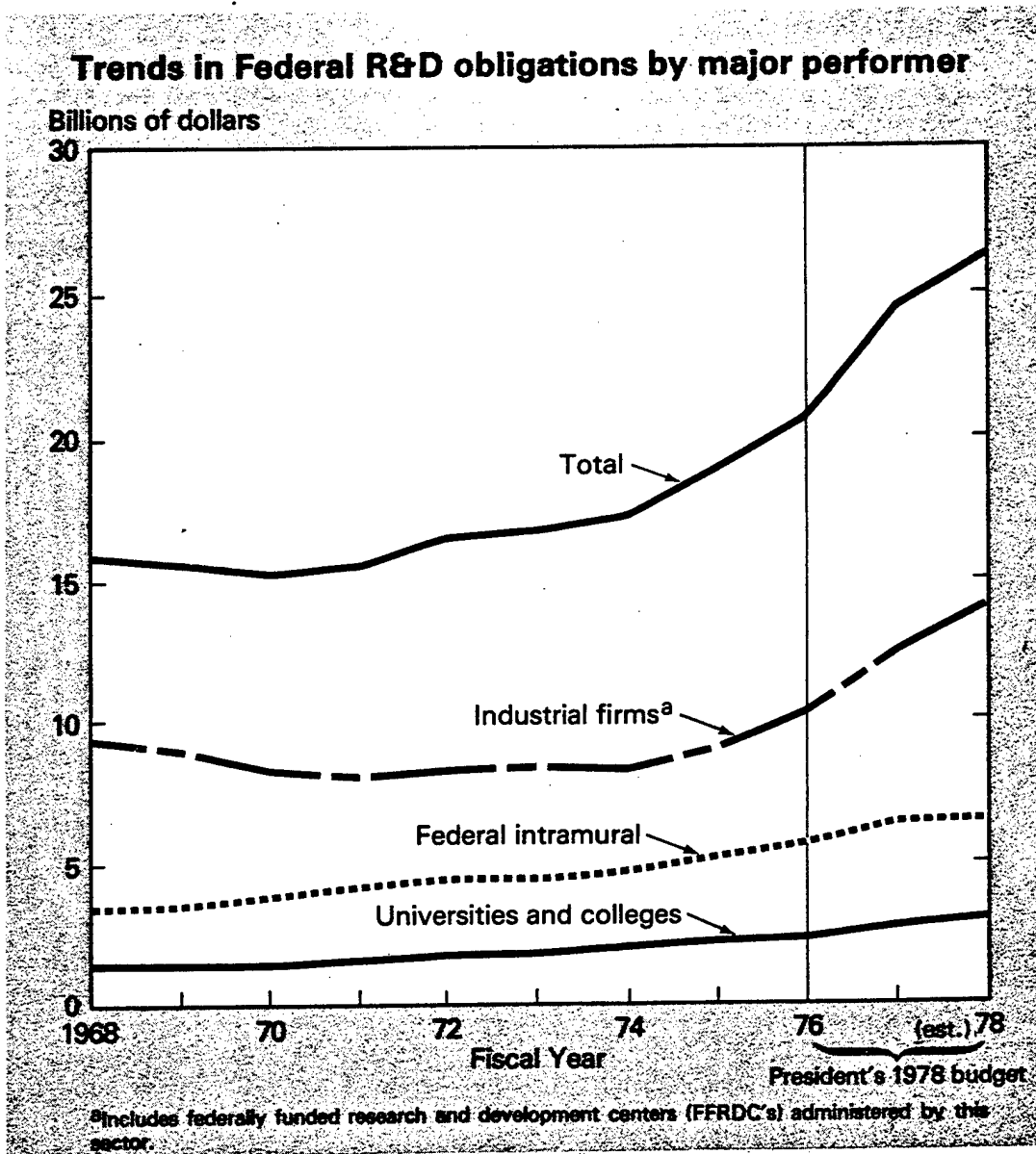
(In Millions of Dollars)

| Department or Agency                             | 1978<br>Actual | 1979<br>Estimate | 1980<br>Estimate |
|--------------------------------------------------|----------------|------------------|------------------|
| Defense--military functions                      | 11,520         | 12,961           | 13,842           |
| Energy                                           | 4,237          | 4,642            | 4,665            |
| National Aeronautics and Space<br>Administration | 3,875          | 4,392            | 4,540            |
| Health, Education, and Welfare                   | 3,199          | 3,685            | 3,721            |
| (National Institutes of Health)                  | (2,575)        | (2,956)          | (2,958)          |
| National Science Foundation                      | 749            | 819              | 910              |
| Agriculture                                      | 608            | 667              | 664              |
| Environmental Protection Agency                  | 385            | 400              | 436              |
| Interior                                         | 357            | 390              | 377              |
| Transportation                                   | 372            | 381              | 357              |
| Commerce                                         | 268            | 308              | 310              |
| Nuclear Regulatory Commission                    | 139            | 160              | 183              |
| Veterans Administration                          | 117            | 131              | 129              |
| All Other <sup>1</sup>                           | 413            | 443              | 485              |
| TOTAL Conduct of R&D                             | 26,237         | 29,379           | 30,620           |

<sup>1</sup> Includes the Departments of Justice, Labor, State; Treasury, and Housing and Urban Development; the Agency for International Development, the US Office of Personnel Management, the Smithsonian Institution, the Tennessee Valley Authority, the Federal Preparedness Agency, the Corps of Engineers, the Arms Control and Disarmament Agency, the Consumer Products Safety Commission, the Federal Communications Commission, the Federal Trade Commission, the Library of Congress, and the Advisory Commission on Intergovernmental Relations.

SOURCE: Special Analysis, Budget of the US Government, FY 1980

FIGURE 1



SOURCE: National Science Foundation, Federal Funds for Research, Development and Other Scientific Activities, NSF-78-300, p. 15.

## Chapter 2

### THE NATURE OF GOVERNMENT-FUNDED R&D

#### Introduction

To begin the discussion of the Government functions in R&D it was felt that a somewhat qualitative look at the characteristics of the Government R&D establishment would be appropriate. It is intended that this general background about the nature of Government R&D, as opposed to other Government functions, will provide a framework for the consideration of the Committee's proposals for the management of Government functions in R&D.

#### Agency Differences

There are approximately 30 agencies of the Federal Government that conduct R&D as part of their mission.<sup>7/</sup> In the main, Government R&D is focused on agency mission needs and solutions to relevant policy issues and technical problems.<sup>8/</sup> This close relationship to the agency mission dictates a more applied technology emphasis for most Government performed R&D and requires the intimate involvement of Government employees in a wide range of capabilities throughout the R&D process.

The diversity of agency mission objectives and technical requirements has spawned a number of different approaches to the conduct of

---

<sup>7/</sup> See Table 3 in Chapter 1.

<sup>8/</sup> Basic Research in the Mission Agencies, Report of the National Science Board 1978, NSB-78-1. Also see Special Analysis L to, Budget of the United States Government, 1980.

Government R&D. The market place for Government R&D has influenced the approaches to providing it. Where the Government is the primary user of the R&D product as in the cases of the DOD, the National Bureau of Standards (NBS) and the National Aeronautics and Space Administration (NASA), there has evolved a strong R&D capability internal to the Government. On the other hand, where the private sector is the primary user one finds less of an internal involvement in performing Government R&D, as in the cases of NIH, the Department of Energy (DOE) and the Department of Transportation (DOT).

The location of the agency's R&D activities in the broad spectrum of involvement from basic research on the one hand to full scale development of sophisticated systems on the other is a factor in determining the appropriate operating mode for an R&D agency. The spectrum varies from basic research on galactic evolution sponsored by NSF to weapon systems development conducted by DOD. The rationale for Government R&D varies from the one extreme of doing what nobody else will do to the other extreme of doing what nobody else can or should do. In between are those R&D activities necessary to satisfy the various agency missions. It, therefore, becomes necessary for most agencies involved in R&D to conduct activities throughout the R&D spectrum. This calls for differences in approaches to providing Government R&D, the respective roles of the various performers and the management philosophies employed.

Some agencies do not have one overall philosophy with respect to Government R&D functions. Rather, operating requirements vary among the different subelements within the agency as in DOT. The United States Coast Guard (USCG) utilizes a significant level of Government performed R&D for its operational missions in such areas as search and rescue and aids to navigation. The Urban Mass Transit Administration (UMTA), on the other hand, where the final users of the R&D are most often private sector enterprises, utilizes significant levels of contracted R&D performance. Thus, a single R&D philosophy cannot always be followed even within a single agency.

#### Government Laboratory Environment

Many agencies have chosen to meet their mission requirements for R&D through the development of a strong internal complement of scientists and engineers. Approximately half the R&D agencies meet a portion of their mission requirements for R&D through Government laboratories. These laboratories have been established by the budget and legislative process and have been given specific missions by their parent agencies. These laboratories take two basic forms; those operated by Federal employees and those operated by the private sector. In many instances these laboratories represent national capabilities that could not be provided by the private sector without Government sponsorship. The technology leadership of this Nation has been significantly enhanced by the partnership of the Government and the private sector in the work performed at and managed by these

laboratories. Table 4 gives a summary, by agency, of the Federal laboratories, associated Federally Funded Research and Development Centers (FFRDC's) and the corresponding personnel levels. The importance of the health of this Government laboratory system was addressed by the 1962 Bell Report,<sup>9/</sup> "Finally, we consider that in recent years there has been a serious trend toward eroding the competence of the Government's research and development establishments... In our judgment, the most important improvements that are needed within Government are: to insure that governmental research and development establishments are assigned significant and challenging work..." In a similar vein the 1972 Commission on Government Procurement<sup>10/</sup> said in one of its recommendations:

"Strengthen in-house capabilities to support technology advancement in the private sector, and specifically the procurement-related technical and management capabilities in laboratories by:

- (a) Clarifying the assigned roles of the laboratories;
- (b) Providing training and temporary assignment of technical manpower to intra-agency and interagency program management offices and regulatory bodies;

---

<sup>9/</sup> Report to the President on Government Contracting for Research and Development, S. Doc. No. 94, 87th Congress, 2nd Session (1962), p. ix. Also see p. 21-24.

<sup>10/</sup> Commission on Government Procurement (1972) Summary, p. 47.

- (c) Undertaking test and evaluation (T&E) of conceptual design, hardware, and systems that are proposed, designed, and built by private sources; and
- (d) Maintaining technical competence by continuing to conduct basic and applied research and development projects."

There are several key ingredients to a healthy laboratory environment. A coherent and integrated mixture of technical personnel is an important and required feature. The proper mix of a broad range of skills is necessary to carry out the many technical tasks required in the performance of R&D. Stability is another important requirement for the R&D laboratory environment. The R&D process is generally a long-term activity. The evolution from fundamental knowledge to eventual application and useful products requires significant periods of time, typically ten to twenty years. Thus, drastic fluctuations in funding levels, personnel and available facilities must be avoided if the Government laboratories are to fulfill their mission effectively. Flexibility is another significant requirement of the R&D laboratory environment in order to deal with the uncertainties inherent in the conduct of R&D. In discussing uncertainty, the Committee on Federal Laboratories said, "The uncertainty here (in R&D) is especially general since the notions of research and development concern discovery and creation of something previously unknown, or imperfectly known and

incompletely experienced."<sup>11/</sup> They further listed as the principal managerial characteristics under uncertainty,

- "a. The goal or mission is initially a possibility but is not precisely defined.
- b. As the work progresses, the goal itself is modified and made more specific.
- c. Cost and time estimates likewise converge to definite values, their deviation from initial estimates being primarily dependent on the extent to which the state-of-the-art is transcended.
- d. Strong control and review by technical and managerial talent is required to optimize such a process."<sup>12/</sup>

Such a managerial atmosphere requires the flexibility to replan and to reconfigure the resources applied to a particular task as uncertainties are eliminated and new challenges rise in their place.

#### Synergism in R&D

As mentioned previously, the performance of R&D involves many different skills. Indeed, the R&D process is very synergistic in nature. The contribution of scientists, engineers, technicians,

---

<sup>11/</sup> Performance Measures for Research and Development, Federal Council for Science and Technology, May 1973, p. 8.

<sup>12/</sup> Ibid, p. 10.

programmers, mathematicians, contract negotiators, managers and administrators are all essential parts of the R&D process. Also involved is the synergistic combination of university, industrial and Government activities to bring the proper talents together in the required roles to assure the successful outcome of the Nation's R&D endeavor. It should be recognized that most Government performed R&D is done in partnership with non-Federal organizations. Indeed, most Government R&D activities depend on the existence of a strong private sector R&D capability. It is not unusual for R&D programs to be performed both in the Federal and non-Federal sectors in such a manner as to strengthen industry's technical capabilities while preserving the Government's leadership role. As can be seen from Table 2 in Chapter 1, approximately three-fourths of the Government's investment in R&D is spent in the private sector. If the goods and services included in Government intramural activity that are purchased from the private sector (i.e., not personnel costs) are included, the non-Federal portion of the Government R&D "pie" approaches 85%. The mix of performers for a given R&D activity may change as the organization or the state-of-the-technology itself changes. The salient point is that the effective accomplishment of the R&D mission by Government requires the R&D manager to have the ability to marshall those performers his or her judgment dictates are necessary to attack the problem at hand.

### Cycling of Attitudes

To conclude this Chapter, the Committee observes that the attitude in our society regarding the performance of R&D by Federal employees as opposed to contracting out such effort has not been static. After World War II, Government policymakers decided to never again let the Nation's technology capability lag as it had when the Nation entered the war. Therefore, Government R&D received much emphasis and a strong in-house capability was assumed integral to the process. By the mid-1950's, however, it was evident that the attitude had changed. The Congress made it clear when it established the Second Hoover Commission that the time had come to trim Government and to reduce activities by Federal personnel that would compete with the private sector.

By 1962, the pendulum began to swing in the opposite direction. The Bell Report drew the conclusion that the Government had gone too far in contracting out R&D. The report stated, in part, "No matter how heavily the Government relies on private contracting, it should never lose a strong internal competence in R&D."<sup>13/</sup> This attitude carried through for a decade and in 1972 the Commission on Government Procurement endorsed the same basic policy.<sup>14/</sup>

---

<sup>13/</sup> Report to the President on Government Contracting for Research and Development, S. Doc. No. 94, 87th Congress, 2nd Session (1962), p. 21.

<sup>14/</sup> Commission on Government Procurement (1972), Summary, p. 47.

With the end of the United States involvement in Vietnam, the onset of serious energy shortages, a troubled economy and double-digit inflation, the mood of trimming Government returned. In the last few years the dwindling buying power of the dollar has caused the competition for Federal R&D resources to become sharper both within the Government as well as in the private sector. One result of this sharper competition is a reversal again in the swing of the "attitude pendulum" toward more private sector participation and less internal performance of R&D. The slight decline and leveling of the growth in Federal scientists and engineers since 1968, Table 5,<sup>15/</sup> and the decreasing percentage of the Federal budget devoted to R&D since 1966, Table 6,<sup>16/</sup> are testimony to the effect on Government R&D of this shift in attitude concerning public sector versus private sector roles in the economy.

The Committee does not argue with this reality; indeed, it is merely a feature of our free enterprise/political system. However, while the reversals in attitude are understandable when they occur, it should be equally understood that the pendulum will swing again. The Committee feels that it is an important responsibility of Government policymakers to recognize the character of the attitude pendulum and to shape R&D acquisition and assistance policy around the long range needs of agencies to conduct R&D as part of their Government function.

---

<sup>15/</sup> National Patterns of R&D Resources, National Science Foundation, Report No. NSF-78-313, October 1978, Table B-10.

<sup>16/</sup> Federal Funds for Research, Development and Other Scientific Activities--Fiscal Years 1976, 1977, 1978, National Science Foundation Report No. NSF-78-300, December 1977, p. 3.

TABLE 4

## FEDERAL LABORATORY OPERATING MODES

| Agency/<br>Department | Government-<br>Owned/<br>Operated | Government-<br>Owned/<br>Contractor-<br>Operated | Contractor-<br>Owned/<br>Contractor-<br>Operated | Leased/<br>Government-<br>Operated | Total<br>Laboratories | Personnel <sup>1</sup><br>Professional/<br>Total |
|-----------------------|-----------------------------------|--------------------------------------------------|--------------------------------------------------|------------------------------------|-----------------------|--------------------------------------------------|
| TOTAL                 | 608                               | 54                                               | 18                                               | 99                                 | 779                   | 105434/240054                                    |
| DOA                   | 203                               | --                                               | --                                               | 15                                 | 218                   | 4367/ 11437                                      |
| DOC                   | 35                                | --                                               | --                                               | 10                                 | 45                    | 3347/ 5831                                       |
| CPSC                  | 5                                 | --                                               | --                                               | --                                 | 5                     | 40/ 53                                           |
| DOD                   | 87                                | 2                                                | 2                                                | 4                                  | 95                    | 42079/103135                                     |
| DOE                   | 12                                | 33                                               | --                                               | --                                 | 45                    | 27773/ 62249                                     |
| EPA                   | 25                                | --                                               | --                                               | 21                                 | 46                    | 1872/ 3007                                       |
| GSA                   | 8                                 | --                                               | --                                               | --                                 | 8                     | 89/ 107                                          |
| HEW                   | 52                                | 3                                                | 8                                                | 21                                 | 84                    | 5681/ 11772                                      |
| DOI                   | 52                                | 4                                                | --                                               | 14                                 | 70                    | 2010/ 3374                                       |
| DOJ                   | 4                                 | --                                               | --                                               | 4                                  | 8                     | 140/ 190                                         |
| NASA                  | 14                                | 1                                                | --                                               | --                                 | 15                    | 12823/ 25438                                     |
| NSF                   | --                                | 10                                               | 8                                                | --                                 | 18                    | 822/ 2239                                        |
| SI                    | 6                                 | --                                               | --                                               | 2                                  | 8                     | 417/ 1666                                        |
| TVA                   | 5                                 | --                                               | --                                               | 3                                  | 8                     | 232/ 525                                         |
| DOT                   | 3                                 | 1                                                | --                                               | 5                                  | 9                     | 1875/ 2731                                       |
| VA                    | 97                                | --                                               | --                                               | --                                 | 97                    | 2284/ 7966                                       |

<sup>1</sup> Includes non-Federal laboratory personnel

SOURCE: Investigative Report on Utilization of Federal Laboratories, Hearings Before the Agriculture and Related Agencies, Subcommittee of the House Appropriations Committee, 95th Congress, 2nd Session, Part 2 (1978).

TABLE 5

Full-time-equivalent (FTE) scientists and engineers employed in research and development by sector: selected years<sup>1</sup>

[In thousands]

| Sector                                             | 1954  | 1961  | 1965  | 1969  | 1972  | 1973  | 1974  | 1975  | 1976 <sup>2</sup> | 1977 <sup>2</sup> | 1978  | 1979 <sup>2</sup> |
|----------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|-------------------|-------|-------------------|
| Total .....                                        | 237.1 | 425.7 | 494.5 | 556.6 | 518.5 | 517.5 | 525.4 | 534.8 | 549.9             | 571.1             | 595.0 | 610.0             |
| Federal Government <sup>3</sup> .....              | 37.7  | 51.1  | 61.8  | 69.9  | 65.2  | 62.3  | 65.0  | 64.5  | 65.3              | 64.5              | 65.0  | 65.5              |
| Industry <sup>4</sup> .....                        | 164.1 | 312.0 | 348.4 | 385.6 | 353.3 | 357.4 | 359.5 | 362.6 | 372.4             | 390.1             | 410.0 | 421.0             |
| Universities and colleges,<br>total .....          | 25.0  | 42.4  | 53.4  | 68.3  | 66.5  | 63.5  | 65.5  | 70.2  | 72.4              | 75.0              | 77.5  | 80.0              |
| Scientists and engineers ..                        | 20.3  | 33.6  | 40.4  | 50.4  | 48.9  | 46.9  | 48.0  | 51.6  | 53.5              | 54.9              | 57.0  | 59.0              |
| Graduate students <sup>6</sup> .....               | 4.7   | 8.8   | 13.0  | 17.9  | 17.6  | 16.6  | 17.5  | 18.6  | 18.9              | 20.1              | 20.5  | 21.0              |
| University-associated<br>FFRDC's, total .....      | 5.0   | 9.1   | 11.1  | 11.6  | 11.7  | 12.0  | 12.1  | 12.7  | 13.4              | 14.0              | 14.5  | 15.0              |
| Scientists and engineers ..                        | 4.9   | 8.8   | 10.7  | 11.1  | 11.3  | 11.7  | 11.8  | 12.3  | 13.0              | 13.6              | 14.0  | 14.5              |
| Graduate students <sup>6</sup> .....               | .1    | .3    | .4    | .5    | .4    | .3    | .3    | .4    | .4                | .4                | .5    | .5                |
| Other nonprofit<br>institutions <sup>4</sup> ..... | 5.3   | 11.1  | 19.9  | 21.2  | 21.8  | 22.3  | 23.3  | 24.8  | 26.4              | 27.5              | 28.0  | 28.5              |

<sup>1</sup> Number of full-time employees plus the FTE of part-time employees. Excludes scientists and engineers employed in State and local government agencies. Totals may be understated by about 5 percent because of incomplete data on summer employment at universities and colleges.

<sup>2</sup> Estimate.

<sup>3</sup> Includes both civilian and military service personnel and managers of R&D. Military R&D scientists and engineers in the Department of Defense were estimated at 7,000 in 1954, 9,200 in 1961, 12,000 in 1965, 14,000 in 1969, 10,700 in 1972, 8,100 in 1973, 7,600 in 1974, 7,700 in 1975, 7,400 in 1976, and 7,200 in 1977 and 1979.

<sup>4</sup> Includes professional R&D personnel employed at FFRDC's administered by organizations in the sector.

<sup>5</sup> Excludes social scientists.

<sup>6</sup> Numbers of FTE graduate students receiving stipends and engaged in R&D.

NOTE: The figures for the industry sector represent yearly averages and may differ from other data in the text which is based upon surveys reporting the employment in a single month of the year.

SOURCE: National Science Foundation.

SOURCE: National Science Foundation, National Patterns of R&D Resources, NSF-78-313, Table B-10.

Table 6

**Federal overall and R&D obligations  
and outlays: FY 1940-78**

[Dollars in millions]

| Fiscal<br>year           | Total<br>budget<br>outlays <sup>1</sup> | Research, develop-<br>ment, and R&D<br>plant <sup>2</sup> |         | R&D-related<br>outlays as<br>percent of<br>total budget<br>outlays |
|--------------------------|-----------------------------------------|-----------------------------------------------------------|---------|--------------------------------------------------------------------|
|                          |                                         | Obliga-<br>tions                                          | Outlays |                                                                    |
| 1940 .....               | \$ 9,589                                | (3)                                                       | \$ 74   | 0.8                                                                |
| 1941 .....               | 13,980                                  | (3)                                                       | 198     | 1.4                                                                |
| 1942 .....               | 34,500                                  | (3)                                                       | 280     | .8                                                                 |
| 1943 .....               | 78,909                                  | (3)                                                       | 602     | .8                                                                 |
| 1944 .....               | 93,956                                  | (3)                                                       | 1,377   | 1.5                                                                |
| 1945 .....               | 95,184                                  | (3)                                                       | 1,591   | 1.7                                                                |
| 1946 .....               | 61,738                                  | (3)                                                       | 918     | 1.5                                                                |
| 1947 .....               | 36,931                                  | \$ 691                                                    | 900     | 2.4                                                                |
| 1948 .....               | 36,493                                  | 868                                                       | 855     | 2.3                                                                |
| 1949 .....               | 40,570                                  | 1,105                                                     | 1,082   | 2.7                                                                |
| 1950 .....               | 43,147                                  | 1,175                                                     | 1,083   | 2.5                                                                |
| 1951 .....               | 45,797                                  | 1,812                                                     | 1,301   | 2.8                                                                |
| 1952 .....               | 67,962                                  | 2,195                                                     | 1,816   | 2.7                                                                |
| 1953 .....               | 76,769                                  | 3,361                                                     | 3,101   | 4.0                                                                |
| 1954 .....               | 70,890                                  | 3,039                                                     | 3,148   | 4.4                                                                |
| 1955 .....               | 68,509                                  | 2,745                                                     | 3,308   | 4.8                                                                |
| 1956 .....               | 70,460                                  | 3,267                                                     | 3,446   | 4.9                                                                |
| 1957 .....               | 76,741                                  | 4,389                                                     | 4,462   | 5.8                                                                |
| 1958 .....               | 82,575                                  | 4,906                                                     | 4,991   | 6.0                                                                |
| 1959 .....               | 92,104                                  | 7,123                                                     | 5,806   | 6.3                                                                |
| 1960 .....               | 92,223                                  | 8,080                                                     | 7,744   | 8.4                                                                |
| 1961 .....               | 97,795                                  | 9,607                                                     | 9,287   | 9.5                                                                |
| 1962 .....               | 106,813                                 | 11,069                                                    | 10,387  | 9.7                                                                |
| 1963 .....               | 111,311                                 | 13,663                                                    | 12,012  | 10.8                                                               |
| 1964 .....               | 118,584                                 | 15,324                                                    | 14,707  | 12.4                                                               |
| 1965 .....               | 118,430                                 | 15,746                                                    | 14,889  | 12.6                                                               |
| 1966 .....               | 134,652                                 | 16,179                                                    | 16,018  | 11.9                                                               |
| 1967 .....               | 158,254                                 | 17,149                                                    | 16,859  | 10.7                                                               |
| 1968 .....               | 178,833                                 | 16,525                                                    | 17,049  | 9.5                                                                |
| 1969 .....               | 184,548                                 | 16,310                                                    | 16,348  | 8.9                                                                |
| 1970 .....               | 196,588                                 | 15,865                                                    | 15,736  | 8.0                                                                |
| 1971 .....               | 211,425                                 | 16,150                                                    | 15,992  | 7.6                                                                |
| 1972 .....               | 232,021                                 | 17,100                                                    | 16,743  | 7.2                                                                |
| 1973 .....               | 247,074                                 | 17,574                                                    | 17,510  | 7.1                                                                |
| 1974 .....               | 269,620                                 | 18,181                                                    | 18,326  | 6.8                                                                |
| 1975 .....               | 326,105                                 | 19,834                                                    | 19,590  | 6.0                                                                |
| 1976 .....               | 366,466                                 | 21,595                                                    | 20,688  | 5.6                                                                |
| 1977 (est.) <sup>4</sup> | 411,243                                 | 26,069                                                    | 23,244  | 5.7                                                                |
| 1978 (est.) <sup>4</sup> | 439,967                                 | 27,883                                                    | 25,851  | 5.9                                                                |

<sup>1</sup>Beginning in fiscal year 1953 amounts for both obligations and outlays include pay and allowance of military personnel in research and development. <sup>2</sup>"Outlays" include expenditures plus net lending. Data through fiscal year 1953 are in terms of the "Consolidated Cash Statement" and data beginning with fiscal year 1954 are in terms of the "Unified Budget."

<sup>3</sup>Not available.

<sup>4</sup>These estimates are based on amounts shown in *The Budget, 1978*. SOURCES: Office of Management and Budget and Bureau of the Budget, *The Budget of the United States Government*, fiscal years 1940 through 1978; National Science Foundation annual surveys of R&D programs of Federal agencies.

## Chapter 3

### GOVERNMENT FUNCTIONS IN R&D

#### Introduction

OMB Circular A-76 addresses the Government's general "buy" policy and stipulates the procedures for determining those commercial and industrial activities which are exceptions to the policy and authorized for performance using Government facilities and personnel. For the purposes of A-76 and this report the Committee concluded that it is important to focus on and emphasize the personnel component of R&D commercial or industrial activities when determining Government functions in R&D. Obviously, in order to perform R&D, facilities, equipment and funding, as well as personnel, are required. However, the Committee feels that facilities, equipment and funding are secondary factors and the more basic question must be answered first, "Is the activity one that Government personnel should perform?"

#### Government Performance of R&D

The performance of R&D are those activities that are "hands-on"<sup>17/</sup> R&D performed by scientists, engineers and technicians. It includes activities such as basic and applied research, technology development, concept and demonstration development, full-scale development, science and technology base, R&D studies, and R&D testing and evaluation. In

---

<sup>17/</sup> "Hands-on" refers to the personal participation in scientific and engineering activities. The emphasis here is on personal participation rather than management or contract monitoring.

limited cases the "performance of R&D" may also include some R&D support activities where;

(a) The support activity is so integral to the performance of R&D that it is not feasible or prudent to separate the activity for the purposes of contracting out.

(b) Where the work environment between Government researcher(s) and support personnel may result in an employer-to-employee type relationship.

An example of instance (a), above, is pest control in NIH laboratories. Pest control in most organizations is a support activity and is subject to contracting out. However, in certain NIH laboratories the control of pests is integral to the performance of sensitive research in living organisms being carried out as a Government function. In this instance, an activity which is not itself research is treated as a part of the performance of R&D.

Instance (b), above, is a subject more general in nature and is Government-wide in scope. Federal law<sup>18/</sup> restricts a Government employee from close and continuing supervision of the manner of performance of the work of a contractor employee. In some instances, a Government function in R&D being carried out in a Government facility

---

<sup>18/</sup> Case of Lodge 1858 AFGE vs. NASA, 580 F2d 496 (1978 D.C. Cir.).

requires unusually close support and results in an employer-to-employee relationship between the researcher and the support personnel. Such may be the case between a NASA researcher in aerodynamics and a model builder of an experimental airframe configuration. Day-to-day, even hour-to-hour, modifications may be made at the direction of the researcher on a trial-and-error basis. In such cases, a concise statement of work is impossible, at least impractical, and an employer-to-employee relationship between researcher and model builder is essential to an efficient and successful R&D effort. On the other hand, if a model of a well understood airframe required for a wind tunnel test can be built to specifications by contract and supplied to the Government research team, the model builder would not be integral to the performance of R&D and could be appropriately a contract employee.

#### Internal Versus Contract Performance of R&D

Consistent with the policy embodied in A-76, agency R&D managers should seek to provide necessary Government R&D activities at the lowest possible cost. However, the Committee is of the opinion that the decision to perform R&D with Federal employees rather than by contract can seldom be made only by a comparison of cost. In the Committee's view the nature of R&D (Chapter 2) brings other factors to the forefront and we have divided these factors into two groups.

The factors in the first group are those categories of R&D activities that the Committee feels an agency with an R&D component must

perform, notwithstanding cost, in order to carry out the agency's mission. The degree of involvement in any given category will vary from agency to agency. Representative categories developed by the Committee are:

The reader should consult Appendix C for detailed explanation of each category.

- (a) The performance of agency mission-oriented studies, technical analysis and evaluation.
- (b) The development, management and maintenance of agency-specific R&D expertise for long-term needs.
- (c) The performance of independent test and evaluation.
- (d) Support of the acquisition and assistance process, i.e., providing a "smart buyer" capability.
- (e) The maintenance of a corporate memory in agency-specific R&D.
- (f) The maintenance of a capability to respond to agency emergencies, trouble-shooting requirements and quick reaction situations.
- (g) Internal performance clearly intended by the Congress.
- (h) Government personnel required to staff large and/or unique national R&D facilities.

The general nature of these descriptions is the result of the wide diversity of R&D activities and technical requirements that exist in the public sector. An agency's R&D requirements may fall in one of the activities described but more often there will be overlap to some degree. While these activities in some agencies may pale in magnitude compared to the level of effort pursued by the larger R&D agencies, they are nonetheless important and represent an integral part of the agency's mission capability.

The factors in the second group are those reasons, in addition to cost, for making governmental discretionary decisions on whether to perform R&D activities internally or by contract. Representative reasons developed by the Committee are:

(a) A conscious Government decision to maintain or establish a specific R&D capability in either Government or the private sector.

(b) The agency judges that the likelihood of success in the R&D effort, based on past performance, is much greater if performed either internally or by contract.

(c) The decision is driven by the total amount of R&D activities the agency has to perform when traded off against Presidential/Congressional desires and the realities of budgets, personnel skills, and urgency of the R&D need.

(d) In the interest of national security either internal or contract performance of an R&D activity is deemed appropriate.

(e) The location and availability of key technical personnel, facilities, or recognized experts in a particular field will influence the decision to perform internally or by contract.

(f) Corporate economic and labor conditions can affect the availability of non-Federal sources of R&D.

It should be emphasized that the inclusion of both groups of factors above in determining internal versus contract performance of R&D activities does not represent a disregard for the economy-in-Government intent of A-76. The Committee is in agreement with the policy embodied in A-76 and believes that Federal managers should seek to provide necessary Government R&D activities at the lowest possible cost. As stated previously, however, the Committee concludes that the decision to perform R&D activities with Federal employees rather than by contract can seldom be made only by a comparison of cost. Rather, Federal managers must exercise their discretionary governmental authority in selecting the proper mix of internal and contract performers in meeting the Nation's needs in R&D.

#### GOCO's, FFRDC's, Other Not-for-Profits

Government functions, as defined in A-76, are performed by Federal personnel. Therefore, the R&D commercial and industrial activities performed at Government-Owned/Contractor-Operated facilities (GOCO's), FFRDC's and other not-for-profits, like those activities

carried out by private industry are not Government functions in R&D. However, there are strong and important links between the R&D agencies and their respective GOCO's, FFRDC's and other not-for-profits. These links are essential to the Nation's total R&D capability and have been created under a variety of circumstances and in many cases revolve around basic agency operating philosophies. It would be difficult, indeed, to define a total R&D capability in Government without addressing the role of these special "outside" performers of commercial and industrial activities in R&D. But the Committee concludes that these performers, since they do not perform a Government function and since they are private sector enterprises, are not, and should not be, subject to A-76 consideration. This conclusion is based on the premise that these activities fall into the "buy" category and that A-76 has as its underlying desired result the performance of commercial and industrial work in the private sector to the maximum practical extent.

An OMB orientation memorandum, dated November 3, 1978, contains draft policy and guidelines for establishing, sponsoring, using, reviewing and phasing out FFRDC's. The Committee feels that this form of policy, separate from A-76, is the proper method to address this important topic. It is the use of these special performers in lieu of profit-oriented private industry that gives cause for most of the concern in industrial circles. As stated previously, the role of these performers is essential to the Nation's R&D capability, but the "use policy" deserves further focus outside the scope of A-76.

## Chapter 4

### FACTORS THAT INFLUENCE THE SIZE OF GOVERNMENT FUNCTIONS IN R&D

#### Introduction

As stated previously, the Committee determined that broad and general definitions related to Government functions in R&D are of questionable usefulness. Each agency of Government must address many factors in determining that agency's specific needs for Government functions in R&D. It is essential that the agency head and his or her senior R&D managers play an active role in a well-defined process to ensure that Government functions in R&D, i.e., exceptions to the "buy" policy, are in keeping with the Government's policy not to compete with its citizens. The Committee has identified some of the major factors that we feel an agency must consider in determining the size of its Government functions in R&D. The following is a qualitative description of those factors.

#### Effect of Agency Genesis and Evolution

The most significant factor influencing an agency's required Government functions in R&D is the agency genesis and evolution. By this we mean the combination of historical agency operating philosophy, conditions prevalent at the time of the agency's creation and the wishes of the President and the Congress as expressed in enabling legislation and the annual budget process. In addition, the creation of new programs and agency reorganizations by the President and Congress cause agency modes of conducting R&D to evolve to meet the new mission

requirements. For example, this factor gives rise to the currently small level of performance of R&D by DOE and NSF personnel and the multifaceted R&D activities that are Government functions in R&D on the part of DOD and NASA.

The exigencies attendant to the creation of the original DOE laboratories left few alternative operating philosophies. DOE's GOCO laboratories have proven to be a viable method of accomplishing Government R&D and have resulted in a relatively small Government employee participation in performing those R&D activities. NSF was given no choice in the matter as Congress directed it not to perform R&D with Government employees. Thus, one of the most influential partners in the Government conduct of basic research has no Government employee involvement in the performance of that research.

On the other hand, the DOD operating philosophy of self-dependence and being the primary or sole user of particular goods and services dates back to the Nation's birth. While the weapon systems and the adversaries of today are far more sophisticated, the requirement for a significant level of internally performed R&D to support this mode of operation is still relevant and will remain so. Likewise, from its outset NASA has been heavily dependent on the private sector for goods and services and equally dependent on Government employees for the task of integrating technologies, performing technology requirement determinations and directing the acquisition of complex systems. The

technological sophistication of these activities requires a significant level of internally performed R&D to explore the frontiers of scientific discipline, in order to direct their application to the NASA mission. Similar circumstances have resulted in significant levels of Government performance of R&D on the part of the Department of Health, Education and Welfare (HEW) and the Department of Agriculture (DOA) and the relatively small requirement on the part of the Department of Housing and Urban Development (HUD).

It is the Committee's belief that the effect of the agency genesis and evolution on performing R&D as a Government function is so strong as to almost overpower the other factors described below. This belief is not intended to imply that the Committee takes the position that "since it has always been that way, it will always be that way." Rather, it is a belief based on the reality of longstanding, in-place operating philosophies, institutions and Presidential and Congressional directives or intent. It is clear to the Committee that any attempt to significantly alter an agency's internal capability and operating philosophy can and should be considered but should be approached with deliberation and caution. Any such change should be subject to the same agency, Presidential and Congressional review and approval that established the agency's existing internal capability. The evolution from one mode to another should be afforded sufficient time to allow new operating techniques to mature.

Other Significant Factors Affecting  
the Size of Government Functions in R&D

Given below are some additional significant factors which will influence an agency's need for Government functions in R&D:

1. Scope of Involvement in the R&D Process. The R&D process can be thought of as a continuum of activities with the following major phases:<sup>19/</sup>

- A. Basic research
- B. Applied research
- C. Technology development
- D. Concept and demonstration development
- E. Full-scale development

For major weapon and hardware systems two additional phases can be added:

- F. Production evaluation and support
- G. Field evaluation and support

The scope of an agency's R&D activities can thus be evaluated against this R&D continuum. The broader the agency involvement, the more in-depth and thus larger the requirement for Government functions in R&D will become.

---

<sup>19/</sup> See OMB Circular A-11, "Preparation and Submission of Budget Estimates," Sections 44 and 55 for definitions.

2. Scope of the Agency's Mission. The mission responsibilities assigned to an agency by the Congress will dictate the various scientific disciplines that will characterize the agency's Government functions in R&D. The development and enhancement of modern technologies is an inherently multidisciplined endeavor. The most narrowly focused of research activities today involve several professional disciplines as well as highly skilled technical support personnel. The scope of technologies in which an agency finds itself involved determines the number of different scientific disciplines within which the work force must be competent as well as the number of disciplines that require technical excellence. The broader the range of scientific disciplines required by an agency, the larger the requirements for Government functions in R&D will become. The effect of this factor is a long-term one. An increase or decrease in requirements for Government functions in R&D due to changing scientific discipline requirements would tend to follow from step function changes in agency mission responsibilities.

3. Mission Critical Technologies. Certain scientific disciplines will evolve as critical to the successful accomplishment of the agency mission. Two key factors governing the requirement for Government functions in R&D to assure the necessary expertise are the availability and applicability of private sector sources for meeting the agency need and the nature of the relationship between

the R&D output and major agency policy decisions. The closer the relationship to policy decisions the greater the tendency for the R&D activity to become a Government function. The number of scientific disciplines critical to an agency is proportional to the requirement for Government functions in R&D.

4. R&D Facilities. The need for Government functions in R&D to manage and operate R&D facilities acquired through public funding will vary according to the: (1) agency mission, (2) the agency operating philosophy and, (3) the nature of the research to be performed in the facility. In addition, the intended use and operating philosophy of the facility are the subject of intense review by the Congress during the authorization process. Given below are several factors affecting the requirement for Government functions in R&D associated with facility management and operations:

- A. Size of the Facility Base. The number, type and value of the facilities and associated equipment involved.
- B. Complexity of the Facility Base. The level of complexity of the operational requirements, instrumentation requirements and test support requirements demanded by the facility.
- C. Technical Support Interface. The nature of the relationship between facility operators and technicians and using scientists and engineers.

- D. Future Design and Modifications. The extent to which establishing new capabilities, modifying existing facilities and managing new construction are required.
- E. Relationship Between Facility Use and Agency Mission. The criticality of facility outputs to the accomplishment of the agency mission.
- F. Nature of the R&D Program. The extent to which the performance of the facility itself is a subject of the R&D, as in the development of higher Mach number wind tunnels.

5. Magnitude of the Public R&D Endeavor. The sheer magnitude of the public R&D activity will influence, in a direct and proportional manner, the requirement for Government functions in R&D to support it. The relative priority that the President, Congress and the public place on the activity and the urgency associated with the agency mission will affect the size of Government functions in R&D needed to meet the mission objectives.

Chapter 5  
MANAGING GOVERNMENT FUNCTIONS IN R&D

Introduction

The high degree of discretion required in determining the relative roles in Government R&D for public and private sector institutions carries with it a commensurate degree of responsibility to ensure proper management attention in the decision-making processes. In the Committee's view, the agency head and senior management personnel must play an assertive, active role in defining and reviewing the decision-making processes by which Government functions in R&D are determined. In the Committee's opinion, the positive commitment and active participation by the top levels of agency management will assure maximum reliance on the private sector in meeting the Government's needs for goods and services.

The R&D Management Challenge

The task of complying with both the letter and the spirit of OMB Circular A-76 and at the same time maintaining the management flexibility necessary to accomplish R&D mission objectives represents a formidable challenge for agency R&D managers. The realities of the agency's genesis and its current state of evolution coupled with the personnel and budgetary constraints of the day, provide a background against which agency mission requirements must be analyzed to determine the agency's Government functions in R&D. Establishing the policy

framework and the decision processes used by the agency to decide whether to perform R&D activities internally or by contract, and thus structure its Government functions in R&D, is a significant responsibility of agency R&D managers.

In the transmittal letter accompanying the March 29, 1979, A-76 revision, the OMB stated a need for "some consistency" and "uniform agency implementation" in applying A-76 to R&D activities. The Committee Charter reflected this need by enjoining the Committee to develop policy guidelines, criteria and management procedures for applying A-76 to R&D activities. The Committee agrees that "some consistency" and "uniform agency implementation" in applying A-76 to R&D is needed, as long as that consistency and implementation is at the top policy and process level. The Committee cautions that consistency and uniform implementation must not become ends in themselves at the expense of the R&D process. As stated in Chapter 1, the Committee feels strongly that Government R&D is not monolithic in nature. In most cases, the R&D activities vary so widely from agency-to-agency that it would be neither wise nor possible to be totally consistent between agencies at the implementation level. The Committee suspects that the R&D agencies are probably consistent enough in their policies and processes for determining Government functions in R&D, but we recognize that there is not enough visibility into those policies and processes to substantiate that opinion.

The Committee recognized quickly that responding to our Charter was, indeed, a challenging task. The challenge was in developing a

set of recommendations general enough to be applied to all agencies yet specific enough to be useful.

The Committee developed and examined four R&D management options before selecting a recommended approach to satisfy the objectives of the Charter. The aim of the Committee was to find an approach that would provide some consistency and uniform implementation among R&D agencies and, at the same time, recognize that there is no way that the broad spectrum of all Government R&D can be managed by rote or formula.

#### Management Options

The four management options that the Committee considered were:

1. Exempt all R&D activities from A-76 application.
2. Implement A-76 procedures as currently written.
3. Revise OMB Circular A-11, "Preparation and Submission of Budget Estimates," to include a separate determination and budget exhibit for Government functions in R&D.
4. Revise A-76 to require each agency or subelement, as appropriate, to document its own R&D management approach which would describe the agency or subelements policy and process for determining Government functions in R&D.

Option 1, exempting all R&D activities from A-76 application, was strongly endorsed by DOD and a few Committee members were inclined to agree. Obviously, this option yields maximum flexibility to the agencies and requires the least expenditure of effort. During the Committee's deliberations, Congressional action added some emphasis to this option. The House of Representatives passed the FY 1980 Defense Authorization Bill with a section requiring the exclusion of all DOD R&D from A-76. The Senate did not include the section in their version of the Bill. As this report goes to press, the Joint Senate-House Conference Committee has agreed to the exclusion of DOD R&D from A-76. Despite the specter of this potential exclusion by law of a large fraction of Federal R&D from A-76, after much deliberation, the Committee reached the opinion that it could not recommend Option 1. The majority of the Committee felt that recommending Option 1 would not be responsive to the Committee's Charter or current Executive Branch policy. However, since the DOD represents approximately one half of the Federal investment in R&D, the Committee suggests that the current Executive Branch policy be reexamined should the DOD R&D activities be exempted by law from the application of A-76.

Option 2, implementing A-76 procedures as written, would provide a determination of those commercial or industrial activities considered to be Government functions in R&D in a negative fashion, i.e., the commercial and industrial R&D activities not on the A-76 inventory would define the agency's Government functions in R&D. This option might serve well the internal needs of most agencies, assuming the

appropriate revision were made to include the concepts of Government functions in R&D as developed in this report. It would not, however, take any steps to provide consistency or uniform implementation in applying A-76 to R&D activities.

Option 3, revising Circular A-11 to require a budget submission focusing on Government functions in R&D, was unanimously rejected by the Committee as being overly burdensome. A-11 already requires budget exhibits which present agency data in many cross-section slices. It was the opinion of those members of the Committee most familiar with the A-11 process that another cut of the data would only add to the A-11 burden with little real use. The Committee unanimously agreed that it would be impossible to derive a budget exhibit format that could intelligently display Government functions in R&D for all agencies due to the wide diversity in R&D requirements throughout the Federal sector.

Option 4, revising A-76 to require each agency or its subelements, as appropriate, to document its own R&D management approach, was thought by a majority of the Committee members to be a practical and reasonable option. The R&D management approach would describe the policy and process that the agency or its subelements use in determining Government functions in R&D. The management approach would be a "one-time" document(s) forwarded to OMB, and would be updated only when significant changes occur. The Committee feels that by having

each agency generate and document their R&D management policy and process two benefits would accrue:

1. An introspective examination would focus on and verify the soundness of the agency's R&D management approach or could indicate needed changes in agency policy and process for determining Government functions in R&D.
2. An acceptable degree of agency-to-agency consistency at the Government R&D function decision-making level would be shown to exist.

It must be emphasized that documenting this policy and process would in no way abrogate the responsibility and discretion of the agency head in determining the agency's Government functions in R&D. It would be, simply, a description of the agency's management approach and no more. The agency's R&D management determinations would remain subject only to the review of the President and Congress.

#### Committee Recommendations

1. R&D Management Approach. The Committee recommends management Option 4, i.e., revise A-76 to require each agency or subelements thereof, as appropriate, to document, on a one-time basis, its own R&D management approach and to forward their approach to OMB. Each agency should tailor the format of their document(s) to meet their

own specific situation and preference and at the organizational level they deem appropriate. This means that some agencies may produce one document while others may choose to produce several. Each document(s) must describe the policy, including criteria, and the process, including key decision-making positions, that are used by the agency to determine whether to perform R&D activities internally or by contract. A lengthy and exhaustive document is not envisioned by the Committee. The agencies should be left free to use whatever format and length they desire in describing their management approach in determining Government functions in R&D.

Later in this section the Committee offers example logic that the agencies can use as a point of departure in preparing their R&D management approach document(s). It should be noted that this is a logic process not a suggested format.

2. Implementation of the R&D Management Approach. It is recognized that agencies currently have systems in place for determining internal or contract performance of R&D. However, we feel it would be advisable to have the agencies prepare their management approach document(s) before A-76 is applied to R&D. The benefit of added focus derived during the preparation of the approach document(s) should aid in the A-76 application process. After the initial A-76 application process the management approach would be adhered to for new or expanded R&D activities that the agency undertakes. The management approach document(s) should only be updated when significant changes are required.

3. In-house Core Capability. The Committee unanimously agrees that the definition and description of in-house core capability on page 3 of A-76 requires modification. The Committee recommends that all reference to "in-house core capabilities" be deleted. That line 3 of paragraph f(1) be amended to read as follows, "..., as in directing the national defense and the performance of certain research, development, testing and evaluation (See Appendix ?),..."

4. Review Mechanisms. With regard to review mechanisms, the Committee suggests that ample procedures for the review of agency decisions are already in place, fully understood and utilized. The oversight activities of OMB, Congress, GAO and the recently created Inspectors General provide sufficient review of an agency's compliance with the law and executive policy.

5. Existing R&D Activities, New Starts, Expansions. With regard to differences in the application of A-76 to existing R&D activities, new starts and expansions, the Committee finds no reason to provide dissimilar procedures.

6. R&D Activities in Excess of Government Functions in R&D. With regard to the policy guidelines, criteria and management procedures for applying A-76 to Government R&D activities in excess of Government functions in R&D, the Committee has no specific recommendations. The

Committee's deliberations concluded that there should be relatively few internal R&D activities that are not considered Government functions. Further, as described in Figure 3, any internal R&D activities that do not meet the criteria for internal performance should be subject to A-76 procedures.

7. Interagency Use of R&D Capability. Another area of concern to the Committee is paragraph 7 of OMB Circular A-76 which addresses the use by an agency of the products and services of other Federal agencies. The discussion concerns the use of excess products and services. The use by one agency of the Government R&D functions of another agency seldom involves excess capability. Rather, the performing agency, through the conduct of its mission, has developed specific R&D skills which lend themselves to the solutions to other agency's problems. This process has established a network of agencies which cooperate in the performance of their assigned missions to carry out necessary governmental functions in R&D. If the network were to be broken, the funding agency would have to develop duplicate R&D capability to perform the activity.

The Commission on Government Procurement stressed the need for R&D agencies to be responsive to one another's needs.<sup>20/</sup> The Committee concurs and feels it would be a waste of public energy and resources to duplicate Government functions in R&D in two or more agencies except where it is necessary because of agency mission requirements.

---

<sup>20/</sup> Commission on Government Procurement (1972), Summary, p. 45.

The Committee concludes that the concept of excess capability is not germane in addressing the interagency use of Government functions. The Committee recommends that paragraph 7 of OMB Circular A-76 be revised to make it clear that it does not apply to governmental functions.

8. Example Logic for an R&D Management Approach. Figures 2, 3 and 4 describe an example logic process that the Committee developed for the agencies to use as a guideline in preparing their own R&D management approach document(s). Figure 2 contains the suggested steps to be taken in developing an agency R&D management approach. Figures 3 and 4 jointly comprise a general decision tree and example criteria that the Committee feels will fit any agency with an R&D mission.

The Committee recommends that the overall approach, decision tree and example criteria be used as guidelines by the agencies in generating their management approach. It should be emphasized that the differences in agency genesis and R&D missions will require that maximum flexibility be afforded the agencies in generating their specific approach to determining Government functions in R&D.

Simply stated, the logic indicates that an activity that is the performance of R&D which meets qualifying criteria established in the agency management approach is exempt from A-76 procedures. All other commercial and industrial activities are subject to A-76 procedures. The decision to perform an A-76 exempt R&D activity internally by Federal personnel or by contract is made by the agency as a discretionary application of its Government authority (Chapter 3) within

the total resources provided by law. The Committee emphasizes the discretionary nature of this type of decision and we strongly recommend that the agencies be allowed to exercise this authority without further accounting than that already required by Executive Branch and Congressional reviews of programs, operating practices and budgets.

FIGURE 2

STEPS IN GENERATING AN R&D MANAGEMENT APPROACH

The agency will:

1. Consider and determine how R&D contributes to the agency mission.
2. Consider the agency genesis/enabling legislation, history, and current status.
3. Define current agency R&D management and operating philosophy.
4. Establish criteria for internal performance of R&D.
5. Using criteria established in (4) above determine Government versus contract performance.

NOTE: It is the consensus of the Committee that the above steps should be carried out by the agency's senior R&D managers not by the procurement organization. Procurement should be the business conscience only in the establishment and implementation of the R&D management approach.

FIGURE 3

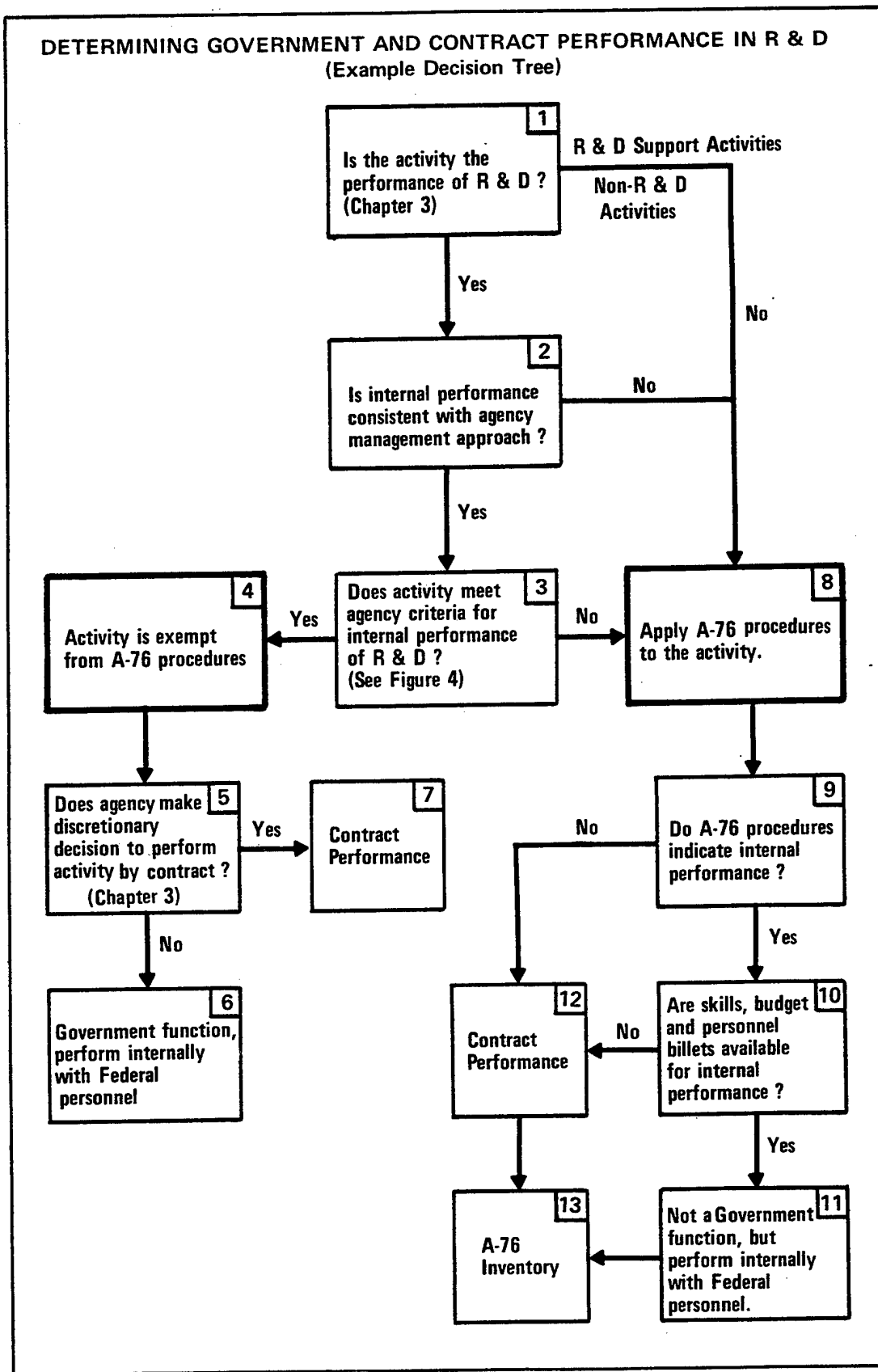


FIGURE 4

EXAMPLE AGENCY CRITERIA FOR INTERNAL PERFORMANCE OF R&D

(Reference Box 3 of Figure 3)

In order to qualify for internal performance of R&D, an activity must fall into one or more of the following categories:<sup>21/</sup>

- A. The performance of agency mission-oriented studies, technical analysis and evaluation.
- B. The development, management and maintenance of agency-specific R&D expertise for long-term needs.
- C. The performance of independent test and evaluation.
- D. Support of the acquisition and assistance process, i.e., providing a "smart buyer" capability.
- E. The maintenance of a corporate memory in agency-specific R&D.
- F. The maintenance of a capability to respond to agency emergencies, trouble-shooting requirements and quick reaction situations.
- G. Internal performance clearly intended by the Congress.
- H. Government personnel required to staff large and/or unique national R&D facilities.

---

<sup>21/</sup> See Appendix C for detailed discussion.

## Chapter 6

### DEPARTMENT OF DEFENSE

#### Dissenting View

DOD is already in compliance with the basic intent of A-76. The DOD strongly supports Option 1, "Exempt all R&D activities from A-76 application," and recommends its adoption. For sometime DOD's reliance on the private sector to supply its R&D needs has been amply demonstrated by the fact that approximately 75 percent of DOD's RDT&E program is performed by the private sector.

DOD is concerned about the growing quantitative disparity between deployed U.S. and Soviet weapons, and about significant advances in the quality of Soviet technology and fielded weapons. This situation demands that we avoid encumbering R&D management with unnecessary processes. The increasing quantities of systems fielded by the Soviets, as well as observed improvements in their quality, demand that we not just maintain our technology pace but that we accelerate it--both through better exploration of innovative technology and through dynamic management of our scientific and technological resources. These measures are vital if we are to maintain the crucial technology advantages that give us superiority where we need it in selected military capabilities. As the diversity of the world's weapons arsenal expands, there is a corresponding need to expand the technology options available to DOD. Rather than streamlining the management process for R&D, the application of A-76 complicates it.

Chapters 1 through 4 of the Committee's report fully support the DOD position. It is noted that the Committee's rationale for not adopting Option 1, "exemption of R&D from the provisions of Circular A-76," was based on the option's failure to comply with the Committee's charter, and not on an assessment of its merits in carrying out agency R&D programs.

The Department of Defense advised OMB (OFPP) that RDT&E should be exempt (deleted) from A-76 on 15 November 1978. The DOD position continues to be that the guidelines and requirements of OMB Circular A-76 should not be applied to R&D. DOD has objected to additional constraints on the Defense RDT&E manager which will result from A-76 implementation, as well as the use of cost comparisons as the primary basis for selecting performers. Implementation of A-76 to R&D would not change DOD's use of the private sector, yet would impair the RDT&E manager's ability to provide the best technological capability per dollar expended.

DOD's position is consistent with comments expressed by the House Armed Services Committee (HASC) on page 65 of their Report No. 95-118, May 6, 1978, the DOD appropriation Authorization Act, 1979. HASC excerpts include: "...the new circular should not be applied to the research and development process." "...the present industry/government arrangement allows the laboratories to determine the percentage of research and development to be contracted out and is working well." "...the committee does not believe that research and development should be procured in the same manner as commercial and industrial type functions." The HASC position was recommended for passage in Conference Report No. 96-371, DOD Authorization, 1980.

The OMB Circular A-76 recognizes that some government functions in R&D must be performed in-house by government personnel. The current 25 percent RDT&E in-house activity by DOD is the minimum in-house core capability required to execute DOD's functions and responsibilities. The present industry/government arrangement is working well. The Circular places too much emphasis on cost comparison which is appropriate for many types of activity but, desirable as it is, is too nebulous a factor to apply to R&D. Other factors such as the availability and quality of technical expertise, organizations' demonstrated performance, technical merit of proposed ideas and concepts, and availability of special facilities must be considered in deciding the true costs of a specific task.

DOD's recommendation to exclude RDT&E from the requirements of Circular A-76 in no way reflects a DOD attitude unfavorable to the private sector performance of Defense RDT&E. The longstanding DOD attitude has been that our major technological advantage over the Soviets is the strong capability fostered by this nation's private enterprise system. Defense RDT&E managers fully recognize the importance of utilizing these assets, without which we would be unable to successfully meet the defense challenges faced by our nation.

Defense RDT&E managers also recognize the importance of a complimentary in-house RDT&E capability, which is fully supported by the Ad Hoc Committee findings, as it has been in many past studies. DOD must have the capability to fulfill the "smart buyer" concept; maintenance of the DOD technical "corporate memory;" conduct program

and/or project management; provide a quick reaction capability; exploit new technological opportunities; avoid technological surprises by others; provide expertise to evaluate IR&D programs; evaluate contractor proposals, pass technical judgement, monitor contractor performance; perform RDT&E in areas of limited or no private sector interest; provide options for future systems; provide for mobilization requirements; provide for the management of RDT&E; etc. DOD believes that its relationship with industry is working well and that the present allocation of effort is well balanced.

The Defense Department's present level of in-house RDT&E effort is the minimum necessary to carry out its RDT&E mission requirements. This needed capability is judged to be in the best national interest and recognized as essential (1) to permit efficient management, planning, and control of DOD's RDT&E programs, (2) to ensure timely and cost-effective Laboratory/Test Facility Support of required technical functions, (3) to render competent RDT&E Center/Laboratory technical advice in the contractual acquisition of new systems, (4) to permit independent DOD evaluation of systems under development and to ensure compliance with technical specifications and operational requirements, (5) to evaluate the impact of intelligence data analysis, (6) to provide expert opinion on technology export controls, and (7) to provide basic support to dynamic and rapidly changing development programs necessary for meeting performance goals and safeguarding national security.

The Government's decision-making responsibilities cannot be contracted out. Defense requires an in-house technical capability

to provide the technical expertise necessary to direct, manage, and evaluate its in-house RDT&E program. It is recognized that actual participation in research, development, test and evaluation work, through which DOD acquires the technical competence and breadth of experience required of our scientific and engineering personnel, is an essential element in maintaining DOD required technical capability. The quality of any RDT&E organization depends on the competence and experience of its people--these qualities can only be maintained through continued direct involvement in RDT&E.

DOD does not concur with the Ad Hoc Committee's recommendation for each agency to develop a management plan and criteria which are to be used for determining Government R&D functions. The Committee was unable to develop a uniform set of specific objective criteria as specified by its charter. DOD, representing roughly one-half of the Federal R&D program and encompassing a wide variety of projects arising from a diversity of operational requirements, likewise finds it inappropriate to develop DOD-wide criteria or military service-wide criteria. Unlike cost comparison which provides a fairly uniform criteria for non-R&D functions, meaningful uniform criteria do not exist for R&D because R&D is a diverse and dynamic process varying from project-to-project (within DOD there are many thousands of projects (tasks), each of which is measured against its own uniquely determined performance specification and development milestone(s)). The Committee correctly concluded that the judgemental determination of government functions in R&D is the responsibility of the agency

head and his subordinate managers of R&D. This conclusion demonstrates the inappropriateness of uniform criteria and additional management processes as mechanisms to further refine these judgemental decisions. The proposed review process will add additional delays and paperwork to a process that is already criticized as being too time-consuming and too paperwork-bound. The proposed procedure becomes all the more questionable since it is highly unlikely that the process will result in any significant shift of effort from the government to the private sector and vice-versa. More importantly, the process will do nothing to improve the ultimate product of the agencies' R&D efforts. It will have an adverse effect upon the final product by diverting technical effort to paperwork and bureaucratic exercises and by adding further delays to the process.

In addition to creating more paperwork, the proposed R&D management approach as exemplified by the decision tree (Figure 3, Chapter 5) presents an illogical process for determining government and contract performance in R&D. Chapter 3 of the report defines two groups of factors for evaluating R&D. The first group of factors concern R&D activities that an agency must perform notwithstanding cost. These activities involve the performance of governmental responsibilities such as providing a "smart buyer" capability. The second group of factors involve other reasons, in addition to cost, for making government discretionary decisions to perform R&D activities internally or by contract. These reasons include, for example, the availability and capability of technical personnel. DOD does not agree to the serial

treatment of these two groups of factors as proposed in the decision tree. There is no rationale in first determining the required internal activity to perform government functions in R&D, and then in applying a further step to determine whether, for reasons in addition to cost, that activity should be contracted out. If an activity is a government function in R&D, then the activity should be excluded from further contracting out review procedures, commensurate with the A-76 treatment of other government functions.

DOD also disagrees with the Committee's recommended treatment of R&D activities which fall outside the scope of the predetermined government functions in R&D. The Committee proposes that these activities be subjected to the existing inventory and cost comparison requirements of Circular A-76. This proposal involves in-house activities not included as governmental functions. The circular, however, will extend coverage to all contracts exceeding \$100,000. This proposal fails to recognize the inappropriateness of cost comparisons as the sole criterion for selecting R&D performers, which has been a fundamental concern expressed by DOD. A-76 does not recognize the specific attributes of R&D contracts that result in the selection of performers through the use of criteria based on technically oriented factors as well as cost. Cost is always an important consideration, but it is rarely the dominant factor in R&D procurement decisions.

As noted, DOD is complying with the intent of Circular A-76 relative to R&D functions. Additional criteria and procedures are not necessary, and would be damaging to both DOD and the private sector. DOD reiterates

its recommendation that R&D be excluded from the provisions of Circular A-76. Applying A-76 to R&D will interfere with the capabilities of Defense to perform its mission and will add considerably to the technical and administrative burden of Defense's extensive R&D activities. There are no cost or technical benefits to be achieved by applying the provisions of A-76 to DoD's R&D program.

## Appendix A

Ad Hoc Interagency Committee  
on  
Application of OMB Circular A-76 to R&D  
of the  
Federal Coordinating Council for Science, Engineering, and Technology  
(FCCSET)

### CHARTER

#### BACKGROUND

In accordance with an agreement between the Administrator of the Office of Federal Procurement Policy (OFPP) and the Director of the Office of Science and Technology Policy (OSTP), R&D will be covered in OMB Circular A-76, but will only apply to "new starts" and "expansions," as defined in the revised Circular, pending development of criteria, guidelines and procedures. The formation of an interagency committee, under the auspices of FCCSET, has been agreed upon as the best mechanism to develop suggestions for A-76 R&D application criteria, guidelines and procedures. The committee will study the issue and report its findings and recommendations to the Administrator of OFPP and the Director of OSTP. After evaluation of the final report, a supplement to Circular A-76 addressing its specific application to R&D is contemplated by OFPP.

#### PURPOSE

To develop suggested criteria, guidelines and procedures for implementing OMB Circular A-76: "Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government," as it applies to research and development activities.

#### DEFINITIONS For the purpose of this Charter:

1. A government-owned, government-operated, (GOGO) facility or installation is one that is owned by the government and is operated by the government, in that it is managed by Federal civilian and/or military personnel with specific primary and support functions being carried out by either Federal personnel or by contract to non-Federal sources.
2. A government-owned, contractor-operated (GOCO) facility or installation is owned by the government but is managed and operated by contract to a non-Federal source.
3. A Federally funded research and development center (FFRDC) (including a Federal Contractor Research Center (FCRC) as designated by DOD) is a facility or installation that operates under a long-term contract with a Federal agency to perform or administer research and development. FFRDC's are administered by universities, by other non-profit institutions, by industrial firms, or by a consortia of such institutions. An FFRDC may or may not be a GOCO facility.

4. R&D core capability is the resource necessary for those R&D functions that are performed by Federal civilian or military personnel at GOCO facilities or installations and are needed for technical analyses and evaluation and technology base management and maintenance. Core capability does not include an agency's R&D activities that are contracted out to a GOCO facility, an FFRDC, a university, or an industrial firm.

#### PRIMARY OBJECTIVES

1. With regard to an "R&D core capability" for agencies which require in-house R&D capability:

a. Develop a detailed definition and explanation of R&D core capability within the framework of the definition given in 4. above.

b. Develop guidelines and criteria for the type and level of R&D effort that should be included in an agency's core capability.

c. Develop management procedures for determining and justifying an agency's R&D core capability. Procedures should include but not be limited to such items as initial determination, review, approval, updating, cataloging, reporting and monitoring.

2. Develop policy guidelines and criteria (in addition to cost) and management procedures for applying Circular A-76 to government R&D activities in excess of the core capability. The guidelines, criteria, and procedures should insure technical quality of the results, while meeting the basic policy of encouraging economy, competition, and reliance on the non-Federal sector. Moreover, guidelines, criteria, and procedures should recognize and allow differences, where necessary, when applying Circular A-76 to 1) existing R&D activities, 2) R&D new starts, 3) R&D expansions, and 4) the use by an agency of the capability of another agency.

#### SECONDARY OBJECTIVE

As the committee addresses the primary objectives of this study it will necessarily discuss the roles of GOCO's, FFRDC's, universities, and industrial firms in performing R&D. The committee will summarize and forward with its final report any suggestions related to the inter-relationships between these sources of government R&D and the government's R&D core capability.

#### STRUCTURE

The Ad Hoc Committee will be chaired by the National Aeronautics and Space Administration. The Secretary of the Committee will be designated by the Ad Hoc Committee Chairman. The Chairman can request additional staff assistance from the member agencies as required by the Committee.

The following departments and agencies are represented on the Committee:

1. Members:

Department of Agriculture  
Department of Commerce  
Department of Defense  
Department of Energy  
Department of Health, Education, and Welfare  
Department of the Interior  
Department of Transportation  
Department of Housing and Urban Development  
National Science Foundation  
Environmental Protection Agency  
National Aeronautics and Space Administration  
Veteran's Administration

2. Ex Officio Members:

Office of Science and Technology Policy  
Office of Federal Procurement Policy

Other participation, as may be appropriate, will be by invitation of the Chairman. The Chairman may designate working groups, subcommittees or panels, as necessary.

SCHEDULE

1. The Committee will submit a working plan by April 15, 1979. The plan will indicate the study approach and significant milestones in the study.

2. The Administrator of OFPP and the Director of OSTP will be kept informed on the Committee's progress

3. The Committee will submit a final report by September 1, 1979.

ANNUAL COST ESTIMATE

Estimated annual cost of operating the Committee, excluding staff support is \$20,000. Estimated annual support is six person-months to be provided primarily by NASA, OFPP, and OSTP.

COMPENSATION

All members are full-time government employees who are allowed reimbursement for travel expenses by their agencies plus per diem or subsistence while serving away from their duty stations in accordance with standard government travel regulations.

TERMINATION DATE

The Ad Hoc Interagency Committee on Application of OMB Circular A-76 to R&D will terminate not later than October 31, 1979, unless specifically renewed by the Chairperson of FCCSET.

DETERMINATION

I hereby authorize the formation of the Ad Hoc Interagency Committee on Application of OMB Circular A-76 to R&D as being in the public interest in connection with the performance of duties imposed on the Executive Branch by law, and determine that such duties can best be performed through the advice and counsel of such a group.

Approved:

April 9, 1979

Date

A handwritten signature in cursive script, appearing to read "Frank Press", written over a horizontal line.

Chairman, FCCSET

Appendix B

AD HOC INTERAGENCY COMMITTEE ON THE  
APPLICATION OF OMB CIRCULAR A-76 TO R&D

| <u>Department/Agency</u>           | <u>Name/Title</u>                                                                                                                                                                                                                                                          |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CHAIRMAN<br>(NASA)                 | Mr. Gerald Griffin, Deputy Director,<br>Kennedy Space Center                                                                                                                                                                                                               |
| SECRETARY<br>(NASA)                | Mr. E. D. "Kam" Kersey, Office of<br>Management Operations                                                                                                                                                                                                                 |
| Agriculture                        | Dr. Hugo O. Graumann, Chief Scientist,<br>Science and Education Administration                                                                                                                                                                                             |
| Defense                            | Dr. George P. Millburn, Technical<br>Assistant to the Deputy Under Secretary<br>of Defense for Research and Advanced<br>Technology<br><br>Dr. George Gamota, Assistant for<br>Research to the Deputy Under Secretary<br>of Defense for Research and Advanced<br>Technology |
| Energy                             | Ms. Kris Forsberg, Director, Office of<br>Policy and Analysis Coordination,<br>Office of Energy Research                                                                                                                                                                   |
| Environmental<br>Protection Agency | Mr. Alan Neuschatz, Deputy Director<br>for Operations, Office of Resource<br>Program Management, Office of Research<br>and Development                                                                                                                                     |
| Health, Education<br>and Welfare   | Mr. Fred Bohen, Assistant Secretary<br>for Management and Budget<br><br>Dr. Lowell T. Harmison, Science<br>Advisor, Office of Environmental<br>Affairs, Office of Assistant Secre-<br>tary for Health                                                                      |
| Housing and Urban<br>Development   | Mr. Charles Taylor, Director, Division<br>of Budget, Contracts and Control, Office<br>of Policy Development and Research                                                                                                                                                   |
| Interior                           | Dr. Rue Harris, Acting Assistant<br>Director, Program Development and<br>Evaluation, Bureau of Mines                                                                                                                                                                       |

| <u>Department/Agency</u>                                             | <u>Name/Title</u>                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interior (cont'd)                                                    | Mr. James C. Poole, Chief, Management Evaluation Section, Management Analysis Branch, U.S. Geological Survey                                                                                                                                                                                  |
| National Aeronautics and Space Administration                        | Mr. Charles Tulip, Jr., Assistant Director, Institutional Operations Division, Office of Management Operations                                                                                                                                                                                |
| National Bureau of Standards                                         | Dr. Thomas A. Dillon, Deputy Director<br>Mr. Raymond Kammer, Associate Director for Programs, Budget and Finance                                                                                                                                                                              |
| National Institutes of Health                                        | Mr. George F. Russell, Jr., Director, Division of Management Policy                                                                                                                                                                                                                           |
| National Oceanic and Atmospheric Administration                      | Mr. Walter Telesetsky, Director, Programs and Technology Development Office, Office of Assistant Administrator for Research and Development<br>Dr. David J. Drew, Program Analyst, Programs and Technology Development Office, Office of Assistant Administrator for Research and Development |
| National Science Foundation                                          | Mr. James E. Carpenter, Policy Analyst, Division of Scientific, Technological and International Affairs                                                                                                                                                                                       |
| Office of Science Technology Policy                                  | Dr. Richard A. Meserve, Senior Policy Analyst, Executive Office of the President                                                                                                                                                                                                              |
| Office of Federal Procurement Policy/Office of Management and Budget | Mr. Fred Dietrich, Associate Administrator for Systems and Technology                                                                                                                                                                                                                         |
| Transportation                                                       | Mr. Edmund J. Richards, Acting Chief, Policy and Plans Division, Office of Policy, Plans and Administration, Research and Special Programs Administration                                                                                                                                     |
| Veterans Administration                                              | Dr. Lawrence B. Hobson, Deputy Assistant Chief Medical Director for Research and Development                                                                                                                                                                                                  |

## Appendix C

### CATEGORIES OF INTERNAL R&D ACTIVITIES

A. The Performance of Agency Mission-Oriented Studies, Technical Analysis and Evaluation. An agency must be capable of analyzing its mission areas, goals and objectives and the various approaches to satisfying its mission requirements. In addition, an agency must be in a position to evaluate its performance in meeting mission objectives and be able to identify and manage opportunities and options for meeting current and future requirements. The majority of R&D agency operating philosophies indicate that the required technical and managerial capability is best provided through direct "hands-on" participation in R&D activities by Government employees of the respective agencies. Table 4 of Chapter 2 shows that 91% of the Federal laboratories are staffed with Government employees. The insight, current technical skills and judgment resulting from the direct involvement in meeting R&D requirements is the cornerstone of an agency's technical and managerial ability to get the job done.

B. The Development, Management and Maintenance of Agency-Specific R&D Expertise for Long Term Needs. The mission for the various R&D agencies, as assigned by the Congress through enabling legislation, dictate specific technical expertise requirements. The broad spectrum of R&D activities necessitated by the agency mission in national defense, public health, energy, transportation,

space and aeronautics, and agriculture, for instance, require specific applications of the technologies and disciplines from which scientific and engineering personnel evolve through academia. These same technologies and disciplines are also the wellspring of private sector scientists and engineers. The applications within the private sector, however, are equally specific. The private sector R&D enterprise is typically short-term and product and profit oriented as opposed to the longer term mission orientation of Government R&D activities. Meeting these longer term agency mission objectives requires many specific applications of technology, often times in unique facilities. Their performance by Government employees guarantees the availability and stability of R&D outputs that are an integral part of the agency's mission.

In some agencies, notably the VA and the Public Health Service, the opportunity to do research has been used as an inducement in recruiting and retention of such personnel as skilled physicians and dentists whose chief function is the care of patients. An internal R&D staff as well as related facilities are necessary for the performance of such research.

#### C. The Performance of Independent Test and Evaluation.

The requirement for independent testing and evaluation arises primarily from two areas of Government R&D activities: systems development and regulatory functions.

At several stages during the course of major systems development (particularly weapon systems), there exists a requirement for user-oriented independent tests and evaluation. The primary focus of such testing activities is to provide an unbiased determination of the performance characteristics of the proposed system prior to commitment to further stages of development or production. There is also a requirement for testing and evaluating production activities as well as periodic test and evaluation of stockpiled systems. Similar testing requirements exist for system development as the performance of subsystem components is verified before attempts at total system integration. This mode of testing and evaluation seeks to remove the bias of both Government-sponsor organizations and the potential private sector suppliers and was encouraged by the Commission on Government Procurement.<sup>22/</sup>

For regulatory functions, independent test and evaluation serves two purposes. First, the relevant technical parameters of the commodities and/or processes to be regulated must be evaluated to determine the acceptable boundaries for compliance as the regulations are drafted. In many cases new measurement methods and hardware must be developed to assure that both the public and private sectors can discern and abide by the ground rules of the proposed regulation. Second is the actual test and evaluation

---

<sup>22/</sup> Commission on Government Procurement (1972), Summary, p. 47.

required to determine and document compliance with the regulation in question. Federal employee participation is necessary in both instances because qualified non-Federal sources independent of the individuals and organizations being regulated are often not available.

D. Support of the Acquisition and Assistance Process, i.e., Providing a "Smart Buyer" Capability. Being a smart buyer of products and services for the Government has long been recognized as a proper role for Government employees. The Commission on Government Procurement, <sup>23/</sup> and the Bell Report <sup>24/</sup> recognized the requirement for the Government to be a smart buyer of products and services. The acquisition of R&D for the Government and the attendant assistance programs require a significant investment in technical capability in order to meet mission objectives. The personnel performing Government functions in R&D provide the capability for functional specification preparation, proposal selection, evaluation and technical monitoring, technical direction and in many cases, systems engineering/integration. Since the conduct of most Government R&D involves the intermingling of both Federal and non-Federal performers through acquisition and assistance, the scope of expertise required must not only encompass experience in performing R&D but must also include knowledge of the capability of the relevant non-Federal performers and the ability to apply the most effective combination of performers to the task at hand. The majority of

---

<sup>23/</sup> Ibid, Volume 2, p. 13.

<sup>24/</sup> Report to the President on Government Contracting for Research and Development, S. Doc. No. 94, 87th Congress, 2nd Session (1962), p. 15-16.

agency operating modes again indicate that "hands-on" R&D experience is the best means to ensure smart acquisition and assistance. In addition, Executive policy in the form of OMB Circular A-109, "Major Systems Acquisition," requires an agency to have a substantial R&D capacity for the evaluation of mission requirements and the test and evaluation of systems proposed in the acquisition process. <sup>25/</sup>

E. The Maintenance of a Corporate Memory in Agency-Specific R&D. The successful results of R&D activities are recorded in journals, reports and books and are archived for posterity. The failures in R&D activities all too often are documented only in the memories of the scientists, engineers and technicians involved in their conduct. Maintaining a corporate memory of lessons learned the hard way is, therefore, an important aspect of the Government function in R&D. The unsuccessful approaches to technical tasks, the negative results of experiments and the poor performance of facility or equipment configurations are expensive and time-consuming lessons learned. The participation of Federal employees assures the continuity necessary to avoid the repetition of such experiences.

On the positive side, the corporate memory also retains the knowledge of successful informal interactions with outside organizations and successful management approaches; another area that is typically not well documented.

---

<sup>25/</sup> OMB Circular No. A-109, Major Systems Acquisition, April 5, 1976, Paragraph 10c.

F. The Maintenance of a Capability to Respond to Agency Emergencies, Troubleshooting Requirements and Quick Reaction Situations. All R&D agencies are frequently called upon to respond quickly to unforeseen, emergency situations. Such situations often do not provide sufficient time to allow the Government acquisition processes to occur. In addition, it is not possible to predict the expertise required since the problems themselves are varied and unforeseen. Federal agencies provide this quick response capability through the existence of an R&D capability staffed by Federal personnel with the appropriate skills to provide such expertise in the event the need arises. This capability is not retained as an excess capability, available only in the event of an emergency, but rather, consists of the personnel required for Government functions in R&D defined by the other activities discussed. It is available, however, to provide a ready technical capability for situations of an emergency nature.

G. Internal Performance Clearly Intended by the Congress. In many instances by legislative history (hearing records, Committee reports or floor records) and in fewer cases by public law the Congress has clearly intended the performance of R&D by Government personnel. It would have been impossible for the Committee to research every agency's legislative history and pertinent public law, but a cursory review of Congressional history related to DOD, DOA, HEW and NASA left little doubt that there are many cases where

the Congress intends for those agencies to carry out certain Government functions in R&D. The Congress has generally left the determination of performers to the discretion of the Executive Branch, except where they have indirectly controlled it by setting dollar limitations in certain budget categories related to internal or external expenditures of funds.

H. Government Personnel Required to Staff Large and/or Unique National R&D Facilities. In many instances, agencies of the Federal Government provide large and/or unique facilities used extensively by the private sector, university personnel, and other Government staff. These facilities are frequently so massive in terms of capital investment, risk of an adequate return or the size of the potential user community that no single company is in a position to assume the responsibility for their development and use. If an attempt is made to locate such facilities where they mesh with the ongoing programs of an agency, both the facility and associated staff will be maintained at the state-of-the-art. The decision to provide new facilities of this nature generally falls outside the A-76 process, being more related to the budget process and Congressional prerogative. Once established, however, the operating mode of such facilities may become subject to A-76 policy. The role played by Government employees associated with such facilities will vary as a function of agency operating philosophy, the relationship of the facility to the agency mission, and the nature of the programs conducted in the facility.



**EXECUTIVE OFFICE OF THE PRESIDENT**  
**OFFICE OF MANAGEMENT AND BUDGET**  
 WASHINGTON, D.C. 20503

March 29, 1979

CIRCULAR NO. A-76

Revised

Transmittal Memorandum No. 4

**TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS**

**SUBJECT: Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government**

Transmitted herewith is a revision of Office of Management and Budget Circular A-76, which replaces Transmittal Memorandum No. 1, dated August 30, 1967, Transmittal Memorandum No. 2, dated October 18, 1976, and Transmittal Memorandum No. 3, dated June 13, 1977.

The revised Circular (1) reaffirms the Government's general policy of reliance on the private sector for goods and services, while recognizing that (2) certain functions are inherently governmental in nature and must be performed by Government personnel, and (3) relative cost must be given appropriate consideration in decisions between in-house performance and reliance on private commercial sources. The balanced approach in this revised Circular is designed to achieve consistent policy implementation in all agencies, equitable treatment of all parties, and improved economy and efficiency in providing goods and performing services needed by the Government.

To support the increased emphasis on relative economy of Government and contract performance, a comprehensive Cost Comparison Handbook is provided as a supplement to the Circular. This Handbook is to be used by all agencies in conducting comparative cost analyses. The Handbook provides instructions for determining the total cost to Government for each alternative and will provide a more accurate basis for cost-based decisions.

This revision of Circular A-76 is the result of an extensive review of the Circular and its implementation by executive agencies, and careful consideration of all comments submitted on the draft revision that was published in August 1978. Many of those comments were accommodated through clarification and refinement of the draft. Supplementary guidance on special subjects will be developed as needed.

Application to R&D Activities

Some concern was expressed over the potential impact of the application of this Circular to Government R&D activities. While agencies with a need for in-house R&D capability can consider a "core capability" in this area as a "governmental function," additional guidance is needed to ensure some consistency in determining and justifying the size of that core capability and applying the Circular to R&D requirements, in excess of that level of capacity.

An interagency committee jointly sponsored by the Office of Federal Procurement Policy and the Office of Science and Technology Policy, has been established under the Federal Coordinating Council for Science, Engineering, and Technology, to study these issues and recommend guidelines for appropriate and uniform agency implementation. Supplemental guidance addressing R&D activities will then be developed and, after public review and comment, be issued as an amendment to the Circular. In the interim, compliance with this Circular and the periodic review of inventoried R&D activities are to be deferred for one year pending completion of the study, except for new starts and expansions, as defined in the Circular. Additional guidance will be provided on determining justified "core capability" and applying the policy to other R&D requirements to assure that essential in-house capability is maintained, and that the Government and taxpayers' interests are properly considered in contract versus in-house decisions.

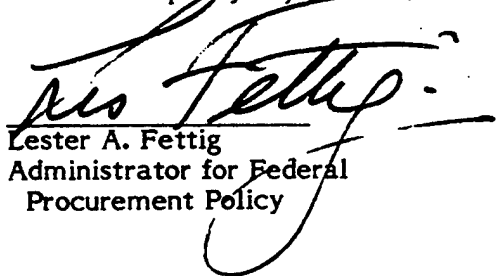
#### Government-Owned Contractor-Operated Activities

Government-owned, contractor-operated (GOCO) activities were excluded from prior issuances of the Circular. A comprehensive review of all GOCO activities is necessary to determine whether they can be completely treated under the terms of this Circular. In the interim, this Circular is to be applied only to new starts and expansions of Government-owned equipment and facilities.

#### Personnel Ceilings

The relationship between Circular A-76 and agency personnel ceilings was reviewed in some detail and clarified in the Circular. While it is clearly specified that agencies will not use the Circular to contract out solely to meet personnel ceilings, it is equally clear that agencies will contract out when justified under the Circular regardless of the relationship between personnel levels and authorized ceilings. Conversely, contracts for activities that are shown to be justified for in-house performance will be terminated as quickly as in-house capability can be established; when the additional spaces required cannot be accommodated within the agency's personnel ceiling, a request for adjustment will be submitted to OMB in conjunction with the annual budget review process.

The Office of Management and Budget will monitor agency implementation of this revised Circular, providing guidance and interpretations as required. Further revisions and supplements will be issued as necessary in the future to achieve the policy objectives.

  
Lester A. Fettig  
Administrator for Federal  
Procurement Policy

  
James T. McIntyre, Jr.  
Director



**EXECUTIVE OFFICE OF THE PRESIDENT**  
**OFFICE OF MANAGEMENT AND BUDGET**  
WASHINGTON, D.C. 20503

March 29, 1979

**CIRCULAR NO. A-76**  
Revised

**TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS**

**SUBJECT: Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government**

1. Purpose. This Circular establishes the policies and procedures used to determine whether needed commercial or industrial type work should be done by contract with private sources or in-house using Government facilities and personnel. This Circular replaces OMB Circular No. A-76, dated August 30, 1967, and all subsequent amendments.

2. Background. In a democratic free enterprise economic system, the Government should not compete with its citizens. The private enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on competitive private enterprise to supply the products and services it needs.

This policy has been expressed in Bureau of the Budget Bulletins issued in 1955, 1957, and 1960. In 1966, Circular No. A-76 was issued and, for the first time, prescribed the policy and implementing guidelines in a permanent directive. The Circular was revised in 1967, by Transmittal Memorandum No. 1, to clarify some provisions and to lessen the burden of work by the agencies in implementation. Transmittal Memorandum No. 2 was issued in 1976, providing additional guidance on cost comparisons and prescribing standard cost factors for Federal employee retirement and insurance benefits.

In 1977, a comprehensive review of the Circular and its implementation was initiated. Transmittal Memorandum No. 3 was issued on June 13, 1977, announcing the review and temporarily reducing the Government retirement cost factor. This revision is the result of that review and careful consideration of comments from all interested parties.

3. Responsibility. Each agency head has the responsibility to ensure that the provisions of this Circular are followed. This Circular provides administrative direction to heads of agencies and does not establish, and shall not be construed to create, any substantive or procedural basis for any person to challenge any agency action or inaction on the basis that such action was not in accordance with this Circular, except as specifically set forth in Section 11 below.

4. Policy. This policy builds on three equally valid policy precepts:

a. Rely on the Private Sector. The Government's business is not to be in business. Where private sources are available, they should be looked to first to provide the commercial or industrial goods and services needed by the Government to act on the public's behalf.

b. Retain Certain Governmental Functions In-House. Certain functions are inherently governmental in nature, being so intimately related to the public interest as to mandate performance by Federal employees.

c. Aim for Economy; Cost Comparisons. When private performance is feasible and no overriding factors require in-house performance, the American people deserve and expect the most economical performance and, therefore, rigorous comparison of contract costs versus in-house costs should be used, when appropriate, to decide how the work will be done.

5. Definitions. For the purposes of this Circular:

a. A "Government commercial or industrial activity" is one which is operated and managed by a Federal executive agency and which provides a product or service that could be obtained from a private source. A representative, but not comprehensive, listing of such activities is provided in Attachment A. An activity can be identified with an organization or a type of work, but must be (1) separable from other functions so as to be suitable for performance either in-house or by contract; and (2) a regularly needed activity of an operational nature, not a one-time activity of short duration associated with support of a particular project.

b. An "expansion" is the modernization, replacement, upgrade, or enlargement of a Government commercial or industrial activity involving additional capital investment of \$100,000 or more, or increasing annual operating costs by \$200,000 or more; provided, the increase exceeds 20% of the total investment or annual operating cost. A consolidation of two or more activities is not an "expansion" unless the proposed total capital investment or operating cost exceeds the total from the individual activities by the amount of the threshold. An expansion which increases either capital investment or annual operating cost by 100% or more is a "new start."

c. A "conversion" is the transfer of work from a Government commercial or industrial activity to performance by a private commercial source under contract.

d. A "new start" is a newly-established Government commercial or industrial activity, including a transfer of work from contract to in-house performance. Also included is any expansion which would increase capital investment or annual operating cost by 100% or more.

e. A "private commercial source" is a private business, university, or other non-Federal activity, located in the United States, its territories and possessions, the District of Columbia, or the Commonwealth of Puerto Rico, which provides a commercial or industrial product or service required by Government agencies.

f. A "Governmental function" is a function which must be performed in-house due to a special relationship in executing governmental responsibilities. Such governmental functions can fall into several categories:

(1) Discretionary application of Government authority, as in investigations, prosecutions and other judicial functions; in management of Government programs requiring value judgments, as in directing the national defense; management and direction of the Armed Services; conduct of foreign relations; selection of program priorities; direction of Federal employees; regulation of the use of space, oceans, navigable rivers and other natural resources; direction of intelligence and counter-intelligence operations; and regulation of industry and commerce, including food and drugs.

(2) Monetary transactions and entitlements, as in Government benefit programs; tax collection and revenue disbursements by the Government; control of the public treasury, accounts, and money supply; and the administration of public trusts.

(3) In-house core capabilities in the area of research, development, and testing, needed for technical analysis and evaluation and technology base management and maintenance. However, requirements for such services beyond the core capability which has been established and justified by the agency are not considered governmental functions.

#### 6. Scope.

a. No executive agency will engage in or contract for commercial or industrial activities except in accordance with the provisions of this Circular, or as otherwise provided by law, including, for example, Title 44 of the U.S. Code.

b. The implementation provisions of this Circular do not apply to governmental functions as defined in paragraph 5(f). These functions must be performed in-house by Government personnel.

c. This Circular applies to the need for Government ownership in any "new start" or "expansion" of a Government-owned, contractor-operated (GOCO) facility.

d. Additional provisions are as follows:

(1) This Circular does not provide authority to enter into contracts. Guidelines governing contracts for goods and services are set forth in applicable acquisition regulations.

(2) This Circular will not be used as authority to enter into contracts which establish a situation tantamount to an employer-employee relationship between the Government and individual contract personnel. Additional guidance on this subject is provided in the Federal Personnel Manual issued by the Office of Personnel Management.

(3) This Circular will not be used to justify a conversion to contract solely to meet personnel ceilings or to avoid salary limitations. When in-house performance of a "new start" is justified under this Circular but cannot be accommodated within agency personnel ceilings, an appeal for necessary adjustment to implement this Circular agency-wide should be made to OMB in connection with the annual budget review process.

(4) Major system acquisitions are governed by the provisions of OMB Circular No. A-109, "Major System Acquisitions." Reliance on the private sector is one of the general policies contained in Circular A-109 to ensure competitive consideration of all alternatives before making a decision as to the best method of satisfying an agency mission need.

(5) This Circular does not apply to consulting services of a purely advisory nature relating to the governmental functions of agency administration and management and program management. Assistance in the management area may be provided either by Government staff organizations or from private sources, as deemed appropriate by executive agencies, in accordance with executive branch guidance on the use of consulting services.

(6) This Circular applies to printing and binding only in those agencies or departments which are exempted by law from the provisions of Title 44 of the U.S. Code.

(7) This Circular should not be applied when it would be contrary to law or inconsistent with the terms of any treaty or international agreement.

7. Use of Products and Services from Other Federal Agencies.

a. Excess property and services available from other Federal agencies should be used in preference to new starts or contracts, unless the needed product or service can be obtained more economically in the private sector. This is consistent with the Federal Property and Administrative Services Act of 1949 and related regulations.

b. When a commercial or industrial activity operated by an agency primarily to meet its own needs has excess capacity, that capacity can be used to provide products or services to other agencies.

(1) If a formal program is established for managing excess capacity, such as the ADP sharing program operated by GSA, capacity that has been reported as excess can be used by other agencies with no further justification. In the absence of a formal program and report of excess capacity, another agency's use of a Government activity must be justified in accordance with paragraph 8 of this Circular. When the cost justification is used, the agency requiring the product or service will solicit competitive bids or proposals to establish commercial costs, and award a contract when more economical. The prospective providing agency will prepare the Government cost estimate, in accordance with this Circular, for comparison with the commercial cost.

(2) It is not intended that agencies create or expand capacity for the purpose of providing commercially available products or services to other agencies. When the performing agency's own requirements increase, capacity used to support other agencies is no longer excess and should be used in preference to acquisition of additional capability. Consequently, agencies should not expand a commercial or industrial activity which is providing products or services to other agencies. The user agency (or agencies) should be informed, with sufficient notice to arrange alternative sources, that the support will be terminated unless exceptional circumstances prevent that agency from finding a new source.

c. In some cases, a commercial or industrial activity is operated for the primary purpose of providing a product or service to other agencies, such as the Federal Data Processing Centers or the Office of Personnel Management training centers. All such activities must be reviewed under this Circular to determine whether continued Government operation is justified. The review should be made at the earliest possible date, but under no circumstances later than October 1, 1981. Prior to that review, agencies may use the products and services available without further justification. When continued Government operation of the activity is approved, agencies may use the products or services provided, up to the level of capability approved, with no further justification. When expansion of such an activity is proposed, the justification for approval under this Circular can be based on the entire workload, including work for other agencies.

8. Government Operation of a Commercial or Industrial Activity. Government operation of a commercial or industrial activity may be authorized under one of the following conditions.

a. No Satisfactory Commercial Source Available.

(1) A Government commercial or industrial activity can be authorized without a comparative cost analysis when it is demonstrated that:

(a) There is no private commercial source capable of providing the product or service that is needed; or

(b) Use of a private commercial source would cause an unacceptable delay or disruption of an essential agency program.

(2) Before concluding that there is no private commercial source capable of providing the needed product or service, the agency must make all reasonable efforts to identify available sources.

(a) As a minimum, the agency must place at least three notices of the requirement in the Commerce Business Daily over a 90-day period. In the case of urgent requirements, publication in the Commerce Business Daily can be reduced to two notices over a 30-day period.

(b) Agencies' efforts to find satisfactory commercial sources, especially small and minority-owned businesses, should include obtaining assistance from the General Services Administration, Small Business Administration, and the Domestic and International Business Administration in the Department of Commerce.

(3) A conclusion that use of a commercial source would not be satisfactory because it would cause an unacceptable delay or disrupt an agency program requires a specific documented explanation.

(a) Delay or disruption must be spelled out specifically in terms of cost, time and performance measures.

(b) Disruption must be shown to be of a lasting or unacceptable nature. Transitory disruption caused by conversions are not sufficient grounds.

(c) In all cases, specific explanations must be documented. If it is known that the function has been performed by contract elsewhere or at another time, the justification must specify why circumstances are substantially different.

(d) The fact that an activity involves a classified program, or is part of an agency's basic mission, or that there is a possibility of a strike by contract employees is not an adequate justification for in-house performance of that activity. Urgency by itself is not an adequate reason for starting or continuing a Government commercial or industrial activity. It must be shown that commercial sources are not able and the Government is able to provide the product or service when needed.

b. National Defense.

(1) A Government commercial or industrial activity, operated by military personnel, may be justified when:

(a) The activity or military personnel assigned are utilized in or subject to deployment in a direct combat support role;

(b) The activity is essential for training in those skills which are exclusively military in nature; or

(c) The activity is needed to provide appropriate work assignments for career progression or a rotation base for overseas assignments.

(2) A Government commercial or industrial activity providing depot or intermediate level maintenance may be justified in accordance with criteria approved by the Secretary of Defense to ensure a ready and controlled source of technical competence and resources necessary to meet military contingencies. These criteria will limit the extent of in-house capability and capacity within the military departments for depot and intermediate maintenance support of mission-essential equipment to the minimum necessary to accomplish that objective. Justification under these criteria will require a detailed explanation, on a case-by-case basis, why the needed capability cannot be supplied by:

(a) A private commercial source; or

(b) Contract operation of Government-owned facilities.

Such justification must be approved at the military department assistant secretary level or equivalent in the defense agencies.

c. Higher Cost. A Government commercial or industrial activity may be authorized if a comparative cost analysis, prepared in accordance with paragraph 9 of this Circular, indicates that the Government can provide or is providing a product or service at a lower total cost than if it were obtained from a private commercial source.

9. Cost Comparisons. A decision for in-house performance based on economy must be supported by a comparative cost analysis prepared in accordance with this Circular and the supplementing Cost Comparison Handbook.

a. Common Ground Rules.

(1) Both Government and commercial cost figures must be based on the same scope of work and the same level of performance. This requires the preparation of a sufficiently precise work statement with performance standards that can be monitored for either mode of performance.

(2) Standard cost factors will be used as prescribed by the Cost Comparison Handbook and as supplemented by agencies for particular operations. It will be incumbent on each agency to defend any variations in costing from one case to another.

(3) Cost comparisons are to be aimed at full cost, to the maximum extent practical in all cases. All significant Government costs (including allocation of overhead and indirect costs) must be considered, both for direct Government performance and for administration of a contract.

(4) In the solicitation of bids or offers from contractors for workloads that are of a continuing nature, unless otherwise inappropriate, solicitations should provide for prepriced options or renewal options for the out-years. These measures will guard against "buy-in" pricing on the part of contractors. While recompetition also guards against "buy-ins," the use of prepriced or renewal options provides certain advantages such as continuity of operation, the possibility of lower contract prices when the contractor is required to provide equipment or facilities, and reduced turbulence and disruption.

(5) Ordinarily, agencies should not incur the delay and expense of conducting cost comparison studies to justify a Government commercial or industrial activity for products or services estimated to be less than \$100,000 in annual operating costs. Activities below this threshold should be performed by contract unless in-house performance is justified in accordance with paragraph 8.a. or b. However, if there is reason to believe that inadequate competition or other factors are causing commercial prices to be unreasonable, a cost comparison study may be conducted. Reasonable efforts should first be made to obtain satisfactory prices from existing commercial sources and to develop other competitive commercial sources.

(6) The cost comparison will use a rate of 10% per annum as the opportunity cost of capital investments and of the net proceeds from the potential sale of capital assets, as prescribed in the Cost Comparison Handbook.

b. Calculating Contract Costs.

(1) The contract cost figure must be based on a binding firm bid or proposal, solicited in accordance with pertinent acquisition regulations. Bidders or offerors must be told that an in-house cost estimate is being developed and that a contract may or may not result, depending on the comparative cost of the alternatives.

(2) The factor to be used for the Government's cost of administering contracts, in addition to other costs of using contract performance as specified in the Handbook, is 4% of the contract price or expected cost.

c. Calculating Costs of Government Operation.

(1) Each agency should assure that Government operations are organized and staffed for the most efficient performance. To the extent practicable and in accordance with agency manpower and personnel regulations, agencies should precede reviews under this Circular with internal management reviews and reorganizations for accomplishing the work more efficiently, when feasible.

(2) The Government cost factor to be used for Federal employee retirement benefits, based on a dynamic normal cost projection for the Civil Service Retirement Fund, is 20.4%.

(3) The Government cost factor to be used for Federal employee insurance (life and health) benefits, based on actual cost, is 3.7%.

(4) The Government cost factor to be used for Federal employee workmen's compensation, bonuses and awards, and unemployment programs is 1.9%.

d. An existing in-house activity will not be converted to contract performance on the basis of economy unless it will result in savings of at least 10% of the estimated Government personnel costs for the period of the comparative analysis.

e. A "new start" will not be approved on the basis of economy unless it will result in savings compared to contract performance at least equal to 10% of Government personnel costs, plus 25% of the cost of ownership of equipment and facilities, for the period of the comparative analysis.

f. All cost comparisons must be reviewed by an activity independent of the cost analysis preparation to ensure conformance to the instructions in the Cost Comparison Handbook.

10. Administering the Policy.

a. Implementation.

(1) Each agency will designate an official at the assistant secretary or equivalent level, and officials at subordinate contact points for major components, to have overall responsibility for implementation of this Circular within the agency.

(2) Each agency will establish one or more offices as central points of contact to maintain cognizance of specific implementation actions. These offices will have access to all decision documents and data pertinent to actions taken under the Circular and will respond, in a timely manner, to all requests concerning inventories, schedules, reviews, and results of reviews. In considering requests which include information supplied by contractors or prospective contractors, agencies will be guided by OFPP Policy Letter No. 78-3, "Requests for Disclosure of Contractor-Supplied Information Obtained in the Course of a Procurement."

(3) Within 90 days after the date of issuance, each agency will promulgate this Circular, with the minimum necessary internal instructions, identifying the designated official and the central and subordinate contact points. When issued, copies of the internal instructions will be forwarded to OMB's Office of Federal Procurement Policy for review. Copies of subsequent changes will also be forwarded for rev. w.

(4) Each agency will recognize that work for the Federal Government may be performed by use of military personnel, civilian employees, and contract services, and that past experience demonstrates that all three methods have been responsive and dependable in performing sensitive and important work.

(5) Each agency will ensure that contracts awarded as a result of reviews under Circular A-76:

(a) Contain all applicable clauses and provisions related to equal employment opportunities, veterans' preference, and minimum wages and fringe benefits, including implementation of OFPP Policy Letter No. 78-2, dated March 29, 1978, relating to "wage busting;"

(b) Include a provision, consistent with Government post employment conflict of interest standards, that the contractor will give Federal employees, displaced as a result of the conversion to contract performance, the right of first refusal for employment openings on the contract in positions for which they are qualified;

(c) Are awarded to a responsible and responsive bidder or offeror, as required by applicable acquisition regulations; and

(d) Are administered and monitored to achieve proper performance, using appropriate contractual remedies any time performance is less than satisfactory.

(6) Each agency will exert maximum effort to find suitable employment for any displaced Federal employees, including:

(a) Giving them priority consideration for suitable positions with the Government;

(b) Paying reasonable costs for training and relocation when these will contribute directly to placement;

(c) Arranging for gradual transition when conversions are made to provide greater opportunity for attrition and placement; and

(d) Coordinating with the Department of Labor and other agencies to obtain private sector employment for separated workers.

(7) Each agency will provide for alterations to the mode of performance to be timed in consonance with, and adjusted for, the budget process to the extent required and consistent with the firm bid cost study approach.

b. Inventories. Each agency will immediately compile a complete inventory of all commercial and industrial activities subject to this Circular.

(1) Agencies will prepare and maintain a complete inventory of all individual commercial or industrial activities (as defined in paragraph 5.a.), which they operate. In addition to general descriptive information, the inventory should include for each activity: the amount of the Government's capital investment, the annual cost of operation, the date the activity was last reviewed, and the basis on which the activity is being continued under this Circular. The inventory will be updated at least annually to reflect the results of reviews as conducted.

(2) Agencies will also prepare and maintain an inventory of all contracts in excess of \$100,000 annually, except those awarded under a duly authorized set aside program, for services which the agency determines could reasonably be performed in-house, including any activities that have been converted from in-house to contract performance. In addition to general descriptive information, the inventory will include: the contract number, name of the contractor, contract period, period of any options, and the total contract price or estimated cost. Inventory updates will reflect exercise of options and the termination and award of contracts.

c. Reviews. Agencies will prepare a detailed schedule for the review of each commercial or industrial activity and contract in the inventory to determine if the existing performance, in-house or contract, continues to be in accordance with the policy and guidelines of this Circular. The flow chart provided as Attachment B demonstrates the sequence of actions required for proper implementation of the Circular.

(1) The schedule for review of in-house commercial and industrial activities will provide for review of all activities during the three-year period following issuance of this revised Circular. Consideration should be given first to criteria that do not concern cost. Unless continuation is justified under paragraphs 8.a. or b., a cost comparison must be conducted to determine the relative cost of Government and private performance.

(2) The schedule for review of contracts will show the date that each contract (including options) will expire, and the date that the requirement will be reviewed to determine if contract performance is to be continued. The agency will review the contract cost and determine whether it is likely that the work can be performed in-house at a cost that is less than contract performance by 10% of Government personnel costs plus 25% of the cost of ownership of equipment and facilities. When this is determined to be likely, a cost comparison will be conducted.

(3) Both schedules will be completed and provided to the Office of Federal Procurement Policy, OMB, within 120 days of the date of issuance of this Circular. These schedules will be made available by the agency to all potentially affected employees and their representatives, and published for the information of contractors.

(4) Reviews will be conducted in accordance with the schedules, unless it is determined that a change in the schedule will be in the best interest of the Government. In such cases, after approval by the agency head or his designee, the schedule can be revised with 60 days notice to all affected parties.

(5) After the initial review, activities approved for continuation will be reviewed again at least once every five years. When it is determined by the agency head or his designee that the circumstances which supported the initial approval are not subject to change, subsequent reviews may be waived. These activities will be retained in the inventory, however, and so identified. A copy of the justification and the waiver will be made available to all interested parties upon request to the agency contact point.

(7) When the number of commercial and industrial activities and the number of covered contracts is so great that reviews cannot be completed in the prescribed time period, the agency may request approval from the Office of Federal Procurement Policy, OMB, to schedule the reviews over a longer period.

d. New Starts.

(1) A new start should not be initiated by an executive agency unless the justification for establishing the activity under the provisions of this Circular has been reviewed and approved by a senior official of the agency. A new start which involves a capital investment or annual costs of \$500,000 or more must be approved by the agency head or by an official at the assistant secretary or equivalent level.

(2) The actions to be taken under this Circular should normally be completed before the agency's budget request is submitted to OMB. Data in support of such budget requests will be submitted in accordance with OMB Circular No. A-11. In the case of a proposed new start involving a major capital investment where the item to be acquired requires a long lead time (e.g., ADP system, building), approval of budget resources will not constitute OMB approval of that method of meeting the agency need. A final determination to initiate the new start or to rely on a private commercial source, within the resources approved, will be made in accordance with this Circular and other applicable policies, prior to any commitment to a particular acquisition strategy.

(3) When Government ownership of facilities is necessary, the possibility of contract operation must be considered before in-house performance is approved as a new start. If justification for Government operation is dependent on relative cost, the comparative cost analysis may be delayed to accommodate the lead time necessary for acquiring the facilities.

(4) When in-house performance to meet a new requirement is not feasible, or when contract performance would be under an authorized set-aside program, a contract can be awarded without conducting a comparative cost analysis.

e. Set-Aside Programs

(1) It is the general policy of the Government, as expressed in the Small Business Act, to ensure that small businesses, including those owned and managed by disadvantaged persons, receive a fair share of Government contract awards.

(2) Consequently, contracts awarded under authorized set-aside programs will not be reviewed for possible in-house performance. Additionally, new requirements which would be suitable for award under a set-aside program should be satisfied by such a contract without a comparative cost analysis.

(3) On the other hand, in-house activities (in excess of \$100,000 annually) will not be considered for performance under a set-aside contract except when the conversion is justified by a comparative cost analysis.

11. Appeals.

a. Each agency will establish a procedure for an informal administrative review of determinations made under this Circular. This procedure will only be used to resolve questions of the determination between contract and in-house performance, and will not apply to questions concerning award to one contractor in preference to another contractor. Upon written request from a directly affected party raising a specific objection, the appeals procedure will provide for:

(1) An independent, objective review of the initial determination and the rationale upon which the decision was based.

(2) An expeditious determination, within 30 days, made by an official at the same or higher level than the official who approved the original decision.

b. The appeals procedure is to provide an administrative safeguard to assure that agency decisions are fair, equitable, and in accordance with established policy. This procedure does not authorize an appeal outside the agency or a judicial review.

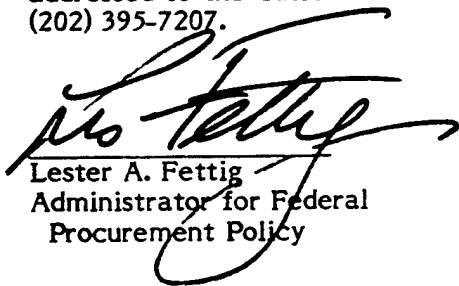
c. Since the appeal procedure is intended to protect the rights of all affected parties -- Federal employees and their representative organizations, contractors and potential contractors, and contract employees and their representatives -- the procedure and agency determinations may not be subject to negotiation, arbitration, or agreements with any one of those parties. Agency decisions are final.

d. Agency appeal procedures, when issued, will be submitted to OFPP for review pursuant to paragraph 10.a.(3).

12. Effective Date.

This Circular is effective May 1, 1979, but need not be applied to studies in process where a solicitation for contract bids or proposals was issued prior to the effective date.

Questions or inquiries about this Circular or its implementation should be addressed to the Office of Federal Procurement Policy, OMB, telephone number (202) 395-7207.

  
Lester A. Fettig  
Administrator for Federal  
Procurement Policy

  
James T. McIntyre, Jr.  
Director

## Appendix E

### TABLE OF ABBREVIATIONS

|       |                                                     |
|-------|-----------------------------------------------------|
| CPSC  | - Consumer Product Safety Commission                |
| DOA   | - Department of Agriculture                         |
| DOC   | - Department of Commerce                            |
| DOD   | - Department of Defense                             |
| DOE   | - Department of Energy                              |
| DOI   | - Department of Interior                            |
| DOJ   | - Department of Justice                             |
| DOT   | - Department of Transportation                      |
| EPA   | - Environmental Protection Agency                   |
| FFRDC | - Federally Funded Research and Development Centers |
| GOCO  | - Government-Owned/Contractor-Operated              |
| GOGO  | - Government-Owned/Government-Operated              |
| GSA   | - General Services Administration                   |
| HEW   | - Health, Education and Welfare                     |
| HUD   | - Housing and Urban Development                     |
| NASA  | - National Aeronautics and Space Administration     |
| NIH   | - National Institutes of Health                     |
| NSF   | - National Science Foundation                       |
| NRC   | - Nuclear Regulatory Commission                     |
| OMB   | - Office of Management and Budget                   |
| R&D   | - Research and Development (see footnote 3)         |
| RDT&E | - Research, Development, Test and Evaluation        |
| SI    | - Smithsonian Institute                             |

Table of Abbreviations (cont'd)

TVA - Tennessee Valley Authority  
UMTA - Urban Mass Transit Administration  
USCG - United States Coast Guard  
VA - Veterans Administration

## Appendix F

### LIST OF REFERENCES

Basic Research in the Mission Agencies, Report of the National Science Board 1978, NSB-78-1, Washington, DC, GPO, 1978.

Busch, Gerald A., How Industry Sees Use of Federal Laboratories, Speech given to the Federal Laboratory Consortium, October 20, 1977.

Commission on Government Procurement, Summary of the Report and Four Volumes, Washington, DC, GPO, 1972.

Department of Defense Authorization Act, Fiscal Year 1980, H.R. Rep. No. 96-166, 96th Congress, 1st Session (1979) Washington, DC, GPO.

Development of a National Make-or-Buy Strategy--Progress and Problems, General Accounting Office, (PSAD-78-118, September 25, 1978).

The DOD Laboratory Utilization Study, Office of the Director of Defense Research and Engineering, Washington, DC, April 1975.

Federal Funds for Research, Development and Other Scientific Activities--Fiscal Years 1976, 1977, and 1978, National Science Foundation Report No. NSF-78-300, Washington, DC, GPO, December 1977.

Federal Personnel Manual Letter, No. 300-8, Contracting for Personal Services, United States Civil Service Commission, Washington, DC, 1967.

Federal Personnel Manual Letter No. 300-12, Support Service Contracts and Federal Personnel Laws, United States Civil Service Commission, Washington, DC, 1968.

Federally Funded Research and Development Centers, OMB Orientation Memorandum, November 3, 1978.

Fettig, Lester A., Statement to House Armed Services Subcommittee on Research and Development, Washington, DC, April 10, 1978.

Final Report: Utilization of Resources II, Commission on Government Procurement--Study Group #1, Washington, DC, January 1972.

Government Competition with Industry--Time for a Change, Aerospace Industries Association of America Inc., Electronic Industries Association, National Security Industrial Association, Washington, DC, June 1974.

Hahn, K. Robert, Statement to House Armed Services Subcommittee on Research and Development, Washington, DC, April 13, 1978.

Haveman, Joel, When the Government Lets Somebody Else Do Its Job, "National Journal," September 10, 1977.

Investigative Report on Utilization of Federal Laboratories, Hearings Before the Agriculture and Related Agencies Subcommittee of the House Appropriations Committee, 96th Congress, 2nd Session, Part 2 (1978), Washington, DC, GPO.

National Patterns of R&D Resources, National Science Foundation Report No. NSF-78-313, Washington, DC, GPO, October 1978.

Office of Management and Budget Circular A-109, H.R. Rep. No. 96-76, 95th Congress, 1st & 2nd Session (1977-78), Washington, DC, GPO.

OFPP Pamphlet No. 1, Major Systems Acquisition, August 1976.

OMB Bulletin 78-11, Guidelines for the Use of Consulting Services, May 5, 1978.

OMB Circular No. A-11, Preparation and Submission of Budget Estimates, May 1978.

OMB Circular No. A-49, Use of Management and Operating Contracts, February 25, 1959.

OMB Circular No. A-76, Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government, Supplement No. 1: Cost Comparison Handbook, March 1979.

OMB Circular No. A-109, Major Systems Acquisition, April 5, 1976.

Performance Measures for Research and Development, Federal Council for Science and Technology, May 1973, Washington, DC.

Policy and Guidelines on Contracting-Out the Government's Requirements for Science and Technology, Minister of Supply and Services Canada, Ottawa, Canada, 1977.

R&D in the Federal Budget--R&D Industry and the Economy, Colloquium Proceedings of the American Association for the Advancement of Science, June 20-21, 1978, AAAS Rep. No. 78-R-3, Washington, DC, September 1978.

R&D Spending at 683 Companies: Another Record Year, "Business Week," July 2, 1979.

Report on the Federal R&D Program--FY 1976, Federal Council for Science and Technology, Washington, DC, GPO, February 1975.

Report to the President on Government Contracting for Research and Development, S. Doc. No. 94, 87th Congress, 2nd Session (1962), Washington, DC, GPO.

Source Evaluation Board Manual, NHB 5103.6A, National Aeronautics and Space Administration, Washington, DC, GPO, December 1975.

Special Analysis L - Budget of the United States Government - Fiscal Year 1980, Washington, DC, GPO, 1979.

Trends in Government Contracting--Growth of Intramural Activity, Aerospace Industries Association of America Inc., Washington, DC, December 1974.

**NTIS does not permit return of items for credit or refund. A replacement will be provided if an error is made in filling your order, if the item was received in damaged condition, or if the item is defective.**

**Reproduced by NTIS  
National Technical Information Service  
U.S. Department of Commerce  
Springfield, VA 22161**

**This report was printed specifically for your order from our collection of more than 2 million technical reports.**

For economy and efficiency, NTIS does not maintain stock of its vast collection of technical reports. Rather, most documents are printed for each order. Your copy is the best possible reproduction available from our master archive. If you have any questions concerning this document or any order you placed with NTIS, please call our Customer Services Department at (703) 387-4660.

Always think of NTIS when you want:

- Access to the technical, scientific, and engineering results generated by the ongoing multibillion dollar R&D program of the U.S. Government.
- R&D results from Japan, West Germany, Great Britain, and some 20 other countries, most of it reported in English.

NTIS also operates two centers that can provide you with valuable information:

- The Federal Computer Products Center - offers software and datafiles produced by Federal agencies.
- The Center for the Utilization of Federal Technology - gives you access to the best of Federal technologies and laboratory resources.

For more information about NTIS, send for our FREE NTIS Products and Services Catalog which describes how you can access this U.S. and foreign Government technology. Call (703) 487-4650 or send this sheet to NTIS, U.S. Department of Commerce, Springfield, VA 22161. Ask for catalog, PR-827.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
Telephone \_\_\_\_\_

**- Your Source to U.S. and Foreign Government  
Research and Technology**