

DEPARTMENT OF DEFENSE  
SYSTEMS ACQUISITION MANAGEMENT

CONGRESSIONAL CRITICISM AND CONCERN



BY MR. JOHN J. BENNETT

REPRINT

DEPARTMENT OF DEFENSE SYSTEMS ACQUISITION

MANAGEMENT: CONGRESSIONAL CRITICISM AND CONCERN

by

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Master of Business Administration, 1961

Michigan State University

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A Dissertation Submitted to the School of Government and  
Business Administration of The George Washington University  
in Partial Fulfillment of the Requirements for the Degree of  
Doctor of Business Administration

May, 1974

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## TO THE READER

This dissertation report, written independently but in cooperation with the Defense Systems Management School, is forwarded to you as a matter of interest because of your role or close relationship to federal government systems acquisition management. The author is a retired United States Air Force Colonel with extensive government and civilian experience in system management as well as education in systems theory. He is currently performing consulting engagements and teaching a course at a local university in systems procurement and project management.

The objective of the research effort was to analyze congressional material over an extended period of time (1967 through 1972), identifying the extent of congressional concern and criticism of DoD acquisition management, and assessing major areas of DoD management as highlighted collectively by the committees having oversight responsibilities. The analysis attempts to examine DoD management weaknesses in the aggregate rather than as individual problems to obtain a better perspective of the macrocosmic nature of trends or improvements needed.

The report concludes that there are a number of inherent problems to the DoD systems acquisition process that make it extremely difficult for DoD to improve its systems acquisition beyond its present state. Most of these fundamental problems and issues appear to be unresolvable, only, at best, manageable. In addition, there are a series of internal major management weaknesses which cut across all levels of DoD's organizational structures. Most of these problems are beyond the scope of the research and development and systems acquisition management community, as a functional group, to attack and overcome.

The overriding major problem appears to be dealing with bureaucratic costs, which is essentially overadministration and as a result, overcontrol. There seems to be a trend to a regulated aerospace/defense industry. The study points to a need to study whether this trend is good or bad. In the afterward the author suggests that fundamental changes in management philosophy and approaches will be required.

Initially the study was structured to address three primary congressional committee functions: These are:

- The authorization and appropriation process;
- The oversight process; and
- The policy formulation and legislative process.

Research was completed on Part I covering DoD systems acquisition authorization and appropriation and an initial draft report prepared. Additional research and reports preparation is required. Part II, the oversight process, is covered in the attached report. A general outline for Part III has been developed but research and analysis has not begun.

As part of its charter, DSMS is interested in promoting research in this or related areas of value to the systems acquisition community. Federal government employees or other closely related individuals who are pursuing advance degrees and considering a master thesis or doctoral dissertation in this area are encouraged to contact:

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Defense Systems Management School  
Fort Belvoir, Virginia 22060

While monetary aid is not normally available, DSMS is in a position to provide advice and critique of subject selection and advice on individuals and sources of information.

The DSMS library facility is in the process of establishing the 350 hearings, committee prints and reports contained in the bibliography into a ready reference file for its students and others closely associated with its program. A special subject matter index is planned and congressional documents pertaining to systems acquisition management will be maintained beginning with the year 1973. The DSMS Program Course (PMC) Director and faculty members are interested in obtaining substantive reports or other materials of this nature because of its close relationship to the coverage and contents of its five-month course. University faculty members, DoD employees with specifically related responsibilities, or federal government researchers interested in discussion or exchange of ideas in this area on a limited base can contact:

Dr. Andrew Mosier  
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## FOREWORD

Management of the research, development, and production surrounding the acquisition of new weapon systems and new weaponry is a fascinating subject and one that continues to intrigue me. For almost fifteen years now, I have been engaged with various aspects of systems acquisition management. From my experience I would say that it is almost beyond comprehension for any one person to appreciate fully and understand the processes and interactions that constantly take place. I never cease to be amazed at the size, complexity, and ever-changing situation that exists in the Department of Defense.

It was when I thought of the changes that were taking place and whether or not the way the Federal Government was managing them would also have to change that I decided to undertake this particular research. Something that Congressman Chet Holifield said in 1969 triggered my interest:

. . . Are we in a different world today in pushing the state of the art in these complicated systems to the point where we have to have new rules of procurement and new rules of recognition on the part of Congress and the general public?<sup>1</sup>

It struck me that perhaps this was so, and we as Americans may not appreciate its full importance. If this research contributes to the thought that perhaps there are a number of fundamental weaknesses in the way the Department of Defense and the Federal Government are managed, then I will be satisfied that my effort was worthwhile.

Washington, D.C.

J.J.B.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 5), Hearings before a subcommittee of the Committee on Government Operations, 91st Cong., 1st sess., 1969, pp. 1473-1474.

## ACKNOWLEDGMENTS

The initiation and completion of this research was greatly facilitated by the arrangements and encouragement of my employer, Peat, Marwick, Mitchell & Co. (PMM&Co.), Washington, D.C. I am particularly grateful to Messrs. Charles S. Enright, Robert L. Sullivan, and Anthony M. Natelli of PMM&Co. for making various work schedule adjustments and part-time employment possible. The use of the Firm's administrative facilities expedited and greatly enhanced the appearance of the report.

Appreciation is also extended to the Defense Systems Management School (DSMS) for use of its library and other services. I want to thank General Winfield Scott, the Commandant of the School, and his Director of Research, Mr. Thomas Keegan, for the confidence they have expressed.

To Dr. Harry R. Page, the Chairman of my research advisory committee, goes my special gratitude for his professional advice and assistance. As the going got tough, it was he who kept me pointed in the right direction and provided the encouragement to continue. Dr. Edwin Timbers, who provided outstanding literary assistance, and Dr. Walton Smith, the other members of my research advisory committee, also deserve a vote of thanks. Dr. J. Ronald Fox, formerly of the Harvard Business School, deserves special mention for his original interest and continuing encouragement.

Special gratitude is extended to Lonnie W. Dalrymple, who edited the several drafts and final report and supervised the report preparation, graphics, and typing, and to Lynda S. Epstein, who assisted in the report preparation and did the majority of the typing. In addition, my appreciation goes to

Mrs. Leslie S. Warner, for her timely assistance in graphics, typing, and other miscellaneous tasks throughout the critical report preparation period.

Finally I want to thank my wife, Dolores, for her tolerance of my academic preoccupation in 1960-61, 1966-67, and throughout the last several years.

CHAPTER I  
PROBLEM AND APPROACH

Research Question

The research covered in this report addresses the Congressional oversight of Department of Defense (DOD) systems acquisition management. Specifically, the research question is: What were the major criticisms and concerns of Congress pertaining to DOD systems acquisition management during the period 1967 through 1972, and what major areas of management weakness were highlighted collectively by the committees having oversight responsibilities?

There are three supplemental questions addressed by the research:

1. What Congressional committees have an interest in DOD systems acquisition management, how do their responsibilities interrelate, and are there detectable committee interactions and interrelations?
2. What DOD systems acquisition management problems and issues were identified by the oversight committees, and do they represent a substantive statement of overall deficiencies?
3. From the oversight committees' perspective, what can be said about management improvements, fundamental problems, and major areas of weakness in DOD systems acquisition management?

Systems Acquisition Management

DOD systems acquisition management, for purposes of this report, is used as a generic term. It is intended to include planning, control, and related activities pertaining to military weapon systems and/or system acquisitions



related to weaponry. Examples are: aircraft; missiles; boosters; combat, tactical, and support vehicles; ships; submarines; communications systems; and space systems. The focus is on major systems acquisitions, those which exceed \$25 million for research, development, test, and evaluation (RDT&E) or over \$100 million for production. Other less costly systems or groupings of system elements, such as new armaments and ammunition, are only included when part of a general problem.

A new system acquisition program or project follows a life cycle. This generally begins with a concept formulation phase to set down the system technical parameters, followed by a validation phase to test the feasibility of the proposed technical approach. If need and feasibility are proven and cost is acceptable, the system moves through full-scale development and production phases. Finally, the new system is deployed to operating units and, if necessary, undergoes modification or retrofit to overcome any deficiencies or improve its combat potential. In addition, as defined here, systems acquisition includes all closely related activities and functions, such as the overall DOD research and development program and the initial logistics and support related to each new system acquired.

According to a General Accounting Office (GAO) report, there were 131 major DOD programs in various stages of the acquisition process as of June 30, 1969, and their total cost was estimated to be about \$141 billion.<sup>1</sup> This does not include the more general annual research and development costs which lead to new systems or the Federal plant and equipment which support the DOD systems acquisition function. Nor does it completely take into consideration the

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<sup>1</sup>U.S., Congress, Joint Economic Committee, Changing National Priorities. Joint Committee Print (Washington, D.C.: Government Printing Office, 1970), p. 41.

defense industry, which depends on DOD hardware and equipment contracts for the majority of its business.

Under any criteria, DOD systems acquisition management is important in terms of national interest. As a Government task, it is big, costly, and complex and of great concern to Congress.

DOD systems acquisition management is an area in which many specialized and technical terms, phrases, abbreviations, and definitions are used. This report uses terms as defined in Defense and Aerospace Glossary for Project Management.<sup>1</sup> A glossary of terms and abbreviations used in this report is contained in Appendix 1.

#### Approach to the Study

The approach undertaken for this study was to view Congress as a whole and to narrow systematically the Congressional structure until the level of interest, that is, DOD systems acquisition management, was reached. This was accomplished in the following five steps:

1. Setting a top-level structure
2. Subdividing national security
3. Determining committee interests and responsibilities
4. Identifying information flows
5. Structuring committee functions

#### Setting a Top-Level Structure

Congress has four basic purposes:

1. To maintain the national security
2. To promote the public welfare

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<sup>1</sup>J. Ronald Rox, ed., Defense and Aerospace Glossary for Project Management (Washington, D.C.: Hawthorne Publishing House, 1970).

3. To continue development of the American economy
4. To carry out routine day-to-day operations of the Government

Congress functions by establishing national priorities, promoting these priorities and goals through legislation, and authorizing and appropriating funds to carry out the specific programs.

One way to view the interrelationship between Congressional purpose and function is through the program budget structure. A conceptual version of a program budget for the entire Federal Government could be constructed as depicted in Figure 1. This has been adapted from ideas recently presented to the Joint Economic Committee for consideration.<sup>1</sup>

This method attempts to bring together all Federal outlays, in this case, direct outlays, tax aids, and various credit programs. These are compared with the various purposes and functions for which the resources are allocated. For purposes of this report, this provides a convenient method to break down the total Congressional responsibility for managing national goals and objectives into smaller increments, e.g., program categories.

#### Subdividing National Security

The next step in structuring the study was to divide one national goal, national security, into its basic components and to examine how a particular component, DOD systems acquisition, was managed. Figure 2 provides a conceptual approach to this step. Here the major purposes of Congress are broken down into general budget categories, in this case, DOD systems acquisition RDT&E and procurement. These are specific budget categories used by Congress and DOD. They are then aligned with the three major Congressional management tasks:

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<sup>1</sup>Joint Economic Committee, Changing National Priorities, p. 41.

PROGRAM CATEGORIES (MILS \$)	DIRECT OUTLAYS	SELECTED MA AIDS	GOVERNMENT ASSISTED CREDIT	TOTAL OUTLAYS
<u>NATIONAL SECURITY</u>				
• U.S. Military Forces				
• Scientific Competition (NASA)				
• Foreign Nonmilitary Aid				
• Foreign Military Forces				
• Psychological Competition (USIA)				
• U.S. Passive Defense	→			
• Arms Control & Disarmament				
<u>PUBLIC WELFARE</u>				
• Social Security				
• Public Assistance				
• Urban Housing & Facilities				
• Anti-Poverty Program				
• . . . etc.				
<u>ECONOMIC DEVELOPMENT</u>				
(Substructure)	→			
<u>GOVERNMENT OPERATIONS</u>				
(Substructure)				
TOTAL				

SOURCE: U.S., Congress, Joint Economic Committee, Changing National Priorities. Joint Committee Print (Washington, D.C.: Government Printing Office, 1970), p. 53.

Fig. 1. Conceptual approach to Federal program budget.

PROGRAM CATEGORIES	AUTHORIZING AND APPROPRIATING FUNDS	OVERSEEING GOVERNMENT OPERATIONS	FORMULATING NATIONAL POLICY
* * *			
<u>NATIONAL SECURITY</u>			
• U.S. Military Forces			
• Manpower			
• Training			
* * *			
• Research, Development, Test & Evaluation (RDT&E)			→
• Procurement			
* * *			
• National Aeronautical and Space Agency			
• (Breakout)			

Fig. 2. Subdivision of Congressional management tasks.

1. Authorizing and appropriating funds
2. Overseeing governmental operations
3. Formulating national policy through legislation and other means

It should be noted that, in so far as the writer was able to determine, national security, as viewed in Figures 1 and 2, is not managed as a whole by Congress. Rather, its parts or functions, usually departments or major agencies, are assigned to various committees.

#### Determining Committee Interests and Responsibilities

An examination was made to determine which Congressional committees had interest in DOD systems acquisition management or directly related subjects during the six-year period. Visits were made to the more likely committees to review their calendars, hearings, and reports. Telephone calls were made to members of other committees to discuss their relationships with DOD. Some committees were not contacted because of their obvious lack of interest in the subject. The tabulation of committee interests based on this review is shown in Figure 3. Four Congressional committees are involved in the DOD authorization and appropriation process. Seven committees have responsibility to oversee some aspect of DOD operations. At least twenty-four committees expressed an interest in DOD systems acquisition management from a policy formulation or legislative standpoint.<sup>1</sup>

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<sup>1</sup>A good example of both direct and indirect interest of a committee not normally interested in DOD systems acquisition management is contained in U.S., Congress, Senate, Committee on the Judiciary, Competition in Defense Procurement, Hearings before the Subcommittee on Antitrust and Monopoly, Senate Committee on the Judiciary, 90th Cong., 2d sess., 1968. The direct relationship pertains to DOD systems acquisition development policy, and the indirect policy relates to how this DOD policy affects United States policy on maintaining open competition among industrial firms.

COMMITTEES	AUTHORIZING AND APPROPRIATING FUNDS	OVERSEEING GOVERNMENT OPERATIONS	FORMULATING NATIONAL POLICY
<u>HOUSE OF REPRESENTATIVES</u>			
Appropriations	X	X	X
Armed Services	X	X	X
Banking and Currency			X
Foreign Affairs			X
Government Operations		X	X
Public Works			X
Judiciary			X
Merchant Marine and Fisheries			X
Science and Astronautics			X
Small Business			X
Ways and Means			X
<u>JOINT COMMITTEES</u>			
Atomic Energy			X
Congressional Operations			X
Defense Production			X
Joint Economic		X	X
<u>U.S. SENATE</u>			
Appropriations	X	X	X
Armed Services	X	X	X
Banking, Housing and Urban Affairs			X
Foreign Relations			X
Government Operations		X	X
Judiciary			X
Labor and Public Welfare			X
Small Business			X
Rules and Administration			X

Fig. 3. Congressional committees with direct interest in DOD systems acquisition management.

It can be observed that there is an expanding interest in DOD systems acquisition management as Congressional responsibility moves from authorization and appropriation (four committees) to overseeing Government operations (seven committees), to policy formulation and legislation (twenty-four committees).

Tabulation of Congressional committee interest in DOD and DOD systems acquisition management was used as a basis for data gathering. As shown in Table 1, these twenty-four committees published over 350 public documents and approximately 140,000 pages of hearings, committee reports, and committee prints during the period covered by the research. About 60 percent of the documentation applied to authorization and appropriation hearings and reports, about 30 percent to oversight, and less than 10 percent to specific policy formulation and legislation directly or indirectly related to DOD systems acquisition management.

#### Identifying Information Flows

The next step was to categorize this documentation for analysis. Topically, matter from public documentation was compared to a general management process (plan, execute, control, report), as conceptually depicted in Figure 4, to determine general information flows, committee and information interrelationships (in so far as possible), and general trends. This activity resulted in flow diagramming of the documents over the six-year period into eleven plates, as shown and numbered in the figure.<sup>1</sup> While there is not a one-to-one correlation, the execution and the control parts of the process shown in the figure (Plates 4, 5, 6, 7, and 8) correspond to the authorization and appropriation process and the oversight process, respectively. The report part (Plates 9, 10, and 11) is generally applicable to both of these processes, while the

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<sup>1</sup>The master flow diagram and the eleven plates are too large to enclose in this report.



TABLE 1  
CONGRESSIONAL PUBLIC DOCUMENTS PERTAINING TO  
DOD SYSTEMS ACQUISITION MANAGEMENT

COMMITTEES	1967	1968	1969	1970	1971	1972	DOCU- MENTS	No. of Pages
<u>HOUSE OF REPRESENTATIVES</u>								
Appropriations	8/3543	9/4574	9/6059	9/4997	11/8436	9/7114	55	34,723
Armed Services (Authorizations)	3/1547	3/1675	4/2862	4/1984	4/2597	5/3064	23	13,729
Armed Services (Other)	6/1628	8/358	2/607	5/2597	3/263	4/579	28	6,032
Banking & Currency		1/126		2/1125			3	1,251
Foreign Affairs	8/1004	2/324	2/585	2/629	1/145	2/43	9	1,726
Government Operations		7/600	13/3140	4/940	4/291		36	5,975
Judiciary				2/2213			2	2,213
Merchant Marine & Fisheries*		2/607			1/249		3	856
Public Works						1/69	1	69
Science & Astronautics	4/3524	3/553	3/1588	5/2585		2/413	17	8,663
Small Business		1/1328	1/476	1/1393		1/820	4	4,017
Ways & Means*		2/402					2	402
Subtotal	29/11246	39/10547	34/15317	34/18463	24/11981	24/12102	183	79,656
<u>JOINT COMMITTEES</u>								
Atomic Energy	1/502	4/892	1/232	1/312	1/278	1/348	9	2,564
Congressional Operations					1/320		1	320
Defense Production *					1/280		1	280
Joint Economic	5/1246	3/603	13/3299	5/1362	2/951	2/1456	30	8,917
Subtotal	6/1748	7/1495	14/3531	6/1674	5/1829	3/1804	41	12,081
<u>SENATE</u>								
Aeronautical & Space Science*	6/682	1/66					7	748
Appropriations	4/2121	6/2861	7/4188	6/4776	5/5083	6/5514	34	24,543
Armed Services (Authorizations)	2/995	2/1234	3/2347	4/2611	8/4662	8/4731	27	16,580
Armed Services (Other)		4/39		2/773		4/771	10	1,583
Banking, Housing & Urban Affairs				1/599			1	599
Foreign Relations	2/115	2/81		3/434	1/295	2/943	10	1,768
Government Operations	5/627	5/96	3/687	5/1483	1/483		19	3,376
Judiciary	1/282	1/916	1/205		2/1267	1/313	6	2,983
Labor & Public Welfare*	1/213	1/69					2	282
Rules & Administration*						1/120	1	120
Small Business	2/302	1/19		3/529		1/363	7	1,213
Subtotal	23/5337	22/5381	14/7427	24/11205	17/11790	23/12755	124	53,895
<b>TOTAL</b>							<b>348</b>	<b>145,432</b>

\*Complete coverage not intended; only sample documentation identified for these committees.

PROCESS

FLOWS

TRENDS

	1967	1968	1969	1970	1971	1972		
PLAN	<b>BASIC CONGRESSIONAL AUTHORITY, DEFENSE ECONOMICS</b>							
			WAR MAKING POWERS					
		MAINTAIN COMPETITION		(USE OF PROTOTYPING)				
	ECONOMIC PROBLEMS IN SMALL BUSINESS DEFENSE CONTRACTING							
		ECONOMIC ANALYSIS/NATIONAL PRIORITIES				1,2	CONGRESS REASSERTS ITSELF	
<b>PLANNING, PROGRAMMING, AND BUDGETING</b>								
PPBS PROCEDURES					FINANCIAL MANAGEMENT			
ACCOUNTING SYSTEM								
	RESEARCH & DEVELOPMENT MANAGEMENT					3		
EXECUTE	<b>ALLOCATION OF RESOURCES</b>							
	CEILING ON GOVERNMENT SPENDING							
	MAJOR DOD BUDGET CUTS						4	REDUCES DOD SPENDING, REALLOCATES RESOURCES
	<b>INTERNAL DOD OPERATIONS</b>							
CANCELS MAJOR DOD PROGRAMS						5		
	INVESTIGATES MAJOR DOD WEAPON SYSTEM PROGRAMS							
CONTROL	<b>ACQUISITION MANAGEMENT POLICY AND PRACTICES</b>							
	CENTRALIZED ANALYSIS & CONTROL							
			PROTOTYPING & RELATED CONCEPTS					ATTACKS DOD WASTE AND INEFFICIENCY
		CHANGES IN ACQUISITION POLICY				6		
<b>ACQUISITION MANAGEMENT CONTROLS</b>								
MILITARY PROCUREMENT								
GOVERNMENT PROCUREMENT PRACTICES								
MAJOR SYSTEM ACQUISITION COST OVERRUNS						7		
<b>GOVERNMENT CONTRACTING</b>								
ACCESS TO DATA								
NEGOTIATE WITH ALL BIDDERS								
INCREASE MULTI-YEAR PROC. AUTHORITY					IR&D	CONFLICT OF INTEREST		
						8	MOVES TO IMPROVE GOVERNMENT CONTRACTING	
ESTABLISH COMMISSION ON GOVERNMENT PROCUREMENT								
REPORT	<b>ACCOUNTING PROCEDURES</b>							
	DETERMINE FEASIBILITY		ACCOUNTING STANDARDS					
	DEVELOP STANDARDS						9	STRENGTHENS INTERNAL WATCHDOG CAPABILITIES
	<b>AUDITING, REPORTING, AND ANALYSIS</b>							
IMPLEMENT POST-AWARD AUDITS								
CONFIRM DCAA ROLE								
		STUDY/INCREASE CAO ROLE & CAPABILITY						
		REORIENT CAO REPORTING						
		SAR						
				OT&E		10,11		

NUMBERS CORRESPOND TO PLATE NUMBERS

Fig. 4. Deficiencies in DOD systems acquisitions.

top part, plan (Plates 1, 2, and 3), corresponds to the overall Congressional legislative and policy formulation process.

#### Structuring Committee Functions

The conceptualized approach to the study, previously described, showed that if a complete assessment of Congressional criticism of and concern for DOD systems acquisition management were to be made, an in-depth analysis of the related authorization and appropriation, oversight, and policy formulation and legislative processes would be required. Although it was recognized that the size of a three-part report and the time involved to do the in-depth analysis were prohibitive, it was decided that the three parts should be structured to some degree. This was considered necessary to test the overall approach to studying Congress and to insure that all problems and issues were considered when the scope was narrowed.

The three parts were further divided into the levels indicated in Figure 5. This structuring followed four general ground rules:

1. Broad policy problems and issues pertaining to the general United States environment (such as the impact of war, recession, inflation) would be included in the three-part study to address as much of the total system as possible
2. Synthesis of data and analysis would be made in the context of national security (in so far as possible)
3. The three parts would be structured to focus on the expanding committee interests depicted in Figure 3 (four, seven, and twenty-four committees, respectively)
4. Each of the three parts would follow the general management process and flows depicted in Figure 4 (in so far as possible)

FIRST LEVEL	SECOND LEVEL	THIRD LEVEL
AUTHORIZING AND APPROPRIATING FUNDS	<ul style="list-style-type: none"> <li>. RESOURCE PLANNING</li> <li>. RESOURCE ALLOCATION</li> <li>. RESOURCE MANAGEMENT</li> </ul>	<ul style="list-style-type: none"> <li>. REVIEW PROCESS</li> <li>. BUDGET SUBMISSION</li> <li>. FUND ADMINISTRATION</li> <li>. PROGRAM ANALYSIS</li> <li>. PROGRESS MEASUREMENT</li> <li>. STATUTORY LANGUAGE</li> <li>. POLICY PRONOUNCEMENTS</li> <li>. PRIORITIES AND UTILIZATION</li> <li>. UNNECESSARY EXPENDITURES</li> <li>. DECISION CRITERIA</li> <li>. ECONOMIC CRITERIA</li> <li>. PRACTICES AND PROCEDURES</li> <li>. INTERNAL OPERATIONS</li> <li>. INDUSTRY HEALTH</li> </ul>
OVERSEEING GOVERNMENT OPERATIONS	<ul style="list-style-type: none"> <li>. DOD ORGANIZATION</li> <li>. DECISION-MAKING</li> <li>. PERSONNEL POLICY</li> <li>. ACQUISITION POLICY</li> <li>. PROJECT MANAGEMENT</li> <li>. PROCUREMENT POLICY</li> <li>. MAINTAINING COMPETITION</li> <li>. CONTRACTING</li> <li>. MANAGEMENT CONTROLS</li> <li>. CONTRACT ADMINISTRATION</li> <li>. CONTRACTOR MANAGEMENT</li> </ul>	<ul style="list-style-type: none"> <li>. LACK OF FULL DISCLOSURE</li> <li>. POOR TOP-LEVEL ORGANIZATIONAL ARRANGEMENTS</li> <li>. MISUSE OF SYSTEMS ANALYSIS</li> <li>. DEFICIENCIES IN SECRETARIAL APPOINTEE SYSTEM</li> <li>. ORGANIZATIONAL LAYERING</li> <li>. UNNECESSARY STAFF ACTIVITIES</li> <li>. EXCESSIVE INTERSERVICE RIVALRY</li> <li>. OVERSIGHT OF DOD SYSTEMS ACQUISITION MANAGEMENT WAS BROKEN DOWN INTO SEVENTY THIRD-LEVEL ITEMS SIMILAR TO THOSE SHOWN ABOVE. EACH LEVEL THREE ITEM IS ESSENTIALLY A MAJOR DOD PROBLEM OR ISSUE. THESE ITEMS WERE PREPARED IN THE FORM OF TABLES WHICH ARE CONTAINED IN APPENDIX 3.</li> </ul>
POLICY FORMULATION AND LEGISLATION	<ul style="list-style-type: none"> <li>. DEFENSE POLICY</li> <li>. DEFENSE AND NATIONAL SECURITY POLICY</li> <li>. NATIONAL SECURITY MANAGEMENT</li> <li>. CONGRESSIONAL MANAGEMENT</li> </ul>	<ul style="list-style-type: none"> <li>. CONGRESSIONAL AUTHORITY</li> <li>. DEFENSE ECONOMICS</li> <li>. PLANNING, PROGRAMMING, BUDGETING</li> <li>. POLICY ANALYSIS</li> <li>. COMMITTEE INTERACTIONS</li> <li>. COMMITTEE MEMBERSHIP</li> <li>. FLOOR DEBATE</li> <li>. OTHER RELATIONSHIPS</li> <li>. FUNCTIONS TO BE PERFORMED</li> <li>. OVERALL BUDGET FUNCTIONS</li> <li>. OVERSIGHT PRINCIPLES</li> <li>. POLICY FORUM</li> <li>. CONCEPTS AND ASSUMPTIONS</li> <li>. SYSTEMS DESCRIPTION</li> <li>. ORGANIZATIONAL STRUCTURE</li> </ul>

Fig. 5. Structuring a three-part study of the DOD systems acquisition process.

Part I, an in-depth analysis of the Congressional authorization and appropriation process as it pertains to DOD systems acquisition management, was conducted independently for the firm of Peat, Marwick, Mitchell & Co., Washington, D.C., by the writer.<sup>1</sup> This particular study focused on steps taken to tighten Congressional control over defense expenditures, to strengthen management of the Congressional/DOD authorization and appropriation process, and to identify weaknesses in Congressional/DOD program budget management.

The study concluded that the Armed Services Committees and those parts of the Appropriations Committees involved with DOD during the six-year period under study had acted to reassert themselves in the authorization and appropriation of Federal funds. In addition, they had played an important role in reshaping national priorities. The report also shows trends taking place in committee management procedures and techniques.

Part II, pertaining to the oversight process, is the basis for this research and report and is discussed under "Scope of the Study." Part III encompasses the legislative and policy formulating process. While study in this area has not begun, other than the developing of information flows and plates (see Figure 4), one aspect is worthy of mention. It appears that, although significant in dollars and importance, the impact of DOD systems acquisition on other segments of the economy has received little direct treatment by Congress. The reasons for this appear to be a lack of structure in the Congressional organization and a lack of information from which to analyze DOD systems acquisition vis-a-vis national security, national economic trends, and overall priorities and goals. This limited attention to the impact of DOD systems acquisition is considered a worthwhile area for further study.

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<sup>1</sup>Peat, Marwick, Mitchell & Co., "DOD Authorization and Appropriation Process: Congressional Criticism and Concern," Washington, D.C., December, 1973. (Draft.)

### Scope of the Study

As indicated earlier, the decision was made to limit this report to Congressional oversight of DOD systems acquisition management. Subsequent scoping of the study involved further delineation of the approach. Three aspects were considered important:

1. Committee interactions
2. Material to be analyzed
3. Data synthesis

### Committee Interactions

Congressional oversight responsibility for DOD systems acquisition management has been carried out by seven committees: the House and Senate Armed Services Committees, the House and Senate Appropriations Committees, the House and Senate Government Operations Committees, and the Joint Economic Committee. Figure 6 provides a conceptualization of the responsibilities of the seven committees (four groupings) in this area. Three aspects are worth noting:

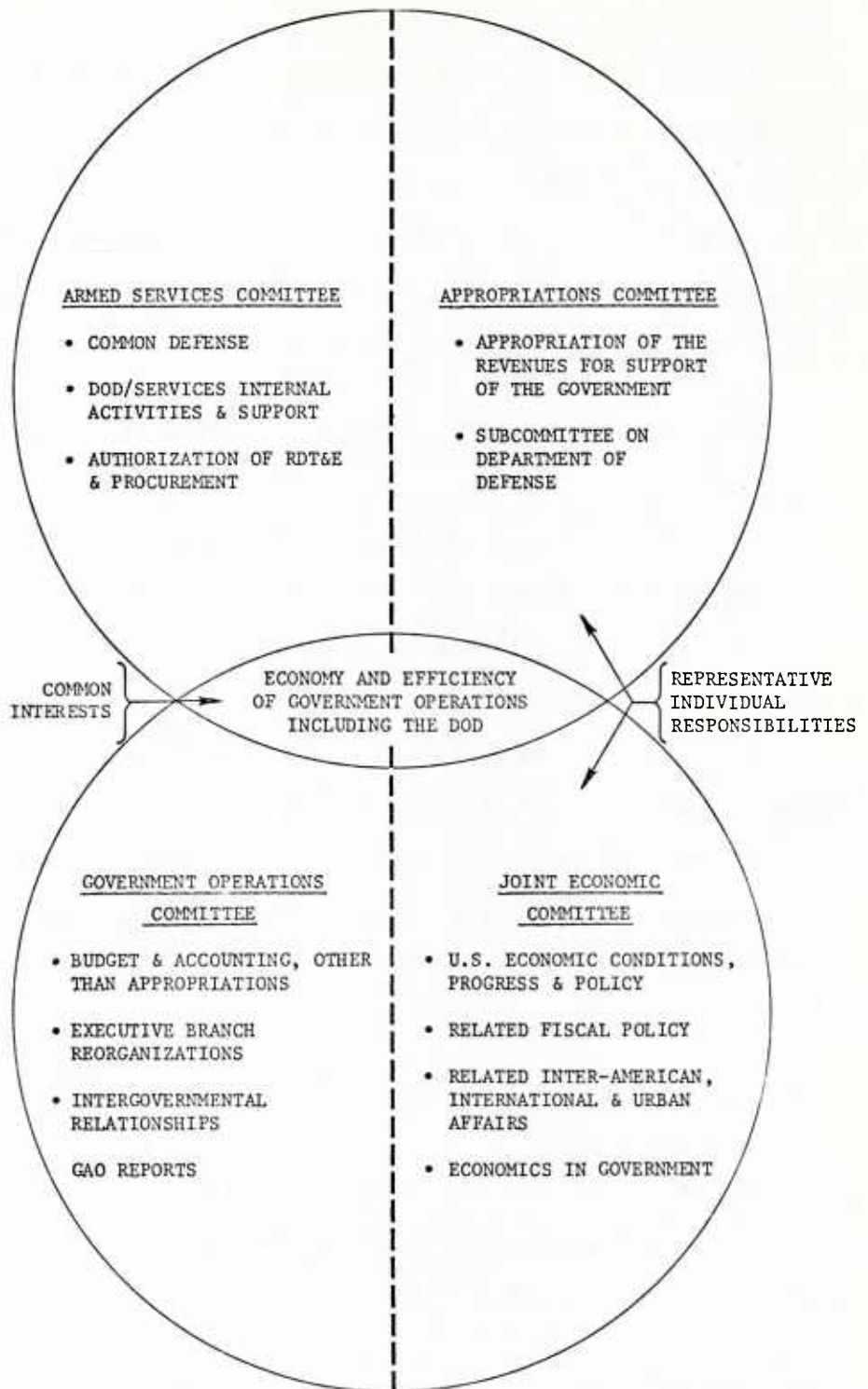
1. There is considerable overlap and duplication among the seven committees<sup>1</sup>
2. Economy and efficiency of Government operations, including DOD, is an area of common interest
3. The particular focus of each of the four committee groupings is different

This latter aspect appears to be a particularly important consideration in distinguishing between the committee responsibilities and the organizational

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<sup>1</sup>The aspect of overlap and duplication is implied in many parts of the documentation under review. See, for example, testimony of Gilbert W. Fitzhugh, Chairman, President's Blue Ribbon Defense Panel, in U.S., Congress, Senate Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 56.





Note: Responsibilities were constructed by taking key words or phrases from regularly published committee calendars.

Fig. 6. Congressional budgetary and oversight responsibilities for DOD.



interrelationships of Congress. As a generalization, committee foci could be visualized as follows:

<u>Committee(s)</u>	<u>Central Focus</u>
Armed Services	Effectiveness of <u>military operations</u>
Appropriations	Efficient use of <u>revenues appropriated</u>
Government Operations	Efficiency and economy in <u>Government procurement</u>
Joint Economic	Overall U.S. <u>economic policy</u> effectiveness and impact

#### Material to be Analyzed

Documents and information flows covered in this report are contained in Plates 4, 5, 6, and 7 (see Figure 3). These plates are contained in Appendix 2.<sup>1</sup> Several observations can be made by examining the plates collectively:

1. There is no appreciable, direct interaction or interrelationship among the various committees and their investigations and documents
2. There appears to be a synergistic or composite effect accrued over time as a result of the repetitiveness of the investigations which would affect public opinion
3. Change and action resulting from Congressional oversight is an evolutionary process that involves a number of steps generally taken over a number of years
4. Few public laws seem to result from oversight investigations. It would appear that change results as much from Congressional persuasion or public disclosure as from legislation

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<sup>1</sup>Cognizance is taken that many aspects of the authorization and appropriation process overlap those of the oversight process. However, only specific Armed Services and Appropriations documents which were investigative in nature were used in the oversight analysis covered in this report.

Of 124 documents published by the seven committees pertaining to Congressional oversight of DOD systems acquisition management over the six-year period, seventy-six were classified as substantive in terms of identifying DOD management problems and issues. Of this number, several were more pertinent to other areas<sup>1</sup> or repeated other documents. Thus, the number of basic documents was reduced to forty-two. These forty-two documents were used for further structuring of the report, synthesis and analysis, and the bulk of the referencing.

### Data Synthesis

Nine of the forty-two documents used were first analyzed in detail and spreadsheets prepared for the system acquisition problems and issues identified (between 100 and 150 data items for each spreadsheet). Data items from the spreadsheets, along with a similar list imputed from the independent authorization and appropriation study, were compared and correlated to develop eleven Level 2 categories. This document review was continued and resulted in approximately 3,000 data items (Level 4). These data items were synthesized into approximately 700 subproblems and subissues, i.e., each subproblem was supported by combining an average of four data items. These were further assimilated into seventy tables covering major DOD system acquisition problems and issues.

The seventy tables contained in Appendix 3 form the heart of the data gathering and synthesis for this report. Each table is composed of short phrases that describe one facet of the major problem and/or issue. Each table consists, on an average, of ten of these subproblem descriptors. Each subproblem descriptor consists of approximately four data items. Thus, each table contains approximately forty elements of information. Each table was

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<sup>1</sup>See, for example, Defense Contract Audit Hearings, Plate 6, Appendix 2. This also appears on Plate 10, Auditing (not shown in Appendix), and was used in the latter area.

constructed on the basis that it could serve as a "ministudy," containing sufficient information and references to support a basic examination of the problem and/or issue. This was not possible in all cases, e.g., Appendix 3, table 3, Concern for Lack of Full Disclosure by DOD, but is generally true throughout. While it would have been desirable to include each "ministudy," i.e., details contained in the tables, in the report, size alone was prohibitive.

Chapter discussion is built around the major contents of the tables, with particularly meaningful aspects quoted or paraphrased as necessary to support particular analytical points. Problems and issues were further aggregated in Appendix 4. These form the basis for Chapter IX, Summary of Problems.

#### Organization of the Report

This report was organized to correlate the DOD organization related to systems acquisition management with the eleven categories of problems and issues structured earlier (see Figure 5). The common denominator, the management process, was again used but modified slightly to place heavier emphasis on the execution or control aspects of DOD systems acquisition management. Three categories—planning: Government; program execution: Government; and program execution: contractor—were used to link organizational aspects and data as shown in Figure 7. The left-hand column contains a four-tier organization to depict this relationship.

The top tier of the DOD organization is responsible for supervising systems acquisition and includes the Secretary of Defense, the Office of the Secretary of Defense (OSD), and the military departments. Each military department consists of a service secretary and staff and a military chief of staff and military staff which constitute the service headquarters. These offices and staffs are responsible for systems acquisition philosophy and concepts,

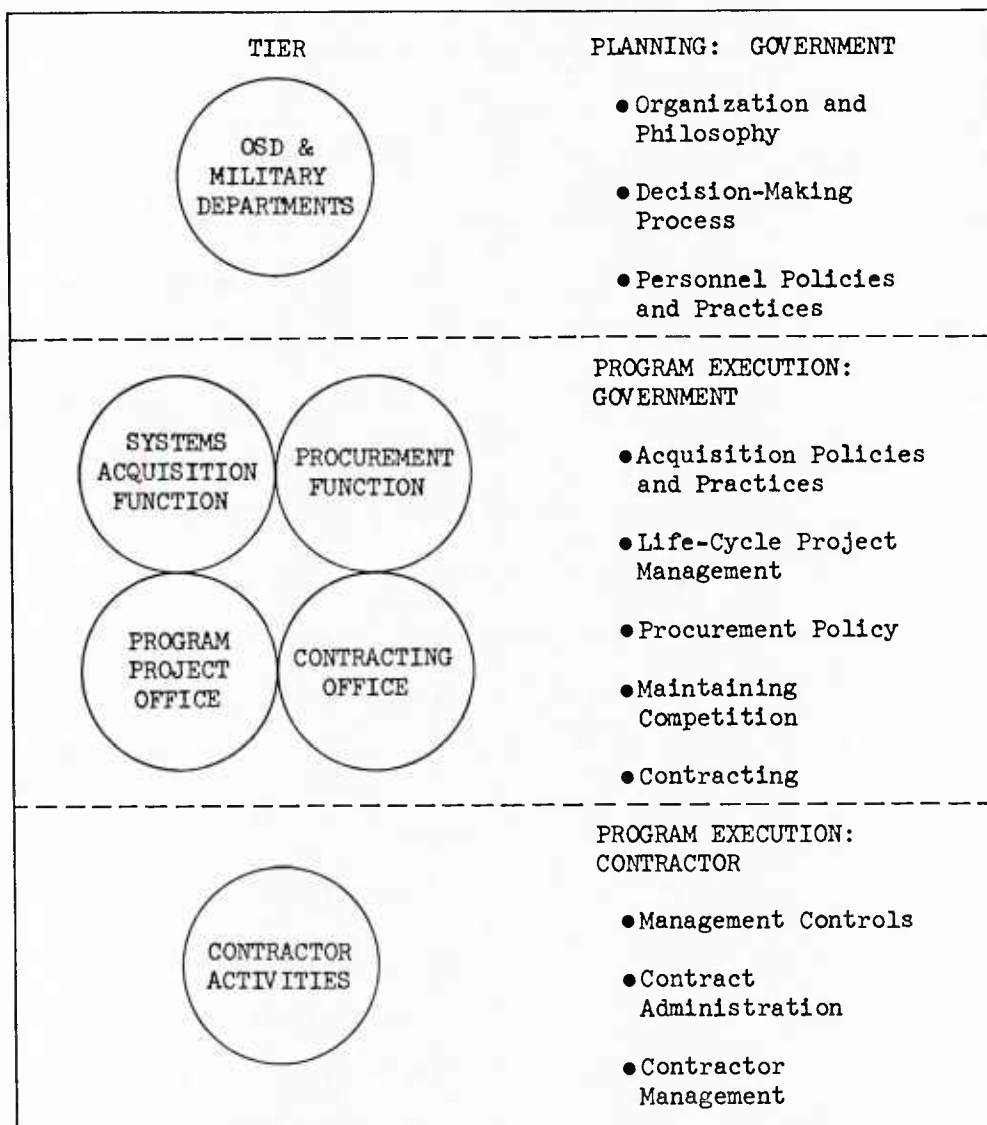


Fig. 7. Schematic comparison of general DOD organization for systems acquisition management with organization of the report.

organization, and policy. Personnel policy and practices have been included as part of the planning tier for purposes of this report.

The next two tiers could be defined as the major staff and operating levels. The second consists of part of the service headquarters, the major systems command, and the product subcommands. The major staffs for the systems acquisition and procurement functions are at this level. This tier is responsible for major policy implementation, and acquisition and procurement practices and procedures. The third tier consists of the product subcommands and the working level program/project and contracting offices that carry out daily acquisition and procurement activities. This level is responsible for project management and contracting. These two tiers constitute the major portion of Government program execution.

The bottom tier consists of those activities involving the contractor. For purposes of this report, they include management controls, contract administration, and contractor management. While some liberty was taken in this organizational portrayal, e.g., procurement structure could be located at a higher level, it should assist the reader in visualizing the scope of the report.

#### Research Contributions and Limitations

It is anticipated that the research described in this report will provide:

1. A systematic visualization of Congressional committee interaction covering a major area of management—DOD systems acquisition management
2. A useful basis for additional analysis and input concerning Congressional management, capabilities, and shortcomings
3. A comprehensive statement of DOD systems acquisition problems and issues for further analysis

4. A synthesis of major problems and issues in its findings and conclusions which will be useful in designing improvements for the DOD systems acquisition management process

This research was limited by several constraints. Although the approach was tailored to examine three committee functions (authorization and appropriation, oversight, and legislation) vis-a-vis DOD systems acquisition management, available time necessitated limiting this report to one function--oversight. This may limit the reader's ability to visualize the entire approach and application.

A number of the hearings pertaining to DOD systems acquisition were held in executive session, and testimony was not published because of the security classification or sensitive nature of the matter. Inquiry indicated that few of these hearings pertained purely to management aspects, but there was no way to confirm or deny this in the research and findings.

Another constraint is related to the fact that no Congressional staff or DOD professional personnel were interviewed or consulted about technical aspects of the documentation.

#### Contents of Report

This report consists of eleven chapters. Chapter II describes the background surrounding DOD systems acquisition management. It highlights the social, political, economic, and technological factors that interact with and impact on DOD systems acquisition management. It discusses Congressional criticism of waste and inefficiency in terms of cost overruns and poor contract performance experienced in DOD systems acquisition management over the six-year period. The overriding Congressional concern appears to be whether the United States can afford costly weapons and diminishing effectiveness of the weapons developed and produced.



Chapter III covers organization and decision-making weaknesses in DOD which affect systems acquisition management. It discusses DOD internal weaknesses associated with bureaucracy, including excessive organizational layers of management and unnecessary staff activities. The lack of adequate long-range planning and rigidity in the planning-programming-budgeting process are also major considerations. The Congressional concern centers on the delays caused by overadministration and overregulation.

In Chapter IV, DOD personnel policy and practices are examined. This chapter focuses on the effect of military policy on personnel capability and performance, the lack of employee motivation, and the pressures on DOD employees. There is Congressional concern over the lack of long-term personnel stability in project offices and employee productivity in procurement activities.

Chapter V covers acquisition policy and project management. The total DOD procurement and related policy and the impact of this policy on DOD systems acquisition management are discussed. Congressional committees criticize the heavy reliance on paper studies as a basis for initiating development projects. In addition, a lack of adequate testing and evaluation and excessive concurrency between development and production are cited as major project management problems. Congressional concern centers on the potential loss of technological superiority and the need to establish policy which will reduce costs and technical risks.

Policy discussions, which are continued in Chapter VI, address procurement policy and competition. Complex, restrictive regulations, defective pricing, contractor claims, profit, and other procurement policy weaknesses are discussed. The inability of DOD to obtain price competition in its major systems acquisitions and the lack of DOD effort to obtain more competition in



production and subcontracting are cited as major weaknesses. Here Congressional concern centers on the need to upgrade and integrate procurement laws and regulations.

Chapter VII addresses contracting and management controls. The misuse of fixed-price contracting, the misapplication of incentive contracting, and other substandard contracting practices are discussed. Rigid, costly management systems, poor cost estimating, accounting, and overhead cost practices are cited as problems. The need for improvement centers on streamlining and simplifying contracting and management control procedures.

Chapter VIII covers DOD contract administration and contractor management. It discusses the poor performance of on-site DOD plant representatives in performing contract administration, particularly surveillance over contractor costs and technical performance. The power of the military-industrial complex, industry influence, and misuse of industry power are considered major deterrents to stricter DOD policies and tighter controls. DOD current contractor management approaches and controls are also discussed and criticized. Congressional concern is expressed for a lack of defense industry motivation, industry inefficiency, and industry upheaval.

Chapter IX summarizes and synthesizes problems and issues discussed in Chapters III through VIII. It is seen that there are a number of fundamental problems which are generally beyond DOD's control and which limit DOD's ability to control completely and effectively systems acquisition management. In addition, this chapter summarizes major organizational and process problems that hinder effective systems acquisition management.

Chapter X, Conclusions, covers responses to research questions. One of the major conclusions is that major management research aimed at understanding the systems acquisition processes and improving management is required.

The Afterword relates areas of management research currently being conducted in the academic community with DOD management problems and weaknesses. The three areas having the most potential are organizational behavior concepts, systems concepts for organizations, and industrial dynamics as applied to decision-making processes.

## CHAPTER II

### BACKGROUND

The period 1967 through 1972 covers the last two years of President Lyndon B. Johnson's administration and the first term of President Richard M. Nixon's administration, a particularly turbulent time for the military forces, the Congress, and the country.

DOD systems acquisition management during this period cannot be examined without considering the environment in which that management took place. One factor, the Vietnam War, overshadowed all other events relating to the political, economic, social, and technological climate in which DOD and the military departments found themselves. Since June 1965, when the United States escalated its involvement in the Vietnam War and until the negotiated peace took place in early 1973, there had been increasing public and Congressional pressure to end the war. No major public official connected with the war went untouched by the anti-war, anti-military attitude that developed. The issue of the war is said to have been a major influence on President Johnson's decision not to seek reelection in 1968. It required President Nixon to frequently reassure the people that indeed the United States was "winding down" the war and was on the road to a "just and honorable peace."

Concurrent with the cry to end the war were equal pressures to give more attention to the turbulence in our cities, to social equality, to crime and violence, and to other domestic issues. Near the end of the six-year period, protection of the environment and an energy crisis on the horizon assumed increasing importance.

Over \$150 billion, by some estimates, was expended for a war that no one wanted. The political, moral, and social issues confronting the nation are a result of a willingness to use weapons in Vietnam. Critical domestic problems rival foreign policy and compete with the military forces for national resources. Persistent inflation has both partially resulted from and influenced these demands on national resources. It was obvious that an accounting was in order and a shifting of national priorities and goals was in progress. It is in this setting that the problems and issues pertaining to DOD systems acquisition management over the six-year period must be viewed.

In preparing to view the extent of these problems and issues, it is necessary to consider the relationship of the subject to national interests; to understand the size, cost, and complexity of DOD systems acquisition procurement; and to appreciate the role and position of Congress. This chapter examines each of these aspects and briefly discusses alleged DOD waste and inefficiency as a way of setting the stage for consideration and assessment of DOD problems and issues covered in later chapters.

#### National Interests at Stake

Weapon systems and weaponry are major elements of the United States' war-making capability. Combat troops can win or lose battles, and nations wars, depending on the superiority or inferiority of the weapons they possess.

Since World War II, the United States has become the leader and bastion of its allies because of its nuclear arms, its weapon production capability, and its arsenal of weapons. All foreign policy and strategy are related to the ability of the nation to defend itself and back up its position with force, if necessary. Major portions of United States' international trade and foreign aid involve military hardware.

Three aspects related to national interests appear particularly important to DOD systems acquisition. The first involves the will of the American people to continue to support a strong defense program in view of the national conscience toward war, the changing American values, and the pressing domestic problems. Second is the public attitude toward Government institutions and the military in particular. Third is the need to modernize the nation's military forces as a result of Vietnam, in the face of major economic ills and competing domestic demands.

Much has been said about the will of the American people in recent years. There appear to be many erosive factors at work that are detrimental to the well-being of the country. Many are manifest in terms of weaponry and new systems acquisitions. For example, Senator John C. Stennis (D, Miss.), Chairman, Senate Armed Services Committee, expressed concern that "the American people are letting down, are losing the will to work hard, and are not being provided proper leadership."<sup>1</sup> Senator Barry Goldwater (R, Ariz.) commented that "the American people don't give a damn about defense matters."<sup>2</sup> In other hearings, Senator William Proxmire (D, Wis.), Chairman, Joint Economic Committee, remarked that "the nation is undergoing a period of acute crisis which is apparent wherever one looks."<sup>3</sup>

The will of the American people leads to a more direct concern related to weaponry and systems acquisition management. It is the public attitude toward DOD and the public confidence in the integrity and ability of the military

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 478.

<sup>2</sup>Ibid., p. 342.

<sup>3</sup>U.S., Congress, Joint Economic Committee, Changing National Priorities (Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, p. 1.

to manage its affairs. There are strong indications that the public confidence in DOD was severely shaken during the six-year period. Much of the loss can be attributed to alleged, major coverups of mistakes and errors and discoveries of major waste and inefficiency throughout the entire DOD procurement process.

In seeking out Congressional criticism and concern for loss of public confidence, one need only turn to Proxmire, perhaps the most outspoken Congressional critic of DOD. In 1969, he said:

In the past, Congress had been assured that mistakes and shortcomings in weapon programs were a special phenomena. . . . They are not the exception, they are the rule.

I believe the public will no longer accept the glib explanations that have been offered for program failures. . . .

We are in a new era of public policy and public scrutiny of Government expenditures, including military spending. It is an era of greater inquisitiveness on the part of the public.<sup>1</sup>

In 1971, continuing the same theme, he said: ". . . the loss of confidence they [DOD] have engendered in the average citizen . . . threatens the very fabric of our political and economic system."<sup>2</sup>

Other congressmen, private citizens, and public officials express similar concerns. On the other hand, many other experts feel that the incessant attacks on the nation's defense establishment are sometimes politically motivated and blown all out of proportion. Consequently, a major issue is whether this public attitude will become detrimental to the overall national security of the United States.

In the short term, national interest centers on maintaining an adequate force and equipping it sufficiently to deter an aggressor or to defend the

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, p. 149.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 4), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st sess., 1971, p. 1140.

country's interests. More than ever before, the question is asked: How much is enough? No one is sure; it is a matter of judgment. From a military viewpoint, the issue is clear. The United States military force must be modernized. Vice Admiral Hyman G. Rickover, U.S. Navy, Director, Naval Nuclear Propulsion Program, addressed this in 1971 testimony:

. . . If the investment for our future needs is not met now, there may be no future.

Most people do not realize how badly our naval forces have been allowed to deteriorate by the hiatus in naval ship construction in the 1960's and the reduction in fleet readiness accepted to make funds available for the Vietnam war. . . .

. . . In the Vietnam war, we have managed to sustain ourselves by using up a great deal of material, drawing down our reserve stocks, wearing out much equipment. . . .

. . . It seems clear to me that, considering recent history, it is dangerous to proceed into the future with our strength declining while that of our potential enemies is increasing.<sup>1</sup>

Almost without exception, military experts support his position and conclusion. In the final analysis, the national interest of concern here is survival. Considering the role major weapon systems play, it is easy to see the importance attached to DOD systems acquisition management.

#### Size, Cost, and Complexity

In 1972, the Federal Government requested a budget of \$246 billion or 19.1 percent of the projected annual gross national product. The largest single component of Federal spending throughout the six-year period was national defense. In 1972, the Federal Government's civilian work force numbered 2.865 million employees, representing 3.3 percent of the nation's work force. Thirty-nine percent of the Government's civilian work force, over one million people, is employed by DOD. In addition, DOD had 2.3 million members in its armed forces and, at one point in time, the equivalent of five million workers in

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 340.



private industry engaged in providing equipment, supplies, and services for DOD. In 1970, roughly one out of eight Americans engaged in production was said to be directly or indirectly working for the military sector of the nation's economy.<sup>1</sup>

### Size

Government procurement, the major area of interest for this study, affects every phase of the economy and involves every important aspect of Government—it is big business. Over the period, approximately \$50 billion was spent annually for Government procurement. Of this, 80 percent, or roughly \$40 billion, was spent by DOD. Within DOD, about 60 percent, approximately \$24 billion per year, was used for major military hardware purchases. Depending on the figures used, major DOD systems acquisitions accounted for between 1.7 and 2.5 percent of the gross national product outlays each year between 1967 and 1972.<sup>2</sup> The first major concern, as congressmen are well aware, is that an expenditure of this magnitude places a tremendous burden upon the taxpayers and makes it increasingly difficult for Congress to balance the budget or reduce an ever-rising Federal debt.

Approximately 68 thousand employees make up the combined DOD procurement and project management work force. DOD initiates approximately 15 million procurement actions annually. Over 98 percent of these are for less than \$10 thousand. These actions represent only 9 percent of the total dollars (versus

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<sup>1</sup>Dollar and manpower figures were taken from U.S., Congress, House, Economic Report of the President, H.Doc. 93-28, 93d Cong., 1st sess., 1973, and U.S., Civil Service Commission, Federal Career Service (Washington, D.C.: Government Printing Office, Undated). Industry figures appear in U.S., Congress, Joint Economic Committee, Changing National Priorities, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 340.



roughly 60 percent for system acquisitions). Between 10 and 12 thousand DOD employees are in the purchasing offices and an additional 42 thousand in all functions of contract administration. There are over 5 thousand contracting officers in DOD having varying degrees of authority. To provide special management attention and control, highly critical systems are assigned separately to project or weapon system managers in the military departments. These managers handle in excess of half the defense dollars allocated to development and production of major systems and subsystems.<sup>1</sup>

The DOD systems acquisition process is strongly influenced and controlled by individuals in DOD not normally considered to be procurement officers. It includes military requirements and technical people, logistics and finance personnel, as well as many other functional elements. In addition, by design, DOD relies almost exclusively on American industry for its weapons development and production. No single policy or procedure can suffice; human judgment is absolutely necessary for the procurement process to work effectively. Thus, systems acquisition management within DOD is big in another sense, in terms of motivating and integrating a very large and highly diverse work force.

#### Cost Considerations

Economic factors affecting DOD systems acquisition management were of overriding importance during the six-year period. Historically, defense planning was essentially in response to clear and present threats to the nation's security. In time of danger, industry was given every incentive to design the best weapons money could buy. The cold war changed all this. With the onset

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Establishing a Commission on Government Procurement, Hearings before the House Committee on Government Operations, 90th Cong., 1st sess., 1967, pp. 67-69.

of the Korean War, the Federal Government adopted a policy of maintaining a high level of military strength and providing a basis for long-term defense planning. Over a period of years, it became evident that defense spending could not be sustained indefinitely at such a high level and that it would threaten the basic economic strength of the country.<sup>1</sup>

It appears that defense spending reached this point during the period under review. In 1968 and 1969, the Joint Economic Committee held a series of hearings and issued two reports. In the first, the Committee indicated there was "a pressing need to reexamine our national priorities by taking a hard look at the allocation of Federal revenues between the military and civilian budgets."<sup>2</sup> In the second, the Committee highlighted the misallocation of national resources and ineffectiveness of Federal programs in accomplishing objectives. It specifically recommended that the DOD budget for fiscal year 1971 "be reduced by no less than \$10 billion below the level of actual expenditures during fiscal year 1969."<sup>3</sup>

At the same time, inflation and other cost factors relating to DOD system acquisitions became major problems. In 1971, the cost problem was sufficiently serious for the Senate Armed Services Committee to note that "if the geometric cost increase for weapon systems is not sharply reversed, then even significant increases in the defense budget may not insure the force levels

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 2d sess., 1972, p. 3.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Economics of Military Procurement, Joint Committee Print (Washington, D.C.: Government Printing Office, 1969), p. 2.

<sup>3</sup>U.S., Congress, Joint Economic Committee, The Military Budget and National Economic Priorities, Joint Committee Print (Washington, D.C.: Government Printing Office, 1969), pp. 1 and 13.

for our national security."<sup>1</sup> The consequence of spending a great deal more money than was planned on weapon development programs since the late 1950s was to reduce the quantity of systems that the military ultimately got. The practice reached a point where there was a question of having enough weapons in the inventory to satisfy real service needs. DOD was beginning to price itself out of the market.

The two-pronged cost problem—a reduction in defense expenditures and price increases—makes the question of what the Federal Government can afford a critical one. There is general agreement that priorities have been reordered away from defense spending. In 1961, about 9 percent of the gross national product was allocated to overall defense costs. Ten years later, this was down to about 7 percent, with corresponding percentage decreases in defense procurement.<sup>2</sup> Over a three-year period from 1969 to 1971, public welfare, economic development, and other Government operations budgets were increased by about 33 percent, while national security budgets were reduced by 7.3 percent.<sup>3</sup> DOD has been forced to face fiscal reality. Austerity and affordability are seen as the basic tenets of recent DOD policy changes.

#### Technical Considerations

DOD systems acquisition management is a lengthy and complex process, involving substantial technical difficulties and uncertainties. John S. Foster, former Director, Defense Research and Engineering, OSD, described the problem this way:

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 1.

<sup>2</sup>Ibid., p. 140.

<sup>3</sup>Joint Economic Committee, 1969 Hearings on Changing National Priorities (Part 1), p. 49.

One of the most critical problems we face is making the decision to initiate orderly development of a major new weapon system.

. . . The decision rests in questions that are complex. These questions involve the character and timing of present and possible military threats with which we may have to cope. Such threats are developed in secrecy and often revealed to us only at late stages. The question involves the extent to which we believe these future threats can be countered by our present weapon systems, and how effective the proposed new system might be.

This involves the difficult projection of confidence in technologies proposed for the future system.<sup>1</sup>

Where threat or technology changes frequently, the weapon system, from a development and production standpoint, is relatively unstable. Robert Perry, Director, Systems Acquisition Studies, Rand Corporation, described the effect of changes:

We plan them as complete programs, and we try to stick as close as possible to the schedules and objectives originally designed. But the threat changes constantly; program life cycles now run from 5 to 10 years and the threat that was envisioned 10 years before the system becomes operational isn't always the threat that exists. . . .

Another is technological advancement and the desire of those in the business of systems development to make each system as modern as possible, to put in as much new technology as possible. That also causes changes.<sup>2</sup>

→ Construction of a major weapon system is one of the most complicated projects known to man. A Minuteman missile has hundreds of thousands of parts, an aircraft carrier is a home for 6,000 people and 100 aircraft, and a single B-1 aircraft will cost about \$50 million. Specifications, drawings, contracts, and other paperwork must be prepared and exchanged. System hardware must be integrated and made to work. Tens of thousands of people work year after year on one design or one production run for a system. Daily, \$125 million is billed by vendors and paid out by DOD.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 1), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 239.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 167.

### Role and Position of Congress

Throughout the six-year period, there was an increased recognition on the part of Congress that its power and influence were eroding. Accompanying this was a noticeable willingness on the part of its members to reassert Congressional authority with respect to its constitutional duties. Nowhere were these two factors more apparent than in the area of national security.

A major concern of Congress has been its inability to limit the Executive's power to carry on indefinitely an undeclared war, such as in Southeast Asia. During the period under study, several bills were introduced and hearings held concerning war-making powers. While nothing other than resolutions calling for a cessation of hostilities were enacted, it was evident that pressure was building for the restriction of Presidential authority.

A second, but equally important issue, has been the loss of influence by Congress over the money it appropriates. As the scope and complexity of governmental activities has grown, influence over the way money is spent has shifted to the Executive. It has been the practice of Congress to make only relatively small changes in the budget submitted by an administration. Beyond this, the increasing use of Federal power to impound or divert funds has allowed the present administration to exercise what, in effect, are discretionary powers in disposing of public monies.<sup>1</sup> While hearings were held, no legislation was enacted during the period to strengthen the power of Congress in this area. There are, however, signs that changes will come about in the near future.

At the present time, many experts feel that the only powers Congress has left are the negative power of denying funds and the power to investigate. Throughout the period, there was much self-criticism of even these powers. In 1969, one committee report criticized Congress for its passive, noncritical and

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<sup>1</sup>Ibid., pp. 301-302.

overly permissive attitude.<sup>1</sup> A number of reasons were given for this seeming inability to deal adequately with oversight of Government operations. Problems in organization and coordination were cited. Congressmen complain that there was no central body or mechanism to pull loose ends together or to examine the broad picture.<sup>2</sup> Congress was not equipped to match the manpower and talent of Executive agencies, and it was not in a position to carry out in-depth program analysis. Congress did not have the necessary information to assess Federal programs or operations. Much information was withheld from Congress on grounds of classification or Executive privilege. Although as many as 100 GAO reports were rendered annually, Congress did little to reprimand any offending Federal agency.

Many of these factors still restrict the ability of Congress to do its job properly. Yet there are signs that Congress has moved to reassert itself and has set in motion a series of actions designed to bring its power and influence more in balance with the Executive's. This is particularly true in terms of DOD management. Congress has acted to reorder national priorities and to reduce defense expenditures. The Armed Services and Appropriations Committees have tightened fiscal controls and have made a number of improvements to increase reporting and analytic capabilities. GAO's role has been strengthened and its focus reoriented to concentrate on systems acquisition management. Furthermore, much has been done to expose DOD waste and inefficiency, as described later in this report.

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<sup>1</sup>Joint Economic Committee, The Military Budget and National Economic Priorities, pp. 4-5.

<sup>2</sup>See, for example, comments of Congressman Frank Horton (R, N.Y.), U.S., Congress, House, Committee on Government Operations, Establishing a Commission on Government Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967, p. 15.



It may be too early to assess properly the success of Congress in re-asserting itself in the area of DOD management. Congressman George H. Mahon (D, Tex.), Chairman, House Committee on Appropriations, speaking in 1972, felt that Congress had some effect on streamlining DOD operations, but we "have not been as successful as we would have liked to have been."<sup>1</sup> Rickover, on the other hand, felt that "despite the large number of hearings that have been held by [various] committees—essentially nothing has been accomplished to improve the situation."<sup>2</sup>

Perhaps most representative of the general feeling are the remarks of Senator Stuart Symington (D, Mo.). He indicated that DOD and industry must face up to the existing situation. In his opinion, DOD "is going to see a revolt when it comes to money," and added, "the tone now is very different from what it used to be."<sup>3</sup>

Presumably, no one in DOD doubts this. The past several years have been particularly trying; few seem to expect Congressional pressures for improvement to abate. DOD, it is said, is not in the position to judge its own performance or systems impartially.<sup>4</sup> Others point out that DOD will only act if prodded; Congress must take the initiative.<sup>5</sup>

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<sup>1</sup>U.S., Congress, House, Committee on Appropriations, Department of Defense Appropriations for 1973 (Part 9), Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972, p. 137.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 294.

<sup>3</sup>Senate, 1972 Hearings on the Weapon Systems Acquisition Process, p. 33.

<sup>4</sup>House, 1967 Hearings on Establishing a Commission on Government Procurement, p. 146.

<sup>5</sup>U.S., Congress, Joint Economic Committee, Economics of Military Procurement (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1968, pp. 14 and 90.



In DOD systems acquisition management, the problem appears to be how Congress should exploit its new initiative and how far it should go in forcing DOD change and austerity. Some fear was expressed that Congress may become overly involved in DOD internal operations.

### Waste and Inefficiency

Throughout the six-year period, the issue of waste and inefficiency surrounding DOD centered on the way it managed its systems acquisition business. Almost without exception, hearings or reports examined during this period addressed some form of excess, whether it be in the money DOD was requesting or in its use. When money was not the direct cause of concern, mismanagement was at issue. DOD stood accused of misspending billions of dollars. At least one critic set the figure as high as \$10 to 12 billion annually.<sup>1</sup> Where money was spent, savings perhaps as high as 30 to 50 percent allegedly could have been achieved.<sup>2</sup>

While there are literally hundreds of problems facing DOD systems acquisition managers, all can be related back to cost and effectiveness. In testimony and reports reviewed, this notion is generally expressed in two terms: cost overruns and efficient use of resources or "getting our money's worth."

### Cost Overruns

Cost overruns, or cost growth, as defined by some, are not new (see table 1, Appendix 3).<sup>3</sup> What is new is that cost increases have been much larger

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, p. 284.

<sup>2</sup>U.S., Congress, Joint Economic Committee, Economics of Military Procurement (Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1969, p. 160.

<sup>3</sup>Note that references to this and all subsequent tables pertain to Appendix 3.

and more serious than anticipated. As a result, they have received more attention by Congress. The problems faced today are said to have begun with the launching of Sputnik by the Soviet Union in 1958. Foster described it as well as any:

Certainly we came out of the fifties with a practice that in fact arose from the national situation. You will recall we were faced with an alleged "missile gap." We thought we had a strategic problem on our hands and were forced to develop weapon systems that had not been thoroughly engineered and risks removed. They were not representative of the state of the art. The art had to be developed, and those weapon systems had to be put together and produced. There was, at that time, a great deal of development-production concurrency. It was based on a felt need, and policies had to be flexible enough to meet that kind of practice.<sup>1</sup>

Facing this situation in the early 1960s, Robert S. McNamara, Secretary of Defense under President John F. Kennedy and for most of Johnson's terms of office, attempted to build safeguards into the system. He changed the acquisition structure by adopting early concept formulation and contract definition phases—a series of paper studies to better define and describe the system to be procured. Many management and procurement procedures were added to tighten controls.

Some studies have indicated that system acquisition procedures developed during the early 1960s resulted in some improvement over those used earlier.<sup>2</sup> Considering the extensive cost overruns experienced as a result of decisions made in the McNamara era, it was evident that the job could be done better. As history has recorded, neither paper studies nor procedural controls proved suited for the technical uncertainties and risks faced in acquiring weapon systems.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon System Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970, p. 34.

<sup>2</sup>U.S., Congress, Senate, Committee on Government Operations, TFX Contract Administration. S.Rept. 91-1496, 91st Cong., 2d sess., 1970, pp. 4, 50, 83, 87, 92, and 93.

The tremendous publicity on cost overruns and Government controversy covered ten years beginning in 1963, peaking in 1969, and maintaining a high level of interest throughout 1972. It was in 1963 when Senator John L. McLellan (D, Ark.), Chairman, Senate Government Operations Committee, began his hearings into the TFX (tactical fighter experimental) aircraft, later designated as the F-111. During these hearings, major DOD systems acquisition management began receiving widespread Congressional attention. The hearings culminated in a final report by the committee in late 1970, which provides a good indication of DOD systems acquisition waste and inefficiency. The following were among the committee's criticisms:

1. DOD directly obstructed the investigation and attempted to conceal the facts about the program
2. The TFX contractor selection decision was capricious, lacked depth, and was without factual substantiation
3. The unit cost for each aircraft more than doubled (from \$7.1 to \$15.3 million), and only 493, instead of 1,704, aircraft could be purchased (1,213 fewer planes)
4. The F-111B, the first weapon system in history to be cancelled by Congress, wasted \$475 billion
5. DOD failed to protect the Government's interest in the negotiation and administration of the F-111 research and development contract
6. The decision to enter production was made prematurely

The report concluded that the TFX program had been a failure, that it was a fiscal blunder of the greatest magnitude, and that it affected public confidence in DOD. It identified the primary cause of the TFX fiasco as "mismanagement."<sup>1</sup>

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<sup>1</sup>Ibid., pp. 4, 50, 83, 87, 92, and 93.

In 1968, A. Ernest Fitzgerald, Deputy for Management Systems, Office of the Assistant Secretary of the Air Force (Financial Management), disclosed in testimony before the Joint Economic Committee that there was a \$2 billion overrun on the C-5A airplane.<sup>1</sup> As with the F-111, this was to become embroiled in similar controversy. Almost as though it were a cause célèbre, the C-5A touched off a series of events which are still being felt throughout DOD. In 1969, Fitzgerald was removed from his job with the Air Force. In May of that year, hearings were held to question his dismissal. Indirectly, all acquisition programs were opened to investigation, new reports were directed, and GAO was given the responsibility to provide annual status on systems acquisition progress and performance to Congress. Concern spread throughout Congress and various committees began probes, ranging from excess profits to ways to increase competition.

By 1970, the significance of the C-5A was realized. The financial risk, when combined with cost overruns, was such that extraordinary action was required by the Federal Government to prevent the Lockheed Corporation from going bankrupt.<sup>2</sup> Shortly thereafter, the F-14 aircraft was reported in trouble, and it was learned that the Grumman Corporation refused to honor its contract with the Navy.<sup>3</sup>

In April 1971, GAO reported that differences between the initial planning estimate and current total cost estimates had increased by at least \$1 billion

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Dismissal of A. Ernest Fitzgerald by the Department of Defense, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, p. 1.

<sup>2</sup>Joint Economic Committee, 1970 Hearings on the Acquisition of Weapons Systems (Part 2), pp. 502-503.

<sup>3</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 4), p. 1140.

on each of eleven new DOD major systems under surveillance. These were: the Army SAM-D missile and MBT-70 tank; the Navy DLG(N)38 frigate and DD-963 destroyer, the F-14 aircraft and the Poseidon submarine; and the Air Force F-15, F-111, and C-5A aircraft and the SRAM and Minuteman missile programs.<sup>1</sup> Two other programs with cost growth exceeding \$1 billion, the DXGN frigate and Mark-48 torpedo, had previously been reported to Congress.<sup>2</sup>

GAO found that on sixty-one weapon systems, where complete data were available, estimates to develop and produce new systems had increased by \$33.4 billion over initial figures.<sup>3</sup> About one-third of this probably can be directly attributed to cost overruns, i.e., estimating, sundry, and unidentified changes.<sup>4</sup> It appears that no facet of DOD systems acquisition was immune from cost overruns/cost growth during this period. While aircraft programs were making the headlines, there were some indications that the largest percentage cost increases involved ships (113 percent) and vehicles and ordnance (96 percent).<sup>5</sup>

Elmer B. Staats, Comptroller General of the United States, identified the underlying causes of systems acquisition cost growth as follows:

1. Unrealistic cost estimates and lack of stable priority
2. Unwarranted degree of concurrency of development and production

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 3), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st sess., 1971, pp. 813-814.

<sup>2</sup>Joint Economic Committee, 1969 Hearings on the Acquisition of Weapons Systems (Part 1), p. 113.

<sup>3</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 3), p. 721.

<sup>4</sup>This percentage was extrapolated from Ibid., p. 796.

<sup>5</sup>Ibid., p. 804.

3. Lack of administrative discipline
4. Unrealistic initial requirements for performance and schedule
5. Changes in operating capability without adequate replanning
6. Factors beyond the control of the DOD, including inflation<sup>1</sup>

While the focus was on cost, it should be noted that schedule delays, as high as five years in isolated cases, and underruns in technical performance were equally prevalent during this period.

#### Efficient Use of Resources

The question of efficient use of resources, or "getting our money's worth," has several facets from a performance standpoint (table 2). In its review of the Army tank program, Congress found that the Sheridan tank, as originally designed, was unsuitable for combat use without extensive and costly retrofits. At the time of the investigation in 1969, 300 unusable M-60 tanks and 243 unusable turrets and components were in storage with no definite plan for their modification.<sup>2</sup> Shortly thereafter, the MBT-70 tank program came under fire for unrealistic technical specifications. Investigations of the Gama Goat vehicle program revealed similar deficiencies. This program was unable to meet durability, reliability, and maintenance requirements set by the Army.

In 1972, 4,400 vehicles were stored in Army warehouses awaiting essential modifications, while other vehicles issued to troops proved unsatisfactory. To

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<sup>1</sup>Joint Economic Committee, 1968 Hearings on the Acquisition of Weapons Systems (Part 2), p. 374.

<sup>2</sup>U.S., Congress, House, Committee on Armed Services, Review of Army Tank Program. Joint Committee Print (Washington, D.C.: Government Printing Office, 1969), pp. 6 and 37.



offset this, it was necessary for the Army to rebuild 2,500 and the Marine Corps to rebuild eighty obsolete vehicles.<sup>1</sup>

In addition to receiving unsatisfactory equipment, there was evidence of cases of continual degradation of stated military requirements throughout various system development and production cycles and some cases of failure to increase combat capabilities. In addition, the ability of particular programs to achieve satisfactory advances in the state of the art was questioned.

There are indications that the United States is not getting new equipment in either the numbers or in the time-frame needed. In the case of aircraft, for example, it has been reported that not one new tactical fighter aircraft has been added to the combat inventory since the F-4 aircraft in the early 1960s. Beyond that, only 285 F-111 fighter bombers have been added.<sup>2</sup>

These deficiencies have prompted serious concern that the United States will not have the weapons needed to keep pace with the Soviet Union. This has led to a call for new strategies and concepts in the use of the armed forces, new initiatives for research and development to advance technology, and improved production for the dollars expended.

#### Need for Major Improvements

Robert F. Keller, Assistant Comptroller General, GAO, testified that "we believe it is important to recognize that not all cost growth can reasonably be prevented and that some cost growth, even though preventable, may be desirable

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<sup>1</sup>U.S., Congress, House, Committee on Armed Services, Army Procurement of the M561 Gama Goat. Committee Print (Washington, D.C.: Government Printing Office, 1972), p. 1.

<sup>2</sup>U.S., Congress, Senate, Committee on Armed Services, Advanced Prototype, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 49.



[e.g., to keep abreast of current technology]."<sup>1</sup> Although DOD could not identify any single item as the reason for cost growth, risk, change, and control were three important causes cited during testimony. As long as the United States tries to push technology and the state of the art, waste and inefficiency will remain. No form of management is going to control the technical unknowns. Added to this, the United States cannot predict threats with great precision.

David Packard, Deputy Secretary of Defense, said in 1969, "I am certain that the job can be done better than it has been done, and that Congress and the public expect and deserve improvement."<sup>2</sup> Stennis expressed everyone's concern when he said, "I am sick at heart about the predicament we are in."<sup>3</sup> Goldwater said that "this is probably the most important subject [systems acquisition] we are going to touch on this year [1972] and next year and for years to come and for whatever it will take to clean up the way we procure weapons."<sup>4</sup> Two points are apparent: the problems DOD faces are difficult and DOD has made changes to improve the situation.

DOD has made a number of policy changes in an attempt to place and retain better people in key project and procurement management jobs. It has increased the authority and responsibility of project managers, changed contracting methods, implemented a concept of "fly-before-you-buy," and reduced program concurrency in an effort to control costs and increase efficiency.<sup>5</sup>

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<sup>1</sup>Joint Economic Committee, 1969 Hearings on the Acquisition of Weapons Systems (Part 1), p. 29.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 6.

<sup>3</sup>Senate, 1971 Hearings on the Advanced Prototype, p. 55.

<sup>4</sup>Senate, 1972 Hearings on the Weapon Systems Acquisition Process, p. 2.

<sup>5</sup>A general description of policy changes is contained in House Committee on Government Operations' 1970 Hearings on Policy Changes in Weapon System

There is no consensus on how much effect the changes and improvements will have on DOD systems acquisition management. Phillip N. Whittaker, Assistant Secretary of the Air Force, Installations and Logistics, testified, "We feel things are looking better and . . . that the sheer amount of attention being devoted to this whole process of systems acquisition within the Pentagon at all levels of management is a healthy indicator."<sup>1</sup> In other testimony he said, "I believe DOD to be one of the better managed, more effective parts of the executive branch. At the same time, we have admittedly great problems and much room for improvement."<sup>2</sup>

Foster, in 1971, testified that "we are beginning to see beneficial results from the practices instituted to control the costs and reduce risks."<sup>3</sup> In Congress, opinions vary from those of Chester A. Holifield (D, Calif.), Chairman, House Committee on Government Operations, who expressed confidence in DOD, to Symington, who commented that "there are a great deal of theoretical solutions to these [procurement] problems, but as yet, I have seen no practical accomplishments or results."<sup>4</sup>

From those outside the Federal Government, cautious optimism has been expressed. Fitzhugh, in defending changes, said, "We are hopeful that by adopting a number of these changes there would be material improvement, but it is

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Procurement, pp. 37-42. In addition, the nine steps taken are outlined in Senate Committee on Armed Services' 1971 Hearings on the Weapon Systems Acquisition Process, pp. 85-86.

<sup>1</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 256.

<sup>2</sup>Joint Economic Committee, 1968 Hearings on the Acquisition of Weapons Systems (Part 2), p. 492.

<sup>3</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 66.

<sup>4</sup>Ibid., p. 26.

not going to solve the problems."<sup>1</sup> Thomas V. Jones, President, Northrop Corporation, a major defense contractor, testified that:

There have been profound changes which now provide a basis for orderly planning. . . . The Government has taken some excellent steps . . . to set policy and has expressed the intent to carry it out. . . . The problem is understood in many places . . . the idea [is] simplification. . . . The changes, if followed rigorously, I think, will be a major step forward.<sup>2</sup>

Finally, an external observer and expert, Frederic M. Scherer, Professor of Economics, University of Michigan, commented that:

The new heads of the Defense Department—Messrs. Laird and Packard—have been changing the policies; they have been moving toward less rigid contractual instruments and toward more decentralized program management. . . . I see these changes as pretty much returning to the 1950's way of doing business. As such, most will probably be an improvement, but one should not harbor illusions.<sup>3</sup>

There appears to be a consensus that changes have been made for the better, but many problems remain. As indicated, national interests are at stake; size, cost, and complexity make the subject one of national significance. Furthermore, the role and position of Congress is critical in any continuing management improvement program.

The following chapters are intended to provide the reader with an appreciation of the problems and issues in systems acquisition management. It is hoped that sufficient information is presented to permit the reader to form an opinion about waste and inefficiency in systems acquisitions and the directions continuing management improvement should take.

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<sup>1</sup>Ibid., p. 35.

<sup>2</sup>Senate, 1972 Hearings on the Weapon Systems Acquisition Process, pp. 3, 7, 34, and 41.

<sup>3</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 136.

### CHAPTER III

#### ORGANIZATION AND DECISION-MAKING

During the six-year period under study, DOD decision-making was vested in essentially two people: McNamara (January 1967 to March 1968) and Secretary of Defense Melvin R. Laird (1969-1972), directly assisted by Packard in the area of weapon systems acquisition.

Probably the most pervasive long-term management issue that confronted these leaders was the trend toward centralization within DOD. The centralization of systems acquisition managerial functions in OSD can be traced back to 1940-41. However, it essentially had its foundation in the National Security Act of 1947 (which placed all defense activities under a Secretary of Defense) and in the creation of the Department of Defense in 1949 (which eliminated the armed services' status as separate executive departments). In 1958, a new and more powerful position, the Director of Defense, Research and Engineering (DDR&E), was created within OSD to resolve technical role and mission conflicts among the military departments.

When McNamara was appointed in 1960, DOD's role was largely reactive; "the services proposed and the Defense Secretary, flanked by his advisors, disposed."<sup>1</sup> McNamara took two major steps to reverse what he considered to be an unsatisfactory decision-making process. First, he organized a separate assistant secretaryship for Systems Analysis to ensure that strategy, need, and

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<sup>1</sup>See testimony of Scherer, one of the most widely accepted authorities on the history of the weapon system acquisition process, in U.S., Congress, Senate, Armed Services Committee, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 143.

economy were thoroughly weighed along with technical feasibility in making new program decisions. This was the beginning of the reign of the so-called "Whiz Kids" and the scientific decision-making, which was so controversial throughout the six-year period and which continues today. Second, McNamara concluded that his office should actively participate in all stages of the weapons research, development, and production sequence, rather than respond to military department initiatives at key budget or program decision points. This was accomplished by developing programming procedures which would link DOD planning and budgeting processes. This resulted in the planning, programming, budgeting system (PPBS) as it generally exists today. These changes greatly increased OSD's influence in setting system program goals and economic trade-offs among system performance, cost, and schedules. Conversely, McNamara's use of both decision-making tools was not well received by either Congress or the military departments.

As Scherer testified, "There was a widespread belief . . . that 'better management' would solve the problem." As Scherer concluded, "'Better management' had a tendency to be translated into 'more management' with an accompanying increase in rigidity, delay, and the suppression of initiative."<sup>1</sup> Most DOD experts agreed with this conclusion, and it formed the basis of much of the committees' criticism and concern.

When the Laird/Packard team assumed command in 1969, one of their first acts was to reverse the trend toward centralization and to change the PPBS decision-making philosophy. While systems analysis was downgraded, critics in Congress and the military departments felt that the function remained very powerful in terms of issuing fiscal guidance for PPBS and influencing the

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<sup>1</sup>Ibid., p. 143.

decision-making process.<sup>1</sup> Under McNamara, all military department budget requirements were forwarded to OSD without regard to any program ceilings. Budget constraints, priorities, and limitations were assigned at the OSD level. The military department "wish list" differed at times by as much as \$10 to 12 billion from the budget OSD finally submitted to Congress. In 1969, DOD reverted back to the "fixed" budget concept. Under this approach, target budget ceilings were set and fiscal guidance provided in advance of the budget call. In addition, the military departments were given responsibility for much of the detailed planning and budgetary decisions. There were, however, indications that decentralization had not proceeded as far as Congress would have liked. One need only cite, for example, the 1972 action in which the Armed Services Committees elected to reduce the size of DOD headquarters by 25 percent.

This chapter discusses these organizational and decision-making factors and examines how they have contributed to rigidity and delay in systems acquisition management.

#### Bureaucratic Characteristics of DOD

DOD is thought by many to be the most typical example of a bureaucratic organization. Because of its size, making any improvements is considered "a tremendous task and an enormous undertaking."<sup>2</sup> Proxmire, for one, has commented on the tremendous difficulty involved in making improvements because of the tendency to maintain the status quo.<sup>3</sup> Several witnesses also claimed that

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<sup>1</sup>During the first two months of 1972, the writer interviewed personnel from the three military departments directly involved in developing and implementing changes to the PPBS, and they generally agreed with this conclusion.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapon Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, p. 287.

<sup>3</sup>In connection with testimony on uniform cost accounting procedures, in U.S., Congress, Joint Economic Committee, Economics of Military Procurement



few people in DOD have ever been actively interested in reform. In fact, testimony over the period indicated a strong tendency within DOD toward self-preservation through an almost unlimited capacity to absorb protest and appear responsive while failing to act in any meaningful way. Many feel that there is no sustained, specific criticism of DOD by DOD officials. As Rickover noted, "There is a tendency for anyone who is in power [within DOD] to keep his own mistakes secret, and thus exempt himself from criticism."<sup>1</sup>

DOD's seeming inability to change, its tendency toward self-preservation, and its inordinate amount of secrecy have been major concerns of the committees over the six-year period and have caused considerable friction and confrontation between DOD and Congress. Symptomatic of this situation is DOD's unwillingness to practice full disclosure in its testimony and dealings with Congress (see table 3). These kinds of problems are present at all levels of systems acquisition management and cover a wide range of issues.

As a result of DOD's restrictive practices, many have concluded that few people connected with DOD have been or will be willing to speak out. There is some evidence that this continuing friction and pressure are having an adverse impact on employee morale and initiative.<sup>2</sup> Some witnesses claim that DOD's actions have created a credibility gap, have shown a complete disregard for public opinion, and have contributed to the loss of public confidence.

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(Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1968, p. 21.

<sup>1</sup>U.S., Congress, Joint Economic Committee, Economics of Military Procurement (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1968, p. 5.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Dismissal of A. Ernest Fitzgerald by the Department of Defense, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, p. 191.



There is sufficient evidence to conclude that a lack of communication (and underlying lack of information) exists between DOD and Congress (and the public). This has contributed to poor relations and to an increase in an advocate-adversary role between the two parties. Along this line, the reader's attention is directed to the similarity of the symptoms and problems described here and the fundamental problems and shortcomings of bureaucratic organizations described by many authors and authorities.

### OSD Organizational Superstructure

Within this bureaucratic environment, the Congressional committees were concerned with DOD's organizational superstructure. Within OSD, this concern focused on:

1. Poor organizational arrangements at the top levels
2. Misuse of systems analysis
3. Deficiencies in the secretarial appointee system

### Top-Level Organization

A schematic of the top-level organization and references and descriptions of special issues or problems are contained in table 4.

The outcome of the National Security Act of 1947 and the establishment of DOD in 1949, while valuable in many respects, created what has been called an "executive bureaucratic chain of command." Weapon systems decisions, once made by Congress on the basis of recommendations by the military departments, were made by echelons of the Executive during the period under study. This removed Congress from immediate contact with the armed services and from those having firsthand expertise in the design and use of military equipment. Budget analysts in the Office of Management and Budget (OMB) allegedly prepared unchecked evaluations of weapon system alternatives and presented them as the basis for

major program decisions by top-level OSD officials. In general, much time was spent by people in DOD rebutting documents prepared by "any and every analyst in the bureaucracy."<sup>1</sup>

This structure and the structure created within DOD were said to have led, in part, to the adversary relationship which exists between OSD and the military departments and among the military departments themselves. They have also resulted in a reliance on the bureaucratic apparatus rather than on individual initiative.

At the OSD level, various secretarial offices appeared to have become compartmentalized without any one office (other than the Deputy Secretary of Defense himself) being responsible for coordination of internal OSD systems acquisition activities. In general, overlap, duplication, and split responsibilities existed between OSD and lower level civilian and military officials. Beyond this, it was said that too many individuals in OSD did not comprehend what was involved in developing complex weapon systems. Since 1969, OSD involvement in detailed management has been reduced, but many DOD officials believe there is still a long way to go.

The major effort has been to get OSD out of the requirements business and to return day-to-day technical management to the military departments. This, incidentally, was one of the conclusions of the follow-on 1970 TFX hearings.<sup>2</sup> There are also those who testified that OMB and DOD comptroller organizations should not be involved in determining specific military requirements. This is considered to be a job for the Joint Chiefs of Staff (JCS) and the military

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 351.

<sup>2</sup>U.S., Congress, Senate, TFX Contract Investigation. S. Rept. 91-1496, 91st Cong., 2d sess., 1970, p. 93.

department secretaries. Others testified that there was a need to reduce the power of DDR&E (and the Office of Systems Analysis) and, among other things, to remove test and evaluation from DDR&E's supervision. Still others thought that a number of the centralized organizations that evolved during the 1960s, such as the large, not-for-profit technical organizations, also had become bureaucratic. In addition, they were a heavy burden on overhead costs and contributed to rigidity in systems acquisition decision-making. Actions were taken by Congress to reduce both the size and authority of the DOD-supported, not-for-profit organizations.

Recommendations addressing top-level organization issues varied but invariably focused on reducing the OSD civilian general staff. Some called for a drastic reduction in numbers, others for more delegation of authority to the military departments. Some dealt with organizational arrangements, such as eliminating staffs of DDR&E and Installations and Logistics (I&L) and having the military department assistant secretaries carry out these responsibilities for the Secretary of Defense and OSD.

### Systems Analysis

While many of the issues and problems outlined above apply equally to systems analysis as practiced within OSD, it is worth-while to isolate the specific areas of concern in this process (see table 5).<sup>1</sup> A major controversy, which began in the 1960s, exists over the role and extensive use of social sciences in DOD systems acquisition decision-making. Supported by computers and quantitative analytic techniques, social scientists have risen to prominence by using

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<sup>1</sup>The reader is cautioned that a great deal of the testimony criticizing systems analysis comes from one source, Rickover, in his several appearances before various committees. Since most of his criticisms are readily accepted by committee members and, for the most part, have appeared in other media by other writers, there is no reason to believe that his comments are not accurate descriptions of the issues and problems.

analytical information as the major basis on which to judge and solve complex technological problems. The Office of the Assistant Secretary of Defense, Systems Analysis (ASD/SA) was established under McNamara as an advisory group. Over time, however, its findings and conclusions were often accepted, it is said, as indisputable truths by top OSD officials. Under pressures of the job and the environment, systems analysts felt compelled to recommend alternatives for systems development, regardless of their merit. Yet, analysts were several times removed from the systems acquisition operation with no responsibility for the consequences or results. Detractors claimed that the analysts had hidden prejudices and that their analyses were not necessarily objective.

Because of the need for quantification, it became necessary to make simplifying assumptions and, in many cases, to eliminate from consideration the principal military reasons for the weapon system. Military personnel felt these assumptions were not realistic and spent considerable time arguing about their validity. There were claims that ASD/SA ignored the fact that many problems were not susceptible to their kind of analysis. Far more emphasis seemed to be placed on determining costs than on studying military effectiveness. Complex factors of war, such as troop capability, target acquisition, terrain, weather, human shortcomings, distraction, stress, and confusion, were generally ignored. Beyond that, the tools of systems analysis were considered crude in many respects.

Many practicing analysts agreed that systems analysis was, by nature, a form of micro-analysis and that there was a tendency to lose sight of the "macro" or larger context. Furthermore, the unknowns and variables were often more significant in the real world than the most careful quantification of the knowns. It was argued that techniques could not be applied to the full range of research and development, particularly basic research since the initiator had no

idea at the outset of what he was looking for. The models used were not always validated by independent tests, and operational data were not always appropriate or adequate. Data often were edited, aggregated, and filtered by many levels before reaching the analyst. In addition, the question was raised whether there were enough people qualified to perform the function for which systems analysis was intended.

While it was agreed that analysis should not be the sole basis for policy decisions, this was not always the case in practice. When decisions based only on systems analysis were made, trouble and dissatisfaction usually resulted.

In 1968 testimony, Rickover said:

DOD financial and systems analysis personnel have caused significant program delays and cost increases by their decisions to suspend or to defer weapon programs in order to conduct cost-effectiveness studies. . . . It is high time we recognize the consequences of unwarranted delays in the technical programs. In DOD, administrators and systems analysts hold up funds specifically appropriated by Congress, . . . while they study and restudy the project. . . . The DOD decisions are nearly always tentative; they analyze and decide—then reevaluate, redecide, on and on. . . . This myriad of administrators has assumed great powers. . . . By simply refusing to act [they] killed [a] project [nuclear power for the new aircraft carrier, the JOHN F. KENNEDY].<sup>1</sup>

In 1971 testimony, he continued to caution about "a real sickness [in which] professional problem-solvers . . . have power to rule on complex technological issues" and in which systems analysis many times ends up being "a menace rather than a help."<sup>2</sup> Throughout at least four years of testimony on the subject, he has continued to stress the inability to cope with the delays attributable to studies and administration as a "dangerous game."

To counteract this trend, Rickover and others have recommended that the position and staff of ASD/SA be eliminated and the function be performed by the

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<sup>1</sup>Joint Economic Committee, 1968 Hearings on the Economics of Military Procurement (Part 2), pp. 76 and 78.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, pp. 303, 320, and 333.

JCS and military department staffs where it is possible to "meld operational experience and technical considerations."<sup>1</sup> Because of his proven record of being right in similar matters and the general committee member agreement each time the subject was discussed, it is difficult to ignore the implications if not the conclusive aspects of his testimony.<sup>2</sup>

#### Appointee System

There has been considerable concern expressed about the balance of power shifting to appointees at the OSD (and the military department) secretarial level through centralization and the use of the PPBS (see table 6).<sup>3</sup> These officials have the power and are said to use it to take any issue out of their subordinates' hands. This group has ready-made views and does not hesitate to put them into effect. As a result, advice from knowledgeable and experienced subordinates is often ignored. The attitude of industry appointees, chosen from the same industries they seek to control, reflects a biased viewpoint. Because of this, it is said that they will act to protect industry at the expense of the taxpayers. Some appointees are thought to use their governmental positions as stepping stones to better positions. Much of the criticism of DOD management has been directed to appointees and the appointee system, ranging from overriding expert advice on the TFX, to refusing to enforce public laws pertaining to industry truth-in-negotiations, to permitting undue industry influence on defense procurement policy.

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<sup>1</sup>Ibid., p. 506.

<sup>2</sup>Early in 1973, the new Secretary of Defense, Elliot Richardson, announced that the ASD/SA had been downgraded from the assistant secretarial to a directorate level. Presumably its influence and power were reduced even further than under Laird.

<sup>3</sup>The reader is cautioned that a great deal of the testimony criticizing the appointee system came from one source, Rickover.



The appointee system is seen as contributing significantly to instability in the decision-making and administrative processes. Stennis and Proxmire commented on the turnover aspects at the Secretary and Assistant Secretary levels. Stennis spoke in terms of the general need for long-term continuity of systems acquisition management and Proxmire in terms of appointees' disclaiming responsibility for mismanagement. During Rickover's career, he reported that he was responsible to sixty-eight senior OSD and Navy-appointed officials (of 101 total military and civilian), each holding his position for a little over two years. Of the top ten officials with whom he dealt, on the average, four were new incumbents each year. Many appointees lacked needed procurement expertise and experience. Most disrupted activities while they learned something about their jobs and were prone to act from authority rather than knowledge.

This situation has created turmoil, questions, paperwork, and other discontinuities in the system. Because of this turnover, long-term problems are hard to solve. As Proxmire sees it, "As soon as they have been around long enough for people to begin to hold them responsible, they are replaced."<sup>1</sup>

#### Military Department Organization and Management

The military department (or service) secretary, the military department headquarters staffs (the major elements of the Pentagon), and the systems and logistics commands (the Army Materiel Command, the Naval Material Command, and the Air Force Systems Command and Air Force Logistics Command) constitute the essential top-level military organizations and can be isolated for consideration. Much of the previously described concern about poor organization, overlap, and duplication at the OSD level applies equally at the military

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 5), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st and 2d sess., 1971 and 1972, p. 1528.

department level, except that the problems are described as being more dangerous to the well-being of the overall systems acquisition management process.

Two major aspects are highlighted:

1. Concern for military department-level organizational layering
2. Concern for unnecessary military department-level staff activity

The problem of organizational layering involves superimposing a traditional, vertical, military organization on one necessary for complex, technical management of long-term system development and production (see table 7).<sup>1</sup> Authority and responsibility are diffused at each level and divided among the several layers. Officers with operational experience are in key decision-making positions at various levels but have neither the background nor the expertise to assess or cope with the technical aspects. During 1972 hearings, it was suggested that Congress specify how many echelons there should be in DOD and in the military departments. The suggestion was to eliminate one military level and essentially reduce the military department layers to two—one military and one civilian.

While layering is concerned with the vertical organization, unnecessary staff-level activity is involved in the horizontal organization (see table 8). Here the problem centers on the growth, numbers, and size of various functional groups existing at each of the three military department levels of management. Excessive functional regulations, procedures, and controls are said to delay decision-making, coordination, and changes in programs beyond acceptable limits. In addition, they appear to constitute one of the most serious threats to providing timely and adequate equipment for the military forces. The recommendations for coping with the unnecessary staff activities involved

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<sup>1</sup>It should be noted that a number of the individual issues contained in tables 7 and 8 apply to more than one aspect of management and appear in other tables in later sections of this chapter.

consolidating functions, reducing staff personnel, and relieving project offices of many coordinative and procedural activities. From the intensity and amount of testimony and the recognition given to the need for streamlining staff-level operations, one gains the impression that this is the most serious of Congressional concerns.<sup>1</sup>

Perhaps no one associated with DOD understood the military department organizational problems better than Packard. In one of his first appearances before a Congressional committee to explain and justify his policy changes in systems management, he had this to say:

We have just begun to look at the organizational problems in each of the Services as they relate to new weapons programs. . . . To be brutally frank about this situation, the services need to be organized so that the development and production of new weapons systems is managed by people who are experts in that business. This is not the practice in the services. Instead, the weapons management job is performed under a system in which too much responsibility is given to officers whose special expertise is not development and procurement. . . . I conclude, therefore, that it is going to require a major change in the organizational structure of all three Services to straighten out the management of new weapons programs.

Too many high-ranking officers want to get in the act. It is generally agreed that they do not know very much about the project in the sense that they make no positive contribution but they can and do say no, and they have to be briefed often and in great detail. . . . There are some cases I have seen where the project manager is often little more than an errand boy for all the service officers, both above him and around him in the organization. The project managers are generally buried down so far in the military department that they cannot effectively influence decisions with respect to changes. . . . There are some exceptions but this is the key to the problem.

We will make improvements [when] we can . . . structure the organizations so they [knowledgeable people] can use their judgment, intelligence, and energy effectively. We do not need more high-level involvement in the Services. . . . We need . . . an organizational structure which creates an attitude at all levels that will enable us to say this is the project manager's job.

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<sup>1</sup>See, for example, the running commentary between Mahon and Rickover on necessary corrective actions; resistance to change, and executive-legislative relationships in U.S., Congress, House, Committee on Appropriations, Department of Defense Appropriations for 1973 (Part 9), Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972, pp. 138-140.

I think we do have to cut out the intervening levels. . . . It is the intervening layers that are our problems.<sup>1</sup>

Although some military department-level organizational changes have been made, it would appear that the major changes in the organizational structure which Packard felt were necessary have not been accomplished.

#### Working-Level Organization and Management

The working level responsible for weapon systems acquisition management consists of two major elements: the specific weapon systems project office and the division level or field contracting office. Each of the military departments operates with either a fully self-sufficient project office, in which much of contracting and other support functions are assigned directly to a manager, or with a matrix organization, in which contracting and other functions provide direct support but do not work exclusively for the project manager. All military departments have examples of each type of organizational structure or some combination, and each has its strengths and weaknesses. Congressional committee concern expressed for project office organizations was generally considered to be an extension of the two military department-level problems. Specifically, they included placement of the project office too low in the organizational structure, lack of adequate authority for the project manager, and insufficient rank to deal on an equal footing with staff functions. It is in these latter areas where the military departments have been able to do the most to strengthen the project management approach and the role and performance of the project manager. Testimony indicated that many problems remained in improving project office efficiency, much of which pertained to personnel policies, which are covered in Chapter IV.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon System Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970, pp. 5-6, 18-20, and 27.

Similar personnel problems exist in the procurement operations, which are also covered in Chapter IV. However, the procurement function, being much larger and older than project management, appears to have suffered significantly from the organizational changes instituted since the early 1960s. Many people testified that the entire business side of DOD, including the procurement function, has been significantly downgraded in relation to other military activities. There is little argument that there is a need for better organizational recognition of the procurement function because of its tremendous impact on the taxpayer. One recommendation was to establish a single, vertical, procurement channel (possibly to include systems acquisition management) reporting to either a top-level, staff military officer or an official at the secretarial level in each military department. There are, however, wide disagreements with any recommendation that would completely remove these functions from the jurisdiction of the three military departments or operate them on an all-civilian basis.

#### Interservice Rivalry

In addition to the major DOD organizational problems highlighted, there is a problem attributed to an organizational barrier which is not bounded by levels of management or functional lines: It pertains to interservice rivalry (see table 9). While not exclusively a systems acquisition problem, many of its roots can be found in the acquisition process. It is not a new problem since it was one of the bases for the so-called Unification Act of 1947, and many dedicated leaders in DOD have repeatedly addressed it. No particular committee hearings during the six-year period focused on the problem, yet the spectra of interservice rivalry as a fundamental problem continued to arise. It commanded top-level attention and was singled out on at least two occasions by leading DOD spokesmen. Fitzhugh, commenting on the President's Blue Ribbon



Defense Panel Report, prefaced his remarks during 1971 Senate Armed Services Committee hearings by saying, "Many of the difficulties result from the structure of the Department of Defense structure itself, which inevitably leads people into adversary relationships rather than toward cooperation. . . ."1 In 1972, Packard said, "When Secretary Laird and I took [office] in 1969, . . . bringing adverse forces together was our most important goal. . . . Within the Department of Defense . . . there continues to be a degree of competition between the Services . . . that is unacceptable because it is inconsistent with the common commitment."2

Interservice rivalry is thought to center primarily on military roles and missions, and systems acquisition management is partially an offshoot of this problem. It leads to duplication of weapon systems to support the overlap and it is costly.3 Goldwater had the following to say in one of the few investigations in which the subject was raised:4

These hearings [close air support] . . . are an effort to answer the question of whether we need one, two, three or four tactical air forces. We started out with one; we have grown to four. Each one of the four can make a whale of a good argument for their continuances, but we are having a very hard time . . . not just justifying but defending the cost of these weapons on the floor.

I know it gets to be a matter of jealousy and hate between the services. I think competition is great, but some way we have got to come up with some answers as to what we need.5

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 4.

<sup>2</sup>Joint Economic Committee, 1972 Hearings on the Acquisition of Weapons Systems (Part 5), p. 1481.

<sup>3</sup>Specific action was taken by the committees to identify and reduce duplication and related aspects in the authorization and appropriation process.

<sup>4</sup>Committee hearings and reports contained only a limited amount of comment and criticism pertaining to interservice rivalry. While interservice rivalry can be justified as a major problem, there was no overwhelming evidence of it in Congressional records during the six years under study.

<sup>5</sup>U.S., Congress, Senate, Committee on Armed Services, Close Air Support, Hearings before the Special Subcommittee on Close Air Support of the



This aspect has led to management problems ranging from excessive technical advocacy by a military department or special interest group to the inability to agree on or set priorities among existing, new, and competing systems.

A second series of problems caused by interservice rivalry deals with the lack of coordinated procurement planning and execution. A number of examples were cited of insufficient use of interservice agreements:

1. The overruling of one service by a second service appointed by OSD to act for it in certain procurement transactions
2. The lack of uniformity in buying procedures which would assist the military departments in supporting each other
3. The lack of consolidated requirements when dealing with the same contractors

Each of these administrative actions involves some degree of duplication and excessive cost. It is thought that the recently reduced DOD budget, coupled with actions to provide greater fiscal reality, would have both a sobering and rehabilitating effect on the internal coordination processes of the military departments. While interservice rivalry may be lessened, there is no indication that it has been or ever will be solved.

#### DOD Decision-Making Process

The DOD decision-making process involved in systems acquisition management is very complex. Because of this, it is probably one of the least understood and visible aspects of DOD. There appears to be a lack of understanding concerning the consequences of decisions among persons involved with DOD, the Executive, and Congress. One witness suggested that a study be conducted on how system acquisition decisions are made. Congressional and witness testimony

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Preparedness Investigating Subcommittee of the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 105.

expressed serious concern for the delays attributed to the process and their impact on military and management effectiveness. The two most prominent aspects are overadministration and irrevocable decisions.

#### Overadministration

All aspects of the process—people, procedures, and data—contribute to overadministration in DOD systems acquisition management. Excessive and unnecessary staff were covered earlier (see table 8), while paperwork is discussed later (see table 15). Procedural aspects of administration are very important and, within DOD, very time consuming (see table 10). The problem is one in which competing objectives, enormous pressures, and conflicting views cause tremendous slowdowns as items are considered at each point in the process. Almost every system acquisition decision is budget-related, which leads to a preoccupation with budget matters. Decisions are overly influenced by the administrative strata. It is said the process is carried out by too many people, many unqualified, with too little getting accomplished.

Decision-making appears to bog down most severely in the review and approval process. One major problem is that the "rights" accorded to an administrator exceed his contribution. Each administrator has rights of involvement, that is, items must pass through him. He has rights of information, both as specified and as he demands. Each party in the process has rights to review, inspect, or query. Furthermore, each administrator has a right to disapprove, directly or indirectly, many of the details connected with a decision. The scope, number, and detail of reviews are overwhelming. Items are studied, justified, restudied, and rejustified. Each review requires a meeting and a briefing, and re-reviews require more briefings. All this is supported by detailed information. Because of the scope and data involved, much of the review

process is carried out by committees at each level. Delays are caused as committees seek consensus; and when this fails, crisis management takes over.

Specific testimony can best serve to demonstrate the extent and magnitude of the problem. Herbert Roback, Staff Administrator, Military Operations Subcommittee, House Government Operations Committee, had this to say in questioning one OSD official:

Your office has an important job in reviewing and approving new systems, but frequently the complaint is made, or the situation exists, that your office, instead of being a contributor to tight management, is a contributor to unusual delay, and unusual delay runs into the tens if not hundreds of millions of dollars. . . . In the Minuteman III, there was one important item that was debated above the level of the Air Force for 21 months.<sup>1</sup>

Dr. William B. McLean, Technical Director, Naval Undersea Research and Development Center, referring to the inadequacies in the systems acquisition process, said, "The budgetary process . . . has become a ritual with no content, which is occupying more than 50 percent of the productive time of our best technical people at the laboratory level and the full time of large numbers of technical people in Washington."<sup>2</sup>

D. T. Leighton, Associate Director, Surface Ships, Naval Nuclear Propulsion Program, commenting on the nuclear-powered CVA(N)-70 aircraft carrier decision, said:

When Congress debates an issue, you can see what the arguments are and where various individuals stand on the issue. But in the Pentagon, at least at the levels of the Chief of Naval Operations and the Chairman of the Joint Chiefs of Staff, we cannot find the document that gives the rebuttal. We do not know why the CVA(N)-70 was not approved by DOD this year.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 4), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 1122.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 224.

Rickover added:

At least this committee will understand that one-fourth of the estimated cost of the CVA(N)-70 is due entirely to the decision-making process which prevented its approval in a timely manner. What really happened in the decision-making process I have no way of knowing, sir.<sup>1</sup>

#### Irrevocable Decisions

Just as decisions are difficult to make, once made, they are difficult to stop or change. Their continuance seems inevitable because of gathering momentum and the presence of a set of irrevocable forces (see table 11). It is said that, as a practical matter, once the President's budget is submitted, it is almost set in concrete. What the Congress can do to the budget in any one year is limited. Any significant change means a major reshuffling. In terms of weapon systems, a one-year appropriation, having set the process in motion, in fact may be a long-term commitment.

There appear to be three forces at work in the decision-making process. There is a force acting between Congress and DOD. On encountering a perceived enemy threat, military pressure often forces DOD to initiate a weapon system program. Although much uncertainty exists at the time, DOD officials vigorously defend their position. Where controversy exists between DOD and Congress, DOD officials tend to make costly changes to prove the credibility and merit of their actions. Both Congress and DOD find themselves locked into a set of circumstances that neither can change.

A second force exists within DOD itself. Military planners and system advocates tend to overestimate technical performance and underestimate cost. Reviewing officials know this and increase reviews and tighten controls. As problems arise, lower levels tend to cover up, color reports, and sweep problems downstream for fear of losing funds. Maintaining the program and meeting

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<sup>1</sup>Ibid., pp. 325 and 329.

schedules override everything else. When top management discovers problems, it is often too late to act. Many times, technical problems are not detected until new systems are deployed to the field.

The third force involves the size and complexity of procurements. Because of their cost, few companies can bid and competition is limited. In an effort to conserve resources and get a good price, a development or production contract is awarded for a period of several years. Thus, DOD and the contractor are locked into a commitment. This commitment tends to limit the actions that Congress might take.

Several Congressional committees are studying ways to improve the overall program budget process. In terms of DOD systems acquisition management, several witnesses advocate some form of incremental decision-making by Congress. Fitzhugh, when asked for recommendations in this area, responded by saying, "I would draw the dividing line, and this is an oversimplification, at the point of decision or the three or four decision points we have been talking about [the major decision points separating specific phases in a system life cycle which do not necessarily line up with the annual budget cycle]."<sup>1</sup> Perry recommended the same thing when he said that "a technique of incremental acquisition based on a sequence of decision points and a succession of development and production phases would be very useful."<sup>2</sup>

#### The Planning, Programming, Budgeting System

The Congressional authorization and appropriation process and the supportive DOD policy and procedures constitute a major part of the systems acquisition decision-making process, both internal and external to DOD. This

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<sup>1</sup>Ibid., p. 36.

<sup>2</sup>Ibid., p. 173.

Congressional-DOD, program-budget mechanism, or PPBS as it is commonly called, is a major contributor to overadministration and other inefficiencies surrounding systems acquisition decisions (see table 12).

Moving a request for funds through governmental machinery is considered to be the single, most time-consuming task at all levels of management concerned with new weapons. Testimony indicated that it can take up to five years to get a new project approved, including up to two years to go through the budget review process, as OSD and the military departments work to handle three budgets (current, next year, and future) simultaneously each year. In recent years, the military departments have been four to six months into the fiscal year for which funds were appropriated before the appropriations were approved by Congress. When this is contrasted with a contracting cycle requiring an average of eight months for a major procurement, it is obvious that problems will arise when action is taken to compress much of the contracting into the last six months of the year. This fiscal year time compression is felt in every aspect and at every level of the DOD PPBS.

It is said that timing and structuring problems exist within the PPBS. For example, Program Budget Decisions (PBDs), a critical mechanism used by OSD to approve programs or set forth alternatives, is one place the internal DOD system breaks down. In the press of time available for military department rebuttal, there may be only a few hours for analysis and preparation of a reclama. Many times inaccurate and erroneous information is included in the PBD evaluation which must be overlooked but which subsequently becomes the basis for major decisions.

Individual research and development projects, regardless of size, are subjected to essentially the same procedures and budget reviews. One Navy laboratory reported that of 316 individual projects, 131 were requesting \$50,000



or less, but had to be reviewed by twelve levels before being approved. Because of summarization and structuring, budget programs put before Congress differ from those in the DOD PPBS. This makes it very difficult to communicate and correlate activities among the different categories and points of view.

A wide range of improvements has been recommended, mostly centering on greater Congressional involvement in long-term considerations, such as five-year planning projections and getting away from funding on a yearly basis. The most promising suggestion involves two-year authorizations and appropriations for system acquisitions. Theoretically, this could cut the budget preparation and associated workload by up to half its current level. It is doubtful that anything of this nature could be carried out since one Congress (the 92nd, for example) would, in its last year, be committing the next Congress (the 93rd) to certain expenditures.

### Planning and Requirements Determination

#### Long-Range Planning

One of the criticisms leveled at DOD was that top-level people were so preoccupied by budget activities that they failed to foresee the nation's true defense needs.<sup>1</sup> This issue centered on the lack of an adequate, long-range, defense planning system (see table 13). True, long-range planning within the Federal Government is said to be a rarity. Specifically, there is a need to expand and improve long-range forecasting methods, to synthesize data from many areas, and to provide alternatives for reaching long-range national goals.

The planning assumptions used by DOD and those applicable to overall national defense planning are not always compatible, explicit, or even stated. DOD's planning system must be able to answer such questions as "How much

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<sup>1</sup>This same criticism was also made with reference to the Vietnam War's diverting attention.

defense spending is enough?" These planning and requirement problems confronting DOD affect the ability of Congress to establish national priorities. Congress is hampered by the lack of a macro planning system of which DOD planning (national security) would be a part.

Within the systems acquisition area, long-range planning is thwarted by an inability to deal with changing technologies and time spans ranging up to thirty years for the investment life of some equipment. When coupled with an ever-changing threat and an inability to assess it adequately, DOD must be content with an extremely unstable planning system. There appears to be a fundamental conflict in philosophy. The defense environment, in which weapon systems evolve, dictates concepts and approaches which optimize and focus on the management of change and growth. This is in contrast with the PPBS, which requires rigid adherence to structure, procedure, and funding.

All three aspects of DOD planning related to systems acquisition management—mission/force structuring, mission/systems analysis, and technological planning—have been criticized as lacking definition, comprehension, and attention, specifically:

1. There is not an adequate internal priority system for allocating resources among promising new technologies, systems, and needs
2. The military departments lack permanent, highly qualified staffs to carry out long-range technological planning
3. Improved structure, organization, capabilities, and methodology are necessary to upgrade DOD's long-range technical planning

#### Requirements Determination

Requirements determination, a specific part of the systems acquisition planning process, deals with the identification of operational requirements for new weapon systems. It is considered by many experts to be the most critical

problem faced by OSD (see table 14). John Malloy, Director of Procurement, OSD, testified that "the major problem in procurement of complex weapons systems is that of adequately defining the requirement."<sup>1</sup> Scherer, in responding to a written query from the Senate Armed Services Committee, elaborated on this:

In my opinion, the single greatest weakness is the failure of the military buyer to establish systems requirements which achieve the right balance among operational performance needs, reliability in use, economy in production and operation, time of availability, and arms race interaction effects.<sup>2</sup>

Systems requirements determination suffers from overstatement and over-optimism. Both the urgency for the system and the threat it is intended to combat have been repeatedly overstated. When combined with overly optimistic technological expectations, costly and unattainable systems were more the rule than the exception during the six-year period under review. As in the case of other parts of the planning and decision-making process, rigidity in the management system contributed to and aggravated the problem. More often than not, overspecification and rigidity significantly deterred and delayed increases in the combat capability of the military forces. Absence of periodic reassessment and restatement of the requirement, premature release of equipment design to production and faulty equipment to troops, and waiving of requirements and/or degradation of the new system are characteristic of problems which have been experienced. Lack of requirements determination methodology and data to assess operational utility also have been major weaknesses.

Recent attempts have been made to improve the basis on which an initial decision for a new system is made and to relax the rigid and unrealistic aspects of requirement specifications. At the same time, critics have called for

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 1), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 15.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 155.

changes in concepts and policies which would lead to a better balance between quality and quantity of weapon systems, austerity and simplicity in design, and evolutionary improvements in weapons based, for the most part, on upgrading existing systems.

#### Operating-Level Administration

Sections dealing with the management process heretofore, i.e., decision-making, PPBS, and planning and requirements determination, focused on practices and procedures at the top- and middle-management levels. Much of the Congressional criticism and concern pertained to the complexity of the process and the resulting delays. This section builds on and continues that train of thought but shifts its focus to the operating or working level. It is within the project and contracting offices and the contractor operations that the real impact of ineffective management has been felt. The common denominator here seems to be excessive paperwork (see table 15).

Overadministration at the operating level prevails just as it does at top management and staff levels, except that most operating-level difficulties are an outgrowth of the regulations and procedures specified from above. The official policy for the past decade has been to turn technical work over to industry and to train Government personnel as administrators. This has led to an increase in the complexity of regulations, forms, and reports. It also has led to a heavy emphasis on staff-developed systems and procedures for project planning and control and to excessive contractor reporting and data requirements.

It has been said that reporting requirements almost doubled between 1967 and 1971. The problem is compounded by the difficulty in interpreting regulations, implementing procedures, and expanding time in report preparation. Critics testified that many regulations appear to be promulgated for the author rather than the user. There is a tendency for regulations to be written "in

the light of the latest horror case which has occurred."<sup>1</sup> Many pointless and time-consuming reports are said to be characterized by quotas, goals, repetition, and stereotyped data. Monthly progress reports are described as keeping literally "hundreds and hundreds and, in certain cases, thousands of people generating paper which nobody reads."<sup>2</sup>

Certain program/financial, technical, and procurement status information is required through command channels. In addition, semiautonomous financial, technical, and procurement staffs have their own regulations and reports, which are further complicated by special, unique, and other paperwork requirements. These requirements multiply, producing a domino effect throughout the chain of command.

Project officers become so bogged down in detail that they cannot do their assigned tasks. It is reported there are over 15,000 instructions just telling a project manager how to conduct his business. The ability of a project manager to defend himself against widespread criticism, to answer queries, and to support audits necessitates extensive record keeping. Rickover claimed that "a project manager would need at least forty-eight hours a day . . . just to satisfy the requests for detailed information from higher headquarters."<sup>3</sup>

As requirements are passed on and added to by project officers, contractors must respond and overhead costs and manpower increase significantly. If a contractor is to be successful, he must match his project counterparts item for item and do it better than his competitors. Packard described it this way:

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Establishing a Commission on Government Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967, p. 189.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 27.

<sup>3</sup>Ibid., p. 308.

One of the problems . . . is that we have asked the contractors to do more in proposals than is really necessary. The result is that they have built up a great pile of paperwork outlining how they are going to manage the program, how they are going to handle the logistics and a number of matters of this nature.<sup>1</sup>

A classical example was the C-5A. Contractor evaluation and selection required thirteen tons of data to be submitted by the contractors.<sup>2</sup> Nor does the paperwork onslaught stop after contract award. Many observers feel that the paperwork problem has reached serious proportions. Walter E. Pettit, Chairman, Section of Public Contract Law, American Bar Association, speaking for industry said:

Let me briefly discuss what I feel to be the most important problem in the field of Government procurement today and that is the excessive supervision and paperwork imposed upon contractors and subcontractors by various departments. It is true . . . that a certain amount of supervision and paperwork is required to protect the Government's interest and to insure satisfactory and reliable performance. On the other hand, when that supervision and paperwork reaches a point where it precludes prompt delivery at the lowest cost to the Government, then the burden of these requirements must . . . be reviewed and evaluated in depth.<sup>3</sup>

There is general agreement that paperwork should be reduced and procedures streamlined. However, some caution that the inclination is for more, not less paperwork. Several people, recognizing this, have called for new strategies and new approaches to the problem.

There is no doubt that Congress has repeatedly criticized and has deep concern for the adequacy of the systems acquisition process. These criticisms cover all aspects of the process, including organization, planning, and administration. Having looked at the organization and decision-making process, it is now possible to extend the examination to another aspect of the process,

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<sup>1</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 9.

<sup>2</sup>It should be noted that this situation has been largely alleviated by recent policy changes.

<sup>3</sup>House, 1967 Hearings on Establishing a Commission on Government Procurement, p. 36.



namely personnel. Personnel policies and practices involved in the systems acquisition process are covered in Chapter IV.

## CHAPTER IV

### PERSONNEL POLICY AND PRACTICES

While Chapter III dealt with the organization and the decision-making process, it was difficult to separate personnel considerations from them. Thus, in providing a setting for this chapter, it seems worthwhile to recap some of the personnel considerations previously covered.

Certain bureaucratic tendencies within DOD were seen to have caused friction and pressures that adversely affected employee morale and efficiency. The chain of command above and within OSD lengthened and disrupted communication. A traditional military organization had been overlaid on one necessary for technical management, resulting in diffused authority and responsibility. Furthermore, large staffs hampered coordination, and interservice rivalry reduced cooperation.

It was said that the organization and decision-making process prevented people from using their judgment and capabilities. Goals and objectives were unclear, and a lack of priority among programs clouded direction to organizations and groups. Systems analysis was said to exercise undue influence and overrule military judgment and technical considerations. Civilian appointees, many from the industries they were to control, had overly influenced past policy. Because of the rapid executive turnover, there was indecision and a lack of accountability for systems acquisition management.

Decisions were seen to be overly influenced by the administrative strata and involved many people unqualified to perform technical reviews. Excessive

supervision and paperwork, coupled with rigid and time-constrained processes, adversely affected the size of workloads and the quality of work.

This chapter discusses personnel motivation, performance, pressures and influences which affected the DOD weapon systems acquisition process.

### Personnel Motivation

The lack of incentives to motivate employees was identified during the study as one of the major problems confronting DOD (see table 16). Although DOD initiated administrative processes to overcome personnel turnover and inexperience in job performance, they have failed in many ways. In fact, excessive administration has contributed to a loss of employee initiative and to an atmosphere in which it is difficult to accomplish anything.

Many studies have been conducted and attempts made to improve the situation by reducing the number of regulations and the amount of paperwork. Yet rarely has anything happened. The behavior of both appointed and military officials, particularly in the procurement area, and their interest in people and activities at the worker level have been questioned. One senator said that he doubted whether DOD wanted competency in its employees, implying that they then would be difficult to control. When mistakes have been made in major procurements, it is said that no one could be held responsible. Errors have not been documented as a basis for learning and prevention, and contractors have been treated with kid gloves. Consequently, many employees believe that improvements are not possible and simply accept the status quo.

Since it failed to improve personnel motivation and initiative, DOD's response was to bring controls closer to upper levels of management and to tighten administrative processes through more regulations and restrictions. One DOD official said that he had never seen "such a tight and unnecessary hold over

procurement as is practiced today."<sup>1</sup> The situation was described as one in which there was inadequate freedom of action at all levels for people to work, regulations hamstrung timely and effective action, and individual judgment and initiative were deterred.

Two general reactions appeared to create dissension and turmoil within DOD. The hard workers were frustrated by the inability to accomplish anything and tended to build up resentment; other workers assumed an attitude of indifference. It is the latter attitude that has plagued DOD and bureaucracy in general, as exemplified in much of the testimony. One company president provided specific examples of detailed specifications for and tests of unnecessary aircraft instruments which significantly increased the cost to DOD. Each year he was told by long-time Government employees, "You're getting paid for it, don't rock the boat." He complained that "Government people are not responsible to anyone because of their tenure and position and won't listen and are not interested in savings or improvements."<sup>2</sup>

As a result of this poor operating environment, military departments have been unable to attract and retain competent people. The present recruiting system does not seem to work. Young people see that project and procurement officers live in a fishbowl environment, are subject to outside intervention, and become targets for criticism. It has been said that military officers will not knowingly volunteer to be a project officer, and the working climate forces the most competent civilians out of the procurement business. Others indicated that diligent personnel are frustrated by the lack of adequate staffs to do an

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 5), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 1427.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, p. 306.

adequate job, the lack of recognition for their endeavors, and inadequate pay to compensate for the responsibility and to compete with industry for their talent.

There are those who feel that pay will not attract the young today; it will take an appeal based on the challenge and difficulty of the job. Still others say that progress will be made only after the constraints to a full career are removed. These people cite the fact that few top-level jobs exist for career procurement people; very few supergrades are available; and procurement positions are set aside for military careerists. One official testified that if asked to counsel a young man aspiring to be a leader within DOD, he would advise him to go into industry, because people outside the Government are appointed to the top DOD jobs. Packard's testimony was most revealing and probably reflects the general sentiment as well as any. In 1969, he said ". . . our more important actions must be to do those things that will put and keep better people in the key management jobs related to this process." He testified that the military departments were going to need "very strong, competent people to 'ramrod' activities," but that he did not find them as project leaders within the military departments.<sup>1</sup> Some progress has been made, but there is little evidence that it can overcome the fundamental problem of lack of personnel motivation that is widespread in DOD.

#### Personnel Performance

From testimony, three personnel performance factors were identified as affecting productivity:

1. The loss of in-house technical expertise was said to have affected DOD's capability to exploit technology

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Wcapon Systems Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d scss., 1970, pp. 4 and 24.

2. Existing military personnel policy contributed to the lack of long-term project management experience

3. Downgrading of the procurement function hampered economy and efficiency in weapon system contracting and contract administration

#### In-House Technical Capability

There is some indication that DOD's previously strong, in-house, technical capability had been eroded and replaced in recent years by a bureaucratic administration. In earlier testimony, this loss was linked to the misuse of systems analysis to downgrade technical considerations, excessive influence of the administrative strata between decision-makers and project managers, and diversion of technical talent from primary roles by administrative details. In at least one man's opinion, Rickover, the loss and lack of technical capability at the working level was an equally important cause (see table 17).

Rickover questioned DOD's basic policy relating to the strict use of industry for weapon system development. He testified:

If the assumption that this work can be successfully turned over to industry with very little technical control by the Service is allowed to continue, the Service will soon find [itself] exhausting its energies and finances patching up the unsuccessful technical products.<sup>1</sup>

Rickover considered it essential for the future welfare of DOD that management attention be placed on the competence, the stature, and the authority of the technical groups responsible for executing technical work. He contended that technical job descriptions are grossly inflated and imply a solid technical capability that DOD does not have.<sup>2</sup> He took the position that the rapidly increasing rate of technology requires much greater technical competency than DOD

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 475.

<sup>2</sup>Ibid., p. 312.



possesses. He indirectly linked the inability to protect Government interest, exercise better management control, and oversee contractor operations to this loss of technical capability. Rickover's major concern centered on the lack of technical background and experience at the project office level. He warned that the military does not understand modern technology, and consequently, it does not have the capability to exploit its use.

If the United States cannot make adequate technological advances, this could be a major factor contributing to the loss of future technological superiority over the Soviet Union. There is no written evidence to indicate that the committees necessarily agree with Rickover or that there is any plan to act on the allegation, except in very general terms. In 1971 and 1972, the Armed Services Committee's authorization reports referred to the concern over loss of technical superiority but only recommended that greater attention be given to research and development.<sup>1</sup>

#### Long-Term Project Management Experience

The lack of long-term experience in key project management positions is a second major problem affecting personnel performance (see table 18). This issue has been strongly debated in recent years and has been the subject of much Congressional testimony. The focus has been on the military officer system, since most key project management positions are filled by general/flag ranks, colonel/captains, and lieutenant colonel/commanders.

Close adherence to traditional military philosophy, concepts, organization, and discipline is thought to be a fundamental problem. F. Trowbridge

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<sup>1</sup>See, for example, U.S., Congress, Senate, Committee on the Armed Services, Report (to Accompany H.R. 15495) on Authorizing Appropriations for Fiscal Year 1973. S. Rept. 92-962, 92d Cong., 2d sess., 1972, p. 85.

Von Baur, former Navy General Counsel, focused on the crux of the criticism when he noted:

. . . the Department of Defense is considerably more than just a military organization . . . it is also a tremendous business organization. I submit to you that this business side . . . can only be effectively managed by the application of business rather than military principles. The nub of the problem, however, has been that the Department of Defense is seriously out of balance . . . because it is influenced by an overemphasis on what might be described as purely military thinking.<sup>1</sup>

The military departments must be capable of rapidly expanding the number of military personnel in times of crisis. The basic premise is that every line officer should be trained to become chief of staff of his service. This philosophy is thought to be in conflict with DOD's business management needs.

Holifield raised this common issue when he asked:

Have you utilized to the fullest this tremendous number of uniformed people who could be trained in these specific fields and given their career opportunity. . . . Why can you not bend your rules and regulations to the point of utilizing these people and training them for this peacetime phase without penalty of stopping their careers?<sup>2</sup>

Critics also take aim at the related problems associated with military discipline. Gordon Rule, a senior, civil service official in Navy procurement gave testimony that typified criticism in this area. He stated:

Today I know of mistakes we made that cost us a lot of money, and you will have a project officer [who] knows what we want or what is going to be done is wrong, he will say it is wrong, and his superior will say, "Knock it off, we are going to do it anyhow." The answer is "aye, aye, sir." . . . When they come up for promotion, [the admiral's] finger is right on their number. . . .<sup>3</sup>

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<sup>1</sup>Joint Economic Committee, 1970 Hearings on the Acquisition of Weapons Systems (Part 2), p. 285.

<sup>2</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon System Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970, p. 132.

<sup>3</sup>Joint Economic Committee, 1970 Hearings on the Acquisition of Weapons Systems (Part 2), p. 191.

The military practice of frequently rotating its officers conflicts with the need for long-term experience in project management. Fitzhugh set forth the dilemma faced by the career officer when he said:

. . . it is impossible, in my opinion, for any one officer, no matter how smart or how dedicated, to become an expert, for example, in electronics in a year and a half and then be transferred to procurement and become an expert in procurement . . . in between each time having a command in the field. . . . On the other hand you come back to the question of how does it affect their career opportunities. Under the present system, it would ruin their career opportunities if they were left in any one of these slots very long because they wouldn't have had the right holes in their experience card punched. So they must be moved around.<sup>1</sup>

Although it was one of the central themes of the 1969 Panel report, this problem is not new. According to Holifield, the practice of rotating officers has been under question as not being conducive to efficiency since 1950. Many critics of the practice, such as Stennis, have reluctantly come to accept the situation.

In 1970, Packard was asked by Holifield whether he could expect results, judging from past difficulties, in changing the rotation policy. Packard responded, ". . . this depends on the attitude and actions of the Secretaries, the Service Chiefs and the high level officers in the Service. . . . They are going to have to make some changes in their personnel policies."<sup>2</sup> The military departments are credited with movement in this direction, some more than others. While many feel the military departments have, on balance, gone about as far as they can, others, such as Fitzhugh, question whether the changes have been adequate. There are those, notably Rickover, who maintain that the changes have not gone far enough. "For a man to do the kind of job I am doing should

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 45.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 19.

take ten to fifteen years experience at least in this kind of work. You can't do it properly otherwise."<sup>1</sup> In 1972 testimony, he indicated that little improvement had been made in the way technical work was being conducted and that many personnel policies were having adverse effects on the quality of DOD military projects.<sup>2</sup>

Critics claimed these policies have led to a lack of stability and continuity in project management, which has resulted in mismanagement and inefficiency. Goldwater, one of the staunchest military supporters in Congress, testified:

I have felt for some time that we should have more permanency in the military staffs assigned to the research and development and weapons development and weapons analysis. The head of AFSC, for example, might serve two or three or four years and he is moved. The program directors of different programs [such as] an outstanding one who is now with the B-1, with North American, will be promoted and moved, and somebody else has to come in.<sup>3</sup>

Later in the same testimony, he expressed a sentiment that many influential officials share, and the military departments recognize and are fighting hard to overcome, when he said, ". . . you don't find one [project manager] in a hundred who knows what he is doing."<sup>4</sup>

What causes the instability in project management? Many reasons have been cited:

1. Project managers only stay on the job for two or three years
2. Available training resources are not fully utilized

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 373.

<sup>2</sup>U.S., Congress, House, Committee on Appropriations, Department of Defense Appropriations for 1973 (Part 9, Testimony of Vice Adm. Hyman G. Rickover), Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972, p. 141.

<sup>3</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 186.

<sup>4</sup>Ibid., p. 368.

3. Officers often are abruptly moved to other assignments, such as Vietnam
4. High-ranking officers from outside the R&D community are superimposed on project management
5. When a military officer is transferred, there is insufficient overlap for his replacement to learn the job properly
6. When promoted, officers, particularly general officers, move on to other jobs
7. DOD does not give adequate attention to technical matters
8. DOD looks for short-term solutions

While most military department activities have been directed to ameliorate or reduce the impact of these shortcomings, many key people are still concerned, as evidenced by the recent comments of Mahon. He said, "We are continuing to press for people in charge of programs and projects to remain in charge of those projects and not be, about the time they fail or succeed, transferred to something else or promoted."<sup>1</sup>

Some critics have opted for "civilianization" to overcome the lack of experience problem. Others feel this will just trade one set of problems for another. Many people, such as Goldwater and Senator Charles Percy (R, Ill.), think that unproductive civil service personnel in DOD are as much or more of a problem than military domination. Goldwater said, "We have got tens of thousands of people sitting in that Pentagon who don't know what they are doing. I don't talk about the man in uniform; I am talking about mostly civilians that we have not been able to jar loose, they are not productive. . . ." <sup>2</sup> In

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<sup>1</sup>House, 1972 Hearings on Department of Defense Appropriations for 1973 (Part 9), p. 147.

<sup>2</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems

questioning a witness, Percy stated, "And would you say they are entrenched? While in the Navy I tried to fire a civilian who [sic] I considered grossly incompetent. . . . He survived me and was able to thwart my best efforts to introduce changed procedures and efficiency." He later added, "The administrations and top people change so rapidly that the people underneath can really run things in effect and establish and frustrate implementation of policy."<sup>1</sup>

In earlier discussion, it was pointed out that deep-seated frustration and resentment exist among the civilian work force at the staff level, leading to dissatisfaction, dissension, and turmoil. As a result, much initiative has been stifled and some employees have become victims of routine and indifference, resulting in several cases of gross misjudgment. It is believed that many policymakers, in all good conscience, have been motivated by these factors to resist civilianization. On the other hand, just as many remain unconvinced that the existing military structure is the most economical and efficient. Within this group, there is a wide range of thinking on how best to improve the situation. The Blue Ribbon Panel Report recommended increased use of civilians as project managers. While Rickover believes that the best man, whether a civilian or a military officer, should be made project manager. Stennis, in partial concurrence, suggested that the military man ought to be the deputy project manager. Like many others, Holifield seems to be making the case that DOD civilians in procurement and project management have unnecessarily been given a secondary role, whereas Rule has taken this one step further by supporting almost complete civilianization.

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Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 2d sess., 1972, p. 31.

<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 5), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st and 2d sess., 1971 and 1972, pp. 1540 and 1602.



## Downgrading of Procurement Function

Downgrading of the procurement function, the third performance factor, is said to have resulted from two primary causes:

1. Domination of the business side of DOD by the military
2. Centralization

Von Baur, in describing the second cause, said:

The McNamara administration had a policy of centralization. . . . There was at high levels in the Pentagon a very diminishing interest in lower levels of procurement, that is the contracting officers, contract administration, and all these nitty-gritty items. . . . [This administration] put more restrictions on contracting officers than had previously been put on them. . . . It was clear that contracting officers were hamstrung. . . . This caused dissatisfaction, dissension, and turmoil, and a slowing down of the whole procurement process.<sup>1</sup>

Regardless of the reasons, there is strong evidence that this deterioration has occurred in the procurement function (see table 19). It has been said that DOD is poorly equipped to match industry at the negotiating table. The best negotiators cannot demand top grades because of civil service regulations and job standards. They transfer to higher level administrative jobs or leave for better paying positions in industry. In 1969, it was reported that a Government negotiator could receive a salary of \$15,000 compared with \$45,000 for the industry negotiator he faced. The Government negotiator may have three to five years on the job; his counterpart generally has three times that experience. Furthermore, the company negotiating may have a two- or three-man team, several for each of the major areas of contracting, e.g., weighted guidelines.

Witnesses testified that manpower and personnel improvements could remedy the situation. One group saw lack of training as a basic problem, i.e., equip those we have with the best understanding and management tools we have. Some witnesses were concerned with the lack of adequate manpower, the right mix of

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<sup>1</sup>Joint Economic Committee, 1970 Hearings on the Acquisition of Weapons Systems (Part 2), p. 171.

people, and proper skills. Others felt that an elite corps for procurement should be established with its own bosses, structure, and control. All seemed to agree that a better career structure and more "professionalism" were minimum requirements.

Collectively there was evidence that personnel development had not kept pace with the increased complexity of contracting and contract administration. Several witnesses pointed out the direct relationship between competence and economy. As Von Baur wrote in a letter to the Navy, "Literally, hundreds of millions of dollars are floating through their [procurement officials] hands," and that sums of money for personnel improvements "are peanuts compared to what the resulting savings would be."<sup>1</sup>

Upgrading of DOD procurement is more complex than it might appear. It involves the major issue of how the military is going to organize and manage the business side of its operation. This includes both project and procurement management and some parts of the research and development function. Stennis commented that if personnel problems were not solved, the military would eventually have to establish a separate department to manage the acquisition process.<sup>2</sup> Proxmire felt these functions would have to be taken away from the military and established as a separate agency.<sup>3</sup> Other congressmen have been seeking ways to improve from within while supporting the current general organizational arrangement; and some witnesses have urged Congress to intervene.

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1969, pp. 189-190.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 14.

<sup>3</sup>Joint Economic Committee, 1972 Hearings on the Acquisition of Weapons Systems (Part 5), p. 1604.

## Military and Civilian Personnel Systems

There was considerable concern on the part of Congress over the many weaknesses in the military and civilian personnel systems, particularly as they pertain to civil service regulations. Since much of this has been covered, no additional comment appears necessary (see table 20).

### Personnel Pressures and Influences

Many people tend to look at DOD and systems acquisition management as a whole, that is, in terms of the "Pentagon," the "military," or the "system." An analysis of this viewpoint can provide some indication of general feelings as well as some of the pressures and influences that impact on DOD employees.

Top-level pressures and influences have been categorized as system inertia, system outlook, institutional pressures, and external pressures. Middle-level pressures are related to the mission, the hierarchy or organization, and the budget. Lower- or operating-level pressures are described as management, military, and project pressures (see table 21). There appears to be an inertia within the "system" which makes significant changes very difficult. One senator has called the system "a joke from the standpoint of efficiency," which seems to express the exasperation and feeling of a majority of the members of Congress.<sup>1</sup> There is a general notion in testimony that the Pentagon organization appears to have "evolved" over the last eight or ten years more as a result of events than by any grand design.

Top officials change so rapidly that nothing really gets accomplished. It is said the status quo can be and has been maintained by the "civilian general staff." Critics claim that the industry viewpoint has been heard so often from top officials, through the DOD media and at the negotiating table, that it

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<sup>1</sup>Senate, 1972 Hearings on the Weapon Systems Acquisition Process, p. 34.

must, by dint of repetition, be true. This philosophy has penetrated and pre-conditioned attitudes and actions, particularly of contracting officers. There has been a feeling among the people in the field that their superiors do not want them to enforce the regulations strictly against contractors.

Institutional attitudes are seen as forcing DOD employees to conform to certain unwritten standards or principles. The military departments have been accused by one contractor of only wanting "team players" and not wanting contractors who "rock the boat."<sup>1</sup>

External pressures are said to precondition employee action. The fish-bowl environment in which DOD must operate is said to create an advocate-adversary role between the military and Congress or any external source that confronts it. One congressman said that it is not realistic to come up with an adverse report and expose it to the public. The implication is that, given the climate within which the Government operates, it would do more harm than good. Another congressman described this practice as "the military playing games with Congress so that they can get what they want."<sup>2</sup>

Mission pressures are said to exist which play an important role in employee action. The fear of a mission suffering as a result of losing funds was cited on several occasions as a principal reason for covering up the facts about projects. Because so much time and money have been committed to various projects, there was fear that any show of lack of confidence would delay or halt them. DOD was cited on at least two occasions for not admitting that a certain concept or policy had been a mistake. Fear of losing confidence or triggering an investigation appears to be involved. One of the most damaging

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<sup>1</sup>Joint Economic Committee, 1972 Hearings on the Acquisition of Weapons Systems (Part 5), p. 1406.

<sup>2</sup>Joint Economic Committee, 1969 Hearings on the Acquisition of Weapons Systems (Part 1), p. 216.

direct results of mission pressures is that many problems and deficiencies are swept downstream until it is too late to correct them or they are corrected only after the system is deployed to the field. Costly equipment retrofit or poor reliability and high maintenance costs are usual outcomes of these kinds of pressures.

The organizational hierarchy is such that project sponsors and personnel are said to develop strategies to work around organizations, levels of management, offices, and people who look unfavorably on their projects. To start a new project, special arrangements must be made and monies set aside by a top official because large groups of people who are not enthusiastic about a new idea tend to kill any initiative with which they disagree. As Packard testified, "It is either do this, or that is the end of the new idea."<sup>1</sup> Critics claimed that projects are "dressed up" to sell them to some high-level official. It has been said that a man's career can rise or fall depending upon his ability to "sell his project." The next higher level rearranges elements, regroups line items to express the best opinion of what will sell that year. There is concern that the packaging and appeal of a project may be given more attention than the need.

Budget processing has been described as a ritual and a motivating force for all other actions. The primary outcome of budget pressure has been the tendency to understate the funds required to undertake a weapon system project and create a built-in overrun. This pressure and its detrimental effect are not to be dismissed lightly. The military departments, as one contractor said, "make an evaluation of how much money they think they can get; they never can get as much as it really takes, so there are three successive cuts, and so you

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Advanced Prototype, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 41.

have an automatic overrun to start."<sup>1</sup> Contractors, knowing how much the military department has requested and what it wants, are forced by these pressures to submit unrealistic estimates for the development work to be accomplished.

Lower-level or operating pressures—the management, the military, and the project—center mostly on the individual project manager. The short-term management outlook is said to unduly influence him. Because he is in the job for such a short time, he must make his mark now without too much concern for the future of the project. Before the results are in, he will move on, and a new project officer will take his place. One witness said that the new project manager's primary ambition is to keep the project moving in hopes that it will not fail during his tour. One of the problems, according to another witness, is that since responsibility cannot be fixed, a person can leave his mistakes behind. A project manager's assignment is considered to be a "brownie point" required by the system. The system itself is not conducive to producing capable managers; and, conversely, capable managers, according to one witness, will not knowingly seek project management positions under current conditions.

Military pressures center on military discipline and rank. When project managers are told to do something by the generals and admirals, they do it. One DOD civilian official explained that military promotions are based on playing ball, not challenging waste when such a challenge could be embarrassing.

In many cases, project pressures build to a point where the project manager becomes a captive of his project. Self-preservation preempts the necessity of facing up to unpleasant facts. This has led many critics to question the objectivity of the project manager and those who surround him. It is said his bias as a systems advocate is an overriding consideration. One Congressional staff member asked, "How are you going to deal with a project manager who is in a position of having to defend a project . . . [doesn't] he become



the advocate of the project?"<sup>1</sup> Systems advocacy on the part of the project is, on the other hand, defended by several senior military officers. They consider the project office as a creative resource in which the project manager has a responsibility to encourage growth, to be alert to the most advanced technical possibilities, and to present the decision-makers with all the capabilities of the system.

Chapter III left little doubt that the DOD organization and decision-making process have many weaknesses. Many of the problems are related to overregulation and overadministration. Chapter IV has demonstrated the debilitating effect that overregulation and overadministration has on personnel initiative, motivation, and incentive. It has also detailed the weaknesses in DOD personnel policy and practices and their impact on productivity and personnel performance. Having completed a look at much of the DOD structure, the next chapter will examine DOD systems acquisition management policy and the effects of that policy.

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<sup>1</sup>House, 1970 Hearings on Policy Changes in Weapon Systems Procurement, p. 195.

## CHAPTER V

### ACQUISITION AND PROJECT MANAGEMENT

The problems faced in acquisition and project management during the six-year period under study, although considered to be more severe, are not new. There is a history of poor management in this area dating back to shortly after World War II. Several witnesses associate recent problems with actions taken in 1958 to overcome the missile gap.

By 1960, as a result of the missile boom, defense resources began outpacing Government demands. When McNamara became Secretary of Defense in 1961, there was evidence of considerable excess industrial capacity. As excess capacity mounted, defense contractor profits began to fall. In one of his first appearances before Congress, McNamara criticized cost overruns, lack of competition, "goldplating," and other aspects of system acquisition and procurement policy.<sup>1</sup> Just as he had done in organization and decision-making, McNamara set out to upgrade and make changes in acquisition and procurement policies and procedures.

In the hope of raising efficiency and profit simultaneously, he initiated several policy reforms, including the increased use of fixed-price contracting, incentive contracting bearing higher profit margins, and the adoption of a "weighted guideline" procedure for negotiating profit rates. Many acquisition procedures were formalized and progress reporting strengthened.

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<sup>1</sup>Acquisition policy generally focuses on the technical aspects of building the system, while procurement policy is concerned with the business aspects. The reader should recognize, however, that there is a certain degree of overlap between them.

Scherer described the situation at that point in time:

At first, the McNamara procurement policy reforms were followed by hopeful omens. By fiscal year 1964, the dollar share of military prime contract awards covered by CPFF [cost plus fixed fee] instruments had fallen to 14.3 percent [and] negotiated profit rates . . . rose. . . .

. . . Nevertheless . . . many contractors were plagued by a dearth of new program assignments, which were handed out in increasingly large, infrequent lumps. They competed all the more vigorously for the business available, and the incident of contract cost overruns rose due to the acceptance of optimistically tight cost targets. . . . As the number of new programs dwindled and as the size of the individual programs rose, defense suppliers vied more and more strenuously for the few new programs available. The pressures to go along with unrealistic technical specification requests of government planners and indeed to go beyond them became irresistible. This built-in unrealism in turn led to the numerous performance failures and cost overruns which have now become all too familiar.<sup>1</sup>

When Laird took office in 1969, he was confronted with the same cost overruns and poor contractor performances that McNamara had attempted to overcome. It was imperative that additional changes in systems acquisition policies and practices be made. This chapter examines a number of the broad systems acquisition factors that affect DOD policy during the project management life cycle. Following that is an examination of acquisition policy for handling each of the life-cycle phases.

#### Total Package Procurement

Much of the criticism in the early part of the period can be traced to a single, but significant, policy established in 1965. McNamara, looking for a way to shift risk to the contractor and prevent contractors from "buying in" on a major program, instituted the so-called "total package procurement" concept and implemented it on the C-5A aircraft procurement in 1966. By 1969, with the discovery of the drastic C-5A cost growth and the associated financial losses of the Lockheed Corporation, it was apparent that total package procurement was

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, pp. 141-142.

not a viable strategy for most major weapon systems development programs (see table 22).

The essence of total package procurement was to fund a competitive contract definition phase in which contractors prepared detailed paper studies and proposals. On this basis, the winning contractor was awarded a fixed-price contract for both the weapon system development and some part of the production. The result was to alter sharply the buyer-seller relationship in that DOD shifted most of the responsibility for performance to the contractor. The Government intended to rely on contract incentives, use the contract as the sole method of control, and disengage itself from direct involvement in internal contractor project management. In 1970, Packard testified that DOD had sufficient experience to conclude that total package procurement would not work as originally intended. The primary problem was that precise requirements for a new major system generally could not be specified in advance.<sup>1</sup> The restrictions and the inflexibility in the total package procurement contract were of such magnitude that the Government and the contractor had no legal recourse to deal with the changes that occurred in the early life of a program.

Total package procurement, by far the most significant cause of DOD's current weapon system problems, represents both the acquisition and the procurement strategy used by DOD to accomplish its management function. When coupled with the perceived urgency for military preparedness and with certain environmental conditions, e.g., inflation, application of this strategy appears to account for many of the detrimental cost and technical outcomes experienced during the six-year period. A number of the outcomes should be examined prior to a consideration of acquisition policy deficiencies.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon System Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970, p. 8.

### Acquisition Factors

By 1967, total package procurement and other acquisition and procurement policies and procedures led to a number of situations which alarmed Congress and the DOD community. At least three are of sufficient importance to discuss:

1. Increased costs of new weapon systems were reducing the quantity of weapons that the Government could purchase
2. Complexity of system performance and other requirements had increased to the extent they adversely affected systems design, reliability, and operations
3. Technical risks in systems development were greater than anticipated and were requiring far greater resources than planned

### Spiraling Costs

Key DOD personnel testified that not only had there been dramatic cost overruns in recent years, but that the cost for each series of new weapon systems had increased to the point that costs were impairing both the usefulness of the weapons and the size of the forces maintained. The problem of cost explosion in moving from one series of weapon systems to the next generation was noted in Chapter II. Spiraling costs and lack of austerity in systems development remain serious factors affecting DOD (see table 23).

The criticism was made that many DOD personnel simply had not been sufficiently interested in cost controls. According to testimony, many persons in DOD had taken the position that cost was relatively unimportant. Whittaker remarked, "The feeling [among project managers] was prevalent . . . that if they needed more money, all they had to do was come in and ask for it."<sup>1</sup> It was said that many consider technical performance more important than price. At

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<sup>1</sup>Ibid., p. 264.

the other end of the spectrum, witnesses indicated a laxity in contractor cost controls. Fitzgerald testified in 1969, "I don't know of any program in the Air Force, any of the large programs, where an active cost reduction effort is underway, that is, an effort aimed at reducing waste and buying the needed items at a lower unit cost."<sup>1</sup>

Industry witnesses claimed that there were no incentives for cost control (a problem discussed in detail later). Lack of intent, determination, and interest were seen as major problems throughout DOD and industry. Key witnesses, including Packard, testified that the situation would require a basic change in outlook and attitude.

In addition to a lack of cost control, technical considerations were seen as important. One partial explanation for the spiraling costs appeared to be related to a series of technological revolutions in military weaponry. Seherer explained it this way:

. . . To get at Senator Symington's basic question, "Why do we get so little out of so much expenditure?"

One important but obvious historical trend is the fact that we have had, starting in the 1940's, a series of technological revolutions which led in turn to radically new weapon systems concepts. These revolutions were largely concentrated in the 1940's and the 1950's. There are some exceptions to be sure; but they are not nearly so prominent in the 1960's.

What we find now are largely third and fourth generation programs. . . . Some of the first and second generation programs were very successful. Therefore, they provide a very tough act to follow. . . . There were a rich set of technological opportunities to exploit. Therefore, you could pick and choose what approaches you wanted to take and just try to solve the easy, straightforward technical problems. . . .

However, weapon systems programs tend to be tackling those small but stubborn technical problems that were left over. . . . And make no mistake, it is as easy to get into trouble on these further incremental technical steps as it was some of the more radically pioneering weapon systems developments of the 1940's and 1950's.<sup>2</sup>

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Dismissal of A. Ernest Fitzgerald by the Department of Defense, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, p. 42.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 132.



Spiraling costs, or lack of austerity, are associated directly with a second major acquisition factor experienced during the six-year period—that of excessive complexity in the design of new weapon systems.

#### Excessive Complexity

One of the major causes of excessive complexity in weapon system design has been termed "goldplating," i.e., making a more sophisticated weapon than is needed (see table 24). In 1970, Packard focused on this problem in answering several written questions from Holifield:

. . . We have too much equipment onboard now that is so complex that it cannot be made to work a good part of the time. . . .

There is a natural tendency and even a strong pressure to incorporate into the specifications what technology will permit. . . .

If we were starting to lay down the design of the C-5 today, it is doubtful that the Army, Air Force, or the OSD would insist on all the capabilities that were specified 5 years ago. . . .

Everyone from the Secretary of Defense on down must guard against goldplating. The decision-making process must be geared to checking this. . . .<sup>1</sup>

Most experts, agreeing with Packard, have cited a series of causes, including:

1. Developing systems to serve multipurpose missions, i.e., commonality
2. Encumbering systems with dubious equipment, primarily in the electronics area
3. Failing to optimize and reward simplicity
4. Failing to pay attention to reliability and maintainability in initial system design
5. Failing to insure adequate technical review and trade-off throughout development

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<sup>1</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, pp. 289-290.

6. Failing to utilize greater standardization

7. Overspecifying technical requirements

Several of these factors are discussed in more detail later in the chapter.

By 1972, DOD had several programs underway to address spiraling costs and complexity. Among the more promising efforts reported were: using experimental prototypes in applied and basic research; redirecting technology for use as a primary means to reduce cost; and redirecting engineering techniques to keep the design of equipment within a preset cost target.

### Technical Risk

Experts testified that the precise technical problems which may be encountered in attempting to convert technology into a practical, producible application cannot be accurately foreseen (see table 25). Dr. M. Baron T. George, Vice President, AVCO Corporation, testifying on behalf of the Aerospace Industries Association, had this to say:

The whole point of the development process is to get something that we haven't got, something that we have never seen, and something that we don't really know can be produced. Unless this is taken into account very much more explicitly in the procurement of development, we are to go on having terrible problems, and will have new kinds of trouble. . . .

It turns out that making a technical risk assessment is extremely difficult, we have not really been successful in coming up with good criteria for doing this. Therefore, you can wind up with a number of unknowns. . . .

What kind of technical uncertainties are we faced with. The first one is labeled as anticipated unknown. . . . These are the things that we know we do not know, but we can plan a program to solve them. . . .

The unanticipated unknowns . . . are things we do not even know we do not know. . . . Experience shows us that any large, complex technical system will have a percentage of unknown, unknowns. . . .

The job to be done in all cases is defined by these unknowns—until we get rid of essentially all of them, we have not accomplished the job. . . . It is not reasonable to go fixed price total package procurement in a development program before you can truly assess the remaining technical uncertainties.<sup>1</sup>

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 9), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, pp. 2493, 2495, 2498, 2499, 2513, 2514.

The use of fixed-price contracting and other changes in procurement practices shifted the risk to the contractors. DOD policy makers had not appreciated the cost penalties of advancing the state of the art, small improvements were indeed more costly than anticipated. It became evident that it was costing DOD and contractors severely to obtain the last two or three percent of technical performance.

These then were the acquisition factors that DOD set out to overcome in 1969 as cost overruns and poor contract technical performance became critical.

### Concept Formulation

The initial phase of the system acquisition, project management life cycle is concept formulation, the embryonic stage of new weapon systems and weaponry. Concept formulation is intimately related to basic, applied, and exploratory research. In some cases, it is related to advance development and to translating technology to fulfill military requirements. Congressional concern over concept formulation centered on the following:

1. The military technology base was not advancing as rapidly as needed
2. Poor initial technical planning resulted from existing user/developer working relationships and other related problems
3. Technical requirements and specifications were unrealistic, inflexible, and poorly managed

### Military Technology Base

Research and development costs increased dramatically during the period under study and were said to represent approximately one-fourth of DOD's annual capital investment (see table 26). Yet most experts testified that the funds being spent were not adequate. There was evidence and testimony that the United States was losing out in the technological race with the Soviet Union. The

basic problem appeared to be that the military's technology base was not advancing at an adequate rate.

Goldwater reiterated Congressional concern to DOD in saying, "I find this to be a question that is very high in the minds of people across the country—what are we going to do to get the costs of weapons down and to increase the interest in research and development?"<sup>1</sup> Fitzhugh, in testimony, made the same point:

If more emphasis and direction is given to the advancement of the technological base, then the flow of technology would come [into] component and subsystem development developments and subsequently into new systems development or modification of existing systems. . . . The increasingly high technological risk associated with major weapon systems development is symptomatic, at least in part, of an inadequate rate of advance in the military-related technological base.<sup>2</sup>

Witnesses indicated at least three problems related to technology:

1. It is very difficult to manage the many thousands of DOD research and development programs

2. Technological options have not been adequate for decision-makers. New research and development initiatives are needed to provide more choices and alternative approaches to future weapon system design

3. Current DOD research and development work is inadequate to preserve Government and industry design excellence

By 1972, these problems had been recognized, and various studies and actions were undertaken to overcome or alleviate technological shortcomings.

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Advanced Prototype, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, pp. 4-5.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 7.

## Initial Technical Planning

There was considerable evidence that concept formulation had been marked by a high degree of poor and unrealistic technical judgment in initial planning and system development decisions. Much has been attributed to the technological uncertainty and technical risks faced. Beyond that, witnesses pointed to the existence of several other major problems (see table 27). One of these problems was that DOD demands were unrealistic. DOD wanted too much, too fast, too big, and too complex. It was said that all parties in the process—military planners, users, developers, and contractors—exercised an unwarranted degree of zeal, overconfidence, and optimism. Packard summarized the situation in explaining why policy changes were necessary:

We have to accept the conclusion, at least I do, that there are forces at play in this process which encourage, in fact, almost insure, unrealism. These forces, at least some of them, are easy to identify. The military planners tend to overstate the threat and, therefore, the requirements. . . . . . . . . technical people, both in industry and Government, are always overoptimistic about the performance characteristics they can achieve, how long development will take, and what it will cost. . . . Both the user and the developer are anxious to develop the new weapon and they have great incentive to underestimate the cost so that the project will be approved. . . .<sup>1</sup>

Part of the problem can be attributed to what is called the user/developer dialogue or interface. The using command is said to ask for everything without considering cost or the impact on total forces. The developer is motivated by technical excellence. Each has inadequate knowledge about the other's area. With dominance shifted in recent years to technical people, the user, once his demands are known, is often excluded from the review and coordination process. Technical people dominate the decision-making process; their views prevail; and, it is said, they are both initiators and reviewers. Critics claim there has

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<sup>1</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 7.

been no counterbalance to technical advocacy or blending of views between the user and developer.

Dr. Jacob A. Stockfish, Rand Corporation, sums up the technical management problem:

Because of the differences in outlook between technicians and developers, on the one hand, and users and consumers on the other hand, there is bound to be a great deal of conflict at times. . . .

So we have a dichotomy here—perhaps a very fundamental one—that has existed with military services, perhaps, since the advent of gunpowder. . . . Blending these two types of expertise and knowledge is a key problem, and it is always difficult to solve in any military community.<sup>1</sup>

#### Requirement and System Specifications

One outcome of poor initial technical planning has been poor technical documentation. The central focus has been on the initial statement of performance requirements and the more detailed technical system specifications (see table 28).

Senator Lloyd Bentsen (D, Tex.), a member of the Senate Armed Services Committee, and Clarence L. Johnson, Senior Vice President, Lockheed Aircraft Corporation, discussed the systems requirement problem in 1972 testimony.

Bentsen asked: ". . . what can industry do to try to encourage the Defense Department to keep its performance goals down to something that are realistic technologically and feasible within cost limits?" Johnson replied, "One of the fundamental problems we have in this country, and probably in others, is how you set up reasonable requirements to start with, and we have great failure in this area."<sup>2</sup>

Witnesses testified that system requirements given to contractors contained competing and conflicting objectives, were unreasonable, unnecessary,

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 107.

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



and complex, as well as inflexible and impossible to meet. Once passed down, these requirements were accepted as gospel and strict adherence was demanded. Critics claimed that many, so-called, initially "essential" requirements were ultimately waived, but only after years of fruitless and costly development.

Most experts now feel that initial activities should focus only on broad military needs. Requirements should be stated as goals, and levels of performance should be set to add flexibility and trade-off capability to the planning process.

Requirements ultimately are translated into systems specifications—the detailed technical designs, drawings, layouts, and interfaces for each component.<sup>1</sup> The problem of managing the specifications was seen as more acute than the requirements. Rule, for one, was critical of the administrative aspects.

As I see the problem, it is one of preparing good specifications. Today, I don't believe that specification writing in the Navy, or indeed in the Government generally, receives the attention it deserves. . . . The specifications are not only part of every contract, they are of crucial legal significance. . . .

. . . There appears to be little overall supervision of any kind given to specification preparation [in DOD]. Specifications appear to grow, much like Topsy, with a crucial word changed here, a critical figure being changed there, and a new key phrase inserted somewhere else, sometimes by different people, often with a strong desire to upgrade the quality of the hardware, and without any organized concern for the legal consequences.<sup>2</sup>

Von Baur echoed Rule's words and added, "The far-reaching impact on everybody of defective specifications is not generally understood."<sup>3</sup> He recommended the establishment of a specification writing school. Herbert J. Frank, President, Aerodynamics Corporation, sees specifications from the contractor's side:

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<sup>1</sup>Since systems specifications have both technical and contractual aspects, the subject also could be included under contracting problems in Chapter VII.

<sup>2</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, pp. 187-188.

<sup>3</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, pp. 290, 292.

. . . these specifications stay in and as the next specification is written, they just leave what is in and add. They never take out, just keep on adding, and this specification appears on every single requirement [for a] rate of climb indicator that the U.S. Government buys. . . .

I am only saying this, that if these requirements are put on us . . . you have got to multiply this by the rest of the armed services procurement, and you would come up with hundreds of millions of dollars [of excessive costs].<sup>1</sup>

### Systems Development<sup>2</sup>

Near the end of concept formulation, a period is set aside, formerly called the contract definition and now validation phase, to confirm the system concepts, develop system acquisition plans, and seek program initiation. Once the decision to proceed is made, DOD undertakes the full-scale development phase. These two phases constitute the heart of the systems design and development cycle. Committee concern centered on four major aspects of systems development:

1. Development decisions were not made on the basis of demonstrated accomplishments
2. Development strategy allowed systems that were far too large to be managed effectively
3. Industry system design resources were not being used effectively
4. Development and operational test and evaluation were not performed or managed properly

#### Initial Development Decision

The initial development decision is probably the most critical in the systems acquisition life cycle (see table 29). Planners and decision-makers must decide that development risks have been identified and solutions are in

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 5), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st and 2d sess., 1971 and 1972, pp. 1537, 1549.

<sup>2</sup>The systems acquisition project life cycle is defined on page 2.

hand and confirm the realism of the plan for full-scale development. The basic problem experienced during the period under study was the heavy reliance on paper studies to support this decision. Fitzhugh addressed this aspect, saying:

More emphasis should be placed on hardware development as contrasted to paper studies before and during concept formulation (i.e., validation) in order to reduce technical risks. A review of major systems development clearly indicates that the necessary technology to proceed with engineering development [which the report calls full-scale development] frequently has not been accomplished through exploratory and advanced development programs. . . .<sup>1</sup>

Packard added another dimension, saying:

The only way cost and performance can be accurately determined is by developing the device, measuring the performance, and then costing the product after you know precisely what you will be producing.<sup>2</sup>

As a result of the Fitzhugh Blue Ribbon Panel Report and Packard's efforts, development prototyping, or so-called "fly-before-you-buy," was adopted as basic DOD policy, when feasible, to support the initial development decision.<sup>3</sup> This was essentially a return to approaches followed in the 1950s prior to the missile gap. Government, industry, and academic researchers overwhelmingly supported this change, with some reservation. The method is not fool-proof and cannot be applied in all cases. Witnesses identified the following limitations:

1. When building a small number of systems, e.g., communications satellite, prototyping may not be feasible
2. Prototyping a complete system, e.g., ship, may not be feasible

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 5.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 7.

<sup>3</sup>In addition to the use of development prototyping during the validation phase and just prior to the full-scale development decision for a new weapon system, experimental prototyping is also used earlier in the conception phase, and production prototyping is used in conjunction with the production decision.

3. Urgency of the need may override any additional time involved in carrying out the prototyping
4. If done improperly, prototyping can cause fantastic increases in cost
5. Prototyping is not a substitute for full-scale development
6. There will always be differences between development prototypes and production models resulting in change
7. The decision still rests on intuitive judgment

#### Full-Scale Development Strategy

Committee members and witnesses criticized full-scale development concepts and approaches. There was testimony that DOD was failing to achieve an adequate increase in effectiveness in moving from one system to another, was pushing the state of the art too fast, and was being overwhelmed by technical problems during development (see table 30).

In addition to poor initial planning and decision-making, many reasons were given for these problems. Programs were inflexible in that they followed a rigid set of practices and procedures. Schedules were overly optimistic and tended to override all other considerations. But one cause seemed to stand out above all others: DOD was attempting to build systems that were too large and too complex. Several witnesses clearly pointed out the dimensions of this problem. Fitzhugh, commenting on the size, noted:

The emphasis on developing all elements for a system as part of a single development project . . . causes the accumulation in one program of a dangerously high magnitude of risk, from both cost and technology standpoints. . . .

It encourages the services to include in a basic new weapon system all the improvements in various components that have been developed since the last system. . . . This not only results in loading down major systems . . . but also militates against having the option available of making incremental improvements in old systems rather than starting all over again.

It means that only tremendously large corporations have an opportunity to participate on the new development.<sup>1</sup>

Systems integration problems were highlighted by Sprey:

I believe with Dr. McLean, our large and integrated development programs, by and large, turn out badly. I think we should abandon this approach; that is, we should not permit simultaneous development of multiple components, each of high risk within a single development program. . . .<sup>2</sup>

Johnson talked about component development, saying:

I would also recommend a return to our former practice of developing components such as armament or engines which would be available off-the-shelf for different programs. Our recent practice of making new engines, radar, guns, and similar equipment new for every different weapon system leads to extreme costs and lengthy development time.<sup>3</sup>

From the various comments made by officials on programs, such as the F-15, there was evidence, although not presented formally in regulations, that the breaking down of total systems into small, manageable units for development, i.e., subsystem and component development, was the preferred strategy by 1970.

#### System Design

This problem of total systems integration led to poor engineering systems design and synthesis and ineffective use of industry resources (see table 31). Jones testified that "it is weakness in design synthesis that has led to many of the failures that have been experienced in our major systems."<sup>4</sup>

Many causes external to contractors were cited for this problem, including:

1. The Government does not do sufficient systems integration
2. Responsibilities for subsystem tasks and interfaces are not delegated properly
3. Government/contractor teamwork is poor

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 6.

<sup>2</sup>Ibid., p. 248.

<sup>3</sup>Ibid., p. 37.

<sup>4</sup>Ibid., p. 5.



4. Government/contractor technical collaboration is inadequate

5. Governmental organization and personnel interfere with contractor activities

6. Governmental controls and administration divert engineers

Causes internal to the contractors center on engineering personnel:

1. Too many engineers do too many unnecessary administrative jobs

2. Engineers focus on excellence and performance, not on cost and simplicity

3. Insufficient use is made of the "job-shop" approach

4. Practical experience is not relied upon sufficiently

5. Development teams are not kept together

Regardless of the cause, it would appear that engineering utilization is a problem equal to that of systems integration. Johnson, Lockheed's manager of the famous "skunk works," focused on the problem in his criticism:

I have made constant surveys over the 20 years about what percentage of an engineering group actually are engaged in putting a line on a paper, writing an analysis that has to do with the hardware. In 1956 . . . I found that 5.6 percent of the total time was spent in actually addressing the problem: How to make the hardware. I found out about 10 years later they were down to 3 percent; and so when we got into these various skunk-work projects, it was pretty obvious to me if we could improve the time [of] the man who was really creative by a factor of 10, and let him spend 30 to 50 percent of his time with the problem, I would use less than 10 percent of people, and a good example of that is when the B-70 was being built. . . . There was a time when they [North American Rockwell] had some 3,500 people in their engineering department. . . . At the same time, we were working in a higher speed regime, 4 miles higher, and the total number of engineers on that program was 135, including me.<sup>1</sup>

#### Test and Evaluation

Test and evaluation prior to and in support of the decision to enter full-scale production, during and on completing development, was inadequate (see table 32). Test and evaluation within DOD suffered from at least five problems:

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<sup>1</sup>Ibid., p. 28.



1. Test and evaluation during development was being overlooked or sacrificed as an expediency
2. Operational testing, in which users participated, was not started early enough in development
3. Data available for evaluation were inadequate
4. Test and evaluation procedures were weak
5. Funds earmarked and work to be performed for testing were the first things sacrificed when money or time became critical

Witnesses testified that funds for testing and evaluation were inadequate, and organizational responsibility was fragmented. At all levels of management within DOD, testers were not independent of the developers. Furthermore, testing was not oriented to the operational need and not undertaken at key points in the acquisition process.

Fitzhugh, addressing the operational testing problem, stated:

One of the most urgent needs for improvement of the entire weapon system acquisition process is more effective operational test and evaluation.

Everyone seems to agree that operational test and evaluation—OT&E—is very important; however, there are significant differences of opinion as to what it encompasses, what its proper objectives are, and what organizations and methods are necessary to accomplish it most effectively.<sup>1</sup>

Stockfish confirmed Fitzhugh's assessment and concentrated on the data problem:

. . . We have vast areas of poor information or almost no information on how systems might be degraded under operational conditions. . . .

. . . if we don't have good information about operational phenomena, we can't even make good judgments about how to exploit the technical improvement. . . .

How to get better information and better insight on how technical performance can generate something that consists of operational utility is a very critical problem. . . .

. . . I would say no one knows. Very frequently that increment of speed [increasing a helicopter speed by 20 or 30 knots] would be detrimental to the system's effectiveness. For example, higher speed may make

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<sup>1</sup>Ibid., p. 8.

it more difficult for the pilot or crewman to acquire targets when operating at low altitudes. . . . Those increments may actually have negative worth in terms of combat utility.<sup>1</sup>

Test practices and procedures were weak in two areas. Many test specifications were outdated and costly. The practices and procedures in use, while often adequate, were not followed or enforced. Many violations of good test management were reported in investigations and hearings on coverups, faulty and optimistic reporting, and incomplete test and evaluations. DOD established separate, independent test agencies at OSD and within each military department and required OT&E in conjunction with both full-scale development and production decisions.

#### Production and Deployment

After full-scale development, production is undertaken and systems are deployed to field units. This essentially completes the systems acquisition, project management life cycle. Committee criticism and concern in this area focused on three main problems:

1. Program and engineering changes were excessive and poorly managed
2. Transition from full-scale development to initial production involved too much concurrency
3. Equipment was being initially deployed to field units which required major modification and retrofit to bring it up to an acceptable standard

#### Change Management

The management of change was considered by many witnesses as the fundamental and most critical task in weapon system management (see table 33). As one witness testified, planning and controlling change during development and

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<sup>1</sup>Ibid., pp. 107, 109, 110, 131.

production was several times as difficult as going through the initial contracting process.

Change makes up the major portion of cost growth, more than poor cost estimating and other cost overrun factors, according to GAO and DOD statistics. Program changes, primarily initiated by the Government, and engineering changes, primarily a contractor's responsibility, are the two largest categories of change.<sup>1</sup>

The major cause of program change is said to be the impact of the environment in which the military operates—changes in threat, changes in mission and force, and advancements in technology. Experience has shown that engineering changes in certain areas can exceed the original cost by 100 percent and can dominate all other considerations. Critics have claimed that both program and engineering changes have been excessive. The accumulated effect, as changes reverberate throughout the system, has had a cost impact of great magnitude on a number of programs.

It is said that changes have been a problem over the years and that the problem is not completely solvable. Critics agree that while changes cannot be eliminated, they can be controlled more effectively. Excessive change is said to be symptomatic of more fundamental problems.

Both procurement policy, discussed in Chapters VI and VII, and acquisition policy are said to be partially responsible for the problem of excessive changes. Performance specifications have not been firm, and technical development and production baselines have never been stabilized in many cases. In other instances, Government officials have been unable to determine in

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<sup>1</sup>Change and change management occur at all points in the systems acquisition life cycle. It was included at this point because of the importance of change in gaining and maintaining production stability, effectiveness, and economy.

advance the worth of the change and, afterward, the responsibility for the deficiency.

DOD policy changes to initiate prototyping, to break down large systems into smaller units, to improve test and evaluation, and to reduce concurrency between production and deployment (discussed later) are expected to aid in reducing both program and engineering changes. In addition, DOD is experimenting with change ceilings and thresholds and pricing in advance. It is also considering not allowing profit on change.

One additional problem exists—the inability to account for change. In 1969, the Joint Economic Committee addressed this problem in one of its reports:

Contractors are not required to account for changes separately. As a result, it is not usually possible to determine the cost of individual changes. Typically, the Government is forced to negotiate a lump sum settlement to pay for numerous changes since most changes are not priced in advance of the work, and the Government has not checked to see what the cost of the change should be.

The report continued with a quote by Rickover:

Thus, contractors can use change orders as a basis for repricing these contracts. They have almost unlimited freedom in pricing change orders because their accounting systems will never show up the cost of work. The Government can never really evaluate the amounts claimed or check up to see if it paid too much.<sup>1</sup>

#### Transition to Production

A similar situation on pricing exists in the transition of a project from full-scale development to production. Once selected for development, a contractor usually has a sole-source position for production. Without adequate competition, it has been difficult to insure that the bidder's price has not been inflated. Just as in earlier decisions, witnesses testified that a large number of premature production decisions had been made (see table 34). Two

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Economics of Military Procurement, Joint Committee Print (Washington, D.C.: Government Printing Office, 1969), p. 12.

general problems were cited. Critics claimed DOD had not limited the commitment of production funds until it was certain what would be produced. In addition, there had been a high degree of concurrency between the end of development (normally test and evaluation) and the beginning of production. The problem of concurrency, along with paper studies, was cited by Packard as the major cause of cost overruns. Robert C. Seamans, Jr., former Secretary of the Air Force, explained the significance:

In the development of defense hardware, we are usually at the outer limits of technological development. Uninterrupted schedules and predictable costs for procurement depend on the development work that has preceded production of the item in quantity. But because weapon systems must be as modern and timely as possible, procurement [production and initial deployment costs]—80 percent of total expenditures—follows very closely behind R&D and often parallels it. There is need, consequently, to minimize risk as much as possible. One way of doing this is to reduce the amount of development that runs concurrently with production. Retrofits, modifications, changes in the line, and dilution of the benefits derived from the "learning" curve of production all add to the final cost, and must be kept to the minimum. . . .<sup>1</sup>

Robert C. Moot, former Assistant Secretary of Defense (Comptroller), described the funding problem:

. . . As you know, there was a great deal of concurrency so that you never really had a . . . clean move from one stage to the next. . . .

. . . I had to accept the judgment of the technical people who would say, we haven't yet completed everything we should have by this time, but we can catch up as we go along with the next stage. . . . Most of that concurrency was policywise being funded and it was being funded because we did not evaluate the seriousness of the difficulty that might arise by doing that.<sup>2</sup>

At least five causes were cited for the problems in the transition to production:

1. Inadequate planning for producibility and assessment of contractor's production capability

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 4), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 1257.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 104.

2. Pressures of urgency and conformance with prespecified schedules
3. Failure to adequately measure achievements through design, test, and evaluation
4. Lack of assurance of design suitability prior to production
5. Too rapid buildup of production line

A certain amount of concurrency cannot be avoided. On an average, long lead time procurement of production equipment and new production processes must begin eighteen months before production. Efficient use of manpower in a contractor's plant requires some overlap of development and production.

Most experts agree there will always be some problems experienced during the transition phase. DOD has acted to strengthen test and evaluation, use achievement milestones for measuring development progress, and, where possible, institute preproduction runs or production prototypes prior to a major commitment of money.

#### Initial Deployment

It is at the time of initial deployment that the impact of technical shortcuts and expediencies have been felt most severely. There was significant evidence to indicate that both excessive retrofits and major modifications were undertaken during the six-year period (see table 35). Several systems, notably the Sheridan tank and the Gama Goat vehicle programs, were the subject of individual Congressional committee reports spotlighting this problem and the associated reasons. Not only were retrofit and modification cited as costly and wasteful, the impact on operation and combat capability was considered serious.

The report about the Army tank program contained the following conclusions:

Every major item discussed in this report was mass produced, and then later, millions of dollars had to be spent to reconfigure and modify the equipment in order to achieve, even partially, the design goals.



Despite inherent design defects in the Sheridan weapon system, the Army hurriedly modified a small number of Sheridans and released the vehicles to Vietnam in early 1969.

Ten years of effort and some \$1.2 billion have been committed to the Sheridan/Shillelagh effort, yet there is no convincing evidence that the system represents enough of an improvement in combat capability over existing weapons . . . to justify any such expenditure of time and money.

Not one Sheridan as originally designed and produced was suitable for combat use without extensive and costly retrofits.<sup>1</sup>

Other reports and testimony, e.g., the Gama Goat, cited similar situations. Some DOD officials have defended the retrofit and modification practice as normal and the lesser of evils since equipment is in the hands of the troops sooner than might have been possible. It is claimed that a system can only be shaken down through field usage. Nevertheless, the degree of waste and inefficiency appears to be significant. Hopefully, DOD's policy changes during the other phases of the project life cycle will be sufficient to minimize retrofit and modification after initial deployment.

#### Acquisition Policy Implementation

A number of critics claim that one of the most serious problems faced by DOD in systems acquisition management is the constant state of flux of policies and practices. This includes the patchwork and fragmented improvements undertaken and the overall lack of integration of functional and project management activities. This would appear to dictate the need for a strong implementation program (including training) and an adequate feedback system with a high degree of systems discipline. Both implementation and feedback were cited by critics as problem areas (see table 36).

It is generally recognized that DOD systems acquisition policy under Packard underwent major surgery. Most experts agree that most of the change

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<sup>1</sup>U.S., Congress, House, Committee on Armed Services, Review of Army Tank Program, Committee Print (Washington, D.C.: Government Printing Office, 1969), pp. 5-6.

has been for the better.<sup>1</sup> At the same time, it is recognized that weapon system acquisition cannot be completely controlled and that there is much room for additional improvement, particularly in the implementation of new policy. As Packard indicated, there is a need for a change in employee attitude and actions, which is a long-term proposition.

Poor implementation was cited as a major reason for past policy failures. Critics claim this problem has not been overcome and there continues to be a lack of communication between Washington and the field on policy. The result is a lack of understanding of what is wanted by OSD and how it is to be accomplished.

Conversely, there is some question about the ability of people at the top to understand what is feasible and attainable at the working level and what actually occurs. At least six major reasons were given for the existence of the acquisition problem:

1. DOD is a very large organization, and large organizations tend to have communication and coordination problems
2. There is a tendency to rely on directives as the basic tool for policy implementation
3. Systems discipline is poor, directives have not been complied with or enforced
4. DOD has no mechanism to analyze poor performance
5. There is no documentation of past mistakes
6. There is no assignment of responsibility or little accountability for past mistakes

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<sup>1</sup>It should be noted that this feeling of change and improvement does not hold true for other areas, such as procurement management wherein most critics feel little other than problem identification occurred over the six-year period.

Von Baur is probably DOD's severest critic in this area. He said:

. . . There is a vast difference in knowledge and orientation, a vast gulf, perhaps, between the ivory tower of procurement policy in Washington and the farflung lines of contracting officers, supervisors of shipbuilding, contract administrators, and inspectors, battling from day to day to try to make the policies laid down in Washington work out in practice. There is a tremendous gap in communications between them. . . .

Now one result of all this is that when policy fixed in Washington goes wrong in the field, today, or in the past, at least, Washington tends to find out about it only occasionally, and then, only by accident. Meanwhile, billions of dollars of the taxpayers' money may be wasted.<sup>1</sup>

Rule, referring to the lack of systems discipline, said:

. . . If the services are to profit from mistakes previously made, there must be visibility given to what caused the mistakes, whether technical, contracting, administrative, et cetera. . . .

Rarely, if ever, is any disciplinary action taken as a result of our major mistakes, and in my opinion some should be taken.

[I recommend] a mandatory lessons-learned procedure to illuminate and document what happened. No such procedures exist today for all of the services. . . .

My personal feeling is that the Navy will set up a board of inquiry if a rowboat runs aground. . . . But if you louse up a hundred million dollar contract, we do not set one up.<sup>2</sup>

If the allegations are true that DOD relies heavily on "legislating" policy and lacks a feedback system, one can tentatively conclude that the DOD systems acquisition management system contains a definite "closed-loop" deficiency in the management process.

Throughout this chapter, there has been an underlying thread of DOD's frequently being overcome by stubborn technical problems and using money and other expediencies to overcome them. The central focus of DOD's management improvement essentially has been to slow down the pace of activities and to relax many of the inflexible regulations and procedures. Decision-making

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, p. 289.

<sup>2</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 5), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 1429.

has been shifted so that decisions are based more on demonstrated performance through prototyping. Development strategy has been changed to prevent large system development and to limit commitment of funds by using small sequential steps throughout systems development and early production. As indicated in Chapter II, DOD is credited by Congress, for the most part, for making improvements in systems acquisition policy; yet much remains to be accomplished.

Having looked primarily at technical policy aspects, it is now appropriate to look at the business side of systems acquisition management. Consequently, Chapter VI addresses procurement policy and competition.

CHAPTER VI  
PROCUREMENT POLICY AND COMPETITION

This chapter examines the complexity and inadequacies in the procurement process, including relevant laws and regulations. It addresses a number of procurement factors and policies which appear to be hindering contractor efficiency and economy. The problem of promoting and maintaining competition as a means of obtaining the best purchase price and motivating contractors to greater efficiency is also examined.

Government procurement policy applies to all Government agencies and has its basis in public law. It represents the business side of DOD systems acquisition management. While DOD is in a position to change acquisition policy, it is more or less bound to conduct its business in accordance with overall Government procurement policy. Thus, many of DOD's business problems and issues are beyond its control.

The evolution of Federal procurement law has been described by GAO as a gradual development of piecemeal legislation designed to solve or alleviate specific and, in some instances, relatively narrow problems as they have arisen. After World War II, Congress enacted the Armed Services Procurement Act of 1947 and the Federal Property and Administrative Services Act of 1949. The two statutes, as amended, are fairly broad and comprise the primary laws for most Government procurements. Each is administered separately, with each having its own implementing regulations. The Armed Services Procurement Regulations (ASPR) represent one set of regulations which are administered and used by DOD.

## Government Procurement Philosophy and Approaches

### Procurement Regulations

DOD procurement regulations implement the two basic statutes as well as regulations issued under other statutes relating to Government procurement. These procurement regulations are said to be voluminous, exceedingly complex, often difficult to apply, and sometimes even difficult to locate (see table 37). Furthermore, they have the force and effect of law. Since the contractor's knowledge and consent to the regulatory provisions are no longer necessary to bind him, the regulation development and implementation process has become of vital concern to the contracting community. As regulations and controls have continued to grow, there has been a widespread clamor for more uniformity, simplicity, and integration of Government procurement regulations.<sup>1</sup>

In 1955, the second Hoover Commission addressed the problem of Government procurement, and it resulted in a number of improvements. Little attention was given to the area over the next ten years, and the problem grew. By 1966, Congressional committees were examining various aspects of Government procurement. In 1967, at the beginning of the six-year period under study, the House Committee on Government Operations initiated hearings to establish a Commission on Government Procurement to study and recommend improvements. At that time, Hollifield, sponsor of the bill, described the overall problem as follows:

There is a vast amount of procurement information in Government which can be better organized, more widely disseminated, better utilized. There are procedures and practices which have to be reconciled, regulations and statutes which have to be coordinated. . . .

Every member of Congress, I daresay, has in his office files complaints by subcontractors who cannot get paid by their primes, by patent holders who believe Government procurement agencies are infringing upon them, by small businessmen who are lost in the maze of Government procurement

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<sup>1</sup>Most of this background information was extracted from U.S., Congress, House, Committee on Government Operations, Establishing a Commission on Government Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967, pp. 45-46.



regulations, by big business contractors who believe they are hemmed in by too many Government restrictions, by civil servants who believe there is too much Government work in-house.

As far as procedures and practices are concerned, he added:

We want to improve Government procurement and contracting procedures and practices. We are interested in economy and efficiency. We want Government to get its money's worth and contractors to be treated fairly. We want to examine the accretion of law, iron out inconsistencies, close gaps in coverage, throw out what is obsolete, and recognize what is new and necessary.<sup>1</sup>

Congressman John N. Erlenborn (R, Ill.) addressed the regulation aspects:

Selling to the Government . . . is an ordeal. . . . Voluminous regulations [are] so complex that all but the most experienced businessman or lawyer become lost in a sea of red tape and technical jargon. I do not exaggerate when I say that these regulations, in volume, approach encyclopedic proportions. . . . In the case of the military, a businessman is required to plow through four separate sets of regulations.

. . . this "paper curtain" of regulations, forms, technicalities, and jargon is too complex to pierce or, at least, too risky financially. . . .<sup>2</sup>

Horton pointed out problems in providing Government policy direction:

There is a ready and logical explanation for the existing complexities, inconsistencies, and overlapping in Federal procurement policies: at every level of Government, responsibility for procurement is meted out to scattered agencies, committees and subagencies and subcommittees. . . . There is no committee in Congress having overall responsibility for procurement policy . . . [and] there is no central body with the authority or the resources necessary to un wrangle procurement difficulties and contradictions which pervade all areas of Government.<sup>3</sup>

Dr. Murray L. Weidenbaum, Professor of Economics, Washington University, best described the general concern:

I think what is needed is a broad-gauge analysis of the total impact of these procurement regulations on the defense firms, the long-term significance of what is happening. . . .

. . . Most of the regulations I am familiar with have come about to correct a specific abuse that has been uncovered either by a congressional committee or by GAO or by the Pentagon itself.

I have failed to see the Government, either the legislative or executive branch, take a look at [this situation] in total and see what cumulative effect this is having on that large branch of private industry which does most of its business with the Government.<sup>4</sup>

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<sup>1</sup>Ibid., pp. 12 and 16.

<sup>2</sup>Ibid., p. 14.

<sup>3</sup>Ibid., p. 15.

<sup>4</sup>U.S., Congress, Joint Economic Committee, The Economics of Military

Although the proposal for a Government commission was originally resisted by many officials, there was widespread agreement that legislative reform was required. In 1969, a bill to establish a Commission on Government Procurement was passed. In 1971, an amendment was passed extending the due date for the Commission's report until December 31, 1972. It must be said that throughout the six-year period under study, in spite of the recognition of major weaknesses in Government procurement regulations and procedures, little external to DOD, other than problem identification, was accomplished to alleviate the situation.

#### Procurement Process and Policies

Problems created by Government procurement regulations, when combined with the rigid DOD procurement process, were said to be one of the major causes of delays in systems acquisition (see table 38). Rickover commented, "Procurement delays alone probably delay technological progress 2 or 3 or more years in a decade."<sup>1</sup>

Downgrading of the DOD procurement function and worker indifference have contributed to procurement instability, as discussed in Chapter IV; while total package procurement, which was covered in Chapter V, has contributed to rigidity in the procurement process. The DOD procurement function has been equally affected by overall DOD organization and decision-making weaknesses, which need not be repeated.

When the DOD procurement process is considered independently, one additional problem should be noted. Critics claimed that the procurement function

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Procurement, Joint Committee Print (Washington, D.C.: Government Printing Office, 1969), p. 68.

<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Armed Services Committee, 92d Cong., 1st sess., 1971, p. 481.

was not adequately related to the systems acquisition life cycle and other functions. Indications of this include procurement cycles being too long, contract types and programs being mismatched, and being unable to tailor contracting tools to the needs of project managers.

#### DOD Procurement Factors and Policies

While it was difficult to separate the procurement process from other DOD processes, a number of specific procurement policy problems can be isolated:

1. Defective pricing resulted from a failure to comply with and to enforce the Truth-in-Negotiations Act

2. Rigid, fixed-price contracting and faulty administration were major reasons for excessive contractor claims

3. Excessive contractor profits were caused, in part, by inappropriate pricing policy

4. Contractor cost policy was and continues to be based on a percentage of anticipated costs without considering total capital investment

5. Government-furnished plant and equipment and progress payment practices were disincentives to contractor investment

6. DOD small business and patent policies gave unfair advantage to large contractors

Collectively, they confirm much of the Congressional criticism addressing the need for legislative reform. Individually, they indicate the difficulties experienced in protecting the Federal Government's interest while stimulating defense industry efficiency and economy.

#### Defective Pricing

Public Law 87-653, effective in December 1962, established the so-called Truth-in-Negotiations Act. Under this act, contractors are required to submit

certified cost or pricing data prior to the award of negotiated contracts. It was felt that this law would reduce overpricing of contracts by forcing contractors to account visibly for cost and pricing data used. In 1967, GAO reported widespread violation of this law. Since that time, witnesses continue to testify that it is not being effectively enforced (see table 39).

DOD has had problems in implementing and administering the law. First of all, the law assumes cost and price can be measured, which has not proved to be the case. Second, there are a considerable number of exceptions and loopholes. Each contracting officer, in effect, sets policy by his individual interpretation of the law at the time the contract is negotiated, and there is great pressure to cut corners to save time. A number of contractors have refused to provide the data, notably in the steel industry. DOD has been reluctant to act, but critics continue to clamor for action to strengthen compliance.

Rickover, in 1972, summarized the continuing nature of the problem, saying:

It [the Truth-in-Negotiations Act] was enacted in 1962 to put the Government on equal footing with industry in negotiating costs and profits on defense contracts. However, it has neither been effectively implemented nor properly enforced. . . .

A large number of defense contractors, including many of the Nation's largest companies, regularly refuse to provide the cost and pricing data required. . . .

. . . Yet the problems in obtaining compliance . . . have been well documented in congressional testimony.

The problem remains unresolved today. . . .

What is the explanation for the Defense Department's reluctance to enforce the law? I trace it to the close relationship that exists between the Pentagon and its largest contractors. . . .

. . . it is a matter of attitude. . . .<sup>1</sup>

Without adequate data from contractors indicating the basis for an item's price and cost, overpricing cannot be detected. Disclosure of overpricing and suspected overpricing have been continuing problems.

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<sup>1</sup>U.S., Congress, House, Committee on Appropriations, Department of Defense Appropriations for 1973 (Part 9), Hearings before a subcommittee of the

In addition to forcing compliance, another alternative would be prescribed accounting standards which would increase the utility of the certified cost and pricing data. Witnesses recommended that the law be reexamined. One proposal presented would require a certified report on actual costs incurred upon completion of the contract.

#### Contractor Claims

During the six-year period, DOD experienced difficulties in holding contractors liable for contracted work. The major part of the problem centered on Navy contractor claims. By 1972, the Navy was faced with approximately \$1 billion in shipbuilder claims (see table 40). These claims, if honored, in effect would have turned the contracts into cost-plus-fee contracts and eliminated any financial risk to contractors. Critics believed the claims were the result of rigid, fixed-price contracting practiced under McNamara. Rule, the Navy procurement official responsible for reviewing claims, also identified faulty administration for a large part of the problem. He testified:

These claims that we have now arise from seeds that were sown in 1963, 1964 and 1965. . . .

. . . we have claims for many [reasons]—late delivery of Government-furnished information, defective specifications, impossibility of performance under the specifications, and things like that. . . .

They [the Navy] had a no-deviation policy. They wouldn't deviate from the plans or specifications. The contractor would write in and say "I need help in this area." Under the no-deviation policy, they just say "no." This breeds claims.

From claims now in being, . . . it is obvious that contracts had been made where unrealistic ship delivery dates were set when it was known, or should have been known, that [Government-furnished] components would not be delivered in time to enable the yard to meet their delivery date.

. . . the minute we miss that Government-furnished delivery date he has a claim.<sup>1</sup>

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House Committee on Appropriations, 92d Cong., 2d sess., 1972, pp. 171-172.

<sup>1</sup>U.S., Congress, Joint Economic Committee, *The Acquisition of Weapons Systems (Part 1)*, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, pp. 154, 156, 158, 159, and 169.



A second problem arose, that of equitable claims settlement. Contractor records and justifications for claims were suspect. In at least one case, the claim was for the exact difference between the contractor's proposal and the actual costs. GAO and critics alike found the claims lacking in tangible evidence. Claims were reported as having excessive man-hours, containing uncertified data, and not being supported by accounting records.

Navy officials faced a dilemma; the contractors would not complete or deliver the ships until some action was taken on their claims. Companies, through Congressional pressure, were pushing for settlement; but Navy claims groups, mostly lawyers, were delaying action on legal grounds. Responsibility for settlement within the Navy was turned over to flag officers who undertook negotiations with contractors and made some provisional payments. An administrative and legal controversy arose. By 1973, very little had been settled. It appeared that the topic of claims and claims administration would continue to be a major concern for Congressional oversight.

#### Contractor Profit Policy

Excessive defense contractor profit and inappropriate policy are major areas of unsettled concern of the Congressional committees. In 1967, defense critics, including several congressmen, claimed there was war profiteering resulting from the Vietnam War.<sup>1</sup> There was some indication that profits had risen between 1964 and 1967, but not to the extent indicated and that, in fact, McNamara's efforts to raise profits had failed (see table 41). At about this time, Logistic Management Institute (LMI) conducted a study for DOD which indicated that defense contractor profits were comparatively lower than could be

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 6), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 93d Cong., 1st sess., 1972, pp. 1657-1666, 1912-1913, and 2217-2221.



expected from commercial business. LMI used unverified, unaudited data which were obtained through the voluntary cooperation of a sampling of defense contractors and were questioned by the Joint Economic Committee. As a result, in 1969, Congress directed GAO to make an independent study of defense contractor profits.

In 1971, GAO completed its study with equally questionable results. The needed audit and verification were beyond GAO's capability. Staats reported:

One problem was that no one has any record as to the total number of defense contracts that are completed year by year. . . . If you make the cutoff at \$1 million, you still have something like 5,000 procurement actions a year.

Our estimate is that in order to [have a valid sample], we would have had to review something like 1,600 contracts [each year for six years].

Obviously we did not have the manpower either in terms of expertise or in terms of numbers. . . .

I frankly do not know where you get the manpower to go in and make this kind of audit. . . .<sup>1</sup>

GAO tended to support the LMI findings that defense contracting was a low-profit business, based on computing profit as a percentage of cost, as is practiced by DOD. However, as a percentage of return on invested capital, a computation widely used in the business world, GAO found that defense profits were equal or better than average.

Nothing has been settled; critics and defenders continue to disagree.

The problem is a lack of adequate information. The result is that the Federal Government cannot set effective profit policy. Proxmire explained it this way:

In fact I am sure there will be some cases where defense profits are too low and I mean that. On the other hand, there will be cases where they are too high. Unless we have it documented and know where it is we are doing a weak job and where maybe too zealous a job, we are going to be handicapped in our procurement policy.<sup>2</sup>

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 3), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st sess., 1971, pp. 1064-1065.

<sup>2</sup>Joint Economic Committee, 1969 Hearings on the Acquisition of Weapons Systems (Part 1), p. 53.

Uniform cost accounting standards and contractor-certified reports on profits submitted upon completion of a contract have been suggested as ways to improve the situation. Additional recommendations involve the method of computing contractor profits.

#### Contractor Cost Policy

Under current defense contract negotiating procedures, little consideration is given to the amount of capital investment required of the contractor for contract performance. Instead, profit objectives are developed as a percentage of the anticipated costs of material, labor, and overhead. By relating profits to costs, contractors in noncompetitive situations are not given incentives for economy and efficiency (see table 42).

Critics claim, and many DOD officials agree, that a "disincentive" occurs. The more costs that can be realistically justified, the larger the percentage of profit will be; inefficiency is rewarded. For example, two contractors were awarded noncompetitive contracts for the same kind of job. The contractor with the higher costs was awarded a higher profit, \$1.4 million more, than the more efficient contractor.<sup>1</sup>

Experts generally agree that of the various ratios available for evaluating profits earned by contractors, the percentage of profit earned on total capital investment—the total investment in all assets used in the business, exclusive of any Government-owned items or leased items—is the most meaningful for evaluating defense profits. DOD has been studying this problem since 1967, beginning with the LMI study and recommendations and conducted a contractor pilot test applying the return-on-investment concept during 1971 and 1972.

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<sup>1</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 3), p. 574.

Dr. Robert N. Anthony, a former DOD Comptroller, testified in 1970:

Fees are based on capital employed in public utilities and in public rate negotiations generally. Defense procurement is one of the few important areas where cost-based pricing still prevails. In Great Britain, contract pricing was shifted to a return-on-capital basis. The possibility has been discussed in the Department of Defense at least since 1962. It is time to act.

. . . Specific techniques have been developed, and their practicability has been thoroughly tested. An implementing instruction could be published in 2 months, if the go-ahead signal was given.<sup>1</sup>

Several problems exist. DOD claims implementation is administratively complex. There is general agreement that return on investment cannot be the only criterion for profit determination. Assuming DOD would not change the total profits a contractor makes, on the average, some contractors would be hurt and others helped by the change in formula. The majority of contractors has tended to oppose it because of the uncertainty of the outcome. No DOD implementing action had been reported by the end of 1972.

#### Contractor Investment Policy

Relating profits to costs causes another equally important problem. Contractors in noncompetitive situations are not provided with positive incentives to make investments in equipment that would increase efficiency and result in reduced costs. Under present methods of negotiating prices, such investments tend to lower, rather than increase, profits in the long run (see table 43). Consequently, contractors prefer to maintain bare facilities, are biased toward labor-intensive processes and away from modernization, and, in some companies, depend heavily on Government-furnished plant and equipment. An IMI study reported that "most of the contractors stated frankly that they invest as little capital as possible in facilities for production on negotiated contracts in

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, pp. 444-446.

order to avoid reducing their return on capital."<sup>1</sup> Industry officials, such as Jones and Johnson, generally agree that the contractor should be expected to invest in plant and equipment it will use.

Government plant and equipment in the hands of contractors is estimated to be worth \$15 billion. While there are some indications that Government plant and equipment provide a decisive advantage in open competition, the major problem stems from its impact on small businesses. As defense business has declined in recent years, some prime contractors have begun undertaking work in-house that normally would be contracted out. Primes are bidding against small contractors (particularly in the die, tool, and precision machine area) for business from other primes and in commercial activities. Small contractors claim that they can do much of this work more efficiently and that, because of DOD policy, they are being subjected to unfair competition.

Witnesses testified that authorization for contractors to use Government equipment for commercial purposes is routinely approved, that rental rates charged by DOD for use of the equipment are "hopelessly inadequate," and that many other abuses occur. In addition, DOD's accountability and inventory control of Government plant and equipment were criticized throughout most of the six-year period.

Since 1967, DOD has indicated a willingness to divest itself of most Government-furnished plant and equipment, but little progress has been made. Witnesses have indicated that, with additional purchases over the past several years, DOD plant and equipment inventory is about the same.

Progress payments, based on a percentage of the value of work accomplished, were also said to create similar disincentives to invest. During the

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<sup>1</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 3), p. 902.

of the great tragedies . . . is the fact that it is becoming more and more clear that the medium-sized company, let alone the small company, is having less and less chance to bid."<sup>1</sup>

Similar criticisms have been directed toward DOD patent policy. Critics claim that DOD has a "giveaway" patent policy that tends to concentrate economic power and thereby reduce competition. DOD generally retains only the right to share patents developed under Government sponsorship without paying a royalty. Furthermore, no patent rights are claimed under Government-sponsored independent research and development (IR&D). The assumption is that by not claiming the rights, the invention will be used for the good of the public. Witnesses, however, testified that about ninety percent are never used for commercial work. About fifty percent of recent inventions made under this arrangement are owned by the twenty largest companies in the United States. In addition, witnesses indicated that many patent infringements have been reported.

There exists a dilemma. One argument is that tightening patent laws would weaken industry incentives. A recent GAO study, recommending that patents under Government-sponsored independent research and development remain with the contractor, tends to confirm this position. It appears that corrective action will involve many factors and long deliberation.<sup>2</sup>

#### Maintaining Competition

Free and open competition in the marketplace, a tenet of the American capitalistic system, is a basic assumption imputed in public law involving Government procurement. Since World War II, as equipment purchases have continued

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 52.

<sup>2</sup>There have been recent hearings concerning Government patent policies, but these have been held by Congressional committees outside the scope of this report.

to increase in size and complexity, the ability of the Government to maintain open competition, particularly price competition, has declined (see table 44). The gradual reduction of competitive forces in the defense and related industries has affected DOD systems acquisition prices and contractor efficiency. Procurement factors and policies that restricted competition were examined in the previous section. Whereas, this section itemizes committee concern and testimony directly related to DOD's ability to maintain competition. Witnesses testified that:

1. Existing contractor pricing strategies have resulted in contractor "buy-ins" and "bail-outs"
2. Price competition should not "drive" DOD systems acquisition
3. Sole-source contracting has been used too much
4. Production contracts do not have adequate competition
5. Subcontractor competition has not been used sufficiently

#### Contractor Pricing

Defense contracting strategy is based on the ability of a contractor to win Government contracts. In the case of many prime contractors, survival is at stake. As a result, a contractor may deliberately set prices below costs as his pricing strategy. When this occurs, the contractor is said to be "buying-in." There is sufficient evidence and testimony to indicate that buying-in was a rather common practice in DOD systems acquisition during the six-year period (see table 45).

Testimony indicated a number of factors contributing to this pricing practice:

1. A contractor may decide to enter a particular aspect of the defense business and operate at a loss to attract business



2. A contractor bids low on the initial competitive contract based on the prospect of a noncompetitive, highly profitable, follow-on contract

3. Contractors count on program and engineering changes to make up for initial price-cost differences

4. When a program is underfunded, a contractor must buy-in under the DOD ceiling in order to start the program

5. Since DOD requirements are unrealistic, the contractor must make overly optimistic promises, knowing that he cannot deliver at the price specified

6. The contractor expects to use the product for commercial markets and can offset part of the initial losses

7. Because the financial risk is so high, the contractor expects to get relief (bailed out) if he runs into trouble

Competitive forces have been insufficient to counterbalance this strategy. While buying-in can sometimes save DOD money, experience has shown it to be a costly practice during the period under study. The buying-in of Hughes Aircraft to enter the helicopter industry was said to have resulted in excessive costs to the Government. Contractors who have extensive cost overruns during development usually win follow-on production contracts. In at least one instance, change costs exceeded original prices. The STOL aircraft program was identified as one which had been underfunded and would result in a built-in overrun. The MBT-70 tank was said to be one in which technical requirements resulted in unrealistic prices. Critics claimed that DOD bailed out Lockheed on the C-5A program and let Grumman out from under its original F-14 contract.

Several witnesses have claimed that the practice will not stop until discipline is tightened because there is no penalty for buying-in. It takes great fortitude to stand up to the pressures involved and to disqualify a bidder for this practice. Proving that a bid price represents a buy-in is also difficult since no guides are provided by ASPR.

Recent policy changes have been made in systems acquisition policy as a substitute for or to augment competitive factors. Total package procurement has been abandoned for large contracts to reduce a contractor's financial responsibility and risk. Competitive development prototyping is expected to reduce decisions based on contractor promises, to provide hardware as a basis for pricing development, and to reduce costly changes. Albeit, none of these is considered a complete solution for the lack of competition.

### Criteria for Competition

Formal, advertised procurement, the preferred method stipulated by public law for Government purchases, simply will not work for major DOD systems acquisitions. Critics have claimed that regulations and practices pertaining to competition are disjointed, that Congress is attempting to fit today's noncompetitive procurement into conditions that existed in the past (see table 46). Furthermore, the need to recognize methods other than formal, advertised bidding is vital to sound procurement practices.

Robert B. Hall, GAO official, provided a good overview of the criticism:

Procurement methods . . . for advanced technology devices have departed markedly—of necessity—from the formal advertising method. The statute does not recognize these more relevant methods. Rather it discriminates against them by loading on unnecessarily burdensome [and ineffective] requirements.

Patently, formally advertised procurement is out of touch with the real world.

Eliminate the fiction of formal advertising as the dominant procurement method, and the need for reciting the "17 exceptions" (it seems ludicrous to contract for 85% or more of DOD's needs on an exception basis).

There is an "overriding fear" that congressional review and revision of the Act would result in more restrictive legislation and, therefore, loss of existing flexibility.

. . . The Act discriminates against, and has helped to create widespread congressional and public misapprehension over perfectly normal and effective procurement methods.<sup>1</sup>

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 7), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, pp. 2001-2002 and 2013.

Advocates of negotiated bidding methods have cited a number of reasons to support this practice:

1. The advertised bid is a bare bones estimate. There is no contingency for technical risk. Using it for complicated products can result in higher prices

2. Accepting the lowest bid price can be a serious problem. Many low bids are suspect. Conversely, other important factors, such as past experience, reliability, and life-cycle costs, are downgraded

3. There are better ways to obtain competition other than cost. Under negotiated procurement, proposals can be explored and questioned for soundness

4. Formal advertising cannot be used for classified material, when specifications have not been determined, when specific sources of knowledge or facilities are required, or when the procurement is urgently needed

5. DOD contracting is highly competitive when based on technical expertise. Through cost and price analysis, proposal evaluation, contract definition, and other techniques, DOD can qualify bidders on both technical and economic bases

There appears to be a general consensus that public laws and statutes should be changed to define "competition" based on a broader definition of the term, emphasizing the substance of competition rather than its precise form.

#### Sole-Source Contracting

While revising laws to put competition in better perspective is a major problem, so is the concern for a current lack of competition within DOD. Non-competitive or sole-source procurement has accounted for more than 50 percent of DOD's major procurements in recent years and offers one of the biggest challenges for improvement (see table 47).

Malloy described how DOD employs and benefits from competitive forces and pressures:

The defense marketplace is to a very large degree unique. The Government is the only buyer of most defense industry products, [it] determines the product it will buy, the characteristics . . . and when it will buy them [and] establishes the rules by which it will make its procurement.

These characteristics provide . . . great leverage in dealing with industry even in noncompetitive awards and are a powerful stimulant to business to become and remain competitive. . . .

. . . each contractor realizes that cost effectiveness studies may rule out his system, if it is not kept competitive. This causes all contractors . . . to maintain or to seek a more cost-effective system than its competition. A contractor cannot . . . relax. To be successful in the defense market, the participants must accept as a way of life a strong competitive environment with its demands for efficiency and technical excellence.<sup>1</sup>

Nevertheless, investigations and testimony have indicated that reducing the number of sole-source procurements is a major problem. While the lack of competition is a major factor, poor management is considered to be the prime cause.

Cited as management problems were:

1. Misuse and overuse of public exigencies as a means to overcome inadequate lead time planning
2. Failure to coordinate and consolidate buying requirements among military departments
3. Failure to seek alternative sources for follow-on procurements
4. Unavailability of technical data for reprourement
5. Failure to exercise vigilance in overseeing contractors who have a sole-source or monopolistic position
6. Failure to seek greater standardization among similar equipment

A number of alternatives exist to increase competition, but most conflict with other DOD goals, objectives, and policies. Breaking out of more subsystems for initial development competition and encouraging wider competition at the

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<sup>1</sup>U.S., Congress, House, Committee on Armed Services, Independent Research and Development, Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services, 91st Cong., 2d sess., 1970, p. 150.

subcontractor level are said to have the most potential. For the most part, however, DOD has relied most heavily on changes in systems acquisition policy, i.e., prototyping, performance milestones, greater test and evaluation, as the primary means of control in lieu of competition.

#### Production Competition

While changes in system acquisition policy can be credited with improving and maintaining competition in the development stage, the lack of competition at the production stage is still considered a major problem (see table 48). There appears to be a lack of contractor motivation for efficiency that would be brought about through competition.

There are indications that where competition has been possible, savings as high as 20 percent have been realized. Should-cost studies are another indicator. In the few places where formal studies have been conducted, similar savings have been documented.

As a practical matter, once DOD has committed itself to a contractor for full-scale development of a system, it is almost impossible to change contractors. The existing contractor has a significant competitive advantage in technology and has some degree of economic investment. Packard described several of the factors involved:

At that point in time [at the end of development], and there is no question about it, you are essentially locked into the program with that contractor. There is no sense, I think, in saying you are not because the design has been made to the unique production capability and characteristics of that contractor. He probably has made some investment in production tooling.<sup>1</sup>

It is DOD's policy to obtain a second source for production where feasible. This requires that technical drawings and other data be procured from the

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon System Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970, p. 15.

original contractor for use by a second contractor. DOD has had very little success with this process. Witnesses have pointed out the many problems faced:

1. In some cases, there has been no concerted effort to obtain the needed technical data package. The project manager involved fears that money will be wasted

2. The cost of obtaining a second source is a critical decision. In many cases, adequate planning, information on volume, and cost data are not available to make that decision

3. Much of the technical data prepared during initial development is of little worth. Contractor design changes depreciate the value

4. Project offices experience difficulty in obtaining and maintaining control over technical data packages. Cases have been cited in which the Government was not certain of what data it had and whether the data were adequate for use by a second source

5. Much of the data is not delivered in time to be of use by the project office and is not of sufficient quality for use by a second source

6. There is a question of data ownership. Often the data needed are owned by the contractor and he is reluctant or refuses to sell

7. There is a problem of transferring technical data from one contractor for use by a second contractor because company processes differ

A. S. Buesking, retired Air Force colonel and former official in the OSD Comptroller's office, summed up the situation in saying, "On development contracts and initial production runs, the Government theoretically receives a package of data which enables them to move to the manufacturing process. I don't know of any specific instance where this has been done satisfactorily."<sup>1</sup>

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<sup>1</sup>Joint Economic Committee, The Economics of Military Procurement, p. 212.



A wide group of studies has been conducted and several committee hearings devoted to the subject because of the difficulty experienced and the value of competition. A wide variety of alternate approaches to production has been suggested, but each appears to be unsuited to DOD's situation.

As indicated in Chapter V, DOD has advocated limiting the initial production run and building up production slowly until it is certain of what is being produced and at what cost. In addition, testimony indicated that, where feasible and economical, DOD could obtain competition at the subsystem or major component level.

#### Subcontractor Competition

Subsystem or major component breakout by the Government affords one form of subcontractor competition. The same method can be applied by the prime contractor for the total system. DOD has indicated its desire to emphasize more competition by subcontractors, particularly in the production phase. Witness testimony, however, raised questions whether this policy had been adequately implemented or carried far enough (see table 49).

Testimony indicated that subcontractor competition was not used sufficiently during the six-year period under study. Rickover, believing one factor to be motivation, said:

Generally, there is not much true competition in subcontracting. My experience is that primes pay little attention to getting the best possible prices for their subcontracts, because subcontract prices can be passed on directly to the Government.<sup>1</sup>

As indicated in earlier discussion, there is evidence that primes have not complied with the Truth-in-Negotiations Act at the subcontractor level.

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<sup>1</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 3), p. 512.

This is said to be a clear demonstration that fair and reasonable prices have not been obtained.

The treatment of small businesses was said to be a deterrent to greater competition in subcontracting. The problems of favoritism, discrimination, and lack of interest and information are not considered conducive to attracting small business to Government work.

A fourth factor, sole-source contracting, was discussed by Proxmire:

Your documentation this morning [a GAO report], I think, shows that in one way or another, subcontracting competition is being avoided.

. . . but where you have subcontracting, it doesn't make any sense that they can only get a sole source. . . . By and large, however, I think this would be the great exception that 99 percent of the time you could get competition. . . .

The problem of subcontract administration was covered by Staats:

. . . we think the subcontracting area is . . . important, because . . . you are talking about a prime who in turn relates to a whole series of concerns. And one of the things that the Procurement Commission is looking at very hard is how can you get more competition into the subcontracting field, because bigness is a fact of life. . . . The real question is whether or not in the negotiating with primes there is adequate attention also given to the subcontracting area. . . . [The question is raised as to] the extent to which the contracting agency is really on top of the procurement process not only before but after the contract is let.<sup>1</sup>

There was a general consensus among witnesses that the potential for more subcontracting competition was significant and that greater interest should be stimulated. One of the questions that could not be answered was how much subcontracting competition took place during the period under study.

Wiedenbaum cited the difficulty in attempting to assess the use of procurement resources, particularly subcontracting:

Military subcontracting is one area where the potential . . . is great, and it is the area where we have the least information. Until 1963, the Pentagon reported on the proportion of prime contracts which were subcontracted out. Such data is no longer available. . . .

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<sup>1</sup>Joint Economic Committee, 1972 Hearings on the Acquisition of Weapons Systems (Part 5), p. 1407.

The major potential for widening the role of small business in military procurement is to increase the subcontractor ratio; and this is precisely the information which since 1963 is no longer available.

It would be helpful to know more about this large segment of the military market. . . . This would enable us to explore the nature of competition for subcontracts.<sup>1</sup>

The examination of Government and DOD procurement philosophy, concepts, factors, and competition indicates many weaknesses. While many problems have been identified, little change has occurred. Chapter VII continues the discussion on procurement management with an analysis of contracting practices and procedures and management controls.

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<sup>1</sup>Joint Economic Committee, The Economics of Military Procurement, pp. 52-53.

## CHAPTER VII

### CONTRACTING AND MANAGEMENT CONTROL

The three principal avenues of control over DOD systems acquisition management are by competition among manufacturers, by the Government, and/or by effective company management.<sup>1</sup>

Control exercised through the use of competitive factors was discussed in Chapter VI. It was seen that competition could greatly influence how a company would act and what it would do under particular procurement circumstances. Competition, especially technical competition, was considered a potent force in DOD procurement.

In recent years, however, economic and other factors have diminished the value and applicability of cost competition in major systems acquisition. As a result, DOD turned to Government controls, the second method, as a substitute for or to augment open competition of the marketplace. Much of this control has been exercised through contracting and management systems and procedures. This chapter examines the Congressional committees' criticism of and concern for contracting and estimating procedures, program/project controls, and accounting practices.

#### Contracting Procedures

Committee criticism of DOD contracting procedures centered on three aspects:

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<sup>1</sup>U.S., Congress, House, Committee on Armed Services, Independent Research and Development, Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services, 91st Cong., 2d sess., 1970, p. 89.

1. The types of contracts available for DOD use in systems acquisition management were found to be weak forms of control
2. Contracting procedures required too much time and too many resources
3. Incentive contracting procedures have done little to improve contractor cost control or to increase efficiency

### Types of Contracts

As mentioned in Chapter V, the misuse of fixed-price contracting was considered a major factor in cost overruns, e.g., C-5A, and in poor contractor technical performance identified during the six-year period. Witnesses identified the problem as one of mismatching and misapplying the type of contract and the nature of the program (see table 50). Because of their importance, it is worthwhile to summarize the reasons for the mismatch and misapplication:

1. Fixed-price contracting, along with the use of paper studies and contract definition to support the development decision, was overzealously promoted by ASPR, by those advocating total package procurement, and by other pressures urging conformity. This led to overconfidence and overoptimism in initial planning

2. The nature and extent of the technical risks involved precluded effective fixed-price contracting early in the life cycle

3. Use of fixed-price contracting for cost control was an error in judgment when the magnitude and kinds of changes were considered

4. Fixed-price contracting reduced the flexibility of both the Government and the contractor to overcome problems in technical requirements and specifications

5. Fixed-price contracting was considered a premature use of price competition. Heavy financial risk was shifted to the contractor, and the result was cost overruns, contractor financial losses, and numerous contractor claims

In 1969, DOD declared that henceforth its policy would be to use cost-plus contracting as the preferred method for research and development programs.

Packard gave the following as his rationale:

What I prefer is that development contracts be on a cost-plus incentive basis and that they provide for trade-off procedures throughout the development, trade-off procedures with which the balance between requirements, technical performance capabilities and costs can be assessed. This process, although it must be done at the beginning, cannot be done adequately at the beginning, and must be a continuous thing throughout the development. Production contracts would be on a fixed-price basis, negotiated after the development is far enough along so that the cost of production can be determined adequately.<sup>1</sup>

Cost-plus contracting was not without its weaknesses and critics.

Scherer said:

Incentives for cost control are undoubtedly weaker under cost-type contracts, suggesting a tendency toward greater overruns. Flexibility is greater . . . [which] might reduce the size of overruns. . . . When a contractor anticipates operating under a cost-type contract, he has less incentive to forecast accurately.<sup>2</sup>

The question of weaknesses in exercising cost control under cost-type contracts was asked of Packard, and he replied that:

. . . if we are going to move toward these cost incentive-type programs, the Government has to exert more management control. I do not think you can go this way unless you are also going to be willing and able to strengthen the capability of your project manager. . . .

. . . We will have to monitor . . . decisions much more carefully if we take this other approach.<sup>3</sup>

The implication was that the review and audit process would increase, continuation of a trend that many had criticized. In addition, strengthening

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon System Procurement, Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970, pp. 8-9.

<sup>2</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 164.

<sup>3</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 11.



of capabilities would mean increasing manpower needs. At a time of declining money and manpower within DOD, this would appear difficult to accomplish.

### Contract Procedures

Contracting involves procurement planning, request for proposal (RFP) and proposal preparation and review, source selection, and negotiations. This contracting cycle has been criticized as requiring too much time and too many resources of both Government and contractor. Lt. General John W. O'Neill, former Deputy Commander, Air Force Systems Command, described the problem:

The procurement cycle . . . is too long. . . .

Our own internal procedures, plus fact-finding and other required pre-contract procedures leading to and during negotiations, make this cycle approximately 8 months long on the average for any large procurement and several months longer for very complex procurements. I can neither suggest nor foresee any real solution to this problem. As a military manager . . . I chafe at this lengthy process. But as a private citizen I find reassuring a regulatory process so well designed to eliminate or at least minimize error of faulty judgment. . . . Nevertheless . . . we are often forced into a letter contract when the demands of the program will not tolerate the response time of the procurement [contracting] cycle.<sup>1</sup>

The RFP and proposal are said to be the beginning of the DOD-contractor paperwork problem (see table 51). Witnesses identified the problem as DOD's stipulating more requirements in the RFP than are necessary. This has resulted in excessively large proposals outlining how a program will be managed, how logistics will be handled, and a great number of related matters. For example, one witness said:

As a matter of fact, asking a contractor at the time he is proposing a new development program to write a description of his maintenance philosophy or his maintainability plan is, to be candid, an invitation to indulge in a "flight of fancy."<sup>2</sup>

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 4), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 1239.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, pp. 258-259.

The RFP/proposal procedure peaked at the time of the C-5A development contract definition and total package procurement. That program was said to have required over three tons of paperwork. Such a paperwork burden could cost a contractor \$2 or 3 million for his response and require 300 Government personnel to conduct proposal evaluation and selection.

Source selection and award are a difficult step. DOD has experienced major problems in interpreting and comparing technical proposals and data, measuring and differentiating among contractor capabilities, and weighting and scoring proposals. One witness said, "The easiest and safest route is to take the apparent lowest cost and the apparent highest performance. But this route eliminates any possibility as to the right costs, yet this judgment must be made. . . ."<sup>1</sup> Selecting a contractor, such as in the case of an F-111 or a C-5A, is complex and subject to considerable pressure; no one is ever satisfied.

One of the problems contributing to the administrative bottleneck is said to be the way the Government is currently required to negotiate. William Munves, Deputy General Counsel, described the situation:

What was once for us a term of art has now become a statutory formula requiring us to negotiate with all offers who are "within a competitive range." When we err in applying the formula, it is not merely an error in judgment; it is an illegal act. . . . We have . . . greater rigidity in administering the negotiation technique.

To us concerned with protest of awards, it has become increasingly evident that more and more disappointed competitors are invoking [the law] as a basis for their complaint.

The principal difficulty is that we are dealing with a provision of law where compliance is . . . dependent on the exercise of judgment.<sup>2</sup>

DOD has acted to streamline and reduce much of the excesses in contracting procedures. There is a point beyond which relaxation can jeopardize

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<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearing before the Senate Committee on Armed Services, 92d Cong., 2d sess., 1972, p. 34.

<sup>2</sup>House, 1969 Hearings on Government Procurement and Contracting (Part 4), p. 1259.

protection of the public interest. Just how far DOD can or should go has been a debatable issue.

### Incentive Contracting

Irvin N. Fisher, Rand Corporation, studying incentive contracting for DOD, said that "all of the available evidence suggests incentive contracts are not accomplishing their intended goal of increased efficiency or reduced costs. It appears the cost savings usually attributed to these contracts may be exaggerated."<sup>1</sup>

One of the principal reasons incentive contracting worked so poorly during the period was said to be misapplication of the techniques (see table 52). A second problem was the inability to keep negotiated target costs from being too high.

Aside from the C-5A, which appears to have been a special case of "reverse incentive" relating to repricing production articles, five administrative problems were cited:

1. Past incentive contracts used multiple cost, technical performance, schedule, and other parameters from which incentives were difficult to structure and implement
2. Changes and other conditions which arose subsequent to contracting often led contractors to optimize and trade off various aspects which were not in the best interest of the Federal Government
3. Many of the incentive-designated items were redundant, in conflict with each other, and impractical to administer or measure

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<sup>1</sup>U.S., Congress, Joint Economic Committee, Economics of Military Procurement, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1968, p. 220.

4. Incentives were placed on items which were already required by the specifications and on unrealistic delivery schedules

5. Inadequate guidance was provided contracting officials, project managers, and administrators

Critics of incentive contracting felt that the procedures were an inadequate substitute for competition. It is said that incentive contracts can only be effective when they are based on reliable and realistic target costs. When there is no competition, contractors are motivated to overstate their cost estimates and to defend them vigorously during the negotiation process. As a result, it is extremely difficult, without adequate cost and profit data, for DOD to determine target costs. If the target cost is inflated or not properly estimated, the inherent incentives tend to be destroyed.

While there are problems, some improvement is possible. DOD has continued to endorse incentive contracting on the basis that it forces both parties to define their objectives. There is some indication that DOD is limiting incentives to end results only, primarily costs. Greater use is being made of award fee procedures wherein the Government withholds and pays additional fees if certain improvements or goals are reached. Nevertheless, providing contractor incentives remains one of the most critical tasks facing DOD.

#### Cost/Price Estimating

Policies and factors affecting cost and price estimating, e.g., truth-in-negotiations, were discussed in previous chapters. Committee comments and testimony appeared on two aspects of particular importance:

1. Program cost estimating, one of the major factors contributing to cost overruns, has been credited with far greater accuracy than it merits, and this has created misunderstandings and communication problems

2. Where competition does not exist, contract price estimating has limitations and should be augmented by should-cost studies to protect the Government from being overcharged

#### Program Cost Estimating

Aaron J. Racusin, Deputy Assistant Secretary of the Air Force (Procurement), Department of the Air Force, succinctly set forth the general concern:

The validity of cost estimates has become an increasingly critical factor in weapon systems acquisition for several reasons. First, of course, is the fact that cost estimates play an important part in selection of the contractor to begin with, even though cost is only one of the factors considered. But the cost estimates also influence the decision whether to proceed with system acquisition. Once the decision to proceed has been made, the cost estimates then become the basis for budgeting and funding. If the cost estimates thereafter are found to have been invalid, for whatever reason, and program costs mount beyond anticipated levels, the initial decision to proceed becomes suspect, funding problems become critical, and the contractor may be faced with substantial losses. With the heavy demand on the Nation's resources, this situation becomes intolerable.<sup>1</sup>

Packard and other DOD officials have acknowledged that underestimating costs has been one of the major reasons for cost overruns (see table 53). Moot testified:

I wish I could be . . . optimistic about cost estimating. It is a very difficult subject and one we have certainly not licked. The problem is probably illustrated by the fact that Mr. Packard found it necessary to change the basic system [e.g., system acquisition policy changes] to recognize the fact that we have not yet between industry and ourselves found the capability of accurately predicting costs over a long period of time, where the state of the art needs to be pushed back and we have unknown unknowns to price.<sup>2</sup>

One of the problems is that initial cost estimates cannot be made with a high degree of accuracy, yet DOD is held accountable for any deviation.

Scherer noted:

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<sup>1</sup>House, 1969 Hearings on Government Procurement and Contracting (Part 4), p. 1159.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 98.



There is . . . a fairly unchanging state of the art of cost estimating. On a development program you simply cannot do better than plus or minus 30 percent in costing out a given package; and if you start changing the package in midstream, it will be worse than that. But the state of the art is you just plain can't do it better than plus or minus 30 percent, and this is for the best cost estimators in the business.<sup>1</sup>

Experts support this thesis. Nevertheless, the difference between original and revised program cost estimates underpins much of the argument surrounding cost overruns. One part of the problem is in the definition. Cost increases on a program, regardless of the cause, e.g., inflation, is called cost growth, while cost estimating, the major cause of cost overrun, is only one cause. Many critics have failed to differentiate between the two—cost growth and cost overruns—and this has led to misunderstandings.

Another problem is that the budgeting systems, except in the case of shipbuilding, made no provision for inflation or contingencies—major causes of cost growth. Holifield put both of these aspects and their importance into perspective:

Is it possible for the Secretary of Defense to announce that to the best of our ability this is going to cost an amount which will include present estimated costs plus acceleration for the years that it takes to develop and produce?

Now I am thinking of this from the standpoint of what I consider a misuse of the word "overrun." . . . If you are honest and say that the total cost of this as nearly as we can estimate it is going to be [e.g., 25 percent higher], then you have cut out from under an unfair critic the added factor . . . and therefore it is not an overrun factor. . . .

I am asking this from the standpoint of observing . . . that we who believe in the defense of our country, and who are constantly being assailed by critics . . . can point to a firm figure. If we can eliminate those factors of criticism . . . it will do a lot to help the image of the Department . . . and therefore shore up the confidence of the American people. And I tell you very frankly the confidence of the people has been shaken, and in instances I think it has been shaken without real cause.<sup>2</sup>

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 152.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, pp. 105-106, 108.



There may be a degree of false optimism in terms of improvements. DOD instituted independent cost-estimate groups at higher headquarters to double check project office estimates, but they have been criticized because estimators often lack technical knowledge and only add to administrative delays. In addition, DOD acted to increase the numbers and experience of cost estimators, instituted cost-estimating tracking procedures, and developed common cost data banks among the military departments. Similar activities were undertaken in the early 1960s, and it would appear without much improvement.

Contingencies for inflation have been made part of each system estimate. Otherwise, without ignoring the cost-estimating problem, a number of DOD officials, notably Packard, believe actions for improvement lie in other directions. This would seem to indicate that, for the most part, program cost estimating inaccuracy is a problem with which DOD would have to live.

#### Contract Price Estimating

Both systems cost analysts and contract price analysts rely heavily on historic cost data for estimating purposes (see table 54). Herein lies a fundamental problem in methodology: these data contain past management malpractices and inefficiencies. It is said that these excesses frequently go unchallenged. For this reason, historic cost estimates are classified by many people as "will-cost" estimates. They contend that the cost of any new program, without tight controls, will also grow because of inefficiencies and additional costs built into historic or parametric cost estimates.

J. Ronald Fox, former Assistant Secretary of the Army (Installation and Logistics), described the problem:

. . . When we have very little knowledge of the content of a program, we use a technique known as parametric cost estimating, which, simply stated, uses historical information from other programs correlated with performance characteristics such as weight, speed, range, as a basis for estimating the cost of a new system.

Now this technique has the obvious disadvantage of including any inefficiencies which existed in the prior programs as the basis for estimating the cost of a new program. However this technique is often the only way available to estimate . . . the cost of new systems.<sup>1</sup>

If a competitive situation exists, DOD can rely on the impetus of price competition to produce efficient and economical management practices and for them to be reflected in bid prices. As price competition lessens, as in the case of sole-source procurement, this pressure practically disappears. The Government must, therefore, insure that the contract price negotiated represents what the contractor "should" incur in performance of the contract, assuming reasonably efficient and economical actions.

To counteract this problem, the Navy and the Army undertook a limited number of "should-cost" studies. A should-cost study results in a complete on-site evaluation of a contractor's proposal and plan to improve his performance. The Government team examines a contractor's in-plant historical data, existing management control practices, and planned performance procedures, such as contractor make or buy plans. Several cases of should-cost studies were reported to the committees and indicated a potential savings of between 18 and 35 percent over initial bid price.

Proxmire urged greater application of should-cost techniques throughout DOD. Several witnesses recommended that they be made a standard procedure for pricing and negotiations and that full-time staffs of specialists be established to further develop and implement them. DOD resisted these efforts. The following reasons were cited for this resistance:

1. Conditions should never deteriorate to the point that special should-cost studies are required. It is a reflection on both the contractor and the Government that neither is doing his job properly

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<sup>1</sup>Ibid., p. 144.

2. Elements of the should-cost technique should be made part of normal business practices

3. The military departments always conduct a form of should-cost studies in pre-award surveys, special contractor procedure reviews, and prenegotiation planning

4. The technique cannot be regularly applied for research and development contracting because its focus is on production processes

5. Its application requires highly trained, motivated groups. There is a need to balance available manpower to give adequate attention to equally important contracting aspects.

#### Program Control

A major concern of both Congress and DOD throughout the six-year period was the search for ways to improve program and financial management.<sup>1</sup> The "scientific" approach to management, begun under McNamara in the early 1960s, appeared to have reached its peak in 1968, and thereafter receded under heavy criticism. One part of this growth was the large-scale development of management systems and procedures for progress reporting and management control over new systems development and production. Congressional committee criticism and concern centered on at least three major aspects in this area:

1. Excessive Government procedural and documentation requirements have hindered rather than helped management control

2. Top management reports and information have not kept officials properly informed of project or contract progress and problems

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<sup>1</sup>It should be noted that no effort was made to separate financial management, a major function, from the project and procurement management functions. While this was possible and originally planned, separation caused a considerable amount of repetition and was discarded for report purposes.

3. Performance measurement systems have tended to focus on fund control rather than on cost control. This has limited day-to-day project visibility over progress versus cost, schedule, and technical performance plans

#### Management Procedures

The proliferation of management procedures is part of the internal DOD problem of overadministration and excessive paperwork discussed in Chapter III. In the early and mid-1960s, DOD attempted to convert contractor project management processes into detailed manuals. These management manuals, reports, and documents then became standard contractual requirements which contractors were forced to follow. There is overwhelming evidence that this approach did not work (see table 55). Scherer, describing the situation in 1971 testimony, said:

Recognizing the system had been functioning imperfectly, the Department of Defense has imposed more and more detailed management structures and contractual gimmicks. In many instances they have . . . reduced initiative and ingenuity and increased program cost. These adverse conditions in turn heightened the level of dissatisfaction over how the weapon system acquisition process has been functioning, inducing policy changes, at least some of which were counter-productive, carrying the dissatisfaction spiral even further.<sup>1</sup>

The management procedures developed were complex, costly, and, in many cases, duplicated existing contractor procedures, ranging from configuration and data management to quality control and assurance. Descriptions of two procedures are representative of the overall problem created. During testimony, Rickover described a series of technical procedures:

Many new requirements have been initiated in recent years . . . which attempt to legislate "doing the job right." These requirements are often referred to as the "ilities" since they say good words about "reliability, maintainability, accessibility, supportability," and so forth. No ships have yet been completed with a full package of ilities included in the contract so that we do not yet have any real knowledge of what these requirements are going to cost us. . . . [Their value] remains to be proven.<sup>2</sup>

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 157.

<sup>2</sup>Ibid., p. 492.

Fox assessed cost and schedule procedures:

. . . What happened in the PERT cost system is that the individuals, both in Government and in contractor plants, who were implementing that system, got themselves involved with very detailed PERT networks on which they were placing dollars at a very low level of detail and then reporting all of that detailed information to the Government. . . . As a result, several years ago one could walk into a project office and find a stack of computer printouts 2 feet high. . . . The only problem was that [the project manager] could not read or interpret all the data.<sup>1</sup>

The problem was further aggravated in that each of the military departments and other Federal agencies using defense contractors had its own set of manuals, reports, and documents. Large contractors had to establish three or four separate systems to accomplish the same thing so that each customer would be satisfied. By 1967, the problem reached such proportions that OSD established a special office to reduce the number of procedures and consolidate similar requirements. In late 1968, Buesking, the head of the office, testified that he knew of "no single document which was altered or cancelled as a result of the 2-year effort."<sup>2</sup>

A number of officials have since testified that OSD controls have begun to take effect, but there is some doubt about this. Both Government and industry critics were still complaining about the situation in 1971 and 1972. In 1971, Rickover said:

. . . the recent surge of massive paper systems imposed by higher command, as well as locally, as substitutes for competent and individual responsibility has reached a peak. Management has come to rely on these paper systems instead of personal involvement by line supervisors.<sup>3</sup>

Evidence indicates that, under Packard, management systems and procedures were deemphasized as the overriding form of management control. Testimony

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<sup>1</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 128.

<sup>2</sup>Joint Economic Committee, 1968 Hearings on the Economics of Military Procurement, p. 157.

<sup>3</sup>Senatc, 1971 Hearings on the Weapon Systems Acquisition Process, p. 377.

showed the trend to more Government/contractor teamwork and on-site reviews, with management reporting augmenting face-to-face communication.

### Top Management Reporting

In 1969, as a result of Congress not having adequate information on cost overruns, DOD was directed to prepare a quarterly status report on major systems acquisitions (see table 56). This report, the Selected Acquisition Report (SAR), has become the key instrument by which project managers and military departments inform the Secretary of Defense and Congress on fund, cost, schedule, technical performance, and contract status.

After a GAO review of the initial SARs, Keller reported to the Joint Economic Committee that "information was not available centrally to any high level DOD official as to the total number of systems being acquired or their costs."<sup>1</sup>

Many problems in reporting developed over the middle years of the study, and there are some indications that SARs are still not adequate for the purposes intended. The major difficulty, aside from any failure to report honestly on the status of programs, is that the reports have not been sufficiently encompassing. Estimates were used instead of actual costs for work in progress. There was no comparison of the technical performance actually demonstrated with that required by the contract. The SAR did not provide a detailed breakout of all costs by categories such as labor, materials, and subcontracting. The fact that a military price index could not be computed for more precise estimating of cost growth resulting from price and material increases was also a problem.

While some progress has been made toward resolving some of these difficulties, the SAR has a major flaw—it does not serve as an adequate basis to

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, pp. 6-7.



predict cost overruns. In 1971, one witness testified that "top officials in the Pentagon find out about problems a year or so after they crop up and Congress finds out roughly two years after they occur. . . ."1 Other witnesses expressed similar convictions.

About the same time SAR was initiated, OSD established a Defense Systems Acquisition Review Council (DSARC) to review the accomplishments of the military department which was proposing a new program and to recommend specific action to the Secretary of Defense. It appears that DSARC, comprised of the principal Assistant Secretaries of Defense, has had a major responsibility in selecting new, major systems acquisitions, but DSARC has not been without criticism. Roback, questioning for the House Committee on Government Operations, stated:

[DSARC] has been pointed to as a way of exerting controls and preventing the Government from getting into positions where it cannot back out, or it is too late, or one thing or another.

And the question is whether the mechanism really is adequate to the purpose. After all, you . . . three or four people . . . have to pass on all kinds of technical matters. Presumably you do not institute your own task forces, panels and subcommittees to investigate each and every one of these things. So how much better than a perfunctory review is it?2

Similar and perhaps more severe limitations on program information, reporting, and progress reviews were said to exist at the military department and command levels, as covered in Chapter III. Because of constant pressure for more visibility over projects and for fewer surprises, increased levels and intensity of reviews, project office studies, and visits to contractor plants were a matter of concern during the study period. In 1970, Packard testified that DOD did not need more high-level involvement, rather less—whether it be from OSD, Congress, or GAO. Others have taken similar stands about higher

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, p. 154.

<sup>2</sup>House, 1970 Hearings on Policy Changes in Weapon System Procurement, p. 102.

headquarters involvement at the project office and contractor levels. Many examples of lower-level involvement were cited. One project officer reported six separate teams in his office making studies; a contractor told of an average of seventeen Government representatives visiting his plant daily for a period of four months. Critics feel that this staff interference is just as counterproductive and costly as the paperwork burden.

#### Performance Measurement

One of the weakest links in cost control has been the lack of an acceptable contractor performance measurement system (see table 57). Fox explained the problem, saying:

In the past we have been very heavily focused on a task I would characterize as funds control. That is making sure that the dollars are not spent any faster or slower than they were planned to be spent on a program.

We do this for a variety of reasons. One, the Congress appropriates money on an annual basis. So, we have a clear requirement to make sure that we do not spend any more than appropriated in specific calendar time periods. All too often, however, that task has very little to do with cost control. . . .

. . . What I suggest is that if you are going to build . . . on a cost-plus contract, then you should be able to require the contractor to plan and budget his program so that when he is moving along through that work he can tell you not only whether the dollars are being spent fast enough but if in fact the work he is accomplishing is higher or lower than was budgeted. . . .

I think that is a fundamental approach to maintaining cost control of an uncertain project or a project that will require a long period of time.<sup>1</sup>

In 1961, to improve management, DOD developed and implemented PERT/Cost, a system which allowed the contractor to plan and control cost and schedules for a project. By 1965, indications were that the PERT/Cost system was not being implemented as planned, and this gave way to the development of DOD cost and schedule control system criteria (CSCSC). These criteria prespecified and set standards for contractor performance measurement systems.

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<sup>1</sup>Ibid., pp. 127-128.

In 1968, Buesking testified:

. . . a number of evaluations of internal resource planning and control systems have been conducted to assess a contractor's capability to meet criteria or minimum standards [i.e., CSCSC]. It was apparent almost without exception . . . that they lacked objective cost planning and control systems that are essential to prevent excessive costs.

. . . I would conclude, the planning and control systems in use in the major portion of the industry are inadequate to provide proper cost control and assure some level of efficiency.

. . . it is recommended that the DOD form a top management team to probe the entire area of cost control in major procurements. . . . I am convinced the problem of cost control is of such magnitude and scope that any lesser actions will not yield any appreciable results.<sup>1</sup>

Much of the remainder of the six-year period was devoted by DOD to implementing CSCSC. Military department, industrial management teams were established, and they visited contractor plants in connection with upcoming or newly awarded contracts. A contractor had to demonstrate that his system met DOD criteria before it was "validated." The implementation went slowly; by 1970, only thirteen of fifty contractors assessed were considered to have fully complied with the criteria.

By 1972, DOD had not been able to give direct attention to similar management problems below the major prime contractor level.

Implementation revealed the existence of several other major problems:

1. Integration and interaction of most contractor management subsystems, e.g., budgeting and work order systems, were not adequate. It has been necessary to undertake long-term, management procedure improvement programs in many contractor plants

2. Weaknesses in particular aspects of the CSCSC hampered DOD's ability to pinpoint overruns. For example, the technique for measuring the value of work performed has been questioned

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<sup>1</sup>Joint Economic Committee, 1968 Hearings on the Economics of Military Procurement, pp. 160-161.

3. There is an extreme shortage of qualified DOD people who understand contractor management systems and who can implement tight controls

4. Numerous DOD project offices do not know how to use the information. Many project managers put little credibility in its use for direct program management

A number of officials testified that DOD performance measurement systems are vastly improved. The military departments are continuing an aggressive management improvement program. The major weakness appears to be the lack of adequate methods to measure actual technical performance progress versus planned performance at an early stage in a project. This would account for the lack of support for and usage of management improvement programs at the project level.

#### Managerial Accounting

Under existing procurement regulations, it is not possible to ascertain how much it costs to manufacture equipment or just how much profit a company actually makes without spending months reconstructing a contractor's books. While procurement regulations have come under criticism for this deficiency, so have related managerial accounting aspects. Congressional committee criticism and concern centered on two major aspects:

1. Existing contractor accounting practices have too many inconsistencies and variations for adequate cost control

2. Indirect costs, which are ineffectively controlled, contribute substantially to the high cost of DOD systems acquisition

#### Accounting Practices

Representative inconsistencies and variations in defense contractor accounting systems include:

1. Different methods are used to compute sales for proposals and to compute sales for profit determination. Proposed and actual profits are difficult to assess and compare

2. Numerous alternatives exist for determining and allocating costs. Various alternatives are used for different purposes, such as computing progress payments, which are disadvantageous to the Government

3. Inconsistent accounting for materials and subcontractor expenditures throughout the defense industry makes cost control difficult

4. No method exists to differentiate adequately among costs, to forecast estimated unit costs during research and development, or to separate research and development from procurement production costs. This makes it difficult to price production costs

These weaknesses are said to affect all aspects of contractor accounting, particularly general project management cost accounting and internal control (see table 58). The problems are attributed to the vagueness of generally accepted accounting principles and practices. Rickover described this aspect:

I mentioned earlier that a contractor can change his accounting system at will. This is another loophole in defense procurement regulations—the absence of definitive requirements that contractors maintain meaningful accounting records. Generally, contractors are only required to maintain an accounting system conforming to the vague standard of "generally accepted accounting principles." . . .

These loopholes confront the Government with an endless variety of accounting systems for allocating costs to Government work. The Government has neither the time nor the personnel for full investigation of costs.<sup>1</sup>

GAO confirmed these allegations in its 1971 profit study. It reported that "numerous alternatives are available in determining costs and profits under generally accepted accounting principles. . . . The alternatives followed could make a significant difference in profit rates. . . . Two of the

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<sup>1</sup>U.S., Congress, Joint Economic Committee, Economics of Military Procurement (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1968, p. 27.

major items affected are research and development costs and depreciation expense."<sup>1</sup>

Lack of contractor internal control, Government auditing and audit/procurement coordination, and compliance with Government cost principles were also cited as deficiencies by witnesses. Contractors were said to rely too heavily on control of manpower rather than on control of work accomplished. Furthermore, they had low visibility over their internal organizational activities and operations. Government auditors were criticized for not focusing on many of the detailed aspects of contractor operations which involved significant waste and inefficiency. Government officials were criticized for ignoring auditor reports, and contractors were criticized for not using ASPR cost principles in conjunction with fixed-price contracts.

While the Congressional committees did not specifically focus on deficiencies in accounting practices per se (with the exception of accounting standards), there appears to be sufficient testimony related to other subjects to indicate a widespread process and procedural problem in this area.

#### Control Over Indirect Costs

Overhead costs have grown inordinately when compared with other cost increases in recent years (see table 59). Witnesses testified that study would reveal areas in which substantial savings could be made. One witness stated that as much as \$500 million could be saved annually by tightening overhead controls.

On major defense contracts, indirect or overhead costs are computed as a percentage of direct labor costs for Government contracting purposes. Critics

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Defense Industry Profit Study of the General Accounting Office, Hearings before a subcommittee of the House Committee on Government Operations, 92d Cong., 1st sess., 1971, p. 45.



claim this method does not motivate contractors to reduce costs or to improve efficiency. This was given as one reason for excessively high indirect costs.

Overhead accounting loopholes are said to be another major cause of this problem. Six specific aspects were cited during testimony:

1. The accounting for and allocating of general and administrative costs (G&A) have been subjected to abuses. There is no uniform Government G&A accounting policy at the present time

2. The bulk of contractors' independent research and development has been charged to Government contracts. There is no effective method to distinguish between Government and commercial R&D; and evidence of overcharges has been found

3. Contractors have charged the Government with certain types of advertising despite Congressional prohibitions. ASPR should but does not prohibit it. Critics claim industry advertising practices release technical data to potential enemies

4. Accounting ambiguities have permitted contractors to mischarge the Government for product improvement and some equipment maintenance and repair, some of which is applicable to commercial work

5. Profits are charged on overhead costs and can be shifted from Government to commercial work. In the case of conglomerates, they can be hidden in the reporting process. Consequently, the Government is not certain what a contractor's profits are

As a result of the differing accounting practices, DOD is unable to compare overhead costs among contractors in any meaningful way. The merit of increases in various overhead elements is not always known and cannot always be analyzed. The methods for transaction accounting provided by ASPR lend themselves to easy manipulation by contractors. The accounting loopholes have been used to benefit contractors at the expense of taxpayers.

## Accounting Standards

Experts agree the most serious defect in defense contractor accounting is the lack of uniform cost accounting standards. As a result of Congressional oversight hearings, the House Committee on Banking and Currency and the Senate Committee on Banking and Commerce amended the Defense Production Act to authorize a feasibility study of uniform cost accounting standards. By 1971, a limited set of standards had been promulgated, and by 1972 implementation was in progress on a limited basis.<sup>1</sup>

This chapter has examined how the Federal Government exercised control over defense contractors through contracting and management procedures, and the major weaknesses encountered. Heavy reliance on management procedures appeared to be counterproductive in that they added to the paperwork burden of employees and contractors.

Chapter VIII continues the examination of Government controls in relation to contract administration. In addition, it examines controls exercised by contractors. It will be seen that the heavy reliance on management procedures, or perhaps more appropriately bureaucratic regulations, is a major problem in both areas.

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<sup>1</sup>For a good summary of deficiencies in uniform cost accounting standards, see U.S., Congress, House, Committee on Banking and Currency, Report on the Feasibility of Applying Uniform Cost-Accounting Standards to Negotiated Defense Contracts by the Comptroller General of the United States, 91st Cong., 2d sess., 1970.

## CHAPTER VIII

### CONTRACT ADMINISTRATION AND CONTRACTOR MANAGEMENT

The concept of total package procurement was developed by McNamara to overcome the lack of competition as a price control mechanism and to promote contractor efficiency so that DOD could disengage itself from direct involvement in contractor management. Both control through competition and control through the various contract forms were unsuccessful. A new look at the buyer-seller relationship within the defense market was required.

Total package procurement and related misuse of fixed-price contracting were said to be responsible for much of the large cost overruns, contractor claims, and financial losses of individual contractors. What appears to have resulted is a period of confrontation between the Government and contractors, the outcome of which is yet to be decided. The C-5A program, which required Government intervention to keep Lockheed from bankruptcy, is a case in point.

Proxmire's comments concerning the C-5A program raised a number of basic questions:

In my judgment, the Lockheed ultimatum is in direct defiance of its contractual obligation to supply weapons which are deemed necessary for national security, and is tantamount to political blackmail. It underlines the basic defects in the military procurement system. . . .

You see, it raises the question, if a contract is not enforced because it would impose large losses on a giant contractor . . . is there any point in improving defense contracting and procurement procedures?

. . . How could contractors take bidding procedures and price competition seriously in the future if Lockheed is permitted to obtain [contracts] through low bids and fixed price commitments and is then allowed to change over to cost-plus contracts when it cannot meet the fixed prices?<sup>1</sup>

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, pp. 282, 310, 517.

Rule added, ". . . if we do this for Lockheed, we will have set a precedent that I don't think we will ever live down."<sup>1</sup> Rickover pointed out the dilemma facing the Government:

. . . corporations cannot be expected to be free of Government control if they come to rely on Government beneficence. If, as is being claimed, the Government has an obligation to rescue a giant defense firm, then the Government has an obligation to see that the firm is properly managed. This will inevitably lead to state socialism.<sup>2</sup>

Rickover, on another occasion, focused on what may be the critical element, saying, "The issue, as I see it, Mr. Chairman, is 'who is going to be in control, the Government or industry?'"<sup>3</sup> For the most part, this chapter focuses on that issue. It examines the second part of control by the Government (contract administration) and the difficulties encountered in performing that task. In addition, this chapter examines control by the manufacturer (contractor management) in three phases—the Government/industry partnership and excesses in industry influence and power; the relationship in terms of DOD dependency and the effect of this on industry control; and industry efficiency and upheaval.

#### Contract Administration

Contract administration is seen by many critics as one of the weakest links in DOD's control over systems acquisition. Committee criticism and concern in this area appeared to center on three aspects:

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<sup>1</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 4), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st sess., 1971, p. 1120.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 3), Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, 92d Cong., 1st sess., 1971, p. 590.

<sup>3</sup>U.S., Congress, Joint Economic Committee, Economics of Military Procurement (Part 2), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 90th Cong., 2d sess., 1968, p. 91.

1. DOD organizations operating in contractor plants have not carried out aggressive and effective contract administration

2. As a result, DOD does not have adequate surveillance over major contractor operations

3. In turn, major contractors have not performed subcontract administration sufficiently to protect the Federal Government's interests

#### DOD In-Plant Organization

In 1968, a Logistics Management Institute study indicated there were some serious, continuing problems in contract administration. The study concluded that the heart of the problem was the organizational separation of the elements involved (see table 60). Roback, commenting on this, said:

. . . A lot of emphasis is given to the team concept whereby the procurement officer has price analysts, auditors, technical people, material specialists, people with various specialties. Ideally distributed this is an imposing array of experts on the Government side. . . .

The fact of the matter is that you have all kinds of problems, do you not; for example, whether the auditor should be subservient, or I should say under the direction of the procurement officer or should he be independent; or the question whether a technical man and a procurement man are really exchanging their information properly and seeing eye to eye. . . .<sup>1</sup>

From testimony, at least six organizational problems involving the team concept were identified:

1. Frequent lack of team effort
2. Duplication of effort among team members
3. Organizational competition for functional responsibilities
4. Faulty coordination and a breakdown of communications
5. Differing field practices
6. Unclear definition of roles and responsibilities

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 1), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 139.

Organizational problems also have been associated with or related to other management problems, including the following:

1. Project offices and contracting personnel have lacked adequate support. Contract negotiation information has been late, lacking in technical sufficiency, and inconsistent in content and recommendations

2. Excessive numbers of Government employees in contractor plants have had poor job performance records

3. Attachment of Government employees to contractor operations has inhibited aggressive action and produced potential conflicts of interest

DOD has acknowledged the existence of major problems in contract administration. While organizational aspects have been held partly responsible, the philosophy of disengagement is also said to have been a major contributing factor. This policy was reversed when total package procurement was abandoned. DOD now provides for greater Government/contractor teamwork and technical collaboration, for more direct ties between the project office and the contractor, and for clearer delineation of contract and contractor control responsibilities.

#### Contract Surveillance

Poor contract surveillance, particularly the failure to evaluate a contractor's actual performance under a contract, was identified by witnesses as a major weakness in contract administration (see table 61). Five areas were considered as being particularly ineffective:

1. Government representatives have failed to oversee contractor resource utilization, including labor productivity and use, labor practices and overtime, and material costs, and have devoted little effort to addressing contractor efficiency

2. Surveillance over contractor cost control has been lacking. Government contract administrators must know more about manpower utilization,



overhead management, cost accounting, and related aspects. Better review and analysis are needed

3. Procedures for measuring technical progress have been inadequate. There is a need to increase the technical capability of contract administrators to perform technical audits

4. Government quality control has not been addressed early enough in the program, and complex and vague quality specifications have been difficult to implement

5. Assessment of contractor procedures has been negligible. Plant representatives and auditors have performed only perfunctory checks; consequently, contractor management system failures and procedural problems have gone undetected

Witnesses indicated that DOD had not acted to correct its contract administration problems during the period under review. Critics claimed that contract administrators are the eyes and ears of project managers and, as such, are on the firing line with contractors. Furthermore, they noted that unless improvements were forthcoming, DOD would be unable to extricate itself from its present difficulties. Most witnesses advocated closer surveillance of contractor activities, which implies resorting to more detailed reviews.

#### Subcontractor Administration

Just as the Federal Government was criticized for inadequate surveillance over prime contractor activities, prime contractors were criticized for similar weaknesses in administering subcontracts (see table 62). The major criticism was that DOD paid little attention to subcontracting and that large corporations were not concerned with subcontractor costs under existing procurement rules. As a result, the Federal Government's interest in a large part of the costs has not been properly protected.

During the course of the six-year period under study, witnesses made the following accusations about subcontractor activities:

1. Of \$35 billion in negotiated defense work each year, as much as \$7 or 8 billion may have gone for profits on defense work, not just the \$4 billion paid to prime contractors
2. Large prime contractors may have actually benefited by limiting competition in awarding subcontracts.
3. Information concerning subcontractor costs and profits has not been available for assessment
4. Prime contractors have lacked adequate documentation to explain the large volume of sole-source subcontracting
5. Profits at subcontractor levels have been higher than at prime levels<sup>1</sup>
6. Subcontractor pricing abuses have been frequently experienced
7. Primes have often allowed subcontractors to avoid truth-in-negotiation compliance
8. Subcontractors frequently have borne the brunt of prime contractor mistakes or inefficiencies
9. Many of the safeguards, such as supervising quality assurance procedures, have not been required at the subcontracting level

Several DOD witnesses recommended actions to tighten controls over subcontractor activities. Military departments have strengthened their review of prime contractor procurement practices and have instituted greater use of sub-contract consent procedures which require pre-approval by the Federal Government of certain prime contractor actions. Unfortunately, there is no

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<sup>1</sup>Note that this is in conflict with some expert testimony concerning subcontractor profits.

indication that weaknesses in any one of the three areas of major contract administration have been adequately overcome.

### Military-Industrial Partnership

The problem of a military-industrial partnership has been a central concern of Congress since it was highlighted in 1958 by President Dwight D. Eisenhower. Ten years later, Rickover reminded Congress of the same essential facts:

. . . Congress must constantly bear in mind the growing autonomy of the Federal bureaucracy, the increasing lack of control by the Congress, and the bureaucracy's tendency to make accommodation with industrial corporations. If a close partnership between Government and industry is actually necessary, then a great responsibility rests on the Congress and on the executive branch to see to it that these giant corporations do not become, in effect, a fourth branch of Government—a fourth branch but with men exerting power without political or legal responsibility. It will be necessary to check and control them.<sup>1</sup>

Indications were that, if anything, the influence and power of the military-industrial partnership had increased during the six-year period. Congressional committee concern appeared to center on three aspects:

1. The military-industrial partnership did not have the necessary controls to provide the proper balance among all parties
2. To protect its own interests, industry influence has abnormally affected DOD procurement policy
3. Use of industry power has been able to exert undue pressure on DOD procurement actions and to bypass existing controls

### Military-Industrial Concentration

Congressman William S. Moorhead, acting Chairman of the House Committee on Government Operations, read a Wall Street Journal article to the committee

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<sup>1</sup>Joint Economic Committee, 1970 Hearings on the Economics of Military Procurement (Part 2), p. 93.

which expressed his and other members' concern about the growth of the military presence. The article said:

The new tendency in Congress and in the public at large to question the growing influence of the military . . . is, it seems to us, a healthy development.

. . . inexcusably, the military has too often evaded the public accountability normally required of other Government agencies.

A large, inflexible military organization unchecked by strong civilian review can lead only to a self-perpetuating drain on the national treasury, a demoralized citizenry, and foreign policies dangerously irrelevant. . . .<sup>1</sup>

Critics described a series of events which were said to account for the military-industrial concentration (see table 63). As a result of the interchange of top officials between industry and DOD, a network of civilian officials exists who put defense contractors' interest above the public's. High-ranking military officers meet and socialize with industry officials and, in many cases, adopt the industry's perspective. This situation is reflected in DOD media which, in turn, influence a large segment of employees connected with systems acquisition and Government procurement. Business practices, seen by some to be amoral, were said to greatly influence ethical standards within DOD and hence the action of its employees.

Many have spoken out on the harm that can come from the concentration of military-industrial views and actions. Packard, for one, calling it game playing, said:

. . . I am not impressed by what I have seen in the attitudes of some of our great corporations. . . . In many ways the problems are deeper than they appear to be.

What is the solution? We are going to have to stop this problem of playing games with each other. Games that will destroy us if we do not bring them to a halt.

. . . It will be a very major disaster to the country if we cannot get the military-industrial complex to play the game straight.<sup>2</sup>

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<sup>1</sup>House, 1969 Hearings on Government Procurement and Contracting (Part 1), p. 159.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 5), Hearings before the Subcommittee on Priorities and Economy

Symington noted that ". . . the system has changed; you [the military] are the partner of the manufacturer. . . . We are supposed to be on the same side . . . yet you are working more with the fellow on the other side of the fence."<sup>1</sup>

The major challenge put forth during the period was establishing better checks and balances in the present system rather than destroying or reducing the military-industrial complex. The focus then is on developing a new philosophy for and approach to the close partnership between the military and industry that is necessary for national defense. Witnesses testified that the major responsibility for this rests with Congress.

#### Industry Influence

One of the major problems that has resulted from the existing military-industrial partnership is that DOD procurement policies are greatly influenced by the defense industry (see table 64). Two reasons were cited for this:

1. Industry advisory groups work closely with DOD officials and are in a position to be heard and to influence policy discussions. For example, it has been said the Industry Advisory Committee (IAC), comprised of top defense industry officials, can effectively dictate to the ASPR committee

2. Industry pressure groups, special interest groups, and lobbyists are heavily financed and very active. They are in a position to exert influence on public policy by pressuring Congress to water down laws and lessen the impact of regulations

Why does DOD go along with this? The prevailing view is that the military tends to look on the defense industry as a national resource. Support of

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in Government of the Joint Economic Committee, 92d Cong., 1st and 2d sess., 1971 and 1972, pp. 1481-1482.

<sup>1</sup>U.S., Congress, Senate, Committee on Armed Services, Weapon Systems Acquisition Process, Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971, p. 127.

the national defense industrial base is an overriding consideration. The belief that the prerogatives and profits of industry must be preserved is said to be widely shared among top procurement officials. As a result, DOD officials are reluctant to enforce laws that will, in their view, hurt the industry. Consequently, the industry is either placated or accommodated. Rickover summarized this aspect:

Government officials have been swayed by industry. . . . They have sold many Government agencies on the idea that the prerogatives of industry must be preserved. This explains why high-ranking Government officials often seem more interested in placating industry than they are in protecting the Government's rights. This is evident in the way new policies are implemented. The Department of Defense tends to trade away something for each new procurement policy it implements. Its preoccupation appears to be in making the policy palatable to industry.<sup>1</sup>

A number of actions have been recommended by critics, including prohibiting the use of Government funds for IAC and initiating a GAO study on the impact of industry groups on defense policy.

#### Industry Power

The defense industry has sometimes influenced procurement policy for purposes of self-aggrandizement (see table 65). Part of the problem has been attributed to the attitude of large corporations. Rule stressed this point in addressing the Navy claims problem:

I think that contractors today—the whole shipbuilding industry has changed. . . . In the past . . . they were almost family affairs, and it was almost this relationship between these companies and the Navy. . . .

Now the whole scene has shifted. They are not private concerns any more. They are parts of big conglomerates.

. . . this has left the NavShips Systems Command still in the old fashion way of doing business whereas the other side of the coin has become radically different.

. . . they are looking for every dollar they can get.<sup>2</sup>

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<sup>1</sup>Joint Economic Committee, 1970 Hearings on the Economics of Military Procurement (Part 2), p. 69.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Acquisition of Weapons Systems (Part 1), Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 1st sess., 1969, p. 168.



Others have described the industry as being smug and noncooperative. Individuals within the industry know that no one will take action against them and they act accordingly. They have delayed and refused to provide certain information; and when the status quo is threatened, they resist. From testimony, it can be argued that the overall climate for control does not exist and that no lasting improvements can be made until this climate is changed.

The defense industry uses its power in three ways:

1. To exert political pressure through members of Congress
2. To influence DOD officials
3. To circumvent certain Federal laws and regulations

Several witnesses said that contractors have appealed directly to Congressional members for questionable assistance. For example, Packard said, "On one occasion . . . a company tried to reverse a decision I had made by appealing to one of our Congressional committees. The company's recommendation was one of self-interest and it was wrong. The company knew it, I knew it. . . ." <sup>1</sup>

Witnesses questioned special relationships between contractors and certain officials at the military-department levels. Favoritism toward contractors who had long-term relationships with certain military organizations was alleged. Contractors were said to operate well-organized intelligence systems and to capitalize on knowledge about Government positions. At least two cases of Government employee conflict of interest were investigated during the period under study. <sup>2</sup>

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<sup>1</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 5), pp. 1481-1482.

<sup>2</sup>Conflict of interest was considered a major issue by many. A number of actions, including changes in public laws requiring military and civil service retirees to report employment with defense contractors, were taken during the six-year period. For purposes of this report, it was considered as a contributing factor for several of the major problems discussed, e.g., table 21, System Pressures and Influences.

Previous chapters covered many of the actions taken by contractors to get around laws and regulations, such as the Truth-in-Negotiations Act and the non-enforcement of the compliance requirement by DOD, and need not be repeated here.

A major point made by many witnesses who discussed the military-industrial partnership and defense industry influence and power was that DOD cannot be expected to correct these weaknesses, and a self-interested defense industry should not be left to decide what is best. Only Congress is in a position to correct these kinds of deficiencies.

#### Other Partnership Weaknesses

The military-industrial partnership, created by a unique set of factors, is said to have several weaknesses other than those described above. Three of them were the subject of considerable committee concern:

1. DOD's dependence on industry has led, among other things, to excessive Government regulation and control
2. Industry prerogatives have, in turn, been reduced by the stricter regulations and increased DOD involvement in contractor operations
3. Industry motivation and incentives are influenced more by survival than by performance, and this has produced counterproductive actions by industry

#### DOD Dependence

Witnesses testified that DOD is dependent on the defense industry by virtue of both the overwhelming economic and the unique technical aspects of the weapon systems market (see table 66). Dependency is important because it is more a cause than an effect and because it provides a rationale for many of the problems that do exist.

DOD dependency largely stems from the lack of competition. Rickover, in relating the various business factors in this area, said:

Defense business is different. . . . Only about 11 percent of the defense procurement budget is awarded under truly competitive conditions. Fifty-seven percent of the defense procurement budget is spent under sole-source contracts. Because of the complexity and high cost of today's military weapons, the Department of Defense is dependent on these contractors. Knowing this, large defense contractors can let costs come out where they will, and count on getting relief from the Department of Defense through changes and claims, relaxation of procurement regulations and laws, Government loans, follow-on sole-source contracts, or other escape mechanisms.<sup>1</sup>

A second factor of importance is the dual dependency that exists between DOD and industry, as Weidenbaum explained:

In the absence of a highly developed arsenal system, the leading contractors represent the backbone of the scientific, engineering, and manufacturing capability to design and produce weapon systems and the Government becomes locked-in or dependent upon them. On the basis of rough calculations, it can be estimated that the military establishment currently produces only one-tenth of the aerospace equipment it requires, 3 percent of the electronics, and maintains no facilities identified as producing motor vehicles, petroleum products, rubber products, engines or primary metals. Thus a symbiotic relationship develops where the defense industry becomes dependent on military orders and the defense establishment primarily looks to these companies for the development of its new weapon systems.<sup>2</sup>

Most witnesses have pointed out the desirability of reducing the close, continuing dependence of DOD on specialized military suppliers and vice versa. The loss of competition and the symbiotic relationship have combined over the years to create a succession of more rigid Government rules and controls which have had a detrimental effect on industry economy and efficiency.

#### Industry Prerogatives

Witnesses testified that defense contractors are hemmed in by too many Government regulations and that this has eroded the qualities that private enterprise is noted for—creativity, imagination, and resourcefulness. Critics

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<sup>1</sup>Joint Economic Committee, 1970 Hearings on the Acquisition of Weapons Systems (Part 3), p. 571.

<sup>2</sup>U.S., Congress, Joint Economic Committee, Changing National Priorities, Hearings before the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Cong., 2d sess., 1970, p. 247.

claimed that defense contractor management is partially ineffective because of the evolution of unwieldy and complicated Government regulations. There is evidence that this evolutionary process will continue to erode industry's capabilities and prerogatives to manage effectively (see table 67). At least three major factors are involved:

1. Government negotiators take advantage of their bargaining power and push contractors to accept low prices. Without contingencies, a contractor has few resources with which to be innovative

2. Since a contractor's knowledge and consent are no longer necessary to bind him, new, tougher, standard clauses are being applied on a take-it-or-leave-it basis. With numerous governmental powers over internal operations, contractors have little room to maneuver

3. DOD has, through management procedures, directly and indirectly taken over many decision-making functions normally prerogatives of contractor management. As contractors lose these prerogatives, they lose a degree of resourcefulness and control

The evolutionary process of control itself appears to be a problem. As industry is perceived as taking advantage of the Government, the Government is compelled to increase its involvement. Congress becomes alarmed and requires DOD to provide more detailed regulations and tighter controls. DOD acts, but the Government tends to obstruct industry the minute DOD intervenes. Controls build on controls and industry prerogatives gradually decrease.

Critics have claimed that this accumulative, long-term impact on industry initiative has rarely been considered. For this and other reasons, investors appear to doubt the future prosperity of the defense industry.

## Industry Motivation

Motivation and incentives for economy and efficiency are said to be lacking in the defense industry. In Chapter VI, a number of ineffective procurement policies were cited as a primary reason for this problem. Witnesses also traced the problem to industry dependency on DOD and the loss of industry prerogatives (see table 68).

Defense contractors operate in a very unstable environment. The results of this instability were described by Scherer:

The main motivation, overwhelming everything else, is survival, and in an environment as turbulent as defense contracting was during the 1960's, what you need to do to maximize your chances of surviving is quite different from close cost control on individual contracts.

The sine qua non of survival for major system suppliers is winning new development contract awards.

In its quest for survival the contractor needs to do four things: First, its top management energies are channeled not to controlling costs on particular contracts but rather winning new awards.

Second, having an empty order backlog, the contractors are under enormous pressure to go along with . . . unrealistic technical specification demands.

A third factor is that the best technical talent in contractor organizations must in this environment be allocated to source selection competitions, preparing brochures . . . and not to the detailed engineering. . . .

Then, finally, contractors realize that their most valuable asset is the human resources they employ. They therefore view their design teams and their production workers as part of a continuing organizational overhead, to be protected and held together except in direct adversity. . . .<sup>1</sup>

During the latter part of the six-year period, a reduction in defense expenditures occurred of much greater intensity than at any previous time in recent history. Significant excess industry capacity grew after 1969, causing great industry insecurity. No work was turned down as long as part of the contractor's work force could be retained. Counterproductive action by defense contractors was accentuated.

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, pp. 134-135.

The problem that the Government faces today is how to motivate defense contractors to maximize the output that can be generated without maximizing the quantity of resources they expend. The health of the industry is seen as a matter of vital concern. Yet Government safeguards and controls allegedly lead to "greater rigidity" and increased "bureaucratic costs," which hamper the establishment of proper motivation and incentives for industry.<sup>1</sup>

### Industry Performance

The health of the defense industry is directly related to internal inefficiencies and to the stability of the industrial base. Congressional committee concern for these aspects appeared to focus on two problems:

1. Gross inefficiencies in defense industry performance are attributed to worker indifference, lack of middle-management supervision, and attitude of top management
2. Defense industry productivity is adversely affected by recurring upheavals associated with Government procurement practices

### Industry Inefficiency

Several witnesses, principally Rickover and Fitzgerald, were very critical of what they described as gross inefficiency and fat on the part of defense contractors with which they associate (see table 69). Fitzgerald had this to say:

. . . all major contractors with which I am familiar are fat. Attainable in-house savings of 20-80% could be realized in the operations of the large contractors I know well.

. . . A major difficulty at this time . . . is the fact that some acquisition programs are so fat as to be scandalous and hardnosed should-cost studies will reveal this.<sup>2</sup>

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<sup>1</sup>Ibid., pp. 135-136.

<sup>2</sup>U.S., Congress, Joint Economic Committee, The Dismissal of A. Ernest Fitzgerald by the Department of Defense, Hearings before the Subcommittee on



Other witnesses attributed gross errors in judgment, development and production mistakes, and misleading statements and reports to various companies and to the defense industry as a whole.

One of the problems is the lack of pride of workmanship among defense industry workers. The atmosphere has been described as unwholesome and without regard for cost or efficiency. Workers are said to have a "care-less" attitude and are indifferent to the work, the company, or the defense goals. Indications of this attitude are seen in large-scale idleness and loafing, misuse of overtime, and lack of quality work. Rickover described this set of circumstances:

In one yard, personnel stop work and line up at the ship exits one-half hour before quitting time. . . .

. . . One check of 35 workers disclosed that only 13 returned to work after the lunch period. . . . In other cases people leave work early and have someone else clock them out at quitting time.

. . . In one shipyard recently 100 workmen and supervisors were observed in an area alongside a ship in dry dock; only four were working. . . .

In another case five workers locked themselves in the radio room of a ship in overhaul and were rolling dice. . . .

. . . I would estimate that there is an average of 30 to 50 percent idleness and loafing in all Navy yards. . . .

Another aspect of shipyard inefficiency is the misuse of overtime. You may not think this subject warrants special consideration, but let me point out that over \$100 million a year is spent on overtime in naval shipyards alone.

. . . In one yard alone we found that most individuals in one division . . . had for years been routinely working up to 8 hours overtime each week, regardless of the actual workload. . . . It had become a permanent way of life.

Recently we observed that six workmen assigned to work an 8 hour overtime shift on a Saturday actually worked only a total of 20 minutes.

. . . The reports of my inspections of shipyards continually show instances of failures to comply with specifications and requirements. When a job has to be done over two, three or more times the obvious result is delay and higher costs. . . . This takes repeated checking and rechecking of the shipyard's work. . . .

. . . Industry does not want tight specification and tight inspection. But there is ample evidence of the disastrous results of proceeding without such controls. . . .<sup>1</sup>

Part of the problem has been attributed to middle management and supervisors not doing their jobs properly. Witnesses have said that many do not know what goes on and rarely get out of their offices to check on how the work is being performed. Some take part in the loafing and idleness, and others, knowing they exist, do little to correct the situation.

Top management has also been criticized as being responsible for the situation. It is said that wasteful practices mean little to company officials and that few devote enough time to the actual running of a company. Repeated errors and ineptitude and the avoidable inefficiencies in productivity are said to be kept from stockholders. Even when major failures have been discovered, little or no change in top management personnel has occurred.

One witness indicated the problem exists because DOD officials display a naive attitude toward industry capability and motives. Most witnesses blamed gross industry inefficiency as one of the largest factors in system acquisition cost growth. Rule, commenting on this point, said:

To me the most important problem area is the inability of industry in this country to produce a quality product, on time and at a reasonable cost—all three elements that are covered in the contracts which industry signs.

What is clearly needed is some tough minded talk and action by representatives of the Government, who today are condoning and acquiescing in the failure of industry to perform as they should.<sup>2</sup>

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<sup>1</sup>Senate, 1971 Hearings on the Weapon Systems Acquisition Process, pp. 375-376, 379-380.

<sup>2</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 5), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, p. 1411.

## Industry Productivity

While industry inefficiency contributes to poor industry performance, the upheaval and instability in the use of resources is also a major factor in poor industry productivity. Witnesses attribute industry upheaval to Government acquisition and procurement practices, the greater risks involved in defense contracting, the resulting fluctuation in industrial capacity, and the economic impact on certain cities and states (see table 70).

This upheaval and instability has been attributed to the steady growth in the size of individual systems acquisition contracts and to the reduction in the number of contracts available to competing companies. Systems acquisition policy prior to and during the early years of the study, which fostered large, integrated weapon system procurement and long-term contracting, contributed significantly to the trend.

The phenomenon is described by several witnesses as "feast or famine." DOD contracting results in a tremendous turnover of contractor personnel. Testimony indicated that when a contractor is awarded a contract, he must assemble a new engineering team from the rest of the industry; while the loser is hard pressed to stay in business. Scientific, engineering, and technical talent move from company to company as the work shifts. Critics claim this is a very expensive way of doing business.

Joseph M. Lyle, President, National Security Industrial Association, described the risk problem:

It must be kept in mind that Government contractors assume a far greater risk in the feast-to-famine economy of defense economy than do most commercial contractors. The termination of a single contract representing the major portion of the contractor's volume, the stretchout or partial termination of such a contract, the failure to win in the win-all or lose-all competition of a major new program award—these are risks which the commercial company . . . does not have to assume. . . . The fact that the reverse is true is a forecast of trouble for the retention

of a broad industrial base of the production of the sophisticated weapons required for our Nation's security.<sup>1</sup>

The turnover, the contingencies required to offset the risks involved, the hoarding of talent, and the excess capacity in a highly fluctuating and generally declining market result in an inefficient use of resources. Critics have claimed defense contractors retain too many unused resources in relation to their contracted requirements. At least one witness testified that the industry could produce the weapons that the United States is currently buying with half the resources. Another testified that DOD is not apt to encourage increased industry productivity until it moves to balance resources and requirements. The thesis is that a company can develop a greater capacity working continually rather than on a stop-and-go basis. A number of experts have suggested that some form of "leveling" is necessary. Under this arrangement, DOD would slim down the defense industrial capacity and guarantee the remaining firms a continuing level of work. Incentives would be set to reward good performance and support would be withdrawn from others. While this appears feasible, several witnesses thought the climate today would not permit any planned program of Government support.

The basic problem in this area is attributed to DOD. One witness testified that DOD does not know what industrial capacity it needs and no one is trying to find out. DOD stated that its policy would be to promote and preserve small industry design teams, but witnesses testified that it had not acted to implement that policy. Other witnesses testified that there appears to be no DOD philosophy, no fundamental concept which determines defense programs and which can be applied to developing and maintaining a stable industrial base.

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<sup>1</sup>Joint Economic Committee, 1971 Hearings on the Acquisition of Weapons Systems (Part 4), p. 1206.

Testimony has indicated that the changes in management and procurement policies have not alleviated the fundamental problems in systems acquisition. Many have called for a strikingly different strategy than is currently followed by DOD. Several witnesses have either advocated or favored action that would treat defense as a regulated industry.

Committee criticism and concern reported in Chapters III through VIII have concerned DOD systems acquisition management at all levels and during all phases. What can be said about these problems and issues as a whole? Chapter IX attempts to provide this type of summary.

## CHAPTER IX

### SUMMARY OF PROBLEMS

Data from tables in Appendix 3 were further summarized, analyzed, and interpreted to highlight the most significant aspects of Congressional criticism and concern. The summarization is contained in Appendix 4.

Two findings can be made from the summarization:

1. DOD's management effectiveness is limited by a number of fundamental problems and issues, most of which appear to be generally unresolvable
2. A number of management weaknesses, affecting all levels of DOD, appear amenable to improvement although major changes may be necessary

#### Fundamental Problems

There are at least eight problems which could be classified as inherent to the DOD systems acquisition management process and which restrict DOD's management effectiveness. They are:

1. Inability to control cost growth
2. Inability to manage change
3. Power and influence of the military-industrial complex
4. Inability to attain adequate price competition for defense contracts
5. Lack of adequate incentives to motivate industry to greater economy and efficiency
6. Lack of adequate productivity within the defense industry
7. Conflict between military and business philosophies
8. Inability to overcome individual, group, and organizational behavioral problems



## Cost Growth

There are strong indications that DOD system acquisitions cannot be managed with the degree of efficiency demanded by the severest critics of DOD management. Four principal reasons support this finding:

1. Economic inflation, which has affected system costs, is beyond DOD control
2. Changes in the enemy threat and advancements in military technology cannot be ignored during the systems acquisition life cycle
3. Using current forecasting methodology and cost-estimating techniques, the cost of new systems can be estimated with no better than 30 percent accuracy
4. Unknown technical risks plague new major systems throughout most of their development and production cycles

While DOD has acted to classify cost growth by its various causes, economic escalation, i.e., inflation, seems to be the only factor that DOD took into consideration in planning future systems during the six-year period. This inability to control cost growth appears to have significantly affected OSD and military management credibility. Although many senators and representatives recognized this, little was said in oversight hearings to defend DOD or to counter its critics. This is not to say that DOD system acquisitions have been managed well or that improvements cannot be made. The expectations for improvements, however, might be put in better perspective.

It would appear that concentration on and communication of this fundamental problem could aid in reversing the strong anti-establishment, anti-military public opinion that is evident today. However, testimony revealed no organized DOD program for getting widespread public understanding of this problem.

## Change Management

A derivative of the cost growth problem faced by DOD is the problem of managing change throughout the systems acquisition life cycle. This occurs in three major forms:

1. Continual change is experienced in managing the military technology base and converting it to military use
2. Military need, mission, strategy, tactics, and system requirements continually change from the time a system is proposed until it is approved for development as much as four or five years later
3. Engineering design and production process changes occur throughout much of the full-scale development and initial production phases as part of the normal acquisition process

The basic problem appears to be one of conflict between the rigid controls involved in Government procurement processes and the need for flexibility in DOD systems acquisition management.

## Military-Industrial Complex

While the reduction of defense expenditures and the shifting of national priorities have tended to reduce the power and influence of the military-industrial complex, it is evident that many DOD critics feel it is still a fundamental problem. There is some indication that certain trends will drive the military and industry closer together and heighten their individual and collective power and influence. These trends include:

1. Shifting of the balance of power within DOD to the appointee level through centralization and the PPBS
2. Continuation of Government policy which fosters almost complete DOD dependency on industry for systems development and production

3. Continued growth of complexity and size of major systems in the face of a declining defense economic base, leading to fewer companies and less competition

4. Aggregation of additional power in corporate hands through mergers and the formation of conglomerates

Some evidence of this close association is seen in the large number of contractor claims, the inability or unwillingness to hold contractors to the C-5A and F-14 contracts, the lack of compliance with Government procurement regulations and the lack of enforcement by DOD, and the double standards for large and small contractors. There are also the continued down trend in the use of small business, the influence of policy by industry and the accommodation made by DOD, and the reduction of partnership relationships between Congress and DOD. There are indications that there will be a continued call for more regulations and tighter controls to combat these conditions.

#### Lack of Competition

The inability of DOD to maintain adequate cost competition is considered a fundamental problem. While witnesses testified that technical competition for Government defense contracts is fierce, there is general agreement that cost competition is lacking. Truth-in-negotiation, incentive contracting, and other procedures have been used to foster better pricing and economy. It appears that these substitutes have not worked effectively.

The advertised bid form of contracting is, by law, the preferred method with seventeen exceptions that permit the use of negotiated bidding as practiced in DOD for major system procurements. Witnesses expressed concern about the lack of reality in the statute and the indirect management problems caused. Congress did not act to change the law during the six-year period, but prospects for change in the future appear good.

Even though laws and statutes may be changed to put competitive bidding in perspective, it would appear that the basic problems surrounding the lack of cost competition will not be overcome. Although the information is sparse, the monopolistic tendencies of the defense industry lead the writer to speculate that some form of central planning, perhaps as practiced in France, or a greater degree of regulation will ultimately be required in lieu of competition as thought of today.

#### Incentives and Motivation

The inability of DOD to create adequate incentives to motivate greater economy and efficiency in the defense industry can be considered a fundamental problem. Evidence of this problem appears in at least five areas:

1. Computing defense contractor profit on accumulated costs motivates contractors to seek ways to increase the cost base
2. Government plant and equipment policy dissuades contractor investment in new and more efficient processes
3. Progress payments and disallowance of interest payments forces defense contractors to place more dependence on public rather than on private investment
4. Business practices, such as giving unfair advantage to large contractors, discourage many small and medium-sized contractors from competing for defense business
5. Incentive contracting procedures, while forcing both parties to clarify goals and objectives, have done little to improve contractor cost control or efficiency

With the exception of incentive contracting, most of these procurement policies have been in effect at least since World War II. No significant changes were made in these policies during the six years under study. There

is some indication that DOD officials perceive little alternative to existing policies in that change would not necessarily solve the basic problem or would create different but equally difficult problems. Except for pilot-testing of a return-on-investment profit policy, there is no indication that major policy changes affecting industry incentives and motivation will be made. The alternative appears to be greater DOD involvement in defense industry activities and increased Government regulations and controls.

### Industry Productivity

There were some questions raised in Congressional hearings and witness testimony concerning structural weaknesses in American industry today. Since the defense industry represents a significant portion of the nation's industry and is so vital to national defense, it is important to consider the issue. Symptoms of its weaknesses can be observed in a number of areas:

1. During the six-year period, there were signs of weaknesses in the ability of the United States to compete in foreign markets. Its domination of foreign sales of military equipment has been challenged, and problems have developed in its international balance of payments and in the value of the dollar abroad.<sup>1</sup>

2. There appears to be a lack of tough-minded management and a loss of dedication to national defense as big business continues to grow. Testimony indicated an inability or unwillingness on the part of industry top management to deal adequately with such things as poor contractor technical performance and high overhead costs

3. If witness testimony is correct, a lack of adequate supervision on the part of industry middle management and a "care-less" attitude on the part of defense workers are adversely affecting productivity

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<sup>1</sup>Several witnesses expressed concern about these factors of competition, and several House and Senate Armed Services' authorization reports commented on the problem. The reader should recognize that by 1974 this situation had improved considerably. It is, however, the opinion of the writer that these problems have not been completely solved and could become critical again.

4. Unions are viewed as all-powerful and exercise influence which may be retarding productivity. Unions have been criticized as contributing to inflation, inspiring poor worker attitude, and protecting inefficient methods of production<sup>1</sup>

Many will disagree that there are any grounds for questioning industry's softness or ability to perform adequately. Few will argue, however, that Government regulation has contributed to industry inefficiency and to a loss of initiative.

#### Military and Business Philosophy

Close adherence to traditional military philosophy, concepts, organization, and discipline is thought to be a fundamental problem in the management of DOD systems acquisition. Witnesses testified that DOD is not just a military organization, but it is also a tremendous business and can only be managed effectively by the application of business rather than military principles. Traditionally, the military departments have been structured for rapid expansion of personnel in times of crisis. The basic premise is that every line officer should be trained to become chief of staff of his service, but this notion seems to conflict with the business management needs of DOD. There are four important considerations relevant to the systems acquisition process:

1. The military practice of frequently rotating its officers to provide broad training and experience conflicts with the business need for long-term experience in project management

2. Military discipline that focuses on authoritative "make it so" orders conflicts with the business need for consultation and flexibility

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<sup>1</sup>Union power and influence were not directly cited as a major problem in the testimony reviewed, but were added by the writer as important external factors which appear to have a bearing on industry productivity.



3. Close adherence to military concepts has led to a lack of stability and continuity in project management, which, in turn, has contributed to mismanagement and inefficiency

4. Basic assumptions underlying military project management (generalists versus specialists) and leadership (directing workers versus training) were subject to question

While a great deal of military department activity has been directed to ameliorating or reducing the impact of these shortcomings, many key congressmen are still concerned. There is a general feeling that changes made have not gone far enough in satisfying the need for long-term experience for the DOD project manager and his staff. Indications are that either the military will solve its dilemma or one of two routes will be taken—removal of project organizations from direct military influence or greater civilianization. Neither alternative is particularly attractive to the military departments. There appears to be a need and justification for systems acquisition to be under the influence of and attached to the military, and a fear that greater civilianization would trade one set of personnel problems for another.

#### Individual, Group, and Organizational Behavior

Hearings and testimony over the six-year period indicated that fundamental weaknesses, singularly and collectively, in individual, group, and organizational behavior within DOD are directly related to DOD systems acquisition management. Several indicators support this observation, namely:

1. There was widespread criticism of the morale, motivation, and performance of the work force

2. There are significant organization and system pressures and influences on the individual project officers, project offices, and related staffs, i.e., groups, which cause undesirable and inefficient behavior

3. There is a major problem of interservice rivalry that, when coupled with organization and communication barriers and conflicts, is counterproductive to organizational goals and commitments

One need only compare a composite of the personnel criticisms and concerns expressed in committee oversight with current behavioral theory to find a high degree of support for this observation.

#### Management Weaknesses

Management weaknesses which cut across the entire DOD systems acquisition management process and related aspects are numerous. At least five problems appear to impact significantly on DOD management effectiveness. These are:

1. Inefficient DOD organization
2. Inadequate long-range technical planning
3. Rigidity and instability in DOD decision-making processes
4. Lack of control of the DOD systems acquisition process
5. Lack of economy of scale in DOD management approaches

#### Organization

Testimony indicated a wide range of organizational barriers and limitations that reduce DOD systems acquisition management effectiveness. Witnesses identified at least six organizational weaknesses. These are:

1. An excessive number of DOD management levels and a diffusion of authority and responsibility for systems acquisition between levels
2. Large and numerous staffs at all management levels with power and influence beyond their authority and responsibility
3. Organizational barriers between military departments causing interservice rivalry and limiting coordination and communication

4. A downgrading of technical and procurement organizations and staffs in relation to other functional entities, e.g., systems analysis

5. Inadequate user/developer organizational arrangements for planning and coordination

6. Failure to support system project and contracting offices because of fragmented organizational elements administering contracts

There appears to be sufficient evidence that some form of reorganization within DOD is likely. There are opportunities to clarify roles and responsibilities, to improve coordination and communication, and to reduce overlap and duplication of effort.

#### Technical Planning

Long-range technical planning for DOD weapons and weaponry is weak. A highly qualified, permanent group at top levels within each of the military departments (or collectively, similar to the Joint Chiefs of Staff organization) is needed to accomplish this task. Indications of this management weakness are:

1. A method for determining long-term alternative goals and military needs does not exist. The DOD system for relating long-term technical and system needs to broad military missions and goals is inadequate

2. Identification of relative priorities of new weapon systems development is a major problem. There is no logical structure or organized method for measuring proposals against the total DOD need

3. DOD often fails to think through technical requirements. It lacks comprehension of the long-term systems acquisition investment period. Technical forecasting approaches need to be vastly improved

4. Organizational relationships between elements involved in technical planning are poor. Interservice duplication, poor user/developer coordination, and downgrading of the technical capability contribute to this problem

5. A new system of data input and synthesis to support technical planning is required. The lack of combat environment test data to determine operational utility is a limiting factor

The impact of the lack of a macro planning system can be seen in at least two areas. DOD has experienced major difficulties in moving from one major weapon system to another, and there is no logical procedure for systematic evolution of new developments and system replacements. Problems such as spiraling costs, failure to link research and systems development, and inability to determine what DOD can afford relate, in part, to the lack of macro planning. There is also a lack of systematic macro planning of industrial base requirements, which appears to contribute significantly to industrial upheaval. While DOD has a stated policy of preserving small industry design teams, no procedure or action to accomplish this is evident.

#### Decision-Making Process

Many congressmen and witnesses expressed concern for delays in the DOD research and development and systems acquisition processes. The major causes of this problem are rigidity and instability in the Congressional/DOD decision-making process. Indications of rigidity and instability can be found in the following:

1. A rigid organizational superstructure exists between Congressional committees and the individual project managers
2. Project approvals can take up to five years, followed by three years to complete a budget cycle
3. Programs are funded on a one-year basis, yet there are indications that decisions are generally irrevocable over an extended period of a system's life cycle

4. Delays in the annual Congressional budget authorization forces compression of all budget-related activities and affects synchronization of virtually all DOD activities

5. Institutional, mission, budget, and project pressures tend to restrict deviation from accepted customs and standards

6. Internal DOD decision-making has resulted in rigid system requirements and detailed specifications which have delayed system development and production

7. The lack of background, knowledge, and experience of many appointees and project managers is inconsistent with the long-term nature and complexity of systems acquisition

Major improvements in timing and synchronization appear necessary. A two-year budget cycle would significantly reduce workloads in budget preparation and review. Improvement in correlating the budget cyclical framework and the systems acquisition life-cycle phasing could reduce instability. Both improvements would allow DOD to better synchronize its activities.

#### Control

Overregulation and overadministration in the DOD systems acquisition process are readily apparent. Of concern to Congress, during the period under study, was the problem of control, particularly over contractor operations and performance. The problem of control seems to have evolved from increased Congressional pressure for tighter control over cost and performance and for more visibility over contractor operations. The chief goal of the many large staffs was said to be the exercise of control. As improvements were needed, various staff functions appear to have moved into new areas to strengthen aspects which were affecting their responsibilities (such as the comptroller assuming responsibilities in the requirements business). These staffs issued regulations to

guide workers and procedural manuals to assist management in carrying out the work more uniformly and effectively. In essence, the reverse took place. The process is now said to be choking itself on regulations and has become bound by procedures.

Many experts feel that DOD has substituted method for knowledge and has become bogged down in paperwork. The result has been that administrative process rules and crisis management prevails. Budget justification, program reviews, progress reporting, and similar activities form a repetitive cycle that is time-consuming and an obstacle to performance and efficiency. Critics claim this cycle is diverting attention at all levels; decision-makers are debating funding rather than attacking fundamental problems; and workers are unable to spend full-time on their primary tasks. This appears to have had a domino effect as it expands through the organization. While the impact within DOD is costly and serious, the stranglehold on contractor performance and efficiency seems to be critical. In the final analysis, the development and production of timely and effective systems and equipment by contractors is the end result desired of the acquisition process.

Government contractors are being flooded by paperwork. RFP and proposal size and content have been reduced, but this has not seemed to alleviate much of the problem. Proposals do not adequately demonstrate contractor capabilities; contracts do not and cannot serve as control mechanisms; cost competition is lacking; and incentives are weak and often nonexistent. Faced with this set of factors, DOD has been forced to increase the use of traditional management controls, and they are not working. Government planning, control, and reporting requirements lack uniformity. They are complex, conflicting, duplicative, and costly. The Government tends to ask for more than it needs. Much of the data is generated for reporting to higher levels and is not used for project



control. In general, the information received fails to fill the need for visibility over contractor progress or performance. Because of the lack of information, high-level staff interference and excessive visits to contractor plants have resulted. Compounding this, DOD contract administrators have been called inefficient and ineffective and, in fact, may have contributed in part to the problem.

DOD faces a puzzling dilemma; the more it does, the worse the situation seems to get and the most costly the job becomes. Yet DOD cannot ignore the situation. According to many witnesses, contractor surveillance is poor; subcontractor visibility and administration are poor; and inefficiency is widespread in the defense industry. Several major actions have been taken over the last several years to combat this situation. Policies have been changed to incorporate prototype hardware demonstration and performance milestones as a form of budgetary cost control. This is seen as a major improvement. However, expert witnesses testified that these changes have not alleviated the fundamental problems of control. DOD has moved to lessen controls by increasing project officer/contractor collaboration and teamwork. This too has had partial success. Excessive numbers of Government people in contractor plants and duplication of contractor skills and functions continue to be problems. DOD has established a policy of using cost-plus contracting for systems development work to reduce contractor financial risk and many of the pressures previously experienced. This poses difficulties since it requires more management control on the part of DOD at the same time that DOD is undergoing a drastic reduction in its work force.

The end result is that functions normally a prerogative of contractor management have and continue to be taken over directly and indirectly by DOD. Collectively, it appears that pressures and forces will continue to push for

more Government management regulations, systems, and procedures. There are proposals to increase service capabilities in this area, to integrate management techniques and procedures, and to reorganize and upgrade contract administration. There is a call for a striking new strategy, but it would appear that because of its direction and inertia, DOD is leaning toward more regulation.

One possible alternative is to examine different concepts of control. Since it is necessary for DOD to insure that contractors have adequate financial, purchasing, technical, and quality control systems, a question can be raised whether Government review and evaluation is the best method to insure this contractor capability. Could a third party, such as a certified public accountant, perform this task? Would it be more effective and cheaper in the long run? Would it reduce DOD involvement and restore contractor management prerogatives? Could a set of generally accepted management practices and principles analogous to those used for financial statements be devised and used?

#### Economy of Scale

One of the most persistent Congressional criticisms and concerns centered on the growth of new DOD systems in terms of size, complexity, and cost. As a result of DOD's experience with total package procurement, which involved the marshalling of large resources and a high degree of risks, there appears to be some economy of scale, from a management standpoint, beyond which diminishing returns in terms of efficiency will be experienced. DOD seemed to sense this when making policy changes to a more orderly sequencing of the systems acquisition life cycle (versus excessive concurrency) and when focusing on subsystems for systems development. Yet, the question can be raised as to whether subsystems is the proper level for management and whether the policy has gone far enough. Obviously, there is some happy medium which will vary from system

to system. When one looks at a cross section of the approximately 700 subproblems listed in the tables, intuitive judgment indicates that perhaps as many as half would benefit from even smaller manageable units, i.e., perhaps from the subsystem to the major component level.

As the size of the manageable unit is reduced, some of the existing pressures and influences should lessen. In addition, DOD should be able to afford to undertake evolutionary development of major components and reduce the time required to get a new project approved. If developments were smaller, the tendency for system advocates to add every latest development or for contractors to underbid should be reduced. Stubborn technical problems could be isolated and addressed on an incremental basis.

It would appear that smaller units would provide more commonality, compatibility, and comparability of equipment. This should aid in reducing duplication involving additional costs, permit greater standardization of components and more trade-offs, give decision-makers more choices, and reduce the possibility of large-scale technical failure.

From a management viewpoint, better prediction of cost estimates would appear possible as size and risk are reduced. Research capabilities and military applications could be better coordinated and matched. Performance goals and requirements for major components could be specified with greater precision. Initial integration problems could be based on subsystem and major component prototypes.

Contracting also could be conducted in smaller units. DOD could move to establish the current major subcontractor or third-tier contractor level as the primary level for contracting. Greater competition could be promoted by direct DOD involvement at that level. Many of the deterrents to small and medium-sized businesses could be overcome. Profit pyramiding could be reduced and

subcontractor administration upgraded. Furthermore, DOD dependence on large, influential contractors could be reduced, and the potential for reducing industrial upheaval would be increased.

The problem of system and subsystem integration would have to be faced. Several alternatives are available, such as increased in-house DOD systems integration and testing, greater use of Government-furnished equipment, or separation of the existing industrial research and development and production structure into two phases. Another possibility is the use of the concept of associated contractors, whereby contractors are hired to assist the project office directly in integration. The problem of integration is most severe and cannot be minimized. In addition, the increased contracting and contract administration workload would be a major consideration. It conceivably could alter many existing DOD procurement organization patterns, including project, contracting, and plant representative offices and functions. In addition, new patterns of management and concepts of control could be expected to emerge.

CHAPTER X  
CONCLUSIONS

The Congressional oversight committees' criticisms of and concerns for DOD systems acquisition management during the period 1967 through 1972 were many and varied. The study identified approximately 700 problem elements of subproblems which were categorized into seventy major problems. These formed the basis for much of the report. There is overwhelming evidence that waste and inefficiency was widespread in DOD systems acquisition management and procurement during the period under study.

Three Major Areas of Concern

While it is difficult to pinpoint any problem as being more important than another, there were three major areas of Congressional concern that stand out. These are:

1. Costs (cost overruns, cost growth, and spiraling costs)
2. Overregulation (voluminous, complex, and inflexible procurement and administrative practices and procedures)
3. Ineffective DOD management

Discovery in 1969 of the C-5A cost overrun and poor contractor performance focused national attention on waste and inefficiency in DOD systems acquisition management. Oversight hearings centered on problems caused by total package procurement and the reinstatement of systems prototyping as the major acquisition strategy. GAO reports on system cost growth and contractor profits also received wide committee attention. Special hearings were held on the loss of

United States technological superiority and the geometric cost increases in new systems.

A second major focus of equal concern to Congressional oversight committees was the need to reform outmoded Government procurement laws and statutes. It was found that the statutes were not protecting and promoting Government interests. Overregulation had reached such proportions that it was hampering efficient Government contracting and industry performance. Within DOD, concern centered on overadministration and excessive paperwork which were contributing to delays and inefficient use of resources. At the industry level, there was major concern over the impact of Government and DOD regulations on industry motivation and efficiency.

DOD management inefficiency, the third major concern, was found to be widespread. Congressional committees focused on faulty organization and processes and on personnel motivation and performance. DOD management philosophy and policies were questioned; decision-making and operating practices were criticized; and management control was exposed as being very weak.

#### Accomplishments of Oversight Committees

When viewed on a yearly basis, Congressional attention to and action on DOD systems acquisition problems appear lacking. Yet over a six-year period, much was accomplished by or as a result of Congressional actions. Congressional oversight in this area made four major contributions:

1. Committees delved into and exposed almost every aspect of DOD business management weaknesses
2. Hearings and testimony raised public and Government interest to the point of forcing changes in major systems acquisition policy
3. Committee actions were a significant factor in making DOD conscious of costs



4. Committee findings provided sufficient justification for reductions in defense spending

The writer concludes that the seven committees acting collectively over an extended period of time satisfactorily carried out the Congressional oversight function pertaining to this area. There were, however, a number of apparent weaknesses, four of which are worth noting:

1. Congressional ability to probe deeply into problems was limited. Except in a few isolated cases, testimony focused on problems rather than causes and on general criticism and comment rather than in-depth analytical findings

2. Congressional ability to force improvement was limited. The committees' major weapon was persuasion. With the exception of their power over appropriations, they were very limited in forcing DOD to make internal changes

3. Congressional ability to address broader national questions was limited. Lack of organization, committee authority, availability of needed data, and analytical capability appeared to restrict Congress in dealing adequately with broad questions, e.g., the relationship between military and foreign policy

4. Some Congressional hearings and testimony appeared to be biased in favor of DOD critics. This bias may have led to overstatements of the intensity of some problems, but not of their existence

While there were considerable overlap and duplication in committee responsibilities, they did not appear excessive, but rather reinforcing. Hearings and testimony were, however, dominated by Rickover; and while very valuable, much was repetitive. Although some of his colleagues might not agree, Proxmire, as Chairman of the Joint Economic Committee, was able to make other committees and DOD acknowledge and act on past mistakes in systems acquisition management.

The study did not turn up any appreciable committee interactions or interrelationships. Committees appeared to be loosely knit and fragmented in

their ability to address issues pertaining to overall Government operations or national problems outside of their specified scope of responsibility.

#### Identification of DOD Problem Areas

The following five conclusions were drawn concerning the systems acquisition problems facing DOD and any effort to give direction to management improvements:

1. Management is the pacing factor in efficient and economical development and production of new systems
2. The problems to be solved are generally external to the systems acquisition community
3. Bureaucratic cost is the overriding consideration
4. Improved central planning and new forms of control are needed
5. Long-term management research is vital to any improvement program

#### Management Is Pacing Factor

Management, not technology, is the pacing factor in the development and production of new systems within DOD. The loss of technological superiority, the mainstay of the nation's defense posture, is caused more by delays in decision-making, organizational and process inefficiency, and overregulation and overadministration than from the inability to discover and apply modern technology. There are a series of fundamental problems that make it extremely difficult for DOD to improve its systems acquisition management beyond its present state. In addition, there are a series of major management weaknesses which cut across all levels of DOD's organizational structure. While improvements are possible, there is little reason to believe that changes will be successful. The Government way of doing business and bigness are factors with which DOD must contend. Fundamental changes in management philosophy and approaches probably will be required.

### Problems Are External to Acquisition

The policies and practices which need to be improved involve factors outside the control of the systems acquisition community. Systems acquisition management policy, as conceived under Packard and practiced today, is conceded to be generally sound. DOD has slowed down the pace by sequencing acquisition phases and limiting commitment of funds until it knows what is to be produced. In addition, it has moved to reduce complexity and risk by prototyping and emphasizing subsystem development. On the other hand, Government procurement reform and changes in the program budget procedures rest with Congress. Major reorganization to improve planning and resource utilization involves factors and forces related to DOD as a whole. Therefore, any search for improvement must go beyond an analysis of shortcomings in systems acquisition.

### Bureaucratic Cost Is Overriding

The basic procurement philosophy and approaches of the Federal Government and the resulting bureaucratic costs appear to be the most important problem facing Congress and DOD. McNamara's unsuccessful implementation of total package procurement may have actually demonstrated the inability of DOD to operate within the existing Government procurement structure. The lack of competition and the lack of industry incentives as substitutes for price competition are serious weaknesses. DOD has tended to increase the number of regulations in order to tighten control over defense contracting. The alternatives to additional regulations are limited. It may be possible to foster more competition by contracting in small units or by separating research and development from production. Unless the trend toward more regulation is reversed, the prospects are that the defense industry will evolve into a fully regulated industry.

### Improved Planning and Control Are Needed

There is evidence that DOD needs more and better planning techniques and new forms of control. At present, national defense economic and technological studies are not routinely considered in determining national priorities and in formulating integrated foreign and defense policy. While the life of a weapon system investment may span thirty years, there is little technological and logistics planning beyond seven years. DOD does not have an adequate priority system for measuring proposed new systems against need. Mission and systems requirements cannot be adequately related for program budgeting. Furthermore, DOD has no particular structure or method for moving from one series of weapon systems to the next. DOD is also limited in its ability to determine the future industrial capability needed and is doing little to overcome the recurring problems of industry upheaval.

It may be that DOD will need to modify its organization to provide greater centralization of technical planning. This could facilitate decentralization of operational activities and provide more autonomy for project offices. There is a need for better integration of technical, procurement, and financial functions, practices, and procedures and for a reduction of Government contractual requirements. Ways to plan and control acquisition activities at the sub-contract level and to reduce Government involvement in contractor management and procedures are needed. The use of prespecified management system practices and principles and third-party procedural audits may be possible. Contractor accounting systems must be improved and cost accounting standards developed. It should be pointed out that the development and testing of uniform cost accounting standards is currently under way.

## Long-Term Management Research Is Vital

The writer concludes that, with the extent of problems faced by DOD, the only viable alternative to support long-term and lasting management improvement is a concerted management research program. This conclusion confirms the findings of the 1970 House Government Operations Committee hearings on policy changes in weapon system procurement.<sup>1</sup>

Appendix 5 outlines a list of management research needs developed from an analysis of tables contained in Appendix 3. Management research has been broken down into six broad categories and tabulated as follows:

<u>General Area of Management Research</u>	<u>Number of Projects Suggested</u>
Systems and Concepts Research (Philosophy, concepts, environmental factors, goals, objectives)	23
Policy Research (Policy factors formulation, implementation, broad DOD practices)	40
Organization Research (Structure, missions and roles, communication, human factors, staffing)	24
Process Research (Planning, decision- making, execution, management controls, reporting)	37
Methods Research (Management systems and procedures, advanced techniques, use of models, other management tools)	36
Information Research (Management information and reporting, data handling storage, retrieval, information technology)	25
Total Research Projects Suggested	<u>185</u>

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Policy Changes in Weapon Systems Procurement. H. Rept. 91-1719, 91st Cong., 2d sess., 1970.

Support for an extensive research program of this nature has come from several congressmen and DOD officials, including former Secretary of Defense Clark M. Clifford.<sup>1</sup> There is no indication that DOD has ever given formal consideration to a proposal of this nature.

The seriousness and the extent of management research needs in DOD may point to a basic Government-wide shortcoming. A study may be needed to determine where and how management research fits into the overall Federal Government organization and functions.

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<sup>1</sup>U.S., Congress, House, Committee on Government Operations, Government Procurement and Contracting (Part 1), Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969, pp. 134-135.



## AFTERWORD

### MANAGEMENT RESEARCH

It is the opinion of the writer that much of the management research currently being conducted in the academic community has application to DOD management problems and weaknesses. Three areas which appear to have potential for application are:

1. Organizational behavior concepts, as set forth by researchers such as Chris Argyris
2. Systems concepts for organization, as outlined by Richard A. Johnson, Fremont E. Kast, and James E. Rosenzweig
3. Industrial dynamics as applied to decision-making processes, as described by Jay W. Forrester

#### Individual, Group, and Organizational Behavior

Certain types of individual, group, and organizational behavior within DOD directly related to systems acquisition management were cited as a fundamental problem in Chapter IX. As previously stated, one need only compare a composite of the personnel criticisms and concerns expressed in committee hearings with current behavior theory to find a high degree of support for this finding.

A comparison of DOD actions with six of the first seven propositions outlined by Argyris in 1957 would seem to support this contention.<sup>1</sup> Argyris pointed out the lack of congruency between the needs of the individual (where

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<sup>1</sup>Chris Argyris, Personality and Organization (New York: Harper and Row, 1957), pp. 232-237.

they are dependent, passive, and use few and unimportant abilities) and the organization (proposition I). The results of this incongruity are frustration, failure, short-term perspective, and conflict (proposition II). These same disturbances appeared many times in testimony. The nature of the formal principles of organization causes the subordinate, at any given level, to experience competition, rivalry, and inter-subordinate hostility and to focus on the parts rather than the whole (proposition IV). Employee adaptive behavior maintains self-integration and impedes integration with the formal organization (proposition V). Employee actions encompass defensive reactions, apathy, disinterest, and lack of self-involvement. The adaptive behavior of the employee has a cumulative effect, feeds back into the organization, and reinforces itself (proposition VI). Certain management reactions tend to increase the antagonisms underlying the adaptive behavior (proposition VII). When diagnosing the problem behavior as the employee's fault, management's action includes:

1. Increasing the degree of direct leadership
2. Increasing the degree of management controls
3. Increasing the number of pseudo-human relations programs

These management actions appear to be prevalent in the Federal Government and in DOD responses to many of its manpower and personnel problems. If this correlation is true to any degree, it would point up a significant application of behavioral theory to a specific area of national significance.

#### Organization and Planning

If one compares the major elements of the DOD organization with the idea of a systems organization such as set forth by Johnson, Kast, and Rosenzweig, three basic differences are noticeable:<sup>1</sup>

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<sup>1</sup>R. A. Johnson, F. E. Kast, and J. E. Rosenzweig, The Theory and Management of Systems (New York: McGraw Hill Book Co. Inc., 1963).

1. Systems organization appears to emphasize short lines of communication vertically within the organization as opposed to layers of management staffs

2. Military departments are organized along service lines (mission or product), whereas the systems organization follows along functional lines in the resource and support areas

3. If the current DOD headquarters is contrasted with the system notion of a master planning council, the lack of long-range technical planning stands out

#### Vertical Organizational Structure

Figure 8 depicts the six levels of management between the decision-maker, i.e., the Secretary of Defense, and the group having technical responsibility, i.e., the project office. The figure also contains a number of the organization and staff weaknesses discussed in Chapter III.

When the superstructure external to DOD is considered, there are perhaps ten levels of management between the Congressional committees and the project offices. Considering the staff reviews, the deputy chief of staff structure, and the commander/secretary decision at each level, as many as fifteen levels of management or management review exist between the Secretary of Defense and the project office. When special committee reviews, such as budget review committees, selected acquisition and program appraisal reviews, and weapon systems evaluation boards and groups are considered, Rickover's statements concerning twenty-four to thirty levels appear credible.

What appears to have happened is that centralization took place at OSD without a commensurate reduction in organizations at lower levels. This is, in fact, probably one of the causes of the growth of larger staffs as each level sought to provide its commander with the information and control

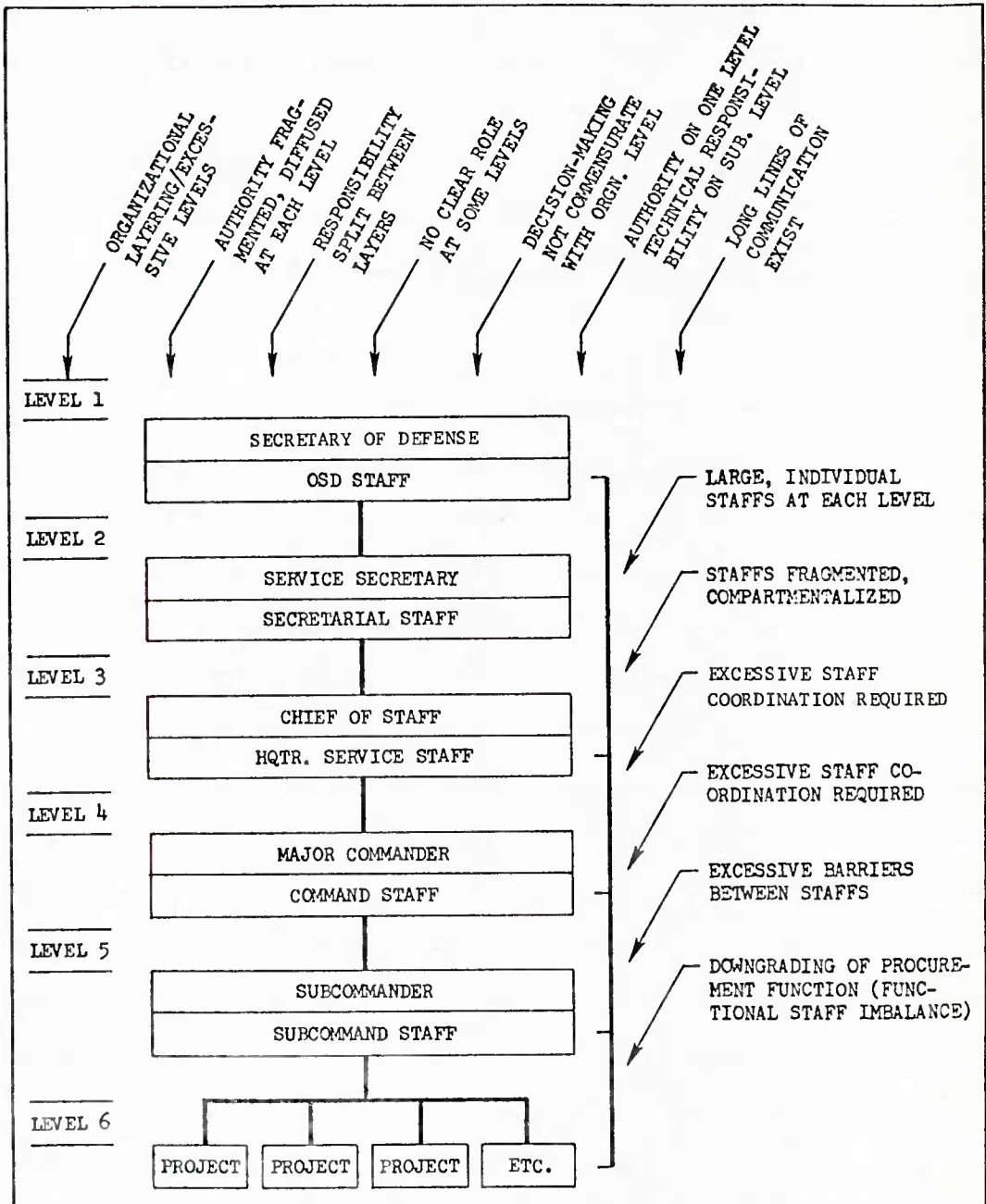


Fig. 8. Conceptual military department systems acquisition organization.

necessary to cope with the demands and pressures of the next higher level. Additionally, with the establishment and increase in size and responsibility of the Joint Chiefs of Staff, the service headquarters have been limited to resource management, i.e., responsibility for men, money, and material planning. When this headquarters resource planning responsibility was evolving in response to centralization, it appears to have been accomplished within the traditional military organization of command and subcommand levels for planning. Split responsibility, overlap, and duplication between levels probably were inevitable.

#### Horizontal Organizational Structure

The major problem with large and overly influential staff offices at each level of management, primarily at top levels, also appears to be an outgrowth of the trend toward centralization and more top-level control. Testimony brought out at least three reasons for this staff growth and imbalance:

1. Systems analysis and increased use of social sciences have evolved as important elements in systems acquisition decision-making. This has occurred pretty much as an addition to existing DOD staffs

2. In response to the need for greater cost control and efficiency, comptroller and financial management staffs have taken on a more prominent and influential role. Increased tasks range from greater involvement of OMB budget analysts in decision-making to development and implementation of advanced management methods and techniques

3. As project management has taken on added importance, new staffs and offices have evolved to deal with this phenomenon

One of the principal outcomes of this staff evolution has been the downgrading of the procurement function, heretofore the focal point for many of these other functions and subfunctions. As systems analysis, comptroller, research and engineering, and parts of installations and logistics functions have

grown in importance in systems acquisition management, greater compartmentalization and fragmentation of responsibilities have taken place.

### General Organizational Structure

Turning attention from the horizontal and vertical structure within OSD and the military departments to the overall DOD organization, one could conceptually view the secretarial and military department elements as depicted in Figure 9. This figure contains an additional number of organization and staff weaknesses as well as many of the shortcomings in long-range planning.

Three organizational weaknesses stand out. These are:

1. Duplication of civilian general staffs between the OSD and the secretarial levels of the military departments. Neither the severity nor the cost of this duplication was brought out in testimony, but one would have to conclude that it adds to the organization's rigidity and instability and the accompanying delays and suppression of initiative

2. Lack of a long-range planning capability, particularly technical planning, within DOD

3. Existence of organizational barriers between the services which are manifest in what is called interservice rivalry

Assuming that Congress and DOD are not willing to undertake a radical change in the way DOD is organized, e.g., consolidation of either civilian secretarial staffs or military departments, the most logical way to reduce organizational weaknesses is through individual military department action. The most fruitful action would appear to be some form of consolidation of headquarters staffs and major systems commands and the establishment of long-range technical planning staffs. The consolidation would reduce organizational layering, clarify authority and responsibility, and reduce lines of communication and coordination. Focusing a portion of the new organization on long-range technical



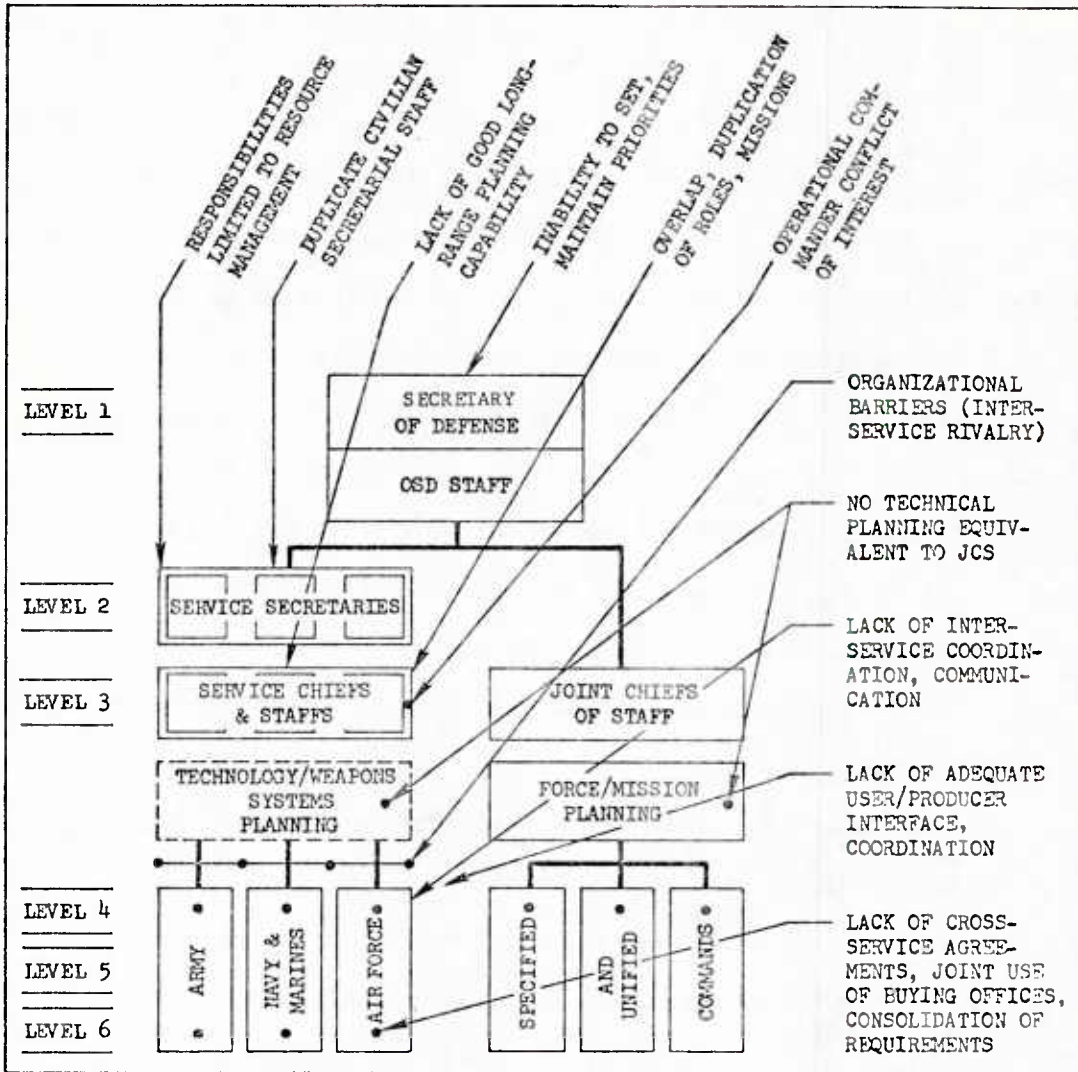


Fig. 9. Conceptual DOD general organization vis-a-vis weapon systems acquisition.

planning would fill an existing void. It would appear that the savings in one area would more than offset the increase in the other, although the skill mix would change.

#### Long-Range Technical Planning

Figure 9 shows a unit under the military departments, analogous to the Joint Chiefs of Staff, which would provide long-range technological and weapon systems planning (similar to the system organization's resource allocation committee). Congressional committee criticism and concern centered on at least five major weaknesses in this area, ranging from a lack of planning at the national level in support of Congressional activities down through DOD, including defense industry planning. The weaknesses and related needs have been conceptually organized into a long-range technical planning system, as depicted in Figure 10. It should be noted that this schematic is not intended to cover all aspects nor does it suggest an exact arrangement. Rather, it is designed to simulate a synthesis of diverse planning needs which appear unrelated but, in fact, may be part of a major overall weakness in national defense planning.

#### Process Synchronization

An attempt is made in Figure 11 to depict in simplistic form the impact of rigidity in the one-year Government program budget cycle, the delays in Congressional appropriations, and the instability created in DOD systems acquisition management. The ideas and graphics put forth by Forrester in Industrial Dynamics are used to show the timing and workload patterns created and to suggest that application of Forrester's concepts would be appropriate for long-term study of the problems encountered.<sup>1</sup>

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<sup>1</sup>Jay W. Forrester, Industrial Dynamics (Cambridge, Mass.: MIT Press, 1968).

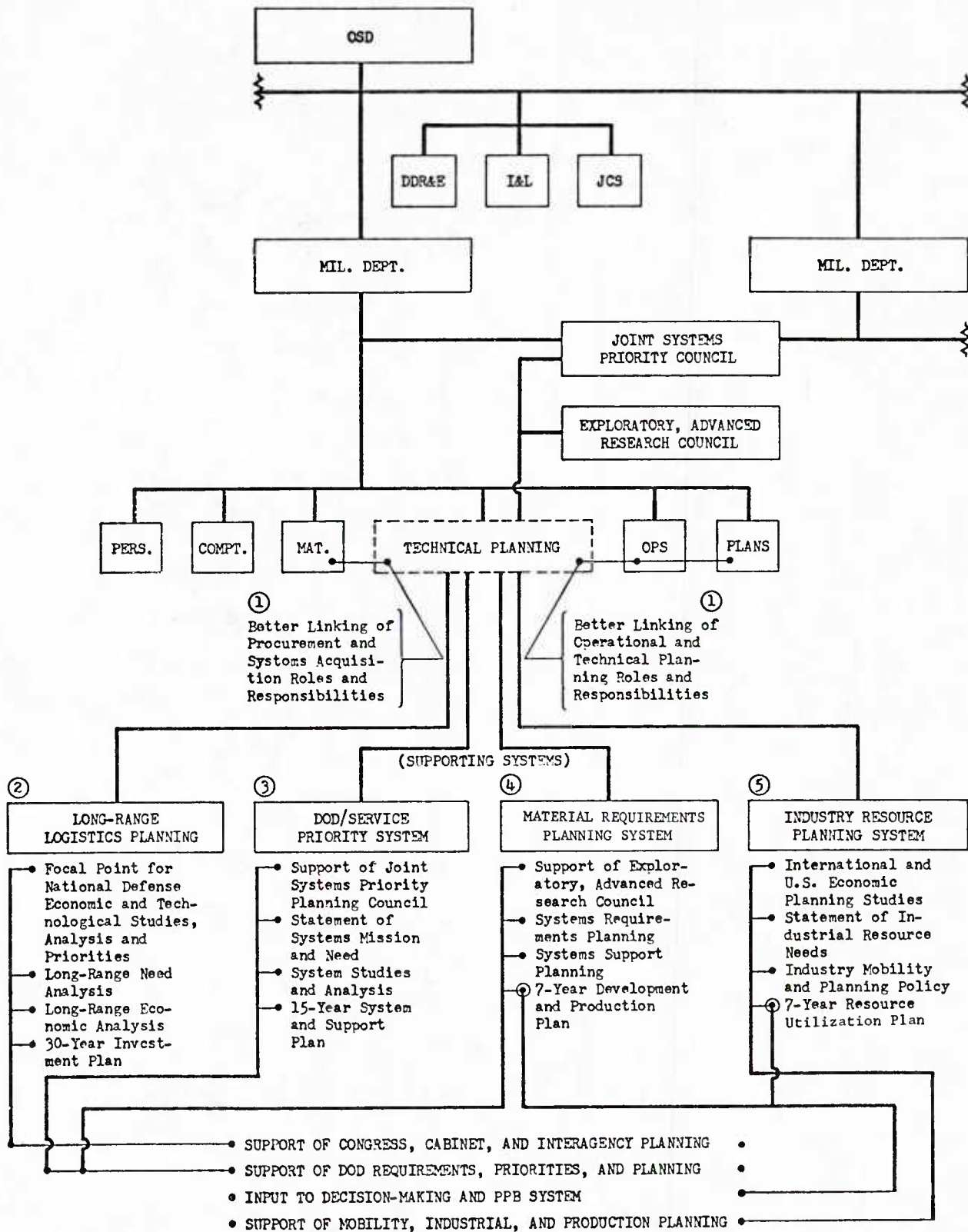


Fig. 10. Schematic of long-range technical planning process.

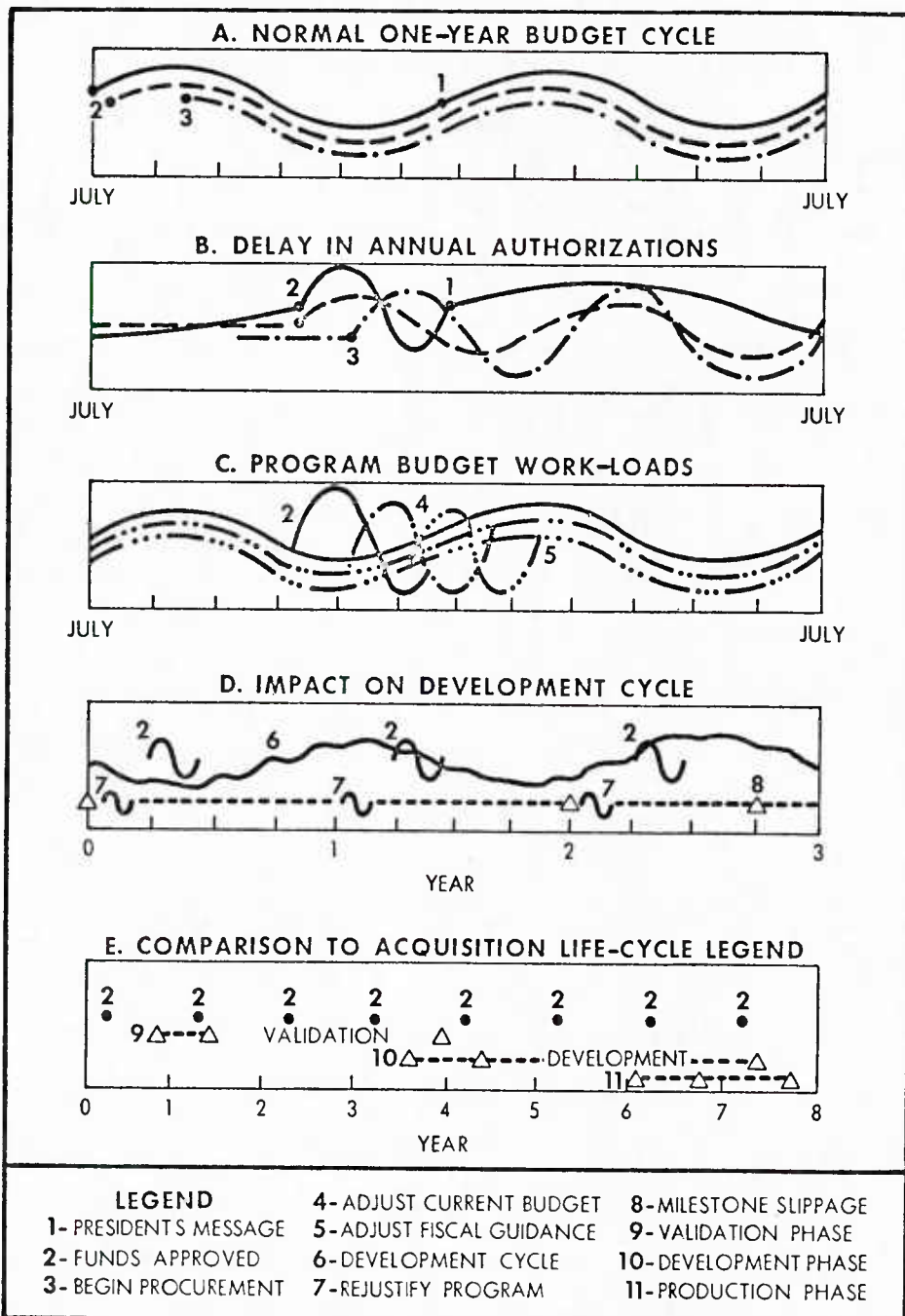


Fig. 11. Examples of impact and instability created by annual budget cycle.

In Figure 11, it can be seen that the President's budget message to Congress for each fiscal year is submitted in January of the preceding year (reference 1). Expectations are that appropriations will be approved by July of the fiscal year (reference 2), and procurement for major systems acquisition can begin about forty-five days later (reference 3). As shown in Figure 11, Congressional authorizations have been delayed four to six months on an average, or to about October 15 of each year. DOD must complete its budget activities leading to the President's budget message in two and one-half months instead of six months and compress its procurement cycle by as much as one-third.

Compression of the budget activities affects other DOD budget activities which are in process at the same time. This is shown in Figure 11. Each of the three budgets in process—the upcoming budget (reference 3), the current budget (reference 4), and the out-year budget (reference 5)—must be adjusted. This delay is compounded in workload imbalances throughout every DOD resource subplanning system, such as for manpower authorizations and personnel manning. In the systems acquisition subplanning system, individual and aggregate budgets must be adjusted, funds reprogrammed, major changes accommodated, and contracting begun. This is done at several levels of management and all under extreme time constraints.

Figure 11 depicts a three-year systems acquisition development phase (reference 6) and allowances for budget rejustification each year (reference 7). Program slippage accumulates when decision-making delays occur annually (one example shown as reference 8). This part of the figure attempts to depict the aggregate impact, in terms of workloads and delays, of subjecting a three-year systems development phase to recurring one-year budget rejustifications. This thought is carried an additional step in Figure 11. An eight- to twelve-year systems acquisition life cycle is depicted (validation phase, reference 9;

development phase, reference 10; and production phase, reference 11). In the systems acquisition life cycle, major milestones and accomplishments are attuned to a linear time scale, but subjected to a budget and decision-making process based on an inflexible cyclical time scale. There seems to be no valid or justifiable correlation between major budget actions, i.e., Congressional authorizations, reference 2 used in this example, and progression of the acquisition program. The cyclical budget appears to force preplanning for subsequent steps based on time rather than accomplishment.



## APPENDICES

APPENDIX 1

Glossary

## Glossary

AFSC	Air Force Systems Command
ASD/SA	Assistant Secretary of Defense/Systems Analysis
ASPR	Armed Services Procurement Regulations
CPIF	Cost Plus Incentive Fee
CSCSC	Cost and Schedule Control System Criteria
DDR&E	Director of Defense, Research and Engineering
DSARC	Defense Systems Acquisition Council
IAC	Industry Advisory Committee
I&L	Installations and Logistics
JCS	Joint Chiefs of Staff
IMI	Logistics Management Institute
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
JT&E	Operational Test and Evaluation
PBD	Program Budget Decisions
PERT	Program Evaluation and Review Technique
PPBS	Planning, Programming, Budgeting System
RDT&E	Research, Development, Test and Evaluation
RFP	Request for Proposals
ROI	Return on Investment
SAR	Selected Acquisition Report
TFX	Tactical Fighter Experimental
TPP	Total Package Procurement
UCAS	Uniform Cost Accounting Standards

APPENDIX 2

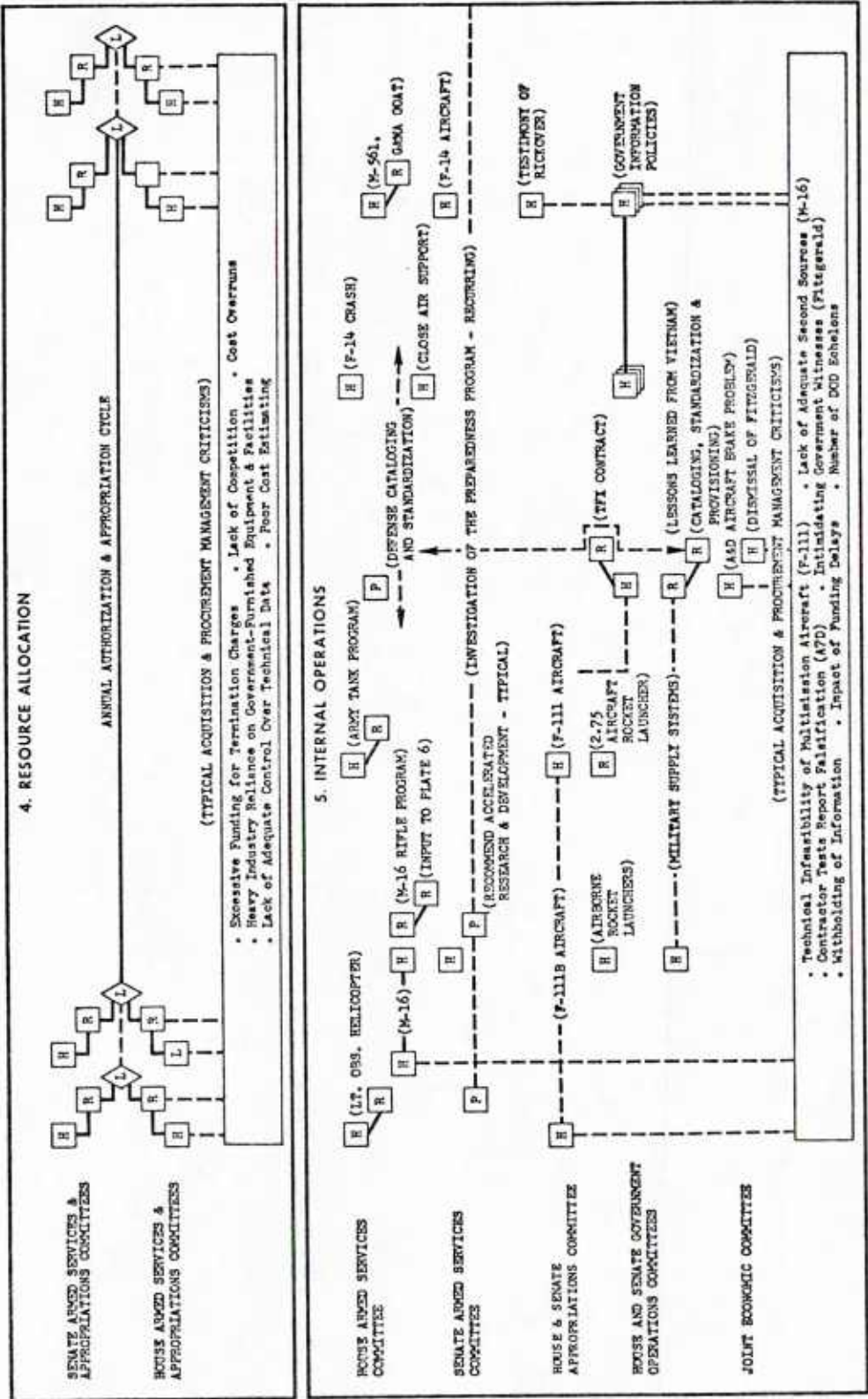
Depiction of Information Flows

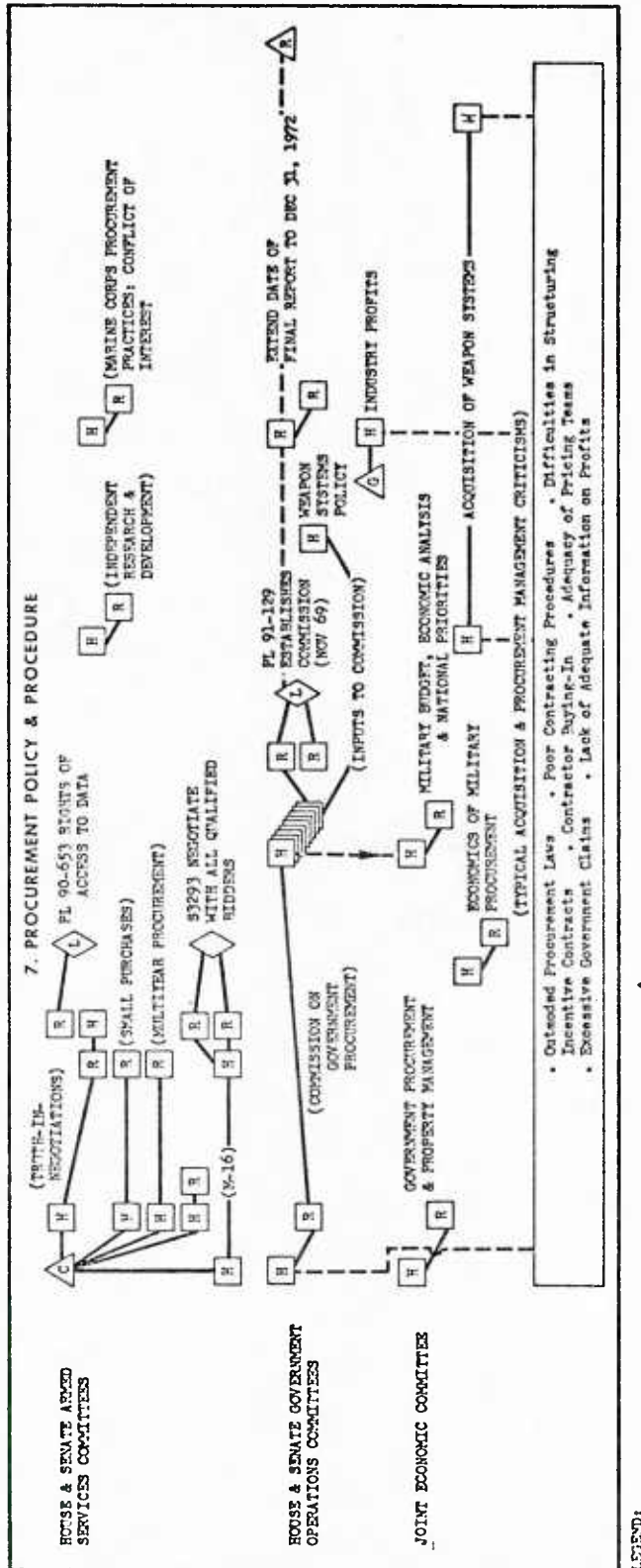
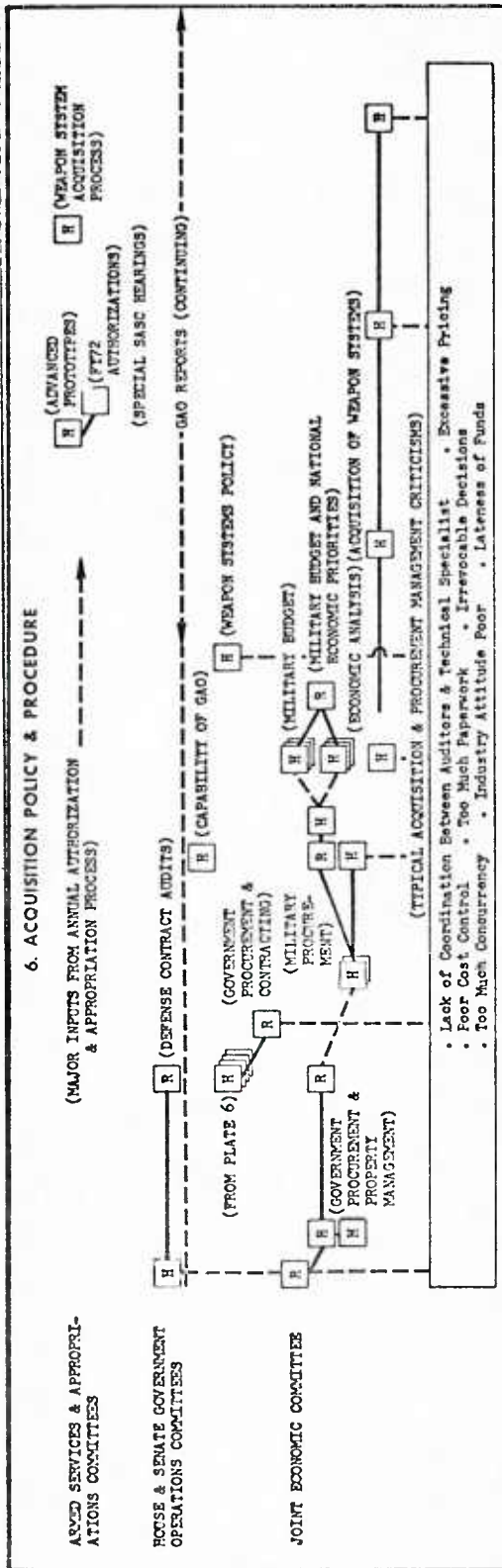
Pertaining to Congressional

Management of DOD Systems

Acquisition Management

(Plates 4, 5, 6, and 7 Only of Eleven Plates)







APPENDIX 3

Tables of DOD Systems Acquisition Problems  
and Issues Extracted from Congressional  
Documents for the Period  
1967 Through 1972

TABLE 1

## CONCERN FOR COST OVERRUNS AND COST GROWTH

Selected Examples	References
F-111 most controversial development program in history; McNamara's efforts capricious; called fiscal blunder; F-111B first ever terminated by Congress	S112(2,3,50,74,75,81,92)
Reports indicate \$2 billion C-5A overrun; Air Force accused of coverup; Lockheed threatened with financial catastrophe; F-14 next in long line to falter	J41(1140,1141,1278,1279)
Cost overruns, poor performance, and delivery delays and compressions said to be rule rather than exception; hallmarks of weapon system process	S72(172);H154(42);J33(149);J35(445);H143(1133,1256)
1969 characterized as year of cost overrun; GAO reported \$21 billion growth on 38 systems; one critic said 90% cost at least twice as much as planned	H83(2);J33(17,26,36);J40(721,737);J41(1201);H140(84,112);J28(3)
Congress not satisfied with explanations offered for problems; seen as national sweepstakes; sought full disclosure; problems eroding confidence	J32(64);J35(392,439);J40(569)
Military planners overoptimistic; cost estimates unrealistic; initial planning poor; priorities unstable; changes not replanned, recycled	H154(7);J33(29);J35(374);H143(1102,1103)
Incentives to underestimate costs; DOD, industry operate on what they can get, not what it takes; promises not kept; overruns built in	S81(36);J33(2);H140(138);J28(3)
Inference that civilian programs do better not true; many similar price increases in large civil projects; major uncertainties, risks exist	J11(1149,1203);H143(1106,1139);J28(17)
Not all cost growth can be reasonably prevented, no one single cause; simply cannot predict enemy threat; will occur as long as technology pushed	S72(167,174);H154(12);J33(29);J35(473);H143(1127,1139)
Tremendous publicity generated great interest; deserves serious attention; job can be done better than has been; no agreement on progress	H154(6);J40(721);J42(1527);J17(211);J37(235)

TABLE 2

CONCERN FOR INEFFICIENCY AND MISMANAGEMENT

Selected Examples	References
Must determine how much defense is enough; judge which DOD expenditures can be cut without impairment; witness said \$10-12 billion wasted annually	J35(284);J28(3,5,15)
Defense of country weakened by waste, inefficiency; taxpayers' money squandered; faced with bureaucratic arrogance, mismanagement	J32(2,3);J33(2);H124(3); H131(16);J20(4)
Most important subject is what it takes to clean up mess; disturbed over predicaments; must act to get cost down; no blank checks	S68(2,55);S81(2);H140 (160);J20(1)
Lack of administrative discipline; relied heavily on paper competition; unrealistic requirements; cost planning and control lacking	J35(374);H143(1168);H131 (17);J17(160)
Unwarranted degree of concurrency; moving to successive stages without meeting prerequisites; money used to buy way out of technical problems	H154(104,127);J33(2);J35 (374)
Major technical problems in tank, vehicle programs; unusable equipment; major retrofit required; forced to rebuild obsolete equipment	H83(6,16,37);H108(3)
No significant evidence of increase in combat capability; degradation of specified requirements over life cycle; frequent overspecification of need	H154(104,127);H83(6);H108 (3)
Not getting money's worth; failure to achieve advances in moving to new systems; U.S. gets the arguments, Russians get new equipment	S69(28);S68(36,49,54);S72 (26);J42(1240);J37(188)
Unhappy with results from R&D money; new initiatives needed; must get more production for money; improvements lagging	S68(54);S81(33);J42 (1527);J20(4)
Explosive cost mismanagement curtails purchases; not able to buy all equipment needed; eventually will not have adequate types, numbers in inventory	S72(169);J40(695);J18(5); J28(5)

TABLE 3

CONCERN FOR LACK OF FULL DISCLOSURE BY DOD AND RELATED SYMPTOMS

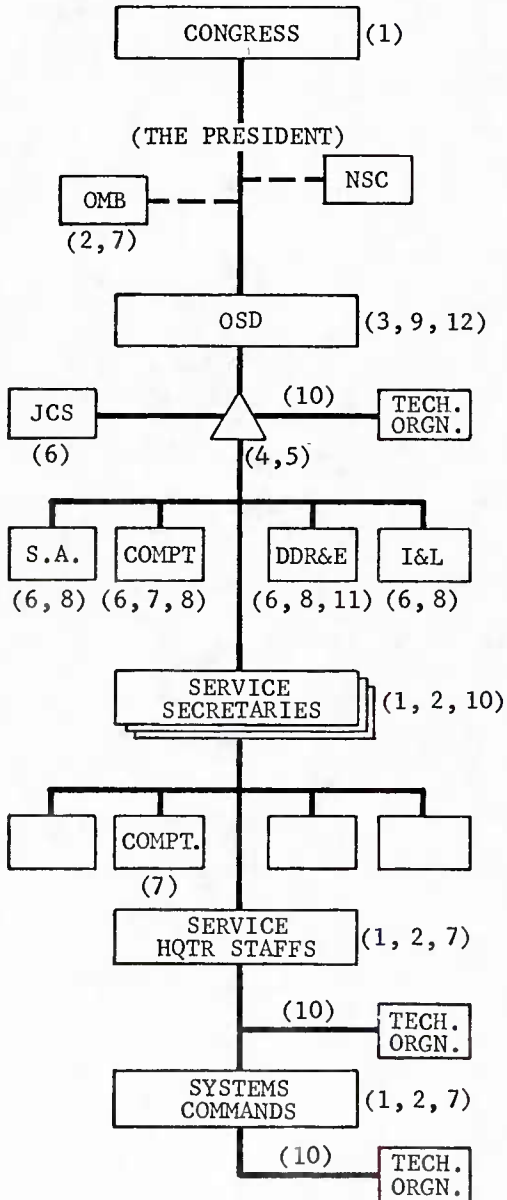
Selected Examples	References
DOD provided misleading reports to Congress; has refused to provide GAO information (tank programs); inconsistency in data furnished Congress	H83(5,11);J33(149);J35(283);H55(136);J17(263)
Information concealed from Congress (C-5A); committees denied access (TFX); obstructive tactics and attempts at secrecy used; executive privilege claimed	S112(4);S72(325);J32(2,209);J35(282);H143(1227);H1148(2389);J20(22)
Lack of candor and truthfulness during testimony; lack of cooperation with Congress on conflict of interests; failure to investigate questionable practices	S112(92);S72(155);J33(3,6);H100(14,15)
Attempts made to muzzle witnesses (Fitzgerald); employees intimidated for telling truth; overt acts taken to impede hostile witnesses from appearing	J32(17,21,31,176);J17(138);J18(73)
Social sanctions and direct retribution taken against friendly witnesses (Rule); contractors also involved in coverup (Lockheed); fear for safety of witness (Durham)	J42(1340,1406,1442);H143(1179)
Deliberate attempts to deceive public (TFX); no administration or organization wants full disclosure; adverse reports to public cause major upheavals	S112(92);H154(108,169);J32(46,49,165,190,198)
Attitude of self-preservation prevalent; mania for maintaining status quo; loyalty to DOD, military; unlimited capacity to absorb protests	H83(18);J32(191);H55(3);J17(15);J18(75)
Critics accused of everything from ignorance to lack of patriotism; seeming indifference to public interests; arrogant disregard for public opinion	S72(24,95);J32(198);J33(149);J41(1140);J17(242)
Confidence of American people shaken; emergence of credibility gap; public no longer accepts glib explanations, scare tactics; Congress must take active role	H154(93);H55(161);J33(149);J42(1406);H148(2390);J28(4)
Should be free and open discussion in Congress; DOD and industry play games; right kinds of information not available; not sufficiently encompassing	S72(352);J33(2,9,216);J35(452);H143(1288);H148(2391);J17(5,51,71,100);J28(5,12)

TABLE 4

CONCERN FOR TOP-LEVEL DOD ORGANIZATIONAL ARRANGEMENTS

Simplified Organization Structure

Selected Examples (and References)



- (1) Congress separated from firsthand service knowledge H55(132)
  - (2) OMB usurps SECDEF decision-making without adequate knowledge S72 (351)
  - (3) Structure of DOD itself leads to adversary relationships S72(4)
  - (4) Lack of coordination concerning weapon system activities, roles, and responsibilities H154(5)
  - (5) Considerable OSD staff overlap and duplication S72(304,311)
  - (6) OSD should be out of requirements business H55(152,172);S72(349)
  - (7) Comptroller activities at all levels should not determine specific military requirements S72 (350,506)
  - (8) OSD should be out of day-to-day detailed management S112(93);S72 (7,325);H154(290)
  - (9) OSD should be restricted to policy and oversight tasks J18(81); H148(2458);J35(305);J72(349)
  - (10) Not-for-profit tech. orgn. latent bureaucratic tendencies add to decision-making rigidity S72(161)
  - (11) Split DDR&E orgn. (OSD) into several directorates H154(34)
  - (12) Size of OSD civilian staff should be reduced J40(840);J72(506);J18 (81);H55(137,139)
- (Note: Misuse of systems analysis covered elsewhere)

TABLE 5

CONCERN FOR MISUSE OF SYSTEMS ANALYSIS WITHIN DOD

Selected Examples	References
Misuse of the basic systems analysis approach within DOD; tendency to recommend alternate programs, regardless of merit; sheepskin economics	S72(304,316);J18(77)
It is by nature micro analysis, while problems are macro, unknowns and variables often more significant in real world than the careful quantification of knowns	J37(206);S72(317,321)
Tools and models are crude; basic data on which studies made often inadequate, extremely deficient; data edited, analyzed, thoroughly altered	S72(123,129,159,317); J28(15)
Applications not objective; analysts have prejudices; assumptions questionable, simplified; often eliminate overriding military reasons for program	S72(318,320,321)
Practitioners are professional problem solvers; have no practical experience; have no responsibility for either making solutions or implementing actions	S72(304);J18(80)
Not enough qualified people to perform function; have no detailed knowledge, no firsthand experience, no feel for what they are analyzing	S72(311);H55(132)
Should not be sole basis for policy decisions; fosters too much reliance on paper studies; many areas exist where decisions cannot be made on basis of cost, effectiveness	S68(3);S72(30);J37(67)
Personnel cause significant program delays, cost increases; studies used to defer system decisions, long record holding up funds, terminating projects	S72(320);J18(76,77,80)
In late 1960s almost completely ran DOD; involved in studies, budget chain policy formulation; too much power, serious consequences; dangerous time lags	S72(333);J18(78,79,98)
Still a major influence; eliminate systems analysis office at OSD level; involve JCS military expertise; place technical examination details at service levels	S72(303,317,506);H154(63)



TABLE 6

CONCERN FOR APPOINTEE TURNOVER AND ORIENTATION

Selected Examples	References
Balance of power shifted to appointee level through PPBS and centralization; appointees have the power and use it to overrule subordinates	S112(50,92);J37(65)
Have ready-made views; do not hesitate to put them into effect; advice from knowledgeable and experienced subordinates often ignored	H55(150)
System wrongly equates knowledge with authority; bad decisions can be made on this basis; tend to get locked into inflexible positions and policy	S112(90);J32(46);H55(150)
Most appointees chosen from industry they seek to control; attitudes reflect industry viewpoint; more concerned with protecting industry than taxpayer	H55(172);J18(52)
Refusal of appointees to enforce industry controls; appointees control advisory committees, DOD media; exercise influence over defense policy	J40(580);H55(172);J18(75)
Many appointees use position as training ground for higher industry positions; overall appointees have detrimental impact on morale of permanent force	J18(52)
Appointee qualifications subject to question; most appointees lack needed procurement expertise and experience	H55(150);H144(1426)
System lacks continuity because of excessive appointee turnover; problems never solved; system limits accountability, acceptance of responsibility	S72(46);J42(1528);H55(129,142)
Second-tier appointees tend to be captured, overwhelmed by system; instances of second tier not being bypassed; considerable staff overlap, duplication	S72(304,311);J32(12,52)
Turmoil caused by excessive appointee involvement, paperwork questioned; consolidate duplicative appointee functions; reduce number of appointee echelons	S72(506);J35(305);H55(137,139,142);J18(81)

TABLE 7

CONCERN FOR MILITARY DEPARTMENT-LEVEL ORGANIZATIONAL LAYERING

Selected Examples	References
Confusion exists as to who is responsible for what; large number of people at top levels exercise much authority, with little or no responsibility; contribute little	S72(309);H154(5);J40(786)
Problem of assimilating specialized role of acquisition management into traditional military command structure; result has been top-heavy organizations	S72(298);J32(138);J40(737,783)
Decision-making layering not commensurate with organizational layering; some levels have no clear roles; results in excessive tiers of management reviews, mismanagement	S72(471,472);J40(786);J18(78)
Anyone in chain of command can say no, only the top echelon can say yes; need face-to-face communication among managers, top officials; reduce intervening layers	S72(300);H154(5,20,272);J40(786);H55(140)
Authority remains at one level, while technical responsibility rests at subordinate level; project manager must be given authority to make program decisions	S72(472);H154(5,6,18);H55(138)
Top-level line officers, administrators lack technical experience, background; too much responsibility given to officers without special expertise needed	S72(472);H154(5,18);J18(79);H55(141)
Staff levels inundated with administrators; conversely, organizational requirements divert many technically competent people into unrelated staff, command jobs	J72(298,472);J40(787);H55(139)
Major change in organizational structure required; must be organized so that development and production of new system is built around the project manager	H154(5,18,19,20);J40(737)
Having chief of service in procurement chain is conflict of interest; restore bi-linear navy organization; establish separate procurement group reporting to service secretary	S72(507);H154(204)
Drastically reduce number of levels; reduce half of management echelons; organize so that each major action is reviewed by only one military and one civilian level	S72(297,505);H154(27);H55(138)

TABLE 8

CONCERN FOR UNNECESSARY MILITARY DEPARTMENT-LEVEL STAFF ACTIVITIES

Selected Examples	References
Large number of functional staff groups through which action must pass in sequence; programs pass through 20-30 levels; each can influence decisions	S72(298);S81(30);H154(272);J40(787)
Every official in chain surrounded by large staff; become embroiled with technical decisions; size and involvement out of proportion with need, qualifications	S72(303,304,472);S81(32);J18(80)
Thousands of unqualified people in Pentagon do not know what they are doing; major staff attention focused on providing guidance to subordinates; unneeded manpower	S72(301,311,315,473)
Staffs substitute method for knowledge; concern is for administration rather than technical matters; system is choking itself on regulations, reports, procedures	S72(301,315,470);J18(79)
There are 15,000 instructions for a project manager alone; staffs push personal proposals for advanced management concepts, business practices; use as panaceas	S72(301,315,472,473)
Staff barriers out of control; endless changes, discussions, reviews; administrative workload doubled every 18 months in last few years	S72(305,470);J18(78)
Simple objectives lost in monitoring, control and communication process; chief goal appears to be exercise of control in areas where staff lacks expertise	S72(305);J18(78,80)
Must be unanimity before moving forward; endless debate; no issue ever resolved; no matter what is done, obtaining mutual agreement is difficult	S72(305,311);J148(2389)
Total refusal to argue question on merit; common for action being taken without consulting project manager; desired changes attempted by fiat	S72(221,472,473)
Statements of ridding itself of staffs must be viewed with skepticism; must reduce staff significantly, simplify process, cut overhead; requires new impetus from top	S81(35,41);H55(147);J18(81)

TABLE 9

CONCERN FOR EXCESSIVE INTERSERVICE RIVALRY

Selected Examples	References
Difficult to keep diverse forces heading in right direction; degree of competition among services unacceptable; much inconsistent with common commitment	J42(1481,1482)
Duplication in systems acquisition; some relate to service roles and missions; very thorny question; can lead to excessive costs	S69(3,58,105);H154(31,39)
Commonality has been problem; use both for and against position; use of secondary requirements (C-5A, short take-off) to buttress interservice position	S112(81);H154(290);J17(209)
DOD unable to address, resolve many of these disagreements; system lacks checks and balances on technical advocacy; must set priorities	S69(105);S72(247);J40(736)
Many proponents of pet projects; DOD cannot generate widespread enthusiasm for new initiatives; everybody acting to get his share of R&D, procurement budget	S68(41);S72(124)
High-level dissent led to circumvention, violation of interservice agreement (LOH); misuse of authority to conduct R&D; inadequate support of one service over another	H63(3,4,7,11)
No exchange of procurement information; lack of uniform procedures (2.75 rocket); limited interservice activities; lack of coordination in dealing with same contractor	H108(12,31)
No systematic procedure among services for consolidating requirements, orderly contracting; operate separate buying agencies for same or similar commodities	H108(32,40)
Lack of established policies and right attitudes plagues common service management; interservice rivalry a long-term, historical problem	H154(6);J42(1613)
Excessive duplication causes excessive costs (P-14/P-15); numerous examples cited, criticized in authorization and appropriation hearings	H143(1175); important separate study

TABLE 10

## CONCERN FOR OVERADMINISTRATION IN DECISION-MAKING PROCESS

Selected Examples	References
DOD decision-making faulty; majority made by administrators; consequences not understood; handed down without explanation; doers not consulted	S72(300,303,329,352,353); H55(132,149)
Excessive pressures; created by existing system; pressure to prepare adequate budget; results in services buy in, poor judgment, lack of austerity	H63(26);S72(173,248,326); H154(10);H55(142);H144 (1465)
Budget all consuming; requires time and attention at all levels; diverts attention; increased involvement in details; a ritual, occupies 50 percent of time	S72(224,227,236,309)
Crisis management prevails; system dictates need for total consensus; decision-making by committee; no issue decided; long-term arguments, compromises	S68(11);S72(305);H154 (289);H148(2395)
Rights of involvement; challenged at any level; lower levels can hold on details, technicalities; requires preparation, presentations, meeting; all time consuming	S72(300,305,312);H55 (149);J18(76,77)
Rights to information on demand at all levels; ever increasing; flow of data, details overwhelming; divergence between rationale and facts	S72(306,356); Table 15
Rights to review; endless discussions on every program; unqualified evaluators; excessive studies, inspections; checkers outnumber doers, divert attention	S72(299,305,306,308,311, 313);H154(215)
Rights of disapproval; causes major delays; debilitating, costly; practiced by individuals with no direct authority	S72(308);J40(786)
System bogged down in information, data; many decisions made on information alone; process not visible; decision documents lost, not made available	S68(3);S72(325,330);J18 (77)
Process unstable; long and imprecise; extends dates of equipment available by years; drastic changes needed; cannot match purposefulness, concentration of approach by Soviet Union	S72(300,309,329);J40 (722);H153(1122);J18(80)

**TABLE 11**

**CONCERN FOR IRREVOCABLE DECISIONS**

Selected Examples	References
DOD decision-making inflexible; it sets irrevocable forces in action which cannot be overcome; difficult to stop DOD spending momentum	S72(155);H55(142)
Tenacious DOD defense of actions (TFX) locks top officials into inflexible support; Congress forces Pentagon promises; influences DOD officials to make costly changes, prove worth	S112(90);S72(153)
DOD tends to underestimate costs to start program; in advocacy process; sacrosanct schedules drive process, become overriding consideration	H108(3,6);S72(130)
Fear of losing funds forces unwarranted continuation, initiation of next stage; personal involvement, career, human tendencies captivate, drive project personnel	H33(5,6,14,18)
Misleading progress reports foster optimistic view at higher levels; mission all important; problems swept downstream by short-term nature of outlook	H33(9,15);H108(15)
Services often locked into dollar estimate prior to systems design; forced to live with; once programs get approved, difficult to depart from agreed plan	S72(173);H154(194);H148(2510)
Once submitted, almost locked in concrete for short term; one President's budget year appropriation really a long-term commitment	H154(69);J35(470);J37(11)
Congress gets committed against its will; decisions are not subject to full scrutiny of committees; almost unheard of to cut off project in the middle	S72(153,154,352);J28(4);J29(17)
Once started, an approval implies a commitment to production; conditions resist change; DOD gets locked into contractual arrangements over several years (F-14)	S72(72,174,363)
Incremental decision-making needed as basic strategy throughout process; Congress needs to get at root causes; must take initiative; must prod DOD	S72(19,36,173,295,342);J35(584);H55(148,155);H124(13)



TABLE 12

CONCERN FOR AN INFLEXIBLE PROGRAM-BUDGET SYSTEM

Selected Examples	References
Fund requests, justification preparation, management reviews, etc., most time-consuming aspect of systems acquisition management	S72(226,227,304,307,312,337,362);H140(89,158,160)
Services simultaneously handling three budgets; never-ending process; Government authorization, appropriation process repetitive, cumbersome	S72(332);H140(2399)
Takes 4 to 5 years to get project approved; 18 to 24 months to go through budget review process; compounded by further funding delays	S72(332);J42(1450,1453)
Lateness of funds in fiscal year complicates ability to get proper contracts drawn; contract cycle itself takes 8 months; accelerates year-end spending; creates inefficiencies	J42(1450,1453,1457,1599);H143(1239)
Program budget decisions, major decision mechanism breakdowns; serious errors in statistics, facts, situation; time for rebuttals seriously limited, projects bypassed	S72(350,351)
Process rigid; same involvement, justification for large and small projects; 12 R&D reviews required; little flexibility below service level; fixed funding needed	S72(226,227,237)
Congress/DOD budget structures incompatible; causes major rearrangement as data summarized at each level; limits good communication and visibility	S72(47,48,226);H154(215);J41(1195)
Congress should institute a two-year budget for efficiency; eliminate yearly funding; need firm program for several years; need 5-year planning projection	S72(337,506);H55(153);H86(13)
Yearly funding creates problems in economic lot buying; increases administrative costs; DOD precluded from multi-year techniques when annual funds involved	S72(249);H124(75);J17(36)
Present system allows little time for debate of fundamental issues; little examination of force levels and planning assumptions; long-term considerations	S72(332);J37(8,9,19)

TABLE 13

## CONCERN FOR LACK OF LONG-RANGE PLANNING

Selected Examples	References
Top DOD officials failed to foresee true defense needs and to take action; appears DOD does not have clear idea of assumptions for war planning	S72(309);J37(210)
Defining mission more important than determining method of development; many cases where force structures for new systems not firm, change	H154(31);J40(750,751); H143(1129);H144(1469)
Have no rational way to decide what weapons should be; need to think through and plan weapon system needs	S72(349);J40(738);H55 (150,152)
DOD majority lacks thorough understanding of modern technology; does not comprehend what is involved in 10-year developments or economics of 30-year investment	S72(309,349)
Methods of determining weapon system characteristics need to be changed; must combine factors, information, analysis to specify requirements	S72(348,506,507);H55(152)
Dealing with uncertainty involved with character and timing of threat is difficult problem; threat is constantly changing; DOD deals with worst case alternatives	S72(167);J40(749);H140 (239)
Managing change, maintaining flexibility, promoting growth are major considerations; induces instability in planning system; clashes with strict budget process	S72(169);H55(152);H143 (1127,1253,1256)
Identification of relative priorities of new systems a fundamental problem; no logical structure or organized method for measuring proposals against total DOD system	H142(722,736,769);H140 (242)
True long-range plans a rarity; no explicit choice of long-term, alternative goals; need to greatly expand, improve forecasting methods; new syntheses of inputs, treatment of decisions needed	H55(142);J37(67,206)
Need highly qualified, permanent group for technical long-range planning; Congress should undertake full-scale investigation of long-range planning (SHIPS), appraise needs	S72(25,309,407);H55(155)

TABLE 14

CONCERN FOR INADEQUATE REQUIREMENTS DETERMINATION PROCESS

Selected Examples	References
Existing process does not produce requirements which are adequately defined, valid, important; many new system requirements are neither nor achievable nor affordable	H154(6,7);S72(155);H140(15)
User/developer coordination, checks, and balances poor; users err on conservative side, ignore costs; developers dominate decision process, check themselves	S72(28,107,109,126,127,160,161,247)
Use of urgency is abused as a basis for expediting weapon system development; overstatements of threat common, results in costly weapon systems	H83(5);S72(19,24,80);H154(7,302,306)
Many programs suffer from overly optimistic plans to advance technology; concepts based on quantum jumps rather than systematic, evolutionary improvement of existing equipment	H83(1);S72(13,110,173,271);H154(7)
DOD overspecifies system requirements; may become rigidly fixed; lack of periodic reappraisal of requirements	H83(7);S72(109,127);J40(749)
Major advances often fail to increase combat capability; unattainable performance requirements frequently degraded or waived	H83(7);H108(2,5,11,13)
Equipment without essential characteristics prematurely released to production, deployment; results in costly, delaying changes, modification, and retrofit	H83(11);H108(2);S68(37);H154(104);H140(342)
Abstract analysis a limiting factor; lack of hard test data and knowledge about the combat environment; difficult to determine operational utility	S72(109,110,173,248)
Need more flexibility in initial planning, development; need a relaxation of rigid requirements, specifications; state initial systems requirements as broad goals	S68(3);11-271;H154(89)
Austerity, simplicity, cost downgraded as primary considerations in favor of technical performance; quality substituted for quantity; must be changes in approach	S72(247,248);H154(89);J37(188)

TABLE 15

## CONCERN FOR EXCESSIVE PAPERWORK

Selected Examples	References
Administration rules the systems acquisition management process; the process has become hidebound by procedures; everything wrapped in paperwork	S68(30);S72(301,469);H124(146);J37(67)
Administration procedures, paperwork requirements increasing; added paperwork compounds clerical costs; creates inefficiencies	S72(305,470,473);H124(147,189)
Regulations written for benefit of writer, not user; written to deal with, counteract latest horror story, deal with what, not how to; very poorly written	S72(310);21-188,189);H131(6)
Myriad of reporting requirements; forms complex, data stereotyped; repetitive, much unneeded, not used; headquarters generated, not for basic project control; floods system	S72(218,311,377);H146(2002,2010)
Projects need simplification; bogged down in paper; consumes hundreds of man-hours; overwhelms project manager, technical personnel; only strong survive; defeating purpose	S72(22,27,308,378,474);H154(17,20)
Industry must match project counterparts; contractors feed system; tons of paper involved in source selection; extensive fact finding; reviews; contracts complex	S72(6,27,218,219,481);S81(32);H154(9);H143(1209);H148(2384)
Much technical data required too early in project life cycle; excess paperwork tied up with systems specifications, documentation; too much technical detail	S72(217,220,469);H143(1104)
Management systems proliferated; no panacea; are superimposed on contractor systems; are excessively detailed, duplicative, costly; not right answer	S72(218,472);H142(692);H143(1104)
Paperwork overpowering contractor; overwhelming the results; affecting development costs; numerous studies, nothing happens; simplicity, uniformity, integration needed	S72(6,22,244);S81(32);H124(36,44);H131(7);H142(682)
Human nature to require information, cannot stop; strategy is wrong; needs examination, re-direction; requires strong impetus, action from top management levels	S72(218);S81(35);H146(1753)

TABLE 16

CONCERN FOR LACK OF EMPLOYEE MOTIVATION

Selected Examples	References
Poor atmosphere, not conducive to productivity; competency of top-level employees questioned; discipline, tough-minded management lacking, no accountability, no lessons learned	H154(264);J35(306,307,309);J42(1255);H144(1426,1429)
Change in attitude needed; difficult to achieve; motivated people, leadership needed; must give people freedom to do job creatively; provide adequate responsibility	S68(40);S81(7,30);S72(470);H154(28)
Tight reins over procurement function must be lessened; contracting officers are hamstrung by top officials; the factor of judgment needs to be reemphasized	J35(305);H144(1427,1543)
There is deep-seated frustration at working level; dissatisfaction, dissension, turmoil exist; victims of routine; gross misjudgments accepted; Government will not listen	H108(45);S72(308);J35(306);J42(1542)
Major problem in attracting, retaining competent people; existing approaches not working; pay not sufficient motivator; must base appeal on challenge, difficulty	H154(4,140);H124(75,184,189);H143(1149)
Personnel subject to external pressures, interferences; targets of criticism leveled at performance; work under pressure, poor conditions; deters best people	H154(130,182,293);H124(187);H144(1427,1539,1540)
Inadequate staffing for job to be accomplished; no recognition for complexity, difficulty, demands, level of responsibility; inequities, restrictions compound frustration	H154(183);H124(183,187);H144(1425,1538)
No room at top for advancement of capable employees; appointees have direct control activities; military administer, supervise process; civilian morale adversely affected	H154(130,131);J18(52,53)
Acquisition procurement is people operations; simple solution is to get better people; motivations and incentives must be put to work; need to force change	S72(221);H154(25);H124(189);H140(57);H143(1149)
Put, keep better people in key system acquisition jobs; services need experts, strong competent people; do not have them as project leaders today	H154(4,5,24)

TABLE 17

CONCERN FOR LOSS OF IN-HOUSE TECHNICAL CAPABILITY

Selected Examples	References
Strong in-house technical capability being eroded and replaced by inflated administrative bureaucracy; technical work has been degraded to lowest organizational level	S72(469,470)
DOD follows assumption technical work can be turned over to industry with little control; services exhausting energies patching up unsuccessful technical products	S72(470,475)
There are many people with job descriptions which imply solid technical ability; an in-depth study of the technical capability shows DOD is woefully weak	S72(312);J18(77)
Men without the necessary technical training, practical experience hold positions of authority; make little allowance for technical aspects and decisions	J18(79)
Strong in-house capability needed if job is to be done properly and at reasonable cost; in-house development might protect Government from excessive costs	S72(469);H154(25)
Need better in-house capability in DOD laboratories to better assess contractor competence, systems design, and proposals	H154(25)
Need expert in-house capability for Government to exert more management controls; key is more involvement; technical collaboration with contractors	H154(11,24,274,275)
Very little improvement in technical work (1972); caused by designating technically inexperienced personnel as project managers; need thorough understanding of modern technology	S72(309);H55(141,142)
Organizations not technically adequate to keep up with what is happening in technology revolution; a need for vast strengthening of technical organization, training	S72(309,469)
Technical work should be recognized as most important; as long as DOD fails to build up its technical capability, it cannot expect to make rapid technological advancements	S72(312,474)



TABLE 18

CONCERN FOR LACK OF LONG-TERM PROJECT MANAGEMENT EXPERIENCE

Selected Examples	References
Rapid military turnover; no overlap in replacement; job needs made secondary; selection of qualified project managers is major need; lack knowledge, practical experience	S72(6,45,62,309,364);H154(202);H55(150)
High-ranking officers superimposed from outside; more rank is not the answer; notion that anyone can administer any project by being assigned works havoc	S72(365,371);H154(295)
Unqualified project managers become mouthpieces for contractors; many managers in name only; little more than reporters; not trained for job	S72(366,367,370,474)
Successful projects identified with individuals; long-term concentration, ability to marshal resources needed; continuity, stability, permanency most important factors	S72(186,309,348,367,370,468);J42(1602);H55(142)
Officers not trained properly; management training only partial answer; managers not made in school; previous experience does not qualify them	S72(367,368,468,474);J42(1604)
Assumption that a large number of "worker bees" await leadership is false; no one to lead, leadership not the problem; leaders must know job themselves; train successors; is major task	S72(474,475);H55(142,143,145)
Organizational problems exist; lower-level location unclear; reporting lines excessive; many external requirements; planning, operations separated, complicates management	S81(30);S72(6,11,129,217);H154(294)
Project managers have little control over procurement; lack expertise; work with many organizations, specialties; coordination, motivation of support personnel difficult	H108(45);S72(11,481);H154(20,147,148)
Need for authority conflicts with overall control; problems with interface, coordination with other systems; solutions to strengthen project management not clear	H154(147,168,169,290);S72(217)
Civilianization only way to get experienced people, cannot depend on military; use experienced PMs from industry, military as deputy PMs; some military interface necessary	S72(11,46,370,372)

TABLE 19

CONCERN FOR DOWNGRADING OF PROCUREMENT FUNCTION

Selected Examples	References
Procurement function downgraded in relation to military activities; procurement people treated as poor relations; second-class citizens; best people driven out	J33(189);J35(298,302,305)
Process has deteriorated; resources have not kept pace; inadequate manpower; personnel overworked, understaffed, harrassed; resource, responsibility not balanced	H154(189);J33(168);J35(285,302,314)
Top people in procurement not involved with negotiations; the most competent people move to administration; is route to promotion; affects field operation	S72(11);H154(183);H124(183);H144(1425)
Government is not equipped to negotiate with contractor; Government negotiators lack experience, numbers, status; are outgunned at negotiating table	J35(303);H124(183);H144(1425)
Procurement is not simple business; takes years to learn; training is a root problem; project managers have little or no experience with business side	H108(45);S72(481);H154(132,292);J35(287)
Need to professionalize work force; provide statutory authority similar to R&D; business management should be recognized as important as science, engineering	H154(130,132);J33(189);J35(285,286);J42(1604);H144(1426);H148(2550,2551,2558)
Competency in procurement related to economic performance; elite corps of procurement experts needed; should have adequate number of supergrades, top spots	H154(131);J33(189);J35(286);J17(147)
Systems acquisition, Government procurement task of national significance; not paying price; services will not change themselves; changes must come from outside	H154(28);H55(148);H143(1149,1150)
Waste in procurement spending attributed to military; civilian control needed; civilian management held down, cannot challenge; remove from direct military control	H154(131);J33(151,190,191);J35(305,308,309);J42(1604);H148(2551)
Put under top OSD/service civilian procurement official; take away from DOD; set up separate civilian agency; create separate military department to overcome problems	S72(46);J33(192);J42(1604);H55(148)

TABLE 20

CONCERN FOR WEAKNESSES IN MILITARY AND CIVILIAN PERSONNEL SYSTEMS

Selected Examples	References
Current U.S. attitude toward military career is poor; public esteem degraded; gradual deterioration of ability to attract high caliber officers	S72(465,467)
Military ideas about type of managerial experience needed for project management questioned; not trained to run programs; overly influenced by military thinking	S72(364,365,368,474); J33(285);J35(1604)
Military officer problems due to strict adherence to military discipline; excessive personnel turnover; lack of adequate authority	S72(186,373);H154(18, 290);H144(1427)
Every officer trained to be chief of staff; all generalists based on need for wartime expansion; assignment policy conflicts with job needs	S72(45,348,369);H154(4, 132);H55(147)
Personnel policy changes promised last 19 years; military officers skeptical; no incentive for military career; chances for promotion to general officer poor	S72(6,11,45);H154(4,19, 132);J35(458);H55(141)
Military promotion system penalizes project procurement officers; costly business training wasted; retirement focus on industry employment	S72(45);H154(131,180);J33 (191);H140(63);H144(1427)
Civilians entrenched; thousands in Pentagon do not know what they are doing; appointee turnover permits civilians underneath to run things; frustrates policy implementation	S81(31,32);J42(1540, 1602);J18(78)
Deep-seated frustration exists at working level; personnel face too many pressures; recognition is lacking, no room for advancement; incentives lacking	Table 16
Civil service regulations limit improvements; restrict recruiting; need new civilian job standards; little personnel rotation; new personnel first to go	S72(377);H154(4,25,130, 181,182,183);H140(62)
Poor civilian reward and penalty system; supervisors lack tools; difficult to fire for cause; called a matter of national concern	S72(377);H140(32);H154 (5);J17(232)

TABLE 21

## CONCERN FOR UNDESIRABLE PRESSURES AND INFLUENCES

Characteristic	Selected Examples	References
1. System Inertia	System evolved; maintain status quo; great reluctance to change	H108(45);S81(34,35);J35(287,288);J42(1537)
2. System	Military-industrial media conditions attitudes actions; feeling against enforcement; loose policy implementation	J40(591);J18(75);J42(1602)
3. Institutional Pressures	Hew party line, don't rock the boat, not team player; fear economic loss, sanctions	J42(1340,1406,1531,1537); H55(5);J18(71);J20(27); J17(233)
4. External Pressure	Arms length dealings, play games with Congress; fish-bowl environment	H154(195,196);J33(216); H148(2410)
5. Mission Pressures	Irrevocable commitment; cover up, fear loss of funds; loss of confidence triggers investigation; pride; sweep problems downstream	H83(5,6,9,12,22,28,32); H108(15);J32(50)
6. Hierarchical Pressures	Bypass groups with pet projects; impossible to get consensus, work around; justify program based on interests, likes, dislikes	S68(41);S72(160,188,236);J40(751);H148(2389)
7. Budget Pressures	Get share of funds; determine what traffic will bear; accelerate year-end obligations	S81(36);S72(123,128,274,275);J42(1452,1458)
8. Management Pressures	Simplicity penalized; system forces gamble; short-term outlook for results; no responsibility for mistakes fixed	S72(224,365,370);H154(58)
9. Military Pressures	Aye-aye sir; rotate quickly; acquire proper tickets; few volunteer knowingly; conflict of interest	S72(308,373);J33(191,192,216);H144(1429)
10. Project Pressures	Project managers captive; advocacy bias overriding; motivated to continue; self-preservation, failure to face unpleasant facts	H83(6);H154(103,195); H143(1123,1253);H148(2400)

TABLE 22

## CRITICISMS OF TOTAL PACKAGE PROCUREMENT POLICY

Selected Examples	References
Purpose to discourage contractor buying in, motivate contractors to design for economical production; encourage competition	H154(2);J17(124)
Based on workings of free enterprise systems; uniqueness in tying contractor to fixed price for development and initial production	H154(8);J32(51)
Concurrent development and production shifts risk, responsibility to contractor; alters buyer-seller relationship	J42(1303);H143(1212);J17(157)
Will just not work; always locked in with contractor; not adequate to prevent excessive costs	H154(8,86);J17(161)
Inconsistent with sound acquisition principles; restrictive and inflexible; no room to maneuver for changes	S72(6);J35(303);H143(1256)
Contracts based on paper study proposals; precise requirements cannot be specified in advance; contractors overoptimistic on capabilities	S86(33);H154(8);H143(1128)
Concentration responsibility, risks are questionable; too early in program, all in one decision point, at time of great uncertainty	S72(5,19);H143(1256)
Contract unworkable, ambiguities exist, impedes buyer-seller collaboration; no adequate audit; ties hands legally	H154(122,262,276)
Unable to establish equitable ceiling price, repricing formula, response to change; created reverse incentives	H154(276);H143(1207,1256)
Substitute competitive prototyping, cost-plus contracting, more direct management controls, performance milestones	H72(53,90);H154(221)

TABLE 23

CONCERN FOR SPIRALING COSTS

Selected Examples	References
Astronomical initial costs; cost explosion, geometric cost increases experienced; raises questions about ability of U.S. to afford new systems	S72(1,169,241);H143(1129)
Lack of austerity degrades military posture, cuts forces to inadequate numbers; attitude of employees toward costs must change	S72(168,169,267);H143(28)
Major problem is intent; is failure to scrub programs; insufficient determination; DOD unwillingness to take on fight with industry	H143(264);J32(15,16,22)
No active, aggressive, cost reductions within DOD; some acquisition programs fat; not using cost tools available to control contractors	J32(42,63);J17(28,230); J18(7)
DOD officials oriented to protect industry; internal resistance from industry; no contractor incentive for cost reduction	J32(72,148);J42(1531); J17(28,167)
Technical performance rather than price is major driving force; massive infusion of funds used to buy way out of technical difficulties; contributed to overruns	J32(149);J17(50)
Need critical review of accomplishments; systems performance not being significantly improved; performance underruns prevalent throughout services	S72(247,271);J32(35);J33 (214);H143(1133)
Stubborn technical problems, unrealistic expectations; urgency made overriding consideration; process driven by time, rigid schedules	S72(132,267);H154(116, 243,262,272);J17(231)
Problem is how to get cost down; no cheap solutions to new systems; must demonstrate ability to make hardware less expensively	S68(2,36);H55(151)
Tighten budgetary restraint; improve budget deliberations; improve correlation between available and required funds; need to adhere to a cost schedule	S72(127,128,187,188,249); H154(85);J37(189)



TABLE 24

CONCERN FOR EXCESSIVE COMPLEXITY

Selected Examples	References
Complexity degrades performance; considerable opportunity for decreasing cost, increasing reliability; existing equipment too complex to work effectively	S72(240,245,264,267);H154(289)
Past engineering designs too sophisticated, too ambitious; simplification will bring costs down; build on an austere, low cost basis	S68(45);S72(153,234);H154(89,245);J42(1545)
System rewards complexity, penalizes simplicity; change motivation and attitude; need new management approaches, buy only what is needed, at reasonable cost	S72(172,221,277);H154(88);H140(103)
Mission commonality expensive (TFX); multi-mission design maybe infeasible; has driven up unit costs in many cases; optimize single mission objective	S112(81,91);S81(37);H154(244)
Past systems "encumbered"; loaded down with extras; develop, keep systems "clean"; limit elements of system to essentials	S68(33,34,35);S72(6,10)
50% of costs of weapon systems in secondary and support subsystems; need to simplify electronics; eliminate dubious expensive electronics	S68(49);H154(37,137)
Give adequate attention to systems reliability, maintainability, durability; major problem when pushing new technology; build into initial design	H108(1,4,8);S72(10);H143(1245,1246)
Difficult to tell in advance if system is too complex; goldplating discovered too late, take positive action to reduce, institute continuous trade-off review	S72(21);H154(27,29,289)
Sponsor development work to achieve standardization throughout DOD; reduce excessive duplication between services; reduce individual service specifications	H108(30,32,42);J42(1533,1551);H55(176);H144(1370)
Emphasize force effectiveness in mission planning; need approach to judge/balance simplicity with complexity; balance cost with quantities, quality	S72(247,249)
Nothing in system to drive costs down, must build on extremely austere basis; shift interest to getting low-cost design	S68(45);S72(234);H154(245)

TABLE 25

## CONCERN FOR INABILITY TO COPE WITH TECHNICAL RISKS

Selected Examples	References
Higher technical risks experienced than anticipated; many low-risk judgments proved faulty; state of art pushed too far, too fast by advocacy	H154(24);H144(1459,1475)
DOD did not appreciate cost penalties of advancing state of art; small improvements cost a great deal; last 2-3% performance key problem	H154(29,121,262);J17(231)
Cannot foresee precise technical problems; must reduce technical risks; cannot anticipate many technical unknowns; percentage of unknown, unknowns always exist	S68(5);S72(4,7);H144(1423,1463);H148(2489)
Get technical uncertainty in perspective; tailor appropriate management to degree of risks, strategy to situation; must reduce technical unknowns at beginning	S81(17);H154(164);H148(2515)
Recognize problem in contract documents; past contracting methods contained considerable risk; shifting risk to contractor not solution	H154(121);H148(2519);J17(278)
Engineering necessary to proceed not being accomplished; emphasize hardware development, use prototype development for high-risk areas, provide for continuous design validation	S72(5);H154(15);H143(1104)
Managing technical risk assessment extremely difficult; continuous assessment is crucial; must improve procedures, practices	S72(133);H154(63);H148(2495,2497)
Technical risk is major source of schedule slippage, cost growth; keep development flexible to allow trade-offs; make part of decision-making process	H154(8,15,25,28)
Adopt approach of practical, continuous trade-off, put dollar in technical equation, make cost equal to technical considerations; instill philosophy at lower levels	S81(4,24);H154(8,27,80);H143(1103)
Define development progress milestones; make achievement prerequisite to production, improve, test, evaluation; resolve uncertainty prior to production	H154(21,135,273);H35(520);H143(1104);H144(1320)

TABLE 26

CONCERN FOR MANAGING AND MAINTAINING THE TECHNOLOGICAL BASE

Selected Examples	References
R&D under attack throughout Government; U.S. threatened with mediocrity in science; knowledge gap pending	H86(248,250,256);J37(24)
R&D represents one-fourth of military capital outlays; costs up dramatically; funds not considered adequate	S81(37);S72(26);J37(219)
Military technology losing ground overall; U.S. not getting hardware; contrasts to Soviet Union are alarming; losing technological superiority	S69(28);S68(36);S72(49);H154(28);J37(24)
Character, timing of threat complex; projection of technology difficult; constantly changing environment; problem of judgment, learning as you go	H140(239,242);H143(1105,1106)
Increased emphasis, attention to R&D needed; technology base not advancing at adequate rate; officials very concerned	S68(2);H154(36);S72(4,5,39);J37(219)
Managing technology is major problem; improved planning and control over technology base needed; structuring, visibility over multiplicity of projects poor	S72(90,185);S81(3);H154(35)
Capability to tap technology limited; need to improve coordination; must link research capabilities; reduce redundancy, duplication between research projects	S72(132,192,309);H154(35)
Need more R&D freedom, flexibility; little freedom to be innovative; reduction in burdensome programmatic aspects required	S81(4,6,27);S72(132)
Must initiate more basic research; create future choices, provide more options, range of alternatives for decision-makers	S68(5,29,34,39,40,43);H86(247,256)
Experts recommend use of experimental prototypes; orient new technology to reduce costs; find ways to accelerate technological applications	S68(5,56);S81(3,4,35,37);S72(90)
Establish procedures to upgrade industry design teams; preserve excellence, sharpen quality, capability, keep design teams lean, small	S68(4,31,43);S81(5,37)

TABLE 27

CONCERN FOR POOR INITIAL TECHNICAL PLANNING

Selected Examples	References
Unwarranted degree of confidence dominated by technical zeal, system engineer optimism, technical advocates	H83(5);S72(168,242,247,267);H154(7)
Industry promises more than it can deliver, pushes risky technology; incentive is to underestimate cost, only ball game in town	S68(33);S72(271);H154(7,28)
Initial decision most important; unrealistic requirements, not adequately defined; threat overstated, performance not attainable	S72(168);H154(6,7,93)
Forces at play encourage unrealism; cannot overcome optimism; American "can do" syndrome to do better; newness viewed as something desirable	S72(187);H154(7,88);H140(216);H143(1102)
Technical problems not adequately solved initially before proceeding; strong pressures to enter development before warranted	S68(33);S72(172);H146(241);H148(2517)
Last chance pressures irresistible; only limited number of opportunities; everything put into one big development; forces overloading	S68(38);S72(6,21,41)
Expecting too much; asking for what is possible vs need; pressures encourage what technology will permit; requirements inflated to keep pace with technology	H83(1);H154(88,244,289);J33(214)
User oriented to ask for everything; does not consider cost impact on force; must integrate cost and force levels into each command requirement process	S72(247,267);H154(266)
Divergence of user/developer views interchange poor; no user follow-up in requirements process; review process does not eliminate "nice-to-have" items	H83(9);H154(120,149,213)
Technical people dominate decision-making; developers' view prevails, decide on new systems; check themselves; no counterbalance to technical advocacy	H83(11);S72(28,107,126,160,247)
Key problem is blending user/developer expertise; need to increase user participation, capability, voice in decision; problem more acute with rate of change	S72(107,126,161,247)

TABLE 28

CONCERN FOR POOR REQUIREMENT AND SYSTEM SPECIFICATIONS

Selected Examples	References
DOD unreasonable in demands; performance requirements not well thought out, contribute to technical risks; costs inflated by unnecessary, redundant specifications	H154(23,93);J35(460);S72(226,261,265)
Costs not explicit consideration in requirements process; requirements accepted as gospel; problem is how to set up reasonable requirements; must evaluate worth; better internal checks and balances needed	S72(248);S81(23);H154(50,265,268);J42(1538)
Unreasonable adherence; ability to control, simplify limited; need continual, periodic evaluation	H83(7);H154(27,50,208,268); H144(1126, 1463)
Much cost increase tied to complex military specifications; unnecessary aspects costing money; hundreds of millions in savings possible through simplifying, upgrading	S72(242);J42(1547,1549)
Too rigid specifications worse than useless; overspecification frequent, costly ambiguities exist; seedbed of many problems	S72(109,110,125,127,481,491);H154(1308,1323)
Specifications have grown like topsy; are an accumulation of the past; no organized concern for specification management; ability to change difficult	J33(174,188);J42(1537)
Many specifications poorly written; make compliance impossible; emphasis on drawings not performance, not aimed at workability of design	H108(3);S72(271);J33(154,158,177)
Preparation a haphazard process; largely written by engineers; little attention to legal aspects; need service, vendor analysis; user participation is desirable	J33(187,188,290);J42(1589)
Experience shows many essential requirements ultimately waived; poor past record; conversely, more judicious use of waivers, deviation policy needed	H83(25);H108(2,5,12);J33(157,173)
Limit absolute system requirements; focus on broad military need initially; set performance goals, not detailed requirements	S68(3,25);H154(119);J33(157)
Allow range of performance; set goals at subsystem level; work closely with industry; technical documentation key requirement, cannot be ignored; shift burden to contractor	S72(126,484);H154(121);J33(228);H144(1334)

TABLE 29

## CONCERN FOR SOUND DEVELOPMENT DECISIONS

Selected Examples	References
Contract definition, total package concept is major cause of existing development problems; full-scale development based on systems analysis, paper studies	S68(33);H154(8);H144(1128); See Table 22
Development decision must rest on judgment; cannot place reliance on paper studies; need "proof of concept" before proceeding; prototyping can provide this	S68(1,3);S72(363,364); H143(1257)
Prototyping is critical step in sound development policy; plays important role in flexible, tailored strategy; bases decision on hardware demonstration	S68(4,37,45,47);S72(4); S81(5);H148(2506)
Use sequential step-by-step approach; can lower costs; combine with prototypes at decision points, where possible; make decisions incrementally through life cycle	S68(45);S72(170,196);J33(187)
Apply prototyping early in process; apply to small manageable units because of expense; manage with minimum constraints; allow flexibility	S68(3);S72(35);H144(1309)
Prototyping aids in determining technical, economic feasibility; confirms requirements; is part of learning process; all aspects have been past trouble spots	S68(3,4);S72(174,248); H144(1427)
Prototyping makes greater use of competition, reduces buy-ins; allows firm prices to be quoted; reduces time to evaluate; aids in source selection	S68(4);S81(6,8);S72(248); H154(24);H148(2505)
Can increase R&D costs; said to pay for itself in long run; should be cheaper overall; not always practical because of costs, size, complexity of development	S72(43);H154(285);H144(1362)
DOD policy, must build device to determine realistic cost, performance; small extra investment compared to return on military effectiveness; provide for cost schedule integrity	S81(6);H154(7)
Prototyping is not substitute for full-scale development; if done improperly, can cause fantastic increase in costs; not everything should be prototyped; requires judgment	S81(8);H148(2507)



TABLE 30

## CONCERN FOR POOR DEVELOPMENT STRATEGY

Selected Examples	References
Have failed to achieve effectiveness in moving from one system to another; pushing too fast for new systems; new attitudes on development needed	S68(4);H154(1313);J37(188)
Have experienced poor past performance; overwhelming technical problems; faced with rigid schedules; resulted in major cost overruns, massive system developments	S72(6,20,132,247,267,271);H154(116,243); Tables 24, 25
Large and integrated systems turn out badly; should avoid integrated development; make incremental improvements; costs found to be much lower this way	S72(20,130,169,170,248,267)
Total systems emphasis causes accumulated risks; everything being put into one large development; take positive action to get down to manageable size	S72(5,10,21,248);H154(10)
Eliminate simultaneous development of high-risk components; change, interaction has impact of great magnitude; resolve component problems first before systems integration	S68(34,35);S72(5,248); H154(11)
Make greater use of Government labs; focus on long-term level of effort; do independent exploratory and advance development; build in reliability and maintainability	S68(5);S72(10);H154(35); H143(1242,1244)
Return to practice of developing engine, armament, other components separately; not feasible for complete systems development on a prototype approach; will reduce complexity	S68(48);S81(37)
Recognize low overall electronic performance; requires 7-10-year development cycle; limit electronics to existing capability; develop separately; add-on	S72(242);H140(304,342,344)
Consider trade-offs between new and modified systems; always making new is extremely expensive; emphasize improvements in weapons; need continuity between successive series	S72(168);H154(10,14,37,244,263)

TABLE 31

CONCERN FOR INEFFICIENT SYSTEM DESIGN APPROACHES

Selected Examples	References
Refocus direction, attitude, training of engineers; engineering process may be contributing to overloading; reduce activities, documentation that divert resources	S72(146,187,492);H154(258,208)
Less engineering superstructure needed; make more use of engineering shop approach; "nurture" modest development design teams; keep design teams together	H154(263);S81(9)
Too many unnecessary people; too much splintering of responsibility; reduce excess number of engineers in both Government and contractor project offices; need chief systems designer in Government project offices	S81(26,28);S72(279,280,284,309)
Weaknesses in design synthesis exist; have caused many failures; problem in delineating responsibility; more systems integration can be done by Government	S81(5);H154(259);H143(1247,1248);H144(1496,1497)
Technical mismatch of subsystems occurring frequently; Government should accept more responsibility for continuity of goals; major systems interface is a problem	J40(771);H144(1463)
Increase time spent on design; foster increased design quality; rely on substantial practical experience to reduce cost	S81(6,28,37,40)
Improve Government, contractor teamwork; increase technical collaboration; put project personnel at contractor plant	H154(24,265,274,275)
Lessen controls over contractor by increasing teamwork; emphasize cooperation to achieve common objectives; combine designer, user skills and experience	S81(24,45)
Premature "lock-in" occurring; unreasonable adherence to Government specificity; much initial interpretation required; give contractor more flexibility, responsibility for performance	H154(1210,1211,1323,1343);J17(30)

TABLE 32

## CONCERN FOR INADEQUATE TEST AND EVALUATION

Selected Examples	References
Testing is integral, repetitive part of process; is critical aspect; must test in advance; departures have expensive consequences	S68(4,5,71,81,363,364)
Urgent need to improve operational test, evaluation; must confirm requirements; evaluate alternatives; no agreement on approach, objectives, outcomes	S68(3);S72(8)
Operational testing not started early enough; must identify user problems, suitability prior to production; premature commitments to production being made	S72(5,77,82);H108(3);H83(5)
Lack knowledge of operating environment, phenomena; only technical performance, system checkout measured; do not know type operational testing needed; no institutional methods, mechanisms available	S72(108,109,112,130)
Information system on combat effectiveness lacking; no one knows worth of incremental improvement of performance (SPEED), may be degrading; need relevant, real data	S72(109,131,157)
Failures traced to incomplete development testing; gloss over defects; sweep problems downstream; overly optimistic interpretation; failure to heed warning signals	H102(1);S72(33);H83(10)
Stated accomplishments not supported by test results; lack of progress covered up; failures not reported to higher ups; misleading reports, appearance of satisfactory progress	H83(5,12,14,15,16)
Test specifications violated by contractors; cases of reports being falsified; questionable actions taken to pass tests; poor inspection by Government alleged	J77(3,6,16,241,242,251,252,262,263)
Existing test procedures, practices questionable; test specifications outdated, costly; essential test aspects waived; Government-contractor responsibilities for testing unclear	H108(3,9);J42(1531,1536,1537);H83(35);S68(19)
Testers not independent from influences; funds are being diverted; progress not adequately monitored; objectivity of present system questioned	S72(8,27,33,82);H108(9)
Test and evaluation organization, responsibility fragmented; diffused at all levels; funding inadequate; no systematic review by decision-makers; tendency to ignore failures	S72(8,27);H108(1,5)

TABLE 33

## CONCERN FOR INABILITY TO CONTROL CHANGE

Selected Examples	References
Constant threat, rapid technology, strategy, economic changes, forces program changes; continuing problem over years; not completely soluble; most adjust to	S72(40,167,492);H154(267);J35(441);J42(1404);H143(1242)
Cannot eliminate, concern is with control of technical process; performance specification never firm; technical baseline evolves over time	S112(85);H154(124);J35(454,532)
Changes make up major portion of cost growth; sometimes engineering change exceeds original cost by 100%; can dominate; symptom of more fundamental problems	S72(167,385);H154(118);J35(494);J41(1134);J18(11);H143(1123)
Excessive number changes requested by Government major factor; inability to determine responsibility for deficiency and change; large systems slow to react	S112(85);S81(29);H143(1123)
Ability to determine "worth" of change limited; project manager may not be in best position to authorize change; not aware of total picture; complicates control	J17(221);H143(1123);J18(80)
Major factor in design cost; accumulative composite interaction effect is major concern; ability to determine life-cycle costs, impacts limited	S81(28);S72(5,7,363);H154(125)
Pricing negotiation is bottleneck; change orders tend to accumulate; actions deferred; accounting records not maintained; settle in lump sum, after the fact	S112(85);S72(403);J18(40);J20(12)
Maintaining cost control, change cost estimating is several times as difficult; need better techniques, capability, accounting; must control cost of chance for success	S72(40,385);H154(125);J32(23);J33(158);J35(379);J20(12);J17(222)
Cannot always estimate changes in advance; need better way to budget for contingencies; internal process, tracking should be improved	J41(1134);H143(1123,1159);J20(12)
Contractors use changes to get well; make up for poor planning, previous deficiencies; evidence of overcharge in half of cases examined by GAO; no way to verify overpricing	S72(40,403);H154(125);J35(314);J18(40,41)
Ceilings, thresholds should be set; changes priced in advance where possible; allow no fee or profit, reduce contractor incentive to change	H154(33,125);J35(441,532)

TABLE 34

CONCERN FOR INEFFICIENT TRANSITION FROM DEVELOPMENT TO PRODUCTION

Selected Examples	References
Major problem is concurrency between development and production; has led to unsatisfactory results; steep rise in cost likely to occur; major cause of overrun	S68(3,33,43);S72(86,172); J35(441,474);H144(1545)
Initial response to missile gap, felt national need, tendency continued; driven by urgency; gets weapon sooner; schedules considered sacrosanct	S72(19);H154(1434);J35 (446,473);J42(1303);H144 (1316)
Large number of examples of premature production decisions exist, did not evaluate seriousness of difficulties which arose, focus on justification of decision	H83(8,35);S68(37);H154 (104);J42(1388,1389);H143 (1257)
Inability to transition adequately between phases; lack assurance of design suitability for production; no one best way; requires analysis, judgment	H83(5);H154(104);H144 (1544,1545)
Inadequate early planning for producibility; failure to assess contractor capability; must consider ultimate production costs throughout	H63(3);H83(5);S81(8)
Concurrency forces contractor into untenable position; reduces his management prerogative; increases technical risks in production	H154(188);J42(1303,1387); H147(2103)
Cannot fully eliminate overlap; would lead to large cost increases; must make efficient use of manpower; concurrency can be cheaper in some cases	S72(26);H154(13);J35 (473);H144(1480);H147 (2103);H148(2500)
Establish measurable achievement milestones in design test phase; need to freeze design; provide for gradual buildup; minimize commitment of funds	H154(12,13,188);H143 (1169)
Need for greater austerity, efficiency in production; change profit structure, bidder pattern, contractor motivation; improve pricing, other contracting aspects	S81(33);S72(171,205);J42 (1446)
Rationale presented to separate R&D from production; make production major point of competition; technology relationship between phases may inhibit separation	S81(7);S72(168,171);J42 (1446);J17(69)

TABLE 35

## CONCERN FOR POOR EQUIPMENT PERFORMANCE DURING INITIAL DEPLOYMENT

Selected Examples	References
Evidence of poor equipment performance during initial field deployment; high number of major modification and retrofit programs; is extremely wasteful	H108(2);H140(342)
Sometimes only extensive field experience will show up many problems; indicates failure to correct deficiencies prior to deployment; degree of deficiencies significant	H83(9,28);H154(288);J33(181)
Difficulties attributed to not solving technical problems before or during production; problems usually known through testing but swept downstream, schedule major consideration	H83(325);H154(42);H143(1168)
Frequent changes impact production lines; requires extensive retrofit; stop and go delays deliveries; retrofit is costly, wasteful process	S72(32);J33(224);H143(1257)
Poor feedback of utilization data for planning, initial provisioning; provisioning started before design stabilizes, is costly; elaborate logistics organizations set up long before needed	S72(364);H154(304,307)
Significant cost problems associated with Government delay in delivering equipment to prime during production; caused by improper planning, other factors; major factor in contractor claims	S72(149,154,491);J33(158,159,169,177);H144(1308,1314)
Relates to system pressures; is an irrevocable commitment to production; fear of loss of confidence, loss of program funds; services drive to demonstrate competency	H83(5,6,22);S112(91);H144(1487)
Reinforced by overly optimistic progress reports, misleading information to Congress; project manager faith in ability to remedy deficiencies in short time	H83(5,12); Table 21
Much equipment defective on delivery; excessive amount stored for repair; has required rebuilding obsolete equipment; degrades combat capability	H108(2,5,12,16);J33(225)
Results in millions spent for modification to achieve design goals; investigations indicate extensive retrofit to provide combat capability; increases in effectiveness questionable in some cases	H83(5,6,9);S72(168);J33(225)



TABLE 36

CONCERN FOR POOR POLICY IMPLEMENTATION AND FEEDBACK

Selected Examples	References
Lack of integration in life cycle and functions; improvements fragmented, follow band-aid approach; process not streamlined; systems hidebound by procedures	S68(30);H154(118);H55(135);H143(1100)
Past policies contributed to excesses; new, less costly approaches needed; establish new attitude; change is long, hard process; must instill discipline, dedication, motivation in employees	S68(1,4,40);S72(4,7);S81(34)
New cost control policy may not have been communicated effectively; field feels DOD not serious; first requirement is willingness to accept change, make change realistically; control guided by experience	S72(6,169);J32(72);J40(591)
Assumption everything will be carried out according to rules is invalid; past directives not enforced by DOD; source of problem was policy implementation	H154(33,34,37,271);H148(2395)
Directives will not improve management; cannot write procedure to take care of every event; job of improving one of implementation, not management systems design	S72(306);J35(445);H143(1125)
Communicating "lessons learned" is a difficult task; no documentation, inquiry, or assignment of responsibility for mistakes; no machinery exists to analyze past performance	J35(288);H144(1429,1430)
Top management presently limited in ability to direct, monitor; people at high levels not sufficiently informed; external groups may overly influence actions, activities	H154(102,291);H148(2549,2557);J18(86)
No system to report back what actually happens; complaints often traced to misapplication of policy; man on firing line adjusts to actual situation	J35(289);J42(1531);H124(151);H148(2395)
Washington finds out only occasionally, accidentally; need dependable system to insure policy decisions are carried out; an acute need for internal communication, organized system of feedback	J35(289,304);H148(2378,2548,2547)
Feedback is a vital input for future decisions, programs; proper knowledge permits relaxation of controls; feedback will reduce system instability	J40(768);H143(1256);H148(2488)

TABLE 37

CONCERN FOR COMPLEX AND RESTRICTIVE REGULATIONS

Selected Examples	References
Procurement system grown like topsy; lost in sea of red tape, technical jargon; paper curtain, complex, risky financially	H124(14,15,146);J17(69)
Regulations ponderous, voluminous, excessive, duplicative, difficult to apply; overbearing in size, coverage too diverse, much updating	S72(88);S81(32);H124(46,188)
ASPR engulfed in steady stream of revisions; deals with too many specific issues, variety of special provisions; need standards of essentiality	H124(188,189);J17(67,68)
Armed services procurement regulations tie hands, stifle freedom; complicated by military business flowing through four separate sets of regulations; should apply selectively	S81(32,33);J32(9);H124(14,15)
Critics claim ASPR protects industry; DOD will not enforce; DOD wrongfully judging itself; no one in Government coordinating activities	J40(591);H124(15,29);J18(6)
Government slaves to strict regulations; have become substitute for judgment; attitudes, practices stifle efforts, causes inefficiency, raises costs	S72(88);J33(173);H124(14,147,150);H144(1543);J17(47)
Creates conditions for cost optimism growth, costly change; places heavy burden on contractor, takes away discretion; supervision, paper impedes prompt delivery at lowest cost	S81(40);H124(36,37,189);J17(63)
Need to reconcile statutes, regulations, practices, procedures; uniformity, simplicity, integration desirable; must evolve single set, in usable form	H124(12,46,150,188,189);J17(67)
Judicial decisions giving regulations force of law; provisions empower Government to give unilateral direction; rigidity enshrouds Government procurement	J35(284);H131(7,17)
Question raised whether procurement system can be improved; environment, complexity, technology dictate new rules of procurement	H144(1473,1474);H146(2006)

TABLE 38

## CONCERN FOR RIGID PROCUREMENT PROCESSES

Selected Examples	References
Serious changes needed; procurement delays alone probably set back technological progress 2 or 3 years in decade; need new, less costly approach	S68(1);S72(219,480,481)
Defense procurement problems require legislative reform; legislative oversight must improve; need action to put factors into perspective	J40(585);H55(173);H148(2491)
Procrustean approach needs attention; techniques have been too rigidly applied; DOD needs to reduce complexity, simplify requirements	J40(671);J41(1144);H140(242);H143(1103)
There is mismatch of contract type and nature of program; tailor the management tools to meet the needs of individual programs; provide flexibility	H154(164);H143(1103,1104)
Pendulum swinging back to medium approach; re-emphasize judgment; moving to cost incentive contracts; tailored to degree of risk	S68(37);S81(17);H154(164);H144(1543)
Government has removed itself too much; must set goals, work out interfaces; take more of financial responsibility; role out of proportion to responsibility	S68(19,20);J33(228);S72(5);H154(12);H143(1207)
Procurement workers indifferent, entrenched; civil service regulations thwart promotion of excellence; need major upgrading	Table 17;J42(1531,1542)
Procurement downgraded, process deteriorated; waste in military control, civilianize; separate from military; create new military department	Table 20;S68(10,11);J35(308,309)
Need better relating of procurement function to system cycle, other functions; procurement cycle too long; find new ways of formulating contractual structure	J35(308,495);H140(134);H143(1100,1101,1239);H148(2389);J18(80)
As technology advances, size increases; continuing need for advances in state-of-procurement art; need continuing policy research; development of advanced techniques	J35(288);H140(134,135);H148(2383)

TABLE 39

## CONCERN FOR DEFECTIVE PRICING

Selected Examples	References
Overcharges accentuated by lack of compliance with Truth-in-Negotiation Act; increased costs have resulted; widespread violation of law (1967)	J40(586);H124(98);J12(1,3)
Act has not been effectively implemented or enforced; need still exists for improving practices (1969); problems continue to exist (1972)	J40(578,581);H55(171);H142(904)
DOD has problems implementing the law; contracting officers must secure information, follow up on contractor provisions; establish post-audit program	J41(1147);J12(3);J17(8,43)
Contracting office records poor; questions on currency of contractor data; failure to obtain accurate, complete information; competition questionable	J33(50,51,52);H124(98)
Difficulty in determining evidence, justifying exemptions; use of identical bids found; violations at subcontract level are even greater	J40(587);J41(1092,1178);J18(33)
Contractors reluctant to give Government this information; serious loopholes exist; contractors often devise methods to avoid obeying the law	H55(171);J17(41);J18(29)
Many contractors fail or refuse to comply, confrontation with steel companies prime example; DOD reluctant to act	S72(502);J40(588);J41(1176,1177);J42(1404);J18(34);H55(171)
Concerted effort needed; strengthen compliance; use DOD economic leverage, refuse to pay violators; refer violators to Justice Department	S72(503,509);J40(589);H55(174);J17(105)
Reexamine law; assumes cost profit can be measured; contracting officers can bypass act; requirements can be waived	H124(45);J18(31,39)
Need prescribed standards; contracting officers in effect set policy in each case; must require certified report on costs, profit at completion	H142(904);J12(3);J18(6,28)

TABLE 40

## CONCERN FOR EXCESSIVE, UNSUBSTANTIATED CONTRACTOR CLAIMS

Selected Examples	References
DOD experiencing problems in holding contractors liable; claims being used to bail out contractors; the coming home of sophisticated policy; DOD highly vulnerable	H108(4);S72(491,501);J33(156);J40(581);J42(1469)
Claims turn contracts into cost plus; used as remedy for loss; eliminate risk; \$1 billion outstanding, never so high; continuing; affects credibility	S72(482,495);J40(164);J41(1088);J42(1223,1441,1444)
Primarily Navy; four principal factors: inaccurate planning, poor written specifications, change in requirements, late delivery Government-furnished equipment	J33(153,154,159,169,171,173);J42(1347)
Odds favor contractor in settlement; can repeat; serious legal matter; adversary proceeding; requires major surgery	J33(152,148);H55(162);J18(42)
Government competency in settlement methods questioned; some claims treated as change orders; provisional payments made	J42(1269,1270,1272,1461);H55(161)
Headquarters group not bargaining, holding contractors feet to fire; responsibility given to flag officers; said to bypass lawyers	J41(1115,1117,1119);J42(1385,1447,1478)
Question of preventing payment; contractor, political pressure alleged, combined with need for equipment; Navy caves in	J42(1467,1488,1528)
Government not equipped; contractors have large legal staffs bent on getting as much as possible; Government indirectly pays cost of claim	S72(500);J42(1468);H55(159,160,161,162)
Claims lack tangible evidence; show excessive man-hours; contain uncertified data; not supported by accounting records	J33(167);J40(712,838);J42(1226,1346,1384,1442,1460);H55(160);J18(40)
Critics claim Government taken to cleaners; exact difference between proposal, actual costs; once Government makes partial concession, contractor in driver's seat	S72(510);J42(1461);H55(160);J18(40)
Policy ineffective; need additional guidance at working level; set up claim-free period; new clauses developed	H154(203,218);J41(1115);H55(162);H124(45,189)

TABLE 41

## CONCERN FOR VALID PROFIT INFORMATION AND POLICY

Selected Examples	References
Profits obvious starting point for investigating DOD procurement; level profits key indicator of efficiency; important because price competition limited	H154(59);J40(571);J17(5,17)
McNamara's previous efforts to raise profits, strengthen incentives failed; weighted profit guidelines developed to stimulate; guidelines did not achieve objectives	S72(133);J17(10,11,105)
Study shows 1964-67 profits up; later LMI, GAO studies controversial; show generally average to poor profit picture, but data suspect; inconclusive, restrictive	J41(1087,1107,1155);J17(43,108,111);J20(17);H156(120)
Renegotiation act ineffective, board hobbled; band-aid operation; understaffed, not subject to outside review; need better data, basis for making determination	S72(495);J41(1139);H55(171,175);J18(11,29)
Loopholes can shift profit year to year, conglomerates can conceal escape clauses; public being misled, no assurances; board is buffer, contractors happy, legitimizes profits	S72(503);J40(576,837);J41(1089);H55(170);J17(242);J18(29,30)
Critics claim excessive profit; experience shows contractors understate; ROI compared with Fortune 500 is high by 40-50%; prime, sub profits compounded; is a concentrated industry	J40(577);J41(1096);J17(57,61,161,213,242);J18(13,92);H156(10,11)
Defenders claim concern should be in opposite direction, Government contracting is low-profit business; no evidence profits too high; health of industry at stake	J35(317,445);J40(1145,1155);J17(60,120);J18(125);H86(183)
No one knows; are handicapped, do not know if doing weak job or overzealous; cannot establish effective policy; cannot account to taxpayers	J33(2,53);J35(317,319);J40(572,593);H55(157);J17(5);H156(44)
No way to get comprehensive, reliable study based on audits without excessive costs; virtually impossible without standards; forced to develop own conclusions	J40(1065);H55(157);J18(5,8);J20(15);H156(45);J28(3)
Require contractors to submit certified annual report revealing profits; disclose profit by elements of business; frame rules similar to utilities	J40(571,572,595);J41(1206,1212);H55(174);J18(6)



TABLE 42

## CONCERN FOR COST AS A BASIS FOR PROFIT

Selected Examples	References
DOD profits tied to cost, does not provide incentive to improve efficiency, control costs, invest; one of few agencies where this prevails	H154(142);J35(447);J40(583,860);H156(87)
Operates in reverse of typical commercial decisions; tendency to goldplate, produce weapons in excess of need; maintain bare facilities	J17(225,231);H156(87)
Policy partially responsible for increased cost of military hardware; biased toward labor-intensive processes, away from modernization	J42(1274);J17(225,226)
Rewards inefficiency; no effective mechanism to reward, penalize contractor performance; based on how much he spends	H154(142);J40(574);H55(156);H140(126);J17(160)
Changes in allowables; tightening rules, greater limits on IR&D; other downward pressures; further erodes profits; is long-range problem	J41(1207);H140(133);H86(156,183,193,195)
Must give attention to total invested capital as criterion for profit objectives; use ROI but balance with complexity, risk, other factors	S72(408);J35(443);J40(860,1066);J17(58);J18(52);H156(21)
Focus has been on weighted guidelines, capital employed; only minor consideration; only 1% penalty being assessed; not adequate	J17(224);H156(21,48)
Revise regulations; specific techniques have been developed and practicality tested; enough demonstration to act; time to act, progress has been slow	S72(509);J35(445,446);J40(840);H156(50)
Disregard what contractors feel, do what is right; DOD must begin to take contractors' investment into consideration; Government-wide guides advocated	J35(448,574);J40(727);H156(87)
System must change; leery ROI will not motivate contractors to invest; furnishing Government facilities, progress payments must also be addressed	J35(562);J40(727);J41(1275);J17(11);J18(72)

TABLE 43

CONCERN FOR CONTRACTOR INVESTMENT DISINCENTIVES

Selected Examples	References
Some companies depend heavily on Government-furnished plant and equipment; gone too far in past; affects quality, cost, efficiency	S81(6,7,38,39,43);J40(615);J17(11)
Have \$15 billion worth of Government-owned property; can get along with very little own capital; no incentive to invest; significant cost impact	J35(447);J40(583,835)
Government property used for commercial activities; prime does work in-house normally sub-contracted, bids against small business; huge competitive advantage	J40(599,600,601,603,848);H148(2417)
Many abuses; DOD routinely authorizes use; rental rates hopelessly inadequate; poor methods of accountability, inventory control	J35(447);J40(598,601);J41(1217);J17(23);J18(45,46);J20(6)
DOD announced policy to divest itself to maximum extent (1967); has restrictive policy on additions; little effort to reduce holdings; non-responsive	J40(607,729,842,846);J41(1172);J17(22);J18(6,46)
Takes advantage of loopholes; sale, leaseback cost \$100 million to Government versus use of Government-owned plant; no distinction made on determining contractor profit objective	J17(11,13,14)
Progress payment creates similar disincentive to invest; \$5 billion held by contractors for work in process; routinely paid; is free provision of working capital	J35(562);J42(1399);J17(64,65)
Evidence of excess payments; contractors paid more frequently; far greater than authorized; deviations made without proper authority	S72(383);J42(1343,1344,1414);H55(168)
Problems aggravated by Government disallowance of interest rates; contracts not of sufficient duration to permit adequate depreciation; policies not related to return on investment	J42(1185,1186);J17(65)
Allows capital investment to be small; avoids interest rates; collects for subs' work prior to paying; cases of working capital larger than assets	J42(1395,1413);J17(65)
Substitute private for Government capital; eliminate negative incentives caused by Government; reduce competitive advantages	J35(562);J17(23,66,70);J20(6);H156(47)

TABLE 44

## CONCERN FOR FACTORS REDUCING COMPETITION

Selected Examples	References
Small business discrimination starting with award, through renegotiations; double standards by DOD in enforcing law; projects go to large industries	J40(598);H55(169);J17(4,3)
Policy of favoritism toward large contractors; close previous relationships exist; driving out small business; someone must speak out	J42(1529,1538,1542,1544,1545);J12(47)
Defenders claim do small business disservice by giving them prime contracts, can't play in league; do not know rules of game; most defaults by small businesses	J33(170);J35(311,312);H124(132)
No time to fool around with small business; don't know details, lack information; public exigencies used; DOD's trying to increase bidding not true	H108(11);J42(1539);H140(132,133)
Set-asides save money; some evidence of misuse; evidence of neglect; need ways to protect small business; medium-sized companies also have less chance	H108(9,10);S72(52);J42(1545);H124(132);H131(22);J17(3,62)
Small business used as whipping boy in declining base; suggest policy of long-term shutout; threat to free enterprise economy; not intent of Congress	J35(311);J17(2,3,56)
Information visibility lacking; need to know more about impact; provide central information; potential in subcontracting; increase ratio of large to small businesses	H124(132);J17(51,52)
DOD has giveaway patent policy; Government pays cost of development; has right to any features; question whether data, patents should flow to Government	S68(47);J18(46,48);H86(17)
Normally retains only royalty-free license; does not get rights under IR&D; need to clarify rights of Government and contractors; many complaints about infringement	H124(12,44);J18(47);H86(10,11)
About 90% of patents never used for commercial work; half owned by 20 largest companies; significant number from IR&D; dual standard in dealing with inventions	H124(49,50);H86(11)
Tighten patent laws; would weaken industry; could endanger public interest; further economic concentration, reduced competition	J17(70);J18(70);J20(7);H86(80)

TABLE 45

CONCERN FOR CONTRACTOR PRICING STRATEGIES

Selected Examples	References
LOH aircraft program classified as buy-in; source selection characterized as auction; contractor decided to enter business; resulted in price increase, poor performance	H63(3,14,15,16)
Total package procurement developed to prevent buy-in; did not succeed; C-5A good example of competition in DOD environment; Government admits contractor bought in	H140(67);H143(1200,1205,1207);J17(7);Table 22
Military demands performance; sets exacting requirements, but program based on available funds; STOL recent example; buy-in probable	S81(36,42);H148(2289);Table 14
Selection should not be based on promises; paper analysis will not resolve uncertainties; at disadvantage in assessing capabilities	S72(174);S81(39);H154(121)
Competitive pricing in development has led to underbidding; insist at beginning that there not be cost competition; cost, pricing certificates not answer	S72(5);S81(35);Table 39
Contractors always hope for program, engineering changes; expect to get bailed out, fundamental DOD-industry problem	H154(121);J42(1442);J17(104,130)
Practice will not stop unless discipline tightened; no penalty; no guide in ASPR; takes guts to stand up; difficult to prove	H154(120);J42(1266,1402)
Buy-in to get production; lock-in by full-scale development; only practical source; are victims of process, evolution of structure	H154(8,9,10,15,71);H148(2510);J17(103);Table 48
Cannot prevent as such; sometimes saves money; concern is on financial strength of contractor; Government must accept more responsibility	H154(12);H140(67,68);H143(1205)
DOD policies of fly-before-you-buy, prototyping, incremental decision-making, increased test and evaluation will help; not complete solutions	Tables 30,31,33

TABLE 46

## CONCERN FOR OUTMODED CRITERIA FOR COMPETITION

Selected Examples	References
Formal, advertised procurement tries to fit noncompetitive procurement into mold of yesterday; simply cannot be made to work in vast majority of cases; overemphasized	H146(1767);H148(2397);J18(8,10)
DOD regulations based on competition as rule, rather than exception; regulations and practices disjointed; out of touch with real world; archaic; result in loopholes	H146(2001,2006);J18(10,18)
Accepting lowest bid price can be serious problem; many low bids suspect; indiscriminate use, use for complicated products may actually result in higher prices	H124(41);H146(2006);J18(10,18)
Advertised bid is bare-bone estimate; no contingencies; tend to get little but lower price, get better product with negotiation; use lowest sound price criteria	H154(10);J35(301);H86(155)
There is danger of excessive competition, wasted resources; C-5A is prime example of costly competition; approaches, methods need simplification	H146(2014);J17(313); Table 37
There are better ways of getting competition, other than costs; only going to save money with trained negotiators; can question, explore soundness of proposal	S72(30);S81(35);J35(312); H146(2007)
Archaic techniques, no relevance for buying complex technical products; cannot be used without specifications, for classified projects or to buy knowledge, etc.	J41(1091);H143(1309);H146(2001,2005,2006);H148(2397)
Need to recognize other methods is vital; advertised bids declining substantially; down 10% by 1968; GAO questions whether advertising fulfills intent of Congress	J33(46);H124(187);J17(5,8,74)
Congress treats advertised bid as sacrosanct unnecessary pressures; fear that forthright opposition would result in more restrictive legislation; need clear definition	H140(74);H146(2006,2007,2010,2013);H148(2397)
Laws should be amended, deemphasize formal advertised procurement; advertising overdone; eliminate fiction of need for citing 17 exceptions; define competition broadly	S72(509);J33(169,170); H146(2002)

TABLE 47

## CONCERN FOR CREATING MORE COMPETITION

Selected Examples	References
Subcommittee urges greater use of competition; noncompetition accounts for 57%; much higher than in past; DOD's biggest challenge	H108(45);J42(1554);H140(134);J17(69)
DOD needs improved management; did not attempt to get company cases; public exigencies misused; no coordination between services; separate organizations	H108(8,12,17,42);J41(1352);J12(1,3)
Too much sole sourcing; for example 7 years with one source; higher costs; tendency to perpetuate; special vigilance needed	H108(24,40,41);J42(1532,1537,1547)
Relying on substitutes for control, motivation, incentive; contracting is example of not being adequate, need competition to set good target costs	J17(167,168,169)
Strong IR&D most important factor in competition; R&D and competition synonymous; maintains industrial base; several technical approaches, some duplication good	H86(62,69,84,96,248,256)
DOD emphasizes technical design competition; is intense; used to qualify bidders; strong incentive to present lowest price; further price analysis required	H154(14,31,70,110,155)
Defense contracts highly competitive; Government gets several bites at apple; uses cost-effective analysis; competitors in wings; need to keep competition in subsystems	H154(10,77);H86(155)
DOD cannot make more use of competition; has few, massive systems; depends on acquisition strategy, characteristics; tailoring competition to situation	S72(6,248,482);H143(1104);J17(223)
Shift in emphasis; break down into small manageable units; primes have solid competition at sub level; have strong monitoring, review, audit	S72(23);H154(11,24,77);H140(85);J18(9);J17(69)
Consider other ways to increase; broaden competitive base; use in-house for design, competition for production; break out more subsystems; widen participation subcontract level; reduce advantage of using Government assets; tighten patent policies	J17(69); Tables 43,44,48



TABLE 48

CONCERN FOR LACK OF PRODUCTION COMPETITION

Selected Examples	References
If development selection is competitive, cannot, as a practical matter, turn to anybody else for production; cannot introduce competition far down road; a major problem	H154(12);H143(1186,1187);J17(13)
Separate development from production, pay for separately; reduce profits from production proposed; need creative, technological interrelationships, interfaces	S72(168,170,171,205);S81(7);J37(246)
Many contractors at lower levels; component breakout, wider participation of subcontractors have potential; must push primes harder	S72(163);H154(77);J33(227);H140(76);J37(246);J12(12)
Several methods suggested: parallel development testing, licensing, leader-follower, and validated data package; all have major limitations, weaknesses	S72(212);H108(28,29);H144(1545)
Second sourcing primary consideration; Government often lacks technical data for competition; no concerted effort to obtain data; new contractors often unsatisfactory	H108(25);S72(163);H144(1545);J17(6)
Cost of second source is critical decision; additional sources cost money; volume must be sufficient to justify; timing, availability major problems	H108(411);S72(163);J33(230);H140(73);H144(1545);H146(2006)
Utility questioned; fear money spent would be wasted; much technical data generated early in program of little worth; tough problem deciding on data required	H108(26,27);S72(220);H140(73);H143(1489)
Very rarely have adequate specifications for item; cannot rely on technical drawings; have trouble transferring technical production processes; company processes differ; question of ownership	H108(28,41);H140(72);H144(1377)
Project offices need to tighten control over technical data; beef up quality; learn how to handle masses of data; engineering changes, resignation is common problem	H108(29,42);H144(1378)
Only limited success in increasing production competition; some use of in-house design made but broad opposition; limited production only way to increase degree of competition	H108(28,29);H140(73);J17(6,212,213)

TABLE 49

## CONCERN FOR GREATER SUBCONTRACTOR COMPETITION

Selected Examples	References
DOD policy changed to break down massive systems to subsystems, major components; carry out competitive development prototyping; tailor program strategy	Table 29;J27(9);H104(11)
Questions raised on small business subcontracting; generally nonconducive environment; discrimination, favoritism, lack of interest, bears brunt	Table 44
Generally there is no true competition in subcontracting; question is what is being done to spread subcontracting potential; inadequate use of competition	J33(252);J40(572);J42(1407)
Primes pay little attention to getting best price, cost can be passed on to Government; lower prices possible through negotiation with subs; prime must assume more than normal responsibility	S81(9);J40(572);J42(1353)
Usually does not make sense that DOD can only use sole sources; attempts made to get bidders and cannot is questionable; neither DOD nor contractor overly concerned about problem	J42(1405,1539);J18(15,34)
Subcontracting hidden part of iceberg; should collect complete data on subcontracting competition; DOD says it cannot keep track of subs	J35(313);J18(33);J20(8,31);H86(110)
Have little information for policy formulation; do not even know how much subcontracting is carried on; collection of data on subs is inadequate	J17(51,52,71);J20(7);J28(3)
There is lack of Government information to prospective bidders; no central place where assistance, direction are available; need education program, help with details	J35(312);J42(1532);H124(132,133)
Bigness fact of life, need greater competition in subcontracting; need to break out more subsystems; wider participation necessary	J42(1407);J17(69,70,222)
Opportunity for increasing competition at subcontractor level exists; there is no question DOD should stimulate interest; potential is great	H144(1352,1459);J17(51)

TABLE 50

CONCERN FOR WEAKNESSES IN THE VARIOUS TYPES OF CONTRACTS

Selected Examples	References
Mismatch of contract type and nature of program; emphasized contract definition, led to overconfidence; overzealous application of fixed-price contracting; ASPR promoted	H154(32);J33(49);H140(241);J17(129)
Use of fixed-price contracting is asking for trouble; contractor has gone too far in development; too many technical risks; significant unknowns; retarding research, new information	S72(31);H154(2);J35(387);H140(80);H143(1124)
Could not be changed to absorb additional costs; no flexibility, must either convince contractor or open up contract to changes; contributed to large number of claims pending	J33(169,248);J35(387)
Cost control cannot be relegated to contracting; high incidence of changes negates control; adds significantly to cost; provisions for relief turn fixed-price into cost-plus contract	H154(126);J35(475);J41(1215);J42(1350)
Government cannot control costs as such, costs controlled by administrative regulations; cost principles do not apply to fixed price, but Government uses as guide; controversy, delays abound; lead to anxiety, frustration	J17(4,122);J18(5,28)
Premature use of price competition; technical performance, not price, is focus; contractor motivated to overstate cost, benefits; pushed further by Government	S72(134);J17(50,130,217)
Production options attempt to insure price competition into production; cannot make estimate for development called for later; fixed-price successive target concepts may help	S72(215);H154(71,86,187)
Cost-plus-incentive-fee is preferred method; realization that contractors cannot operate without overruns, pushing state-of-art; over-control considered costly, detrimental	H154(33,74);H124(151)
No longer want industry to take risk of R&D; cost-plus represents a more reasonable sharing of risks; contractor risk now is out of proportion	S68(37);S72(5);H154(81,262)
Incentives under cost-type contracts undoubtedly weaker; stimulation by fear of loss gone; require more management control, audit, expert in-house capabilities	S72(164);H154(10,68,96);H140(85)

TABLE 51

## CONCERN FOR EXCESSES IN CONTRACTING PROCEDURES

Selected Examples	References
RFP and resulting proposals beginning of paper work problem; size alone is significant, as much as 3 tons of paper; responses can cost contractor \$2-3 million	S68(21);S72(23,91);H154(9,258)
Government asks for more than it needs; should limit to essential requirements; services have acted to reduce size of RFPs, simplify process, reduce costs	H154(9,310);J35(496);H86(112)
Need to clearly draft RFPs, need to get visibility over unusual requirements, conditions; emphasize proven capability, adequacy of resources, selection criteria	H154(308);J42(1531);H86(112)
Need to improve practices used during source selection; 300-man teams involved; delays in processes, late contract definition, funding; letter contracts common	H108(41);S72(23,480);S81(33);H143(1239);J17(129,130)
Selection is tough, complex; heavy pressures; very subjective decision; major problems in interpretation, weighting; easy route is to take low cost, high performance; ignores right cost	S112(1);S81(34);H143(1260)
Some evidence of misawards during period; circumvented top-level policy; awarded despite poor production capacity and conflicts of interest; misawards considered widespread	H63(3,7,8,16,17);H108(5,23,24);H156(1);H100(1)
Negotiation was art until 1962, now is statutory formula; must negotiate all bidders in range, there is greater rigidity in administration; more protests	H143(1259,1260,1261,1262)
Government outgunned in negotiations; failure to protect Government interests; one Government negotiator faced by industry battery; need for highly talented teams	S112(83);J35(303);H124(183);H140(311)
Government has inferior information resources; helpless position, contractors hold crucial cost, pricing data; needs more cost realism	H154(310);H140(56);J12(8);J18(31)

TABLE 52

## CONCERN FOR MISAPPLICATION OF INCENTIVE CONTRACTING

Selected Examples	References
Incentive contracting probably not increasing contractor efficiency; offered as basis for controlling overruns, but has not; weakest aspect is generating incentive for tight cost control	S72(163);H146(107);J17(158)
Advantage claimed for making financial incentives to reduce cost may be exaggerated; overall cost/benefit considered adverse; probably cost Government more than saved	J17(167,220);S72(158,153)
Appears contractors not motivated; incentive still on providing system that costs more; tendency is to minimize risk, develop earning strategy; may cause upward shift	J17(220,231,242);H143(1160)
Cannot suppress high target costs, which are inflated, overstated; may cause upward shift, underrun; experience shows increase in both profits, costs	H140(78);H143(1160);J17(168,188);J20(13)
Questionable without competition; targets negotiated in noncompetitive environment; since there is no threat to competition, will overstate cost estimate	J17(217,169,168,167)
Negative incentives experienced; repricing formula of C-5A cited; if contractor found himself in vastly overrun position, can cut losses by increasing overrun	J32(23);S72(134);H140(107);J17(277,295,298)
If not properly structured, tends to destroy inherent incentives; problem in multiple incentives to motivate contractors to make tradeoffs in Government's best interest	H140(78);H143(1231);H146(2011);J17(124)
Incentives on redundant, impractical aspects; offered for items in specifications and for unrealistic delivery; need concentration on end results; more guidance to officials	H140(79);H143(663,739);H144(1546);H146(2011)
Strong contractual incentives in early development not very effective; not appropriate for research exploratory development; is future for award fee plan in R&D	S72(134);H143(1125,1130,1131)
Incentive contracting forces parties to define objectives; is endorsed by policy; evidence suggests not accomplishing objectives; warrants reveal buyer-seller relationships	H146(2011);J20(13);J17(161)

TABLE 53

## CONCERN FOR COST ESTIMATE ACCURACY

Selected Examples	References
Cost estimating too widely credited with accurate predictions, precise problems not foreseen; affects DOD credibility; of critical importance	S72(7);H154(306);H143(1102,1159)
Experts say cannot estimate with better than 30% accuracy; no counterpart problem in industry; height of folly to pretend one can estimate production 5-7 years later	S72(132);H154(98,99);J35(561);H143(1160)
Constantly being assailed by critics for firm figure; inability to explain, affects public confidence; political, economic, technological changes impact severely	H154(108,110,196,306)
Cost estimates consistently overoptimistic; system pressures, motivation creates bias; is basis for overruns; must improve	S72(89);H154(7,197,309);J35(440);H140(137,138)H148(2401)
Economic instability major problem; excessive inflation and cost escalation contingencies; over time, ships estimates come within 2%, Congress did not make requested funds available	S72(290,487);H142(137);H148(2394);H154(109,110)
Parametric cost estimating offers potential, but limitations must be acknowledged; heavy reliance raises question of adequate policy	H154(303);J20(13)
Need statement of precision; need confidence in estimates; only gross estimates are possible initially	H154(194,309);J35(532)
Methodology must be improved, but some feel has reached limits of capability; some improvement in application possible	S72(152,168);H144(1307,1308,1324);J17(223)
Cost analysts' capabilities must be upgraded; more coordination, interchange between services needed; overall training in use of cost data required	H154(25,99);J33(200);H142(683);J20(14);J17(132,154)
Need more extensive, uniform cost data, cost data bases; present system is new; development is long-term proposition	S72(7);H154(98,99);H140(91);J17(223)
Root problem not understood; new high-level, cost analysis groups not answer; independent cost estimates only partial check	S72(494);J17(132)
Must look for alternative means of improvement; Congress must insist on cost realism, detecting underestimates difficult; cost can only be determined by building device	S72(28,494);H154(7);H148(2401)



TABLE 54

CONCERN FOR LIMITATIONS IN PRICE ESTIMATING

Selected Examples	References
Adequate price competition not available; must have way to deal with contractor buy-in; without adequate cost analysis, unable to control	H154(108,109,124,143);J33(42);J35(460);J17(223)
Both system and price analysis overly dependent on historical costs; inefficiency not challenged, DOD accepts current ways of doing business	H154(303,309);J35(450)
Incorporates inefficiencies, malpractices from past; misapplication of learning curves present, accepted; said to be up to 50% higher than should be	H154(144);J17(160,223);J20(13,14)
Should-cost techniques make in-depth analysis of what is used to build up cost estimate; employed in proposal evaluation; evaluates contractor efficiency; vehicle for capturing potential savings in negotiations	H154(144,310);J32(65);J33(41);H144(1381,1390)
Basic industrial techniques used by Sears, others; strength within Government lies in coordination and integration of fragmented procurement methods	H154(124);J35(362,364)
In contrast to will-cost, should-cost studies show significant improvement; one case of 30-35% inefficiency proved, 18-34% second case; application not repeated	J33(159);J35(476)
Considered to be doing part of contractor's business; ought to be part of on-going Government plant representatives' practices; reflects on past and current procurement practices	H154(200);J33(162);H144(1391,1419)
Cannot be realistically applied in R&D; limited application for spotting overruns; needs highly trained, motivated group	J33(209,210);J35(373)
Look at should-cost for post-award application; could be used as management audit of plant representatives' work; need better access to data, apply plantwide, across services	J33(367);J40(725);H144(1396)
Considerable opposition; claims reflect on job performance, is part of normal job; some critics claim lack of motivation, desire; no plans for country-wide implementation; should-cost considered to be part of evaluation	J33(42,45,160);J35(450);J41(1140);J42(1418,1420)
Critics say room for greater application in DOD procurement; should have full-time staffs, regular checks	J33(40,162);H144(1391,1394);J17(214);J28(4)

TABLE 55

CONCERN FOR PROLIFERATION OF MANAGEMENT PROCEDURES

Selected Examples	References
Proliferation of Government management systems; detailed management practices and procedures required; resulted in massive paper system	S72(377);H154(101);J17(156,757)
Excessive Government oversight of contractor management operations; large management structures exist; use too many people, too much data	S72(157,217,218,311,377)
Pentagon progress reporting involves hundreds, generates paper which nobody reads; implementation of effective management system yet to be demonstrated	S72(28);J33(204);J28(4)
Government requirements not uniform across services; sets up duplication with contractor systems; costly, complex, conflicting	H143(1104);J17(129,131)
Excessive documents, reports must be reduced; divert technical attention, action; problem is in determining reasonable levels, price for data	S72(226);H154(232,258,303)
Size of proposals unwarranted; 200,000-page proposals involved; paper contract definition costly, not adequate to demonstrate contractor capabilities	S81(21);H154(258)
Large segments of engineers' time devoted to systems engineering, configuration management, bills, technical performance evaluation, "ilities"; most requirements could be delayed, reduced; system attempts to legislate	S72(491);S81(21);H154(258);J17(129,131)
Contractor management reporting excessive; undue emphasis on management techniques; Government involved in implementing detailed PERT networks	H154(128,303);J17(129,131)
New contracting methods require more management control; need new concept of control; teamwork, co-users of contractor systems, clear, unequivocal contractual arrangements needed	H154(11,306,313)
Complex management problem; need to strengthen contractor information systems, internal audit; improvements are evolutionary, increase service capabilities, integrate techniques and procedures	J35(473);J42(1490);J17(229)

TABLE 56

CONCERN FOR INEFFECTIVE PROGRESS REPORTING TO TOP OFFICIALS

Selected Examples	References
In 1969, no central DOD information on number of systems and costs; SECDEF not informed on progress on day-to-day basis; no way for individual congressmen to know status of any particular program	J33(6,8,196);J35(452)
Selected acquisition reports (SAR) initiated; response to keep Congress informed; many problems in reporting exist	J33(2,3,5,6)
Considerable information withheld; many inconsistencies in data; procedures not uniformly applied; needs refinements; should be used for management at all levels	J33(9,12,204);J35(378,566,568)
Reports not sufficiently encompassing; inability to explain cost growth; cannot look at SAR and tell where problems are	J33(9,382,392)
Original cost estimating baseline questionable; underestimation perennial problem; no provisions for cost escalation; changes, significant, pending decisions not reported	S72(8);H154(105);J33(10,11,16);J35(454)
Original estimates made on very sketchy technical information; no technical performance measurement; entirely subjective appraisal	J33(9,37);J35(378)
SARs not designed to show systems cost to date; costs incurred not related to physical progress; cost status appears to be entirely subjective estimates	J33(10);J35(380,381,454)
Lacks functional cost data for comparison; no cost history available; accounting systems do not lend themselves to aggregate reporting	J35(378,379,392,393,466,541,542)
Progress review process counterproductive; excessive briefings, numbers of reviews; no clear-cut intermediate-level responsibilities; need face-to-face reporting for clarity, fidelity	S72(299,305,306,311,331,471,472);H154(171,272,289);J40(786,787)
High-level staff interference at operating levels; continuous, numerous studies in project offices; excessive visits to contractor plants	S81(18);H154(18,215);H55(142,149)
Top-level DSARC review questioned as effective control mechanism; get advocacy view; no independent assessment	H154(102,103,104,289)
Reporting system no panacea for cost control problems; mere existence of data not enough, needs analysis; problems surface 1-2 years late	S72(154,356);H154(104);J35(444,490);H144(1307)

TABLE 57

CONCERN FOR INADEQUATE PERFORMANCE MEASUREMENT SYSTEMS

Selected Examples	References
DOD lacks discipline, interest in contractor cost control; considerable unwillingness, internal resistance	J32(39,147,149);J35(445); J17(28,158,230)
Cost control problems not recognized; extreme shortage of personnel qualified in tight control; must fight folklore that quality will suffer; Government must take initiatives; cost can be reduced	J32(147,148);J42(1350); J17(211)
Far too much reliance on fixed-price contracting; high incidence of change reduced benefit of instrument; Government disengaged without adequate control	H154(126);J17(157)
Shift to cost-plus contracting dictates need for measuring progress versus work planned; must be able to summarize progress; tie to accomplishment milestones	H154(128,129)
Past policies and practices in cost control major reasons for cost growth; success or failure lies primarily within management controls of project manager; has not had adequate systems	H154(129,303);J32(152); J35(473)
Make cost control, not fiscal control, key objective; fund management important, but not tied to work accomplished; can only tell financial status at end of project	H154(104,127,304);J32 (102,146,152);H143(1246)
Contractor performance measurement system commonplace in commercial companies; application for Government relatively new; major claims for improvement made	H154(126);J17(160,161)
Need uniform work breakdown structure; must conform to natural process of contractor; key to integration, transferability of information	H154(98);H143(1141,1249)
Contractors' systems inadequate to control costs; weaknesses in budgeting work, estimating system, budgetary controls; fails to pinpoint overruns, major reason for price increases	J33(251);J40(694,695);J42 (1347,1386);J17(213)
Validating contractor cost schedule systems on site relatively new; in 1970 only 13 of 50 companies passed review; need greater certainty in reporting to Government	H143(1232,1251);H148 (2395)
Government technical performance measurement inadequate; ability to anticipate poor; must have system to augment on-site technical evaluation	H154(101);J33(272,273); H144(1307)

TABLE 58

## CONCERN FOR INEFFICIENT CONTRACTOR ACCOUNTING PRACTICES

Selected Examples	References
Many financial accounting practices questioned; significant inconsistencies; different ways to compute sales for proposals, profits; numerous alternatives for determining costs	J40(574,575);J18(27);H156(45)
Cost accounting practices inconsistent; poor handling of material, subcontractor cost; little uniformity within industry	J17(157);J35(443)
Studies show consistent deficiencies in contractor internal controls; excessive reliance on manpower controls; lacks organizational visibility over performing divisions	J40(695);J17(157)
Accounting systems cannot account for price of change; cannot adequately determine unit costs; can misassign costs between R&D and procurement	S72(403);J17(217,221,222,174)
Absence of definite Government requirements for meaningful accounting records; examples of costs not segregated by item work order contract; examples of refusals to show direct costs	J18(27,28)
Government auditing system poor; does not go after nuts and bolts of industry; vast sums go down the drain	J42(1339);H143(1251);H148(2395)
GAO, DOD auditor reports ignored; examples of record deficiencies conveyed by reports over several years; tied to fraud, mismanagement	H108(16,18,19)
Inadequate coordination, cooperation between contracting officers, administrators, auditors; reports remain at working levels; top-level officials unaware of deficiencies	H108(20,42);J32(152);J12(11);J17(122,124)
Cases of contractors refusing to observe ASPR cost principles; make mandatory; present system lets contracting officer set policy, inconsistent	J18(25,26,28)
Generally accepted accounting principles vague, elusive; expert disagreement commonplace; GAO, DOD auditors, others often disagree on specifics, administrative costs; delays significant	S72(499);J18(20,23,24,25)

TABLE 59

## CONCERN FOR LACK OF CONTROL OVER INDIRECT COSTS

Selected Examples	References
Overhead costs too high; have grown inordinately; examples of mischarges; encouraged by present methods, use percentage of direct costs	J32(66);J35(318,441,442); J42(1356);J17(131)
Critics claim study will reveal lucrative opportunities for savings; as high as \$500 million; used to "administer" profits	J32(62,65);J35(448)
Magnitude of GSA costs warrants separate criteria; need uniform policy; should not be paid for work in Government plants	H142(906);J18(6)
Bulk of IR&D chargeable to Government; line between what is commercial, what is Government impossible to draw	J17(63);H86(18)
Advertising releases technical data to enemy; contractor can charge, despite Congressional prohibition; ASPR should prohibit	J17(237);J18(6,43,96)
Can mischarge product improvement, maintenance and repair; can charge direct to Government, allocate part of same to commercial work	J18(19,20)
Profits can be shifted from Government to commercial from year to year; cannot tell what is cost to manufacturer, what is profit	S72(495,498);J18(5,26,29, 30)
Need better methods to compare overhead between companies; benefits for increases not always known; contributes to cost growth	J32(71);J35(442,516);J17 (131)
Multiplicity of accounting procedures leads to easy manipulation; vast accounting ploys can be used to benefit contractors	J17(223);J18(18,21)
Contractors allocate cost with little constraint; book available to tell ways to benefit; power to decide vested in working-level contracting officer	J18(5,26,27,28)
Most serious defect is lack of uniform cost accounting standards; could save \$2 billion, 5% of procurement budget annually; slow progress to date	S72(483,499);H55(166);J17 (149);J18(IV,17,87,88)
Industry wants status quo, will resist; arguments against UCAS not valid; British has implemented; most important improvement that can be made	J40(576,594);J17(21,150, 244)



TABLE 60

CONCERN FOR WEAK CONTRACT ADMINISTRATION IN FIELD ORGANIZATION

Selected Examples	References
No hope of improving contract administration with existing organizational arrangement; heart of problem is separation of administration and audit components; problem of responsibilities	S72(436,444);H140(141); H142(921)
Fuzzy definition of field roles; administrative contract officer, price analyst, auditor; duplication of effort; breakdown in communications, lack of teamwork	H140(141);H142(92);H86 (259,260)
Field support to procuring contracting officer from field contracting, pricing needed; not in position to effectively coordinate; support unresponsive, untimely, poor quality	H146(139,140,141);H142 (921)
Once assigned, Government personnel think of selves as part of contractor plant; responsibilities blurred; should not remain in plant too long; potential conflict of interest	S72(377);J42(1339);H142 (850);J17(240,250)
Contractors feel more Government people in plant than needed; plenty of people but not doing job; Government people feel overworked, understaffed, harrassed, not compensated	S81(26,28);S72(385);H142 (682);H86(259); Table 16
Government appears to be asleep, bored, indifferent; lacks energetic follow-through; Government has 400 people in each shipyard, yet not effective; disenchantment with system	S72(308);J35(300,306);J42 (1339);H55(166)
Instances where Government administration adversely affects contractor costs, efficiency; need management audit of plant representative's office; need outside competency to augment contractor check	J40(725);J42(1394,1396); H140(140)
Key is more involvement with contractor; Government disengaged without adequate controls; increase technical collaboration, emphasize cooperation	S68(47);S81(26);J17(157)
Project manager should have more direct tie with contractor; should have some of his own people in plant; need project office-contractor team working relation	H154(24,274,275,311);H143 (1103)
Need new concept of control; need clear, unequivocal contract-contractor controls; must learn administrative controls, need better delineation of responsibilities	H154(11,306,313);H143 (1103)

TABLE 61

CONCERN FOR LACK OF CONTRACTOR SURVEILLANCE

Selected Examples	References
DOD does not have adequate surveillance over prime contractor operations; procedures, practices not effective; GAO reports surveillance as basic failure	S72(404,460,495);J42(1404);H55(166)
Government fails to evaluate contractor's actual performance meaningfully; evaluation is very difficult problem; not on top of process after contract let	H154(118);J42(1407);H124(183)
Need to improve measurement of contractor's capability to perform; distinguish between contractors; existing administrative techniques complex; limited effect on source selection	S81(21);H154(154,258,280);H140(121,122,129);J18(42)
Oversight work performed, but elements of work poor; include productivity, overtime, labor use, material, costs, etc.; little effort to address contractor efficiency	J32(152);J35(404);J42(1350);H55(177,178,179,180)
Poor surveillance cost control; no adequate review of major areas of cost; must know more about contractor overhead, manpower utilization; better analysis needed	H108(16,19,42);S68(46);H154(134);J33(251)
Need more in-house technical capability; surveillance cannot adequately measure technical progress; getting well done design will require careful audit	S72(469,473,475);H154(15,25)
Poor contractor quality control a problem; inject Government quality control early in program; clarify, reduce complexity of quality control specifications	H108(2,3,10,16,18);J33(225,229);H142(836);J17(131);H100(3)
Problems with contractor management systems, practices, etc.; little attention to contractor procedures; plant representatives, auditors make perfunctory checks	S72(382,385,404);J40(473);J42(1490);H55(167);J17(229)
DOD not acting to correct its contract administrative problems; unless it improves, not going to get out of trouble; plant representatives on firing line with contractor	S68(46,47);H154(204);J35(443);H55(166)
It is necessary to resort to detailed reviews, close surveillance of contractor activities; requires closer scrutiny of contractor financial, technical activities; no effective program	S68(46);S72(482,496,510)

TABLE 62

CONCERN FOR POOR SUBCONTRACTOR VISIBILITY AND ADMINISTRATION

Selected Examples	References
Many safeguards designed to protect Government on primes not applied to subcontractors; DOD pays little attention to subcontracting; large corporations not concerned	S72(495);J18(15,34);J33(251)
Problems in subcontractor source selection, make or buy decision process; often unreasonable prices for Government; have little incentive to negotiate lower prices	J18(15,36,170)
Primes lack documentation to explain large volume of sole sources; fail to perform adequate cost analysis; cannot substantiate reasonableness of price	J33(252);J42(1351);J18(34)
Profit pyramided, layer upon layer, into final cost; question raised why prime should take profit on avionics; question how much to pay prime should be examined	S72(149);J33(253);J40(572);J18(15);J20(7)
Profits at sub level higher than primes; substantiated by GAO report; ROI higher on primes because of progress payments, more timely reimbursement needed	J40(572);J20(13,14);H156(47)
Subcontract pricing abuses experienced; vendors sometimes charge what traffic will bear; many cases primes not enforcing subs' compliance with Truth-in-Negotiation Act	H108(19);J42(1319,1324,1419)
Contractors, subs devise ways to avoid cost, pricing data; break down size of purchases, label competitive; give waivers; DOD, for most part, ignores	J33(252);J40(572,579)
DOD profit reports do not cover subcontracting; not possible to tell if primes are charging unreasonably for subs' work; profit information would be useful	S72(495);J40(572);J17(101);J20(7,8)
Subs frequently bear brunt of problems which occur in process; lack legal recourse; subs not paid on timely basis; cannot get subs to testify	J42(1556);H146(1762);H156(47)
Subcontractor procedures can be improved; contracts lack supervision, need for strengthening DOD subcontractor review; use subcontractor consent procedures	J27(265);J33(252,253);J40(579);J42(1351);J18(35)

TABLE 63

## CONCERN FOR MILITARY-INDUSTRIAL CONCENTRATION

Selected Examples	References
If partnership between Government and industry becomes too close, may become fourth branch of Government; together forms giant concentration of political, economic strength	J32(148);J18(IV,68)
Inflexible military organization unchecked by civilian review, can lead to self-perpetuating drain, inexcusably, military too often evades public accountability	H140(159,161);H18(93)
Leaders in DOD appointed from industry; put defense contractor interests above public; interchange of top officials has given industry network for influence	J40(584,591);J18(IV,52)
High-ranking officers meet and socialize with industry officials; in many cases, have adopted industry viewpoint, perspectives	S72(504,505);J18(86)
Media used for propaganda purposes; media assists in creating state of mind; hear, read, think must be true; feeling supervisors do not want policy enforced	S72(504);J40(591);J18(75)
State of DOD ethical standards tied to military-industrial complex; amoral way many executives conduct their business, great influence on defense	J32(198);J40(570);J18(92)
Industry/services playing games; going to have to stop or will destroy U.S.; same old team runs things same old way; must find ways to bring about change	J42(1462,1478,1482)
System changed, military no longer partner of Congress; new tendency to question growing influence of military is healthy development; issue is who is going to be in control	S72(127);H140(161);J18(91)
Industry, Government form necessary partnership in service of U.S.; need to recognize value of military-industrial complex; incessant attacks erode strength	H143(1258);H148(2399,2400)
Great responsibility for close partnership, adequate checks, balances rests on Congress; need atmosphere self-respect, carefully informed analysis	H148(2400);J18(93)

TABLE 64

CONCERN FOR TOO MUCH INDUSTRY INFLUENCE

Selected Examples	References
DOD procurement policies greatly influenced by industry; pervasive, unabated; serious implications for our system of Government; disproportionate to role in society	S72(496,504,510);H146(1570);J18(92)
Industry advisory groups work closely with DOD officials; have great influence over policy; the IAC can effectively dictate to ASPR committee	H55(172,173);J18(86)
Industry pressure groups, special intent lobbies water down laws, rules to lessen impact; have impressive record; exert influence on public policy	J40(575);J18(59,69,86,92)
Many politicians believe purpose is to support massive, middle class WPA; industry impact, fear of labor, Congressional reaction used to protect private interests	J32(148,149)
Defense industry seen as national resource; support of industrial base most important; widely shared view that economic support drives policies	S72(505);J32(72,148);J18(69)
Protecting rights paramount concern; prerogatives must be preserved; concerned more about profits than cost control or taxpayer interests	S72(504);J32(148,149);H55(173)
Government officials swayed by industry; traced to close relationship between Pentagon, contractors; industry retains large staffs, sole purpose to get every conceivable advantage	J40(575);H55(173);J18(IV,69,71)
DOD reluctant to enforce law; rules interpreted to benefit industry; tendency to accommodate, placate industry	S72(504);H55(172);J18(IV,93)
DOD trades away something for each new policy; bargains, negotiates with industry over each new regulation; preoccupied with making policy palatable	H55(158);J18(IV,69,70)
A GAO study on impact of industry groups on defense policy would be very useful; determine whether public interests require additional safeguards; prohibit use of funds for IAC	S72(510);H55(174);J18(87)

TABLE 65

CONCERN FOR MISUSE OF INDUSTRY POWER

Selected Examples	References
Aggregation of power in corporate hands portends serious problems for capitalistic system; not impressed with attitude of large corporations; problems deeper than appear	S72(505);J33(168);J42(1481)
Contractors not always cooperative; give idiot treatment; delay, refuse to provide certain information; if status quo threatened, great resistance	J32(70);J33(41);J40(577);J41(1179);J42(1268,1355);H55(168);J17(158)
Industry today is smug; knows no one will take action; climate for control does not exist, industry knows it; no improvement until climate is changed	H55(172);H144(1428);J18(59,69)
Contractors can appeal directly to Congress; serious impediment; cozy arrangement said to exist; exert substantial pressure; dozens of phone calls summon officials	S69(399,400);J42(1257,1258,1405,1481)
Many contractors powerful politically; can muster unreasonable outside pressure; leave no stone unturned; integrity, public confidence involved	H63(19);J42(1256,1406);H55(169)
Evidence of influence used in source selections; referred to in claims; question special relationships at service level; favored contractor treatment claimed	H63(17);J35(395);H144(1367,1368)
Industrial intelligence said to exist; capitalize on leaks on Government positions, actions to be taken; develop buy-in, change strategies; thwart competition	H63(15,22,23);H108(30);S72(31,163);J33(155);J41(1137);J18(69)
Biggest contractors have nothing to fear; renegotiation board offset rule helps large firms evade reprisals; claims are a way of life; big contractors not made to adhere	J35(311);J40(581);H55(169,170)
Procurement policies weighted in favor of large contractors; one set of rules for big contractors, more stringent rules for others; DOD follows double standard	J40(570);J42(1529,1541);H55(169)
DOD does little to correct, will not without prodding; should not be left to industry self-interests; Congress will have to take initiative to correct deficiencies	S72(496);J40(584);H55(173);J18(4)



TABLE 66

## CONCERN FOR DOD DEPENDENCE ON INDUSTRY

Selected Examples	References
Costs made DOD dependent; financial stakes are too high; contractors cannot finance failures; \$5 billion in progress payments	H154(26);J17(64,65)
Complexity of weapon systems forces DOD to depend on industry; knowing this, tendency to optimize performance, spend more, goldplate	H108(30);S72(146,163);J40(571)
Cannot introduce adequate competition; DOD locked into contractors through development; R&D tolerated to get production contracts	S72(171);H154(1);H143(1187)
DOD forces buy-in; never enough money, DOD in helpless position in negotiations; does not have information; business deliberately quotes low price	S81(36);H140(56);J12(8)
Contractors use large, unpriced changes to get foot in door, "get well"; claims are new get-well technique; can use other financial manipulations	H63(15);S72(31,501);S81(35);J18(41);J33(155);J35(387);J40(581)
Examples of defiance of contractual obligations; nonenforcement C-5A, F-14 contracts set precedent; does great violence to whole competitive system	J33(282,310);J35(517);J41(1120,1213);J42(1397,1482)
Economic, political blackmail practiced when industry gets into trouble; ships held as hostages, contractors refuse to continue; used to induce bail-out	J35(502,503);J42(1483,1617)
How is the Government to prevent lock-in, etc.; should reduce dependency; responsibilities cannot be delegated, must be shared	S81(36);H143(1193,1194)
Symbiotic relationship has developed between military, defense contractors; desirable to reduce, not increase continuing dependence	J17(67);J37(247)
National policy to maintain capability; conflicts with other goals; if Government obliged to rescue, is obliged to oversee management, leads to state socialism	J35(517);J41(1174);J17(590);H140(134,151)

TABLE 67

CONCERN THAT DOD IS TAKING OVER INDUSTRY PREROGATIVES

Selected Examples	References
Industry faces sea of red tape, technical jargon; lost in maze of separate, conflicting regulations; hemmed in by too many Government restrictions	H124(12,14,188,245)
Management lost in overformalization, over-rigidity, overproceduralization; complex management controls imposed; conflicting proliferation of reports	S72(264);H124(122,130,132)
Sincere contractor expression that there is more paperwork, more people in plant than needed; make mistake in duplicating contractor skills, capabilities	H124(245);H142(682);J17(241)
Government imposes unwarranted technical restrictions; lays down specifications in exacting, demanding way; reduces flexibility, freedom to innovate	S81(11);S72(124,125);J35(449,450)
DOD contracting process cumbersome, costly; diverts industries' best technical talent to source selection; paper flood does not aid Government in selection	S72(134,135);H146(204);H148(2384)
Government negotiators take advantage of their bargaining power; push contractors to get low prices, leading to overruns; no contingencies	S72(134,135);J33(187)
Contractor's knowledge and consent no longer necessary to bind him; standard clauses applied on take or leave it basis; numerous powers over internal operations	H124(46);H146(1765);J17(63)
DOD gradually has taken over directly, indirectly many decision-making functions normally prerogatives of management; has become essentially a regulatory body	J17(63,68,122);J40(591)
Congressional hearings, legislation has forced DOD to provide more detailed regulations; contractors take advantage, DOD compelled to interfere; need standard of essentiality	S72(264);J17(67,26);J18(10)
Cumulative, long-term impact on initiative rarely considered; defense business not viewed by stockholders as successful pattern; industry trend is to reduce dependency	S72(124);J17(63);H86(48)

TABLE 68

CONCERN FOR LACK OF INDUSTRY MOTIVATION

Selected Examples	References
American industry can no longer free wheel; survival is at stake; excessive capacity begets inefficiency, causes great insecurity	S72(134,148,158,188,189)
Sine qua non is winning new development contracts; small number contracts forces contractors to be optimistic; will not turn down work; behaves in counterproductive ways	S72(29,43,134,151);J42 (1481)
Contractors motivated to retain large engineering staff; lots of engineering is make work; today's process generates more and more of its kind	S72(145,146,304);J17(231)
Problem is not whether competition can be obtained, but how it influences contractor behavior; profit structure arrangements run counter to goals	S72(162,205,226,381,495)
Procurement system rewards inefficiency; little attention to cost control efficiency; costs can be passed on to Government; higher costs mean higher profits	S72(380,381,383);J40(570, 572)
Little incentive to provide more than absolute minimum facilities; biased toward labor-intensive processes; no incentive to invest	S81(67);J40(583,727,737); J17(66,225)
Undue delay in negotiations, contract awards, funding; sometimes expected to perform on basis of loose arrangements; differences in cost principles cause frustration, anxiety	J40(591);H124(37,246);J18 (28)
"Couldn't care less" attitude; evidence of lack of industry quality control; make money regardless; quality of work is secondary	H108(16);S72(314);H55 (161)
Must induce contractors to maximize output, not resources they can spend; conscientious resource planning and incentive structuring are required	S72(136,151)
Must attract and motivate contractor to accomplish defense requirements; health of industry of vital concern; incentives must be improved	J41(1145);J17(128,131)

TABLE 69

## CONCERN FOR INEFFICIENCY IN DEFENSE INDUSTRY

Selected Examples	References
Gross inefficiency exists; errors, mistakes in judgment, misleading statements continue; all major contractors are "fat"	S72(383);J32(63);J42(1462)
Not enough pride of workmanship in industry today; attitude toward cost control is basic obstacle; atmosphere unwholesome; care-less attitude prevails	H108(16);S72(315);J32(61,71)
There is 30 to 50 percent idleness and loafing; large number of people hanging around doing nothing; personnel line up one-half hour before quitting; people leave work early	S72(375,376,378);J32(64)
Misuse of overtime is another aspect; some routinely work 8 hours each week regardless of workload; idleness and inefficiency increase during overtime work	S72(375,379,380);J32(71)
Continual errors; takes checking, rechecking of work; jobs being done over 2-3 times; failure to comply with specifications, requirements; erroneous, falsified reports	J27(3,6,241,242);S72(375,485)
Industry problems involve having too many people; overengineer design, products; misuse skilled shop personnel; poor control over overhead costs	S72(184);H154(304);J35(441,442)
Many managers, supervisors not doing their jobs; not planning work properly; little being done; situation has been uncorrected over long period of time	S72(375,376,495)
Wasteful practices mean little to company officials; do not and will not devote enough time to running the business; management ineptitude kept from stockholders	S72(314,378);J42(1462)
Complex organizations lack visibility over work; companies able to conceal facts; DoD officials often display naive attitude toward industry capability, motives	S72(314,483);S81(35,36);J17(158)
Poor management, lack of productivity major problems; avoidable inefficiencies identified; one of largest individual factors in overall growth	S72(314,483);J32(61)
Industry unable to produce a quality product on time and at a reasonable cost; close Government technical control required; eliminate non-producers	S72(377,485);H144(1411)

TABLE 70

## CONCERN FOR INDUSTRY PRODUCTIVITY

Selected Examples	References
Feast or famine experienced in defense industry; tremendous turnover in contractor personnel; losers hard pressed to stay in business	S72(20,21,73);J41(1206)
Many times only game on street; if successful in winning contract, must assemble new engineering team from rest of industry; very expensive way of doing business	S68(38);S72(20,170,190);J37(248)
Defense contractors assume greater risks than commercial; face continued stretchout terminations; uncertainties, insecurity creates tension in defense industry	S72(157,304,307);J41(1206);J17(128)
Have too many resources relative to stated requirements, could produce what we are getting for half the resources; not apt to eliminate inefficiency unless move in this direction is made	S72(137,146,151,157,161)
Certain states particularly vulnerable to shift in size, type of procurement; question is whether maintaining industrial base is necessary; how can defense firms convert to commercial, peacetime business	S72(307);J33(187);J40(614);J37(248)
Can develop great deal more capability working continually rather than stop and go; objective is to keep design teams, expertise together; eliminate hit or miss nature	S68(4,31,33);S72(73,190,304)
Some method of "leveling" is necessary; slim down capability; guarantee remaining firms continuing level of effort; reward those doing good job; withdraw support from others	S72(137,161,304,307)
Is it feasible to work out program for industry continuity, stability; climate not promising; DOD should determine how much capacity it can support, bring actual in line; no one in DOD has been doing this	S72(137,150,151);H154(264);J35(312)
Appears to be no DOD philosophy, no settled fundamental concepts which determine defense programs; need to establish firm requirements, stick to them, develop stable base	S72(157,190,315,483);H86(32,69)
Changes in management, procurement procedures have not alleviated fundamental problems; need strikingly different strategy; may be necessary to act to regulate defense industry	S72(173);S81(35);J35(312);J40(591)

APPENDIX 4

Aggregated DOD Systems Acquisition

Problems and Issues



	1. Cost Overruns/Cost Growth	2. Inefficiency/Mismanagement	3. Lack of Full Disclosure	4. Top-Level Organization	5. Misuse of Systems Analysis	6. Appointee Turnover	7. Organizational Layering	8. Unnecessary Staff	9. Interservice Rivalry	10. Overadministration	11. Irrevocable Decisions	12. Program Budget System	13. Long-Range Planning	14. Rqmts. Determination	15. Excessive Paperwork	16. Employee Motivation	17. Technical Capability	18. Project Mgmt. Experience	19. Downgrading Procurement	20. Personnel Systems	21. Pressures/Influences	22. Package Procurement	23. Spiraling Costs	24. Excessive Complexity	
<b>Impact of External Environment; Social, Political, Economic, &amp; Technical Factors; Philosophy &amp; Concepts</b>																									
Inability to Control Cost Growth	X							X	X			X	X												
Inability to Manage Change	X	X	X										X								X	X	X	X	
Power/Influence of Mil.-Ind. Complex	X	X	X	X	X		X	X	X	X			X								X				
Inability to Obtain Price Competition	X	X																							
Lack of Incentives to Motivate Industry	X	X																				X	X		
Lack of Productivity in Defense Industry	X	X																							
Conflict of Military & Business Philosophy	X						X	X	X	X	X										X	X	X		
Individual, Group, & Organizational Behavior	X	X		X	X		X	X	X	X	X		X			X	X			X	X	X			
<b>Organization &amp; Staffing; Structure; Authority &amp; Responsibility; Manpower &amp; Personnel Functions; Training</b>																									
Organizational Layering	X	X					X									X									
Authority/Responsibility Diffused, etc.	X	X	X				X	X	X	X	X				X							X	X		
Compartmentalized, Fragmented Staffs	X	X	X	X			X	X	X						X	X						X			
Poor Communication & Coordination	X	X	X	X	X		X	X	X	X	X	X			X										
Organizational Structure Problems	X	X	X	X	X		X						X	X											
Excessive Numbers of People	X	X	X	X	X		X	X	X				X		X										
Lack of Personnel Qualifications	X	X	X	X	X		X	X	X				X	X	X	X					X	X			
Personnel Turnover	X		X				X	X					X	X	X	X				X	X				
<b>Goals, Objectives, Policy Formulation, Broad Acquisition &amp; Procurement Management Practices</b>																									
Legislative Reform Required	X	X																							
Inability to Adequately Set Priorities	X						X	X		X			X	X	X										
Weak Acquisition Policy	X	X		X			X						X	X	X	X						X			
Weak Procurement Policy	X	X					X						X								X	X			
<b>Decision-Making &amp; Operating Processes (Plan, Execute, Control, &amp; Report)</b>																									
Lack of Adequate Long-Range Planning	X	X	X	X			X	X	X	X		X	X												X
Rigidity in Programming & Budgeting	X								X	X		X	X												X
Overadministration & Paperwork	X	X	X	X			X	X	X	X		X	X								X	X	X		X
Factors of Uncertainty & Risk	X	X					X	X	X			X	X								X	X	X		X
Overregulation & Poor Control	X	X	X				X	X	X	X	X	X	X	X	X	X					X	X	X	X	X
Lack of Adequate Feedback	X						X	X	X	X	X														X
Lack of Good Information	X	X	X				X	X	X	X	X		X												X
Poor Visibility Over Operations	X	X	X				X	X	X	X	X										X	X	X		X
Lack of Adequate Management Tools	X		X				X	X				X	X												X
<b>Other Related Factors</b>																									
Lack of Management Discipline	X	X					X						X	X							X				
Excessive Workloads	X	X	X	X			X	X	X	X			X	X											X
Delays in Processes, Progress, etc.	X	X	X	X	X		X	X	X	X	X		X												X
Overall Management Process Rigidity	X	X	X	X			X						X	X	X										X
Overall Management Process Instability	X	X	X	X			X	X	X	X		X	X	X	X	X					X	X	X	X	X

	25. Technical Risks	26. Managing Technology Base	27. Initial Technical Planning	28. Rqmts./Systems Specs.	29. Sound Development Decisions	30. Poor Development Strategy	31. System Design Approaches	32. Inadequate Test & Eval.	33. Inability to Control Change	34. Inefficient Transitioning	35. Poor Equipment Performance	36. Poor Policy Implementation	37. Restrictive Regulations	38. Rigid Procurement Process	39. Defective Pricing	40. Excessive Contractor Claims	41. Profit Information & Policy	42. Cost as Basis for Profit	43. Investment Disincentives	44. Reducing Competition	45. Pricing Strategies	46. Criteria for Competition	47. Creating More Competition	
<b>Impact of External Environment; Social, Political, Economic, &amp; Technical Factors; Philosophy &amp; Concepts</b>																								
Inability to Control Cost Growth	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X				X
Inability to Manage Change	X	X	X	X	X	X	X	X	X	X	X	X			X							X		
Power/Influence of Mil.-Ind. Complex			X					X					X	X	X	X	X	X	X	X				
Inability to Obtain Price Competition				X	X	X	X	X	X				X	X	X	X	X	X	X	X		X	X	X
Lack of Incentives to Motivate Industry			X				X	X	X	X			X	X	X	X	X	X	X	X		X	X	X
Lack of Productivity in Defense Industry							X	X	X						X	X	X	X	X	X		X	X	X
Conflict of Military & Business Philosophy	X	X	X	X	X							X												
Individual, Group, & Organizational Behavior	X						X			X	X		X				X		X	X	X			
<b>Organization &amp; Staffing; Structure; Authority &amp; Responsibility; Manpower &amp; Personnel Functions; Training</b>																								
Organizational Layering												X												
Authority/Responsibility Diffused, etc.		X					X						X	X										
Compartmentalized, Fragmented Staffs		X					X						X	X										
Poor Communication & Coordination	X	X					X	X	X				X	X										X
Excessive Numbers of People	X	X					X						X	X										
Lack of Personnel Qualifications	X	X					X	X				X												
Personnel Turnover	X																							
<b>Goals, Objectives, Policy Formulation, Broad Acquisition &amp; Procurement Management Practices</b>																								
Legislative Reform Required								X					X	X	X	X					X	X		
Inability to Adequately Set Priorities	X	X		X	X			X		X														
Weak Acquisition Policy	X	X	X	X	X		X	X	X	X	X													
Weak Procurement Policy							X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
<b>Decision-Making &amp; Operating Processes (Plan, Execute, Control, &amp; Report)</b>																								
Lack of Adequate Long-Range Planning	X	X	X	X				X		X														X
Rigidity in Programming & Budgeting	X	X						X	X	X				X										
Overadministration & Paperwork			X	X	X		X	X					X	X	X									
Factors of Uncertainty & Risk	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X					X	X	
Overregulation & Poor Control			X	X	X		X	X		X			X	X	X									X
Lack of Adequate Feedback	X						X		X	X														
Lack of Good Information	X	X					X	X	X	X			X	X	X							X	X	
Poor Visibility Over Operations	X						X	X	X	X	X			X	X									
Lack of Adequate Management Tools	X	X					X	X					X	X	X	X								X
<b>Other Related Factors</b>																								
Lack of Management Discipline							X		X				X	X							X	X	X	
Excessive Workloads			X				X						X	X										
Delays in Processes, Progress, etc.	X	X	X	X	X		X	X	X	X	X		X	X										
Overall Management Process Rigidity	X									X			X	X										
Overall Management Process Instability	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X

	48. Production Competition	49. Subcontractor Competition	50. Type of Contract Used	51. Contracting Procedure	52. Incentive Contracting	53. Cost Estimating Accuracy	54. Price Estimating	55. Management Procedure	56. Progress Reporting	57. Performance Measurement	58. Contractor Accounting	59. Control Over Indirect Costs	60. Contract Administration	61. Contractor Surveillance	62. Subcontractor Administration	63. Mil.-Indus. Concentration	64. Industry Influence	65. Misuse of Industry Power	66. DOD Dependency	67. Industry Prerogatives	68. Industry Motivation	69. Inefficiency in Industry	70. Industry Productivity
<b>Impact of External Environment; Social, Political, Economic, &amp; Technical Factors; Philosophy &amp; Concepts</b>																							
Inability to Control Cost Growth	X	X		X			X	X	X	X				X	X					X	X		
Inability to Manage Change					X	X		X	X	X	X			X	X					X	X	X	X
Power/Influence of Mil.-Ind. Complex								X	X	X	X			X	X					X	X	X	X
Inability to Obtain Price Competition	X	X	X	X	X		X	X	X	X	X					X	X	X	X		X	X	
Lack of Incentives to Motivate Industry	X																				X	X	
Lack of Productivity in Defense Industry		X	X		X		X	X	X	X			X	X	X						X	X	X
Conflict of Military & Business Philosophy																							
Individual, Group, & Organizational Behavior	X	X	X				X	X					X	X	X	X	X		X	X	X	X	
<b>Organization &amp; Staffing; Structure; Authority &amp; Responsibility; Manpower &amp; Personnel Functions; Training</b>																							
Organizational Layering																							
Authority/Responsibility Diffused, etc.							X						X	X									
Compartmentalized, Fragmented Staffs							X	X	X				X	X									
Poor Communication & Coordination							X						X	X	X					X		X	
Excessive Numbers of People					X								X										
Lack of Personnel Qualifications							X		X	X	X		X							X		X	
Personnel Turnover													X										
<b>Goals, Objectives, Policy Formulation, Broad Acquisition &amp; Procurement Management Practices</b>																							
Legislative Reform Required	X	X							X	X			X	X	X	X	X		X	X			
Inability to Adequately Set Priorities																							X
Weak Acquisition Policy	X																						
Weak Procurement Policy	X	X	X		X								X	X	X	X	X	X	X	X	X	X	X
<b>Decision-Making &amp; Operating Processes (Plan, Execute, Control, &amp; Report)</b>																							
Lack of Adequate Long-Range Planning						X																	X
Rigidity in Programming & Budgeting			X	X			X	X															X
Overadministration & Paperwork			X	X			X	X	X	X	X		X	X									X
Factors of Uncertainty & Risk	X	X	X										X	X									X
Overregulation & Poor Control			X	X	X		X						X	X		X			X	X	X		X
Lack of Adequate Feedback							X																X
Lack of Good Information	X	X	X	X									X	X	X								X
Poor Viability Over Operations				X									X	X	X					X			
Lack of Adequate Management Tools	X	X	X	X			X	X	X	X		X	X	X									X
<b>Other Related Factors</b>																							
Lack of Management Discipline	X												X	X	X	X	X	X					
Excessive Workloads		X											X	X									
Delays in Processes, Progress, etc.			X				X								X	X							
Overall Management Process Rigidity							X	X											X	X			
Overall Management Process Instability	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X

APPENDIX 5

Suggested Areas for DOD Systems Acquisition

Management Research

Tbl. Nbr.	Major Areas of Congressional Criticism & Concern	Systems & Concepts Research	Policy Research	Organizational Research	Process Research	Methods Research	Information Research
1	Cost Overruns & Cost Growth	X					
2	Inefficiency & Mismanagement		As Outlined on Other Tables				
3	Lack of Full Disclosure by DOD	X	X				X
4	Top-Level DOD Organization			X	X		X
5	Misuse of Systems Analysis			X		X	X
6	Appointee Turnover & Orientation	X		X			
7	Mil. Dept. Organizational Layering			X	X		
8	Unnecessary Staff Activities			X	X		X
9	Excessive Interservice Rivalry		X	X	X		
10	Overadministration in Dec.-Making			X	X	X	X
11	Irrevocable Decisions	X	X				
12	Inflexible Program Budget System	X	X		X	X	X
13	Lack of Long-Range Planning			X	X	X	X
14	Inadequate Rqmts. Determination			X	X		X
15	Excessive Paperwork				X	X	X
16	Lack of Employee Motivation			X		X	
17	Loss of In-House Tech. Capability		X	X			
18	Lack of Project Mgmt. Experience	X	X	X			
19	Downgrading of Procurement	X	X	X			
20	Personnel System Weaknesses	X	X			X	
21	Undesirable Pressures & Influences	X			X		
22	Total Package Procurement Policy		As Outlined on Other Tables				
23	Concern for Spiraling Costs		X		X	X	
24	Concern for Excessive Complexity		X		X		
25	Concern for Technical Risks				X	X	
26	Managing DOD Technology Base	X	X		X	X	X
27	Poor Initial Technical Planning	X	X	X	X		
28	Rqmts. & System Specifications		X		X	X	
29	Sound Development Decisions				X	X	
30	Poor Development Strategy	X	X		X		
31	Poor System Design Approaches		X	X	X		
32	Inadequate Test & Evaluation				X	X	X
33	Inability to Control Change	X	X		X	X	X
34	Inefficient Transitioning to Prod.				X	X	X
35	Poor Equipment Performance						

Tbl. Nbr.	Major Areas of Congressional Criticism & Concern	Systems & Concepts Research	Policy Research	Organizational Research	Process Research	Methods Research	Information Research
36	Poor Policy Implementation		X	X			
37	Complex Restrictive Regulations	X	X		X	X	
38	Rigid Procurement Process	X	X			X	
39	Concern for Defective Pricing		X			X	X
40	Excessive Contractor Claims		X			X	X
41	Profit Information & Policy		X				X
42	Cost as Basis for Profit		X			X	
43	Investment Disincentives		X		X		
44	Reducing Competition	X	X				
45	Concern for Pricing Strategies			X			
46	Criteria for Competition	X	X				
47	Creating More Competition		X		X	X	
48	Production Competition					X	X
49	Subcontractor Competition		X				
50	Type of Contract Used						
51	Contracting Procedures				X	X	X
52	Incentive Contracting					X	X
53	Cost Estimating Accuracy		X	X	X	X	X
54	Limitations in Price Estimating		X				
55	Management Procedures		X		X	X	X
56	Top Management Progress Reporting					X	X
57	Performance Measurement				X	X	X
58	Contractor Accounting		X			X	X
59	Control Over Indirect Costs		X		X	X	X
60	Contract Administration			X		X	
61	Contractor Surveillance				X	X	
62	Subcontractor Administration				X	X	
63	Military-Industrial Concentration	X	X		X		
64	Industry Influence	X	X	X			
65	Misuse of Industry Power	X	X	X			
66	DOD Dependency	X	X				
67	Industry Prerogatives		X	X	X	X	
68	Industry Motivation	X	X			X	
69	Inefficiency in Industry			X	X	X	
70	Industry Producibility	X	X	X	X		
	TOTALS	23	40	24	37	36	25



SELECTED BIBLIOGRAPHY

## SELECTED BIBLIOGRAPHY

(Chronological)

### Public Documents

- H-1. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 1, Military Personnel). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 1st sess., 1967.
- H-2. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 2, Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 1st sess., 1967.
- H-3. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 3, Research, Development, Test and Evaluation). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 1st sess., 1967.
- H-4. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 4, Procurement). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 1st sess., 1967.
- H-5. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 5, Operations and Maintenance). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 1st sess., 1967.
- H-6. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 6, Appropriation Language). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 1st sess., 1967.
- H-7. U.S. Congress. House. Department of Defense Appropriations Bill for 1968. H.R. Rept. 349 from the House Committee on Appropriations to Accompany H.R. 10738, 90th Cong., 1st sess., 1967.  
\* HR 90-1  
Mrp  
v. 3
- H-8. U.S. Congress. House. Department of Defense Appropriations for 1968. Conference Rept. 595 to Accompany H.R. 10738, 90th Cong., 1st sess., 1967.  
\*HR 90-1  
Mrp  
v. 4
- H-9. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 1, Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
Ada  
FY 69

\*Classification number in Library catalog

- H-10. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 2, Research, Development, Test and Evaluation). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.
- H-11. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 3, Procurement). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.
- H-12. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 4, Operations and Maintenance). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.
- H-13. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 5, Military Personnel). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.
- H-14. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 6, Appropriation Language). Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.
- H-15. U.S. Congress. House. Committee on Appropriations. Appropriation and Expenditure Reductions, 1969. Hearings before a subcommittee of the House Committee on Appropriations, 90th Cong., 2d sess., 1968.
- H-16. U.S. Congress. House. Department of Defense Appropriations Bill for 1969. H.R. Rept. 1735 from the House Committee on Appropriations to Accompany H.R. 18707, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
Mrp  
v.5
- H-17. U.S. Congress. House. Department of Defense Appropriations for 1969. Conference Rept. 1970 to Accompany H.R. 18707, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
Mrp
- H-18. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 1, Military Personnel). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.
- H-19. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 2, Operations and Maintenance). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.
- H-20. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 3, Procurement). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.

- H-21. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 4, Research, Development, Test and Evaluation). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.
- H-22. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 5, Research, Development, Test and Evaluation). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.
- H-23. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 6, Budget and Financial Management). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.
- H-24. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 7, Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 1st sess., 1969.
- H-25. U.S. Congress. House. Department of Defense Appropriations Bill for 1970. H.R. Rept. 698 from the House Committee on Appropriations to Accompany H.R. 15090, 91st Cong., 1st sess., 1969.
- H-26. U.S. Congress. House. Department of Defense Appropriations for 1970. Conference Rept. 766 to Accompany H.R. 15090, 91st Cong., 1st sess., 1969.
- H-27. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 1, Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 2d sess., 1970.
- \*HR 91-2  
ADA  
FY 71  
H-28. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 2, Military Personnel). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 2d sess., 1970.
- \*HR 91-2  
Ada  
FY 71  
H-29. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 3, Operations and Maintenance). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 2d sess., 1970.
- H-30. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 4, Safeguard Antiballistic Missile System). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 2d sess., 1970.
- \*HR 92-2  
Ada  
FY 71

- H-31. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 5, Procurement). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 2d sess., 1970.
- H-32. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 6, Research and Development). Hearings before a subcommittee of the House Committee on Appropriations, 91st Cong., 2d sess., 1970.
- H-33. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 7, Testimony of Vice Adm. H.G. Rickover). Hearings before a subcommittee of the Committee on Appropriations, 91st Cong., 2d sess., 1970.
- H-34. U.S. Congress. House. Department of Defense Appropriations Bill for 1971. H.R. Rept. 1759 from the House Committee on Appropriations to Accompany H.R. 19590, 91st Cong., 2d sess., 1970.
- H-35. U.S. Congress. House. Department of Defense Appropriations for 1971. Conference Rept. 1799 to Accompany H.R. 19590, 91st Cong., 2d sess., 1970.
- H-36. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 1, Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
 \*HR 92-1  
 Ada  
 FY 72
- H-37. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 2, Deputy Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.
- H-38. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 3, Military Personnel). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.
- H-39. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 4, Operations and Maintenance). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
 \*HR 92-1  
 ADA  
 FY 72
- H-40. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 5, Procurement, Lockheed Aircraft Corp.). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
 HR 92-1  
 Ada  
 FY 72
- H-41. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 6, Research, Development, Test and Evaluation). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
 \*HR 92-1  
 Ada  
 FY 72



- H-42. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 7, Defense Agencies). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
\*HR 92-1  
Ada  
FY 72
- H-43. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 8, Testimony of Vice Adm. H.G. Rickover). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
\*HR 92-1  
Ada  
FY 72
- H-44. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 9, Amendment to Budget, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 1st sess., 1971.  
\*HR 92-1  
Ada  
FY 72
- H-45. U.S. Congress. House. Department of Defense Appropriations Bill for 1972. H.R. Rept. 666 from the House Committee on Appropriations to Accompany H.R. 11731, 92d Cong., 1st sess., 1971.
- H-46. U.S. Congress. House. Department of Defense Appropriations for 1972. Conference Rept. 754 to Accompany H.R. 11731, 92d Cong., 1st sess., 1971.
- H-47. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 1, Services Secretaries and Chiefs of Staff). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.  
\*HR 92-2  
Ada  
FY 73
- H-48. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 2, Amendments to the Budget Reprogrammings). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.  
\*HR 92-2  
Ada  
FY 73
- H-49. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 3, Secretary of Defense, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.  
\*HR 92-2  
Ada  
FY 73
- H-50. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 4, Research, Development, Test and Evaluation). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.  
\*HR 92-2  
Ada  
FY 73
- H-51. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 5, Operations and Maintenance). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.  
\*HR 92-2  
Ada  
FY 73



- H-52. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 6, Military Personnel). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.
- \*HR 92-2  
Ada  
FY 73
- H-53. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 7, Procurement). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.
- \*HR 92-2  
Ada  
FY 73
- H-54. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 8, Amendments to Budget, etc.). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.
- H-55. U.S. Congress. House. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 9, Testimony of Vice Adm. H.G. Rickover). Hearings before a subcommittee of the House Committee on Appropriations, 92d Cong., 2d sess., 1972.
- \*HR 92-2  
Ada  
FY 73
- H-56. U.S. Congress. House. Department of Defense Appropriations Bill for 1973. H.R. Rept. 1389 from the House Committee on Appropriations to Accompany H.R. 16593, 92d Cong., 2d sess., 1972.
- \*HR 92-1389
- H-57. U.S. Congress. House. Department of Defense Appropriations for 1973. Conference Rept. 1566 to Accompany H.R. 16593, 92d Cong., 2d sess., 1972.
- H-58. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and a Bill (H.R. 9200) to Authorize Appropriations during the Fiscal Year 1968 for Procurement of Aircraft, Missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes. Hearings before the House Committee on Armed Services and Hearings before the Subcommittee No. 3 on Research, Development, Test and Evaluation of the House Committee on Armed Services, 90th Cong., 1st sess., 1967.
- H-59. U.S. Congress. House. Authorizing Defense Procurement and Research and Development. H.R. Rept. 221 from the House Committee on Armed Services to Accompany H.R. 9240, 90th Cong., 1st sess., 1967.
- \*HR 90-1  
Mrp  
v.2
- H-60. U.S. Congress. House. Authorizing Appropriations for Defense Procurement and Research and Development for Fiscal Year 1968. Conference Rept. 270 to Accompany S. 666, 90th Cong., 1st sess., 1967.
- \*HR 90-1  
Mrp  
v.2

- H-61. U.S. Congress. House. Committee on Armed Services. Review of Army Procurement on Light Observation Helicopters (Part 1). Hearings before the Subcommittee for Special Investigations of the House Committee on Armed Services, 90th Cong., 1st sess., 1967.  
\*HR 90-1  
ASr1
- H-62. U.S. Congress. House. Committee on Armed Services. Review of Army Procurement on Light Observation Helicopters (Part 2). Hearings before the Subcommittee for Special Investigations of the House Committee on Armed Services, 90th Cong., 1st sess., 1967.
- H-63. U.S. Congress. House. Committee on Armed Services. Review of Army Procurement of Light Observation Helicopters. Report of the Subcommittee for Special Investigations of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1967.
- H-64. U.S. Congress. House. Committee on Armed Services. Hearings before the Special Subcommittee on the M-16 Rifle Program of the House Committee on Armed Services, 90th Cong., 1st sess., 1967.
- H-65. U.S. Congress. House. Committee on Armed Services. Report of Special Subcommittee on M-16 Rifle Program, 90th Cong., 1st sess., 1967.
- H-66. U.S. Congress. House. Committee on Armed Services. Review of Defense Procurement Policies, Procedures and Practices (Part 1, Introduction and Truth in Negotiations). Hearings before the Subcommittee for Special Investigations of the House Committee on Armed Services, 90th Cong., 1st sess., 1967.
- H-67. U.S. Congress. House. Committee on Armed Services. Review of Defense Procurement Policies, Procedures and Practices (Part 2, Small Purchases). Hearings before the Subcommittee for Special Investigations of the House Committee on Armed Services, 90th Cong., 1st sess., 1967.
- H-68. U.S. Congress. House. Committee on Armed Services. Review of Defense Procurement Policies, Procedures and Practices (Part 3, A Case Study: Navy Contract Award for Design Services). Hearings before the Subcommittee for Special Investigations of the House Committee on Armed Services, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
ASr
- H-69. U.S. Congress. House. Committee on Armed Services. Review of Defense Procurement Policies, Procedures and Practices (Part 1, Truth in Negotiations). Report of the Subcommittee for Special Investigations of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1968.  
\* HR 90-2  
ASrd
- H-70. U.S. Congress. House. Committee on Armed Services. Review of Defense Procurement Policies, Procedures and Practices (Part 2, Small Purchases). Committee Print. Washington, D.C.: Government Printing Office, 1968.

- H-71. U.S. Congress. House. Truth in Negotiations. H.R. Rept. 1314 from the Subcommittee for Special Investigations of the House Committee on Armed Services to Accompany H.R. 10573, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
Mrp  
v.2
- H-72. U.S. Congress. House. Committee on Armed Services. Multi-Year Procurement Bill (H.R. 15789). Hearings before the Subcommittee for Special Investigations of the House Committee on Armed Services, 90th Cong., 1st and 2d sess., 1967 and 1968.
- H-73. U.S. Congress. House. Committee on Armed Services. M-16 Rifle Procurement Program. Hearings before the Special Subcommittee on the M-16 Rifle Program of the House Committee on Armed Services, 90th Cong., 2d sess., 1968.
- H-74. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and an Act (S. 3293) to Authorize Appropriations during the Fiscal Year 1969 for Procurement of Aircraft, Missiles, Naval Vessels, and Tracked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes. Hearings before the House Committee on Armed Services, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
ASmp  
FY69
- H-75. U.S. Congress. House. Authorizing Appropriations for Military Procurement, Research and Development, Fiscal Year 1969, and Reserve Strength. H.R. Rept. 1645 from the House Committee on Armed Services to Accompany S. 3293, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
Mrp  
v.4
- H-76. U.S. Congress. House. Authorizing Appropriations for Military Procurement, Research and Development, Fiscal Year 1969, and Reserve Strength. Conference Rept. 1869 to Accompany S. 3293, 90th Cong., 2d sess., 1968.  
\*HR 90-2  
Mrp  
v.6
- H-77. U.S. Congress. House. Committee on Armed Services. M-16 Rifle Procurement Programs. Report by the Special Committee on the M-16 Rifle Program of the House Committee on Armed Services, 90th Cong., 2d sess., 1968.
- H-78. U.S. Congress. House. Committee on Armed Services. Selected Aspects of M-16 Rifle Program Contracts. Report Prepared on Recommendation of the House Committee on Armed Services, 90th Cong., 2d sess., 1968.
- H-79. U.S. Congress. House. Committee on Armed Services. Review of Army Tank Program. Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
ASrt
- H-80. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and Legislation to Authorize Appropriations during the Fiscal Year 1970 for Procurement of Aircraft, Missiles,  
\*HR 91-1  
ASmp  
FY 71

Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 1). Hearings before the House Committee on Armed Services, 91st Cong., 1st sess., 1969.

- H-81. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and Legislation to Authorize Appropriations during the Fiscal Year 1970 for Procurement of Aircraft, Missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 2). Hearings before the House Committee on Armed Services, 91st Cong., 1st sess., 1969.
- \*HR 91-1  
ASmp  
FY 70
- H-82. U.S. Congress. House. Committee on Armed Services. Review of Army Tank Program. Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1969.
- \*HR 91-1  
ASr
- H-83. U.S. Congress. House. Committee on Armed Services. Review of Army Tank Program. Report of the Armed Services Investigating Subcommittee of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1969.
- \*HR 91-1  
ASr
- H-84. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1970, for Military Procurement, Research and Development, and Reserve Strength, and for Other Purposes. H.R. Rept. 91-522 to Accompany H.R. 14000, 91st Cong., 1st sess., 1969.
- H-85. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1970, for military Procurement, Research and Development, and Reserve Strength, and for Other Purposes. Conference Rept. 91-607 to Accompany S. 2546, 91st Cong., 1st sess., 1969.
- H-86. U.S. Congress. House. Committee on Armed Services. Independent Research and Development. Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services, 91st Cong., 2d sess., 1970.
- \*HR91-1  
ASi
- H-87. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and Legislation to Authorize Appropriations during the Fiscal Year 1971 for Procurement of Aircraft, Missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 1). Hearings before the House Committee on Armed Services, 91st Cong., 2d sess., 1970.
- \*HR 92-1  
ASmp  
FY 71



- H-88. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and Legislation to Authorize Appropriations during the Fiscal Year 1971 for Procurement of Aircraft, Missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 2). Hearings before the House Committee on Armed Services, 91st Cong., 2d sess., 1970.
- \*HR 91-1  
ASmp  
FY 71
- H-89. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1971, for Military Procurement, Research and Development, and Reserve Strength, and for Other Purposes. H.R. Rept. 91-1022 to Accompany H.R. 17123, 91st Cong., 2d sess., 1970.
- H-90. U.S. Congress. House. Committee on Armed Services. Status of Shipyards (Part 1). Hearings before the Seapower Subcommittee of the House Committee on Armed Services, 91st Cong., 2d sess., 1970.
- H-91. U.S. Congress. House. Committee on Armed Services. Status of Shipyards (Part 2). Hearings before the Seapower Subcommittee of the House Committee on Armed Services, 91st Cong., 2d sess., 1970.
- H-92. U.S. Congress. House. Committee on Armed Services. Status of Shipyards (Part 3). Hearings before the Seapower Subcommittee of the House Committee on Armed Services, 91st Cong., 2d sess., 1970.
- H-93. U.S. Congress. House. Committee on Armed Services. Review of Independent Research and Development Program Management. Report of the Armed Services Investigating Subcommittee of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1970.
- \*HR 91-2  
ASr
- H-94. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1971, for Military Procurement, Research and Development, and for Anti-Ballistic Missile Construction; and Prescribing Reserve Strength. Conference Rept. 91-1473 to Accompany H.R. 17123, 91st Cong., 2d sess., 1970.
- H-95. U.S. Congress. House. Committee on Armed Services. Status of Shipyards. Report by the Seapower Subcommittee of the House Committee on Armed Services, 92d Cong., 1st sess., 1971.
- \*H-96. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and H.R. 3818 and H.R. 8687 to Authorize Appropriations during the Fiscal Year 1972 for Procurement of Aircraft, Missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected
- HR 92-1  
ASm  
FY 71

Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 1). Hearings before the House Committee on Armed Services, 92d Cong., 1st sess., 1971.

- H-97. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and H.R. 3818 and H.R. 8687 to Authorize Appropriations during the Fiscal Year 1972 for Procurement of Aircraft, Missiles, Naval Vessels, and Tracked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 2). Hearings before the House Committee on Armed Services, 92d Cong., 1st sess., 1971.
- \*HR92-1  
ASm  
FY 71
- H-98. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1972, for Military Procurement Research and Development, and Reserve Strength, and for Other Purposes. H.R. Rept. 92-232 to Accompany H.R. 8687, 92d Cong., 1st sess., 1971.
- H-99. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1972, for Military Procurement Research and Development, and Reserve Strength, and for Other Purposes. Conference Rept. 92-618 to Accompany H.R. 8687, 92d Cong., 1st sess., 1971.
- H-100. U.S. Congress. House. Committee on Armed Services. Marine Corps Procurement Practices: Conflicts of Interest. Report of the Armed Services Investigating Subcommittee of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1971.
- \*HR 92-1  
ASmc
- H-101. U.S. Congress. House. Committee on Armed Services. Marine Corps Procurement Practices: Conflicts of Interest. Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services, 92d Cong., 1st sess., 1971.
- \*HR 92-1  
ASmcp
- H-102. U.S. Congress. House. Committee on Armed Services. Crash of the F-14A. Report of the Armed Services Investigating Subcommittee of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1971.
- \*HR 92-1  
ASc
- H-103. U.S. Congress. House. Committee on Armed Services. Close Air Support. Hearings before the Special Subcommittee on Close Air Support of the Preparedness Investigating Subcommittee of the House Committee on Armed Services, 92d Cong., 1st sess., 1971.
- H-104  
\*HR 92-2  
ASmp
- U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and H.R. 12604 to Authorize Appropriations during the Fiscal Year 1973 for Procurement of Aircraft, Missiles, Naval Vessels, and Tracked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of



Each Reserve Component of the Armed Forces and for Other Purposes (Part 1). Hearings before the House Committee on Armed Services, 92d Cong., 2d sess., 1972.

- \* H-105. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and H.R. 12604 to Authorize Appropriations during the Fiscal Year 1973 for Procurement of Aircraft, Missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 2). Hearings before the House Committee on Armed Services, 92d Cong., 2d sess., 1972.
- H-106. U.S. Congress. House. Committee on Armed Services. Hearings on Military Posture and H.R. 12604 to Authorize Appropriations during the Fiscal Year 1973 for Procurement of Aircraft, missiles, Naval Vessels, and Trucked Combat Vehicles, Research, Development, Test and Evaluation for the Armed Forces and to Describe the Authorized Personnel Strength of the Selected Reserve of Each Reserve Component of the Armed Forces and for Other Purposes (Part 3). Hearings before the House Committee on Armed Services, 92d Cong., 2d sess., 1972.
- H-107. U.S. Congress. House. Committee on Armed Services. Army Procurement of the M561, Gama Goat. Hearings before the Armed Services Investigating Subcommittee of the House Committee on Armed Services, 92d Cong., 2d sess., 1972.  
\*HR 92-2  
ASap
- H-108. U.S. Congress. House. Committee on Armed Services. Army Procurement of the M561, Gama Goat. Report of the Armed Services Investigating Subcommittee of the House Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1972.  
\*HR 92-2  
ASa
- H-109. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1973, for Military Procurement, Research and Development, Certain Construction for Safeguard Antiballistic Missile System, Active Duty and Reserve Strength and for Other Purposes. H.R. Rept. 92-1149 from the House Committee on Armed Services to Accompany H.R. 15495, 92d Cong., 2d sess., 1972.  
\*HR 92-1149
- H-110. U.S. Congress. House. Authorizing Appropriations, Fiscal Year 1973, for Military Procurement, Research and Development, and for Antiballistic Missile Construction, and Prescribed Active and Reserve Strengths. Conference Rept. 92-1388 to Accompany H.R. 15495, 92d Cong., 2d sess., 1972.
- H-111. U.S. Congress. House. Committee on Banking and Currency. To Extend the Defense Production Act of 1950, as Amended. Hearings before the House Committee on Banking and Currency on H.R. 15683, 90th Cong., 2d sess., 1968.

- H-112. U.S. Congress. House. Committee on Banking and Currency. To Extend the Defense Production Act of 1950, as Amended. Hearings before the House Committee on Banking and Currency on H.R. 17880, 91st Cong., 2d sess., 1970.  
\*HR 91-2  
BC
- H-113. U.S. Congress. House. Committee on Banking and Currency. Report on the Feasibility of Applying Uniform Cost-Accounting Standards to Negotiated Defense Contracts by the Comptroller General of the United States, 91st Cong., 2d sess., 1970.  
R/C  
GAO  
CGr
- H-114. U.S. Congress. House. Committee on Foreign Affairs. Arms Control and Disarmament Act Amendments, 1968. Hearings before the House Committee on Foreign Affairs on H.R. 14940, 90th Cong., 2d sess., 1968.
- H-115. U.S. Congress. House. Committee on Foreign Affairs. Foreign Affairs Military Sales Act. Hearings before the House Committee on Foreign Affairs on H.R. 15681, 90th Cong., 2d sess., 1968.
- H-116. U.S. Congress. House. Committee on Foreign Affairs. Strategy and Science, Toward a National Security Policy for the 1970's. Hearings before the Subcommittee on National Security Policy and Scientific Developments of the House Committee on Foreign Affairs, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
FAs
- H-117. U.S. Congress. House. Committee on Foreign Affairs. Diplomatic and Strategic Impact of Multiple Warhead Missiles. Hearings before the Subcommittee on National Security Policy and Scientific Developments of the House Committee on Foreign Affairs, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
FAd
- H-118. U.S. Congress. House. Committee on Foreign Affairs. To Amend Foreign Military Sales Act. Hearings before the House Committee on Foreign Affairs on H.R. 15628, 91st Cong., 2d sess., 1970.
- H-119. U.S. Congress. House. Committee on Foreign Affairs. Arms Control and Disarmament Act Amendments, 1970. Hearings before the House Committee on Foreign Affairs on H.R. 16200, 91st Cong., 2d sess., 1970.
- H-120. U.S. Congress. House. Committee on Foreign Affairs. Congress, the President and War Powers. Hearings before the Subcommittee on National Security Policy and Scientific Developments of the House Committee on Foreign Affairs, 91st Cong., 2d sess., 1970.
- H-121. U.S. Congress. House. Committee on Foreign Affairs. War Powers Legislation. Hearings before the Subcommittee on National Security Policy and Scientific Developments of the House Committee on Foreign Affairs, 92d Cong., 1st sess., 1971.  
\*HR 92-1  
FAW
- H-122. U.S. Congress. House. Committee on Foreign Affairs. Arms Control and Disarmament Act Amendment. Hearings before the House Committee on Foreign Affairs on H.R. 13336, 92d Cong., 2d sess., 1972.

- H-123. U.S. Congress. House. Committee on Foreign Affairs. Concerning the War Powers of Congress and the President. Rept. 92-1302, 92d Cong., 2d sess., 1972.
- \*HR 92-1302
- H-124. U.S. Congress. House. Committee on Government Operations. Establishing a Commission on Government Procurement. Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967.
- \*HR 90-1  
GOe
- H-125. U.S. Congress. House. Committee on Government Operations. Brain Drain into United States of Scientists, Engineers, and Physicists. Staff Study of the Research and Technical Programs Subcommittee of the House Committee on Government Operations. Committee Print. Washington, D.C.: Government Printing Office, 1967.
- H-126. U.S. Congress. House. Committee on Government Operations. Rate of Progress Being Made by Government Agencies in Meeting the Requirements of the Budget and Accounting Procedures Act of 1950. Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967.
- \*HR 91-1  
GOr
- H-127. U.S. Congress. House. Committee on Government Operations. Defense Contract Audit Agency. Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967.
- \*HR 90-1  
GOD
- H-128. U.S. Congress. House. Committee on Government Operations. Better Management of Research Equipment Procurement and Utilization in Federal Laboratories. Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 1st sess., 1967.
- \*HR 90-1  
GOB
- H-129. U.S. Congress. House. Committee on Government Operations. Federal Research and Development Programs, Decision Making Process, Comments by National Academy of Science and Bureau of the Budget. Rept. 614, 90th Cong., 1st sess., 1967.
- \*HR 90-1  
GOh
- H-130. U.S. Congress. House. Committee on Government Operations. Planning, Programming, budgeting (Part 2, Testimony of Alan C. Enthoven). Hearings before the Subcommittee on National Security and International Operations of the House Committee on Government Operations, 90th Cong., 1st sess., 1967.
- H-131. U.S. Congress. House. Establishing a Commission on Government Procurement. H.R. Rept. 890, with Additional and minority Views, from the House Committee on Government Operations, to Accompany H.R. 12510, 90th Cong., 1st sess., 1967.
- \*HR 90-890
- H-132. U.S. Congress. House. Committee on Government Operations. Brain Drain into United States of Scientists, Engineers, and Physicists. Staff Study of the Research and Technical Programs

Subcommittee of the House Committee on Government Operations.  
Committee Print. Washington, D.C.: Government Printing  
Office, 1968.

- H-133. U.S. Congress. House. Committee on Government Operations. Defense Contract Audits. Sixteenth Report by the House Committee on Government Operations, 90th Cong., 2d sess., 1968.  
\*HR 90-1132
- H-134. U.S. Congress. House. Committee on Government Operations. Submission of Agency Accounting Systems for GAO Approval (2nd Review). Rept. 1159, 90th Cong., 2d sess., 1968.
- H-135. U.S. Congress. House. Committee on Government Operations. Foreign Research Dollar Drain. Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 2d sess., 1968.
- H-136. U.S. Congress. House. Committee on Government Operations. Military Communications, 1968. Hearings before a subcommittee of the House Committee on Government Operations, 90th Cong., 2d sess., 1968.
- H-137. U.S. Congress. House. Committee on Government Operations. Military Procurement of Airborne Rocket Launchers. Rept. 1836, 90th Cong., 2d sess., 1968.
- H-138. U.S. Congress. House. Committee on Government Operations. Procurement of Aircraft Rocket Launchers. Committee Print. Washington, D.C.: Government Printing Office, 1968.  
\*HR 91-774
- H-139. U.S. Congress. House. Committee on Government Operations. Budget Process in Federal Government. Report by the Subcommittee on Executive and Legislative Reorganization of the House Committee on Government Operations. Committee Print. Washington, D.C.: Government Printing Office, 1969.
- H-140. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 1). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR91-1  
G0g
- H-141. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 2). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
G0g
- H-142. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 3). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
G0g



- H-143. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 4). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
GOg
- H-144. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 5). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
GOg
- H-145. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 6). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
GOg
- H-146. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 7). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
GOg
- H-147. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 8). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
GOg
- H-148. U.S. Congress. House. Committee on Government Operations. Government Procurement and Contracting (Part 9). Hearings before a subcommittee of the House Committee on Government Operations on H.R. 474, 91st Cong., 1st sess., 1969.  
\*HR 91-1  
GOg
- H-149. U.S. Congress. House. Committee on Government Operations. Commission on Government Procurement. Rept. 91-468, 91st Cong., 1st sess., 1969.  
\*HR 91-468
- H-150. U.S. Congress. House. Committee on Government Operations. Procurement of 2.75-Inch Aircraft Rocket Launchers. Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 1st sess., 1969.
- H-151. U.S. Congress. House. Committee on Government Operations. Procurement of 2.75-Inch Aircraft Rocket Launchers. Rept. 91-774, 91st Cong., 1st sess., 1969.
- H-152. U.S. Congress. House. Committee on Government Operations. Efficiency and Effectiveness of Renegotiations Board Operations (Part 1, Testimony of Vice Adm. H.G. Rickover). Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970.
- H-153. U.S. Congress. House. Committee on Government Operations. Procurement of Architect and Engineer Services by Federal Government. Hearings before the House Committee on Government Operations, 91st Cong., 2d sess., 1970.

- H-154. U.S. Congress. House. Committee on Government Operations. Policy Changes in Weapon System Procurement. Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970.
- \*HR 91-2  
GOp
- H-155. U.S. Congress. House. Committee on Government Operations. Application of Aerospace and Defense Industry Technology to Environmental Problems. Hearings before a subcommittee of the House Committee on Government Operations, 91st Cong., 2d sess., 1970.
- H-156. U.S. Congress. House. Committee on Government Operations. Defense Industry Profit Study of the General Accounting Office. Hearings before a subcommittee of the House Committee on Government Operations, 92d Cong., 1st sess., 1971.
- \*HR 92-2  
G0d
- H-157. U.S. Congress. House. Committee on Government Operations. Extension of the Commission on Government Procurement. Hearings before a subcommittee of the House Committee on Government Operations on H.R. 4848, 92d Cong., 1st sess., 1971.
- \*HR 92-2  
G0e
- H-158. U.S. Congress. House. Extension of the Commission on Government Procurement. Rept. 92-145 from the House Committee on Government Operations to Accompany H.R. 4848, 92d Cong., 1st sess., 1971.
- \*HR 92-145
- H-159. U.S. Congress. House. Committee on Government Operations. Efficiency and Effectiveness of Renegotiations Board Operations (Part 2). Hearings before a subcommittee of the House Committee on Government Operations, 92d Cong., 1st sess., 1971.
- H-160. U.S. Congress. House. Committee on the Judiciary. Investigation of Conglomerate Corporations (Part 5, Litton Industries, Inc.). Hearings before the Antitrust Subcommittee of the House Committee on the Judiciary, 91st Cong., 2d sess., 1970.
- H-161. U.S. Congress. House. Committee on the Judiciary. Investigation of Conglomerate Corporations (Part 6, Ling-Temco-Vought, Inc.). Hearings before the Antitrust Subcommittee of the House Committee on the Judiciary, 91st Cong., 2d sess., 1970.
- H-162. U.S. Congress. House. Committee on Merchant Marine and Fisheries. National Marine Sciences Program (Part 1). Hearings before the Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries, 90th Cong., 1st sess., 1967.
- H-163. U.S. Congress. House. Committee on Merchant Marine and Fisheries. Prohibition Against Foreign-built Vessels. Hearings before the Subcommittee on merchant marine and Fisheries of the House Committee on merchant Marine and Fisheries on H.R. 163, 90th Cong., 2d sess., 1968.
- H-164. U.S. Congress. House. Committee on Merchant Marine and Fisheries. Merchant Marine Miscellaneous (Part 2, Military Sealift Procurement, etc.). Hearings before the House Committee on Merchant Marine and Fisheries, 92d Cong., 1st sess., 1971.



- H-165. U.S. Congress. House. Committee on Public Works. Amendments to the "Buy American Act." Hearings before the Subcommittee on Public Buildings and Grounds of the House Committee on Public Works on H.R. 13283 and Related Bills, 91st Cong., 2d sess., 1972.
- H-166. U.S. Congress. House. Committee on Science and Astronautics. Investigations into Apollo 204 Accident. Hearings before the Subcommittee on NASA Oversight of the House Committee on Science and Astronautics, 90th Cong., 1st sess., 1967. Vol. 1.
- H-167. U.S. Congress. House. Committee on Science and Astronautics. Investigations into Apollo 204 Accident. Hearings before the Subcommittee on NASA Oversight of the House Committee on Science and Astronautics, 90th Cong., 1st sess., 1967. Formal Accident Report, vol. 2.
- H-168. U.S. Congress. House. Committee on Science and Astronautics. Investigations into Apollo 204 Accident. Hearings before the Subcommittee on NASA Oversight of the House Committee on Science and Astronautics, 90th Cong., 1st sess., 1967. Vol. 3.
- H-169. U.S. Congress. House. Committee on Science and Astronautics. Technology Assessment Seminar. Proceedings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 90th Cong., 1st sess., 1967.
- H-170. U.S. Congress. House. Committee on Science and Astronautics. Inquiries, Legislation, Policy Studies Regarding Science and Technology, Review and Forecast. Second Progress Report of the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 90th Cong., 2d sess., 1968.
- H-171. U.S. Congress. House. Committee on Science and Astronautics. Utilization of Federal Laboratories. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 90th Cong., 2d sess., 1968.
- H-172. U.S. Congress. House. Committee on Science and Astronautics. Utilization of Federal Laboratories. Report of the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics. Committee Print. Washington, D.C.: Government Printing Office, 1968.
- H-173. U.S. Congress. House. Technical Information for Congress. Report to the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, Legislative Reference Service, Library of Congress. H. Doc. 91-137, 91st Cong., 1st sess., 1969.

\*HR 91-137

- H-174. U.S. Congress. House. Committee on Science and Astronautics. Centralization of Federal Science Activities. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 91st Cong., 1st sess., 1969.
- H-175. U.S. Congress. House. Committee on Science and Astronautics. Technology Assessment. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 91st Cong., 1st sess., 1969.
- H-176. U.S. Congress. House. Committee on Science and Astronautics. Technology Assessment (Part 2). Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 91st Cong., 1st sess., 1969.
- H-177. U.S. Congress. House. Committee on Science and Astronautics. Technology Assessment, 1970. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics on H.R. 17046, 91st Cong., 2d sess., 1970.
- H-178. U.S. Congress. House. Committee on Science and Astronautics. Technology Assessment (Part 2). Hearings before the Subcommittee on Science and Astronautics of the House Committee on Science and Astronautics on H.R. 17046, 91st Cong., 2d sess., 1970.
- H-179. U.S. Congress. House. Committee on Science and Astronautics. National Science Policy, H.R. 666. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 91st Cong., 2d sess., 1970.
- H-180. U.S. Congress. House. Committee on Science and Astronautics. Toward a Science Policy for the United States. Report of the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics. Committee Print. Washington, D.C.: Government Printing Office, 1970.
- H-181. U.S. Congress. House. Committee on Science and Astronautics. Science, Technology and the Economy. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 92d Cong., 2d sess., 1972.
- H-182. U.S. Congress. House. Committee on Science and Astronautics. National Science Policy and Priorities, Act of 1972. Hearings before the Subcommittee on Science, Research and Development, of the House Committee on Science and Astronautics, 92d Cong., 2d sess., 1972.

- H-183. U.S. Congress. House. Select Committee on Small Business. Position of Small business in Government Procurement. Hearings before the Subcommittee No. 2 on Government Procurement and Economic Concentration of the House Select Committee on Small Business Pursuant to H.R. 53, 90th Cong., 2d sess., 1968.
- \*HR 93-1  
SB  
v.3
- H-184. U.S. Congress. House. Select Committee on Small Business. Problems Facing Tool and Die Industry. Hearings before the Subcommittee on Special Small Business Problems of the House Select Committee on Small Business Pursuant to H.R. 66, 91st Cong., 1st sess., 1969.
- H-185. U.S. Congress. House. Select Committee on Small Business. Small business in Government Procurement, Before and After Defense Cutbacks. Hearings before the Subcommittee on Government Procurement of the House Select Committee on Small Business Pursuant to H.R. 96, 91st Cong., 2d sess., 1970.
- H-186. U.S. Congress. House. Select Committee on Small business. The Position and Problems of Small business in Government Procurement (1971). Hearings before the Subcommittee on Government Procurement of the House Select Committee on Small business Pursuant to H.R. 5 and H.R. 19, 92d Cong., 1st sess., 1971.
- \*HR 92-1  
SB
- H-187. U.S. Congress. House. Committee on Ways and Means. Extension of Renegotiation Act. Hearings before the House Committee on Ways and Means, 90th Cong., 2d sess., 1968.
- H-188. U.S. Congress. House. Committee on Ways and Means. Report on Renegotiation Act of 1951. Staff Report of the Joint Committee on Internal Revenue Taxation of the House Committee on Ways and Means, 90th Cong., 2d sess., 1968.

- J-1. U.S. Congress. Joint Atomic Energy Committee. AEC Authorizing Legislation, Fiscal Year 1968 (Part 3, Space Nuclear Systems, etc.). Hearings before the Joint Atomic Energy Committee, 90th Cong., 1st sess., 1967.
- J-2. U.S. Congress. Joint Atomic Energy Committee. Scope, Magnitude and Implications of United States Antibalistic Missile Program. Hearings before the Subcommittee on Military Applications, Joint Atomic Energy Committee, 90th Cong., 1st and 2d sess., 1967 and 1968.
- J-3. U.S. Congress. Joint Atomic Energy Committee. Naval Nuclear Propulsion Program, 1967-68. Hearings before the Joint Atomic Energy Committee, 90th Cong., 1st and 2d sess., 1967 and 1968.
- J-4. U.S. Congress. Joint Atomic Energy Committee. Nuclear Submarines of Advanced Design. Hearings before Joint Atomic Energy Committee, 90th Cong., 2d sess., 1968.
- J-5. U.S. Congress. Joint Atomic Energy Committee. Nuclear Submarines of Advanced Design (Part 2). Hearings before Joint Atomic Energy Committee, 90th Cong., 2d sess., 1968.
- J-6. U.S. Congress. Joint Atomic Energy Committee. Naval Nuclear Propulsion Program, 1969. Hearings before the Joint Atomic Energy Committee, 91st Cong., 1st sess., 1969.
- J-7. U.S. Congress. Joint Atomic Energy Committee. Naval Nuclear Propulsion Program, 1970. Hearings before the Joint Atomic Energy Committee, 91st Cong., 2d sess., 1970.
- J-8. U.S. Congress. Joint Atomic Energy Committee. Naval Nuclear Propulsion Program, 1971. Hearings before the Joint Atomic Energy Committee, 92d Cong., 1st sess., 1971.
- \*J 92-1  
AEn
- J-9 U.S. Congress. Joint Atomic Energy Committee. Nuclear Propulsion for Naval Warships. Hearings and Subsequent Inquiry of the Subcommittee on Military Applications, Joint Atomic Energy Committee, 92d Cong., 1st and 2d sess., 1971 and 1972.
- \*J 92-1,2  
AEn
- J-10. U.S. Congress. Joint Congressional Operations Committee. Federal Fiscal Year as It Relates to Congressional Budget Process. Hearings before Joint Congressional Operations Committee, 92d Cong., 1st sess., 1971.
- J-11. U.S. Congress. Joint Defense Production Committee. Defense Production Act Progress Report 50, On Potential Shortages of Ores, Metals, and Minerals, et al. 92d Cong., 1st sess., 1971.
- \*J 92-1  
DPd
- J-12. U.S. Congress. Joint Economic Committee. Economy in Government. Report of the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Printing Office, 1967.
- \*J 90-1  
\*Eeg



- J-13. U.S. Congress. Joint Economic Committee. Planning-Programming-Budgeting System, Progress and Potential. Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 90th Cong., 1st sess., 1967.  
\*J 90-1  
Ep
- J-14. U.S. Congress. Joint Economic Committee. Economy in Government-1967. Joint Committee Print submitted to the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Print Office, 1967.
- J-15. U.S. Congress. Joint Economic Committee. Planning, Programming, Budgeting System, Progress and Potential. Report of the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Printing Office, 1967.
- J-16. U.S. Congress. Joint Economic Committee. Economy in Government Procurement and Property Management. Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 90th Cong., 1st sess., 1967.  
\*J 90-1  
Ee
- J-17. U.S. Congress. Joint Economic Committee. Economics of Military Procurement (Part 1). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 90th Cong., 2d sess., 1968.  
\*J 90-2  
Ee
- J-18. U.S. Congress. Joint Economic Committee. Economics of Military Procurement (Part 2). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 90th Cong., 2d sess., 1968.  
\*J 90-2  
Ee
- \*J-19. U.S. Congress. Joint Economic Committee. Economy in Government Procurement and Property Management. Report of the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Printing Office, 1968.
- J-20. U.S. Congress. Joint Economic Committee. The Economics of Military Procurement (Part 1). Report of the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- J-21. U.S. Congress. Joint Economic Committee. The Analysis and Evaluation of Public Expenditures: The PPB System. Compendium of Papers Submitted to the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print, Vol. 1 (3 parts). Washington, D.C.: Government Printing Office, 1969.  
\*J 91-1  
ECa
- J-22. U.S. Congress. Joint Economic Committee. The Analysis and Evaluation of Public Expenditures: The PPB System. Compendium of Papers Submitted to the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print, Vol. 2 (Part IV: The Current Status of the Planning-Programming-Budgeting System). Washington, D.C.: Government Printing Office, 1969.

- J-23. U.S. Congress. Joint Economic Committee. The Analysis and Evaluation of Public Expenditures: The PPB System. Compendium of Papers Submitted to the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print, Vol. 3 (2 parts). Washington, D.C.: Government Printing Office, 1969.
- \*J 91-1  
Eca
- J-24. U.S. Congress. Joint Economic Committee. The Military Budget and National Economic Priorities (Part 1). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- J-25. U.S. Congress. Joint Economic Committee. The Military Budget and National Economic Priorities (Part 2). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- J-26. U.S. Congress. Joint Economic Committee. The Military Budget and National Economic Priorities (Part 3). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J 91-1  
Em
- J-27. U.S. Congress. Joint Economic Committee. Air Force A-7D Brake Problem. Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J 91-1  
Ea
- J-28. U.S. Congress. Joint Economic Committee. The Military Budget and National Economic Priorities. Report of the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Printing Office, 1969.
- \*J 91-1  
Em
- J-29. U.S. Congress. Joint Economic Committee. Economic Analysis and the Efficiency of Government (Part 1). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J92-1,2  
Eea
- J-30. U.S. Congress. Joint Economic Committee. Economic Analysis and the Efficiency of Government (Part 2). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J 92-1,2  
Eea
- J-31. U.S. Congress. Joint Economic Committee. Economic Analysis and the Efficiency of Government (Part 3). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J 92-1,2  
Eea
- J-32. U.S. Congress. Joint Economic Committee. The Dismissal of A. Ernest Fitzgerald by the Department of Defense. Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J 91-1  
Ed
- J-33. U.S. Congress. Joint Economic Committee. The Acquisition of Weapons Systems (Part 1). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 1st sess., 1969.
- \*J 91-92  
ECaws



- J-34. U.S. Congress. Joint Economic Committee. Economic Analysis and the Efficiency of Government. Report of the Subcommittee on Economy in Government, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Printing Office, 1970.
- J-35. U.S. Congress. Joint Economic Committee. The Acquisition of Weapons Systems (Part 2). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 2d sess., 1970.  
\*J 91-92  
ECaws
- J-36. U.S. Congress. Joint Economic Committee. Economic Performance and Military Burden in Soviet Union. Compendium of Papers Submitted to the Subcommittee on Foreign Economic Policy, Joint Economic Committee. Joint Committee Print. Washington, D.C.: Government Printing Office, 1970.  
\*J 91-2  
En
- J-37. U.S. Congress. Joint Economic Committee. Changing National Priorities (Part 1). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 2d sess., 1970.
- J-38. U.S. Congress. Joint Economic Committee. Changing National Priorities (Part 2). Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 91st Cong., 2 sess., 1970.
- J-39. U.S. Congress. Joint Economic Committee. Economic Issues in Military Assistance. Hearings before the Subcommittee on Economy in Government, Joint Economic Committee, 92d Cong., 1st sess., 1971.
- J-40. U.S. Congress. Joint Economic Committee. The Acquisition of Weapons Systems (Part 3). Hearings before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee, 92d Cong., 1st sess., 1971.  
\*J 91-92  
ECaws
- J-41. U.S. Congress. Joint Economic Committee. The Acquisition of Weapons Systems (Part 4). Hearings before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee, 92d Cong., 1st sess., 1971.  
\*J91-92  
ECaws
- J-42. U.S. Congress. Joint Economic Committee. The Acquisition of Weapons Systems (Part 5). Hearings before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee, 92d Cong., 1st sess., 1971.  
\*J 91-92  
ECaws
- J-43. U.S. Congress. Joint Economic Committee. The Acquisition of Weapons Systems (Part 6). Hearings before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee, 92d Cong., 2d sess., 1972.  
\*J 91-92  
ECaws

- S-1. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Apollo Accident (Part 1, Review of Background Information and Systems Decisions, etc.). Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-2. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Apollo Accident (Part 2, To Hear Preliminary Views and Recommendations, etc.). Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-3. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Apollo Accident (Part 3, Apollo 204 Review board, etc.). Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-4. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Apollo Accident (Part 5). Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-5. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Apollo Accident (Part 6). Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-6. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Apollo Accident (Part 8, Status of Action Taken, etc.). Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-7. U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Aeronautical Research and Development Policy. Hearings before the Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., 1967.
- S-8. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 1). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 10738, 90th Cong., 1st sess., 1967.  
\*S 90-1  
Ada  
FY 68
- S-9. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 2). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 10738, 90th Cong., 1st sess., 1967.
- S-10. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 3). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 10738, 90th Cong., 1st sess., 1967.
- S-11. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 4). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 10738, 90th Cong., 1st sess., 1967.

- S-12. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1968 (Part 5). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 10738, 90th Cong., 1st sess., 1967.
- S-13. U.S. Congress. Senate. Department of Defense Appropriation Bill, 1968.  
 Rept. 494 from the Senate Committee on Appropriations to Accompany H.R. 10738, 90th Cong., 1st sess., 1967.
- \*S 90-1 Mrp  
 V. 3  
 S-14. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 1). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 18701, 90th Cong., 2d sess., 1968.
- \*S 90-2 Ada  
 FY 69
- S-15. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 2). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 18701, 90th Cong., 2d sess., 1968.
- \*S 90-2 Ada  
 FY 69
- S-16. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 3). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 18701, 90th Cong., 2d sess., 1968.
- \*S 90-2 Ada  
 FY 69
- S-17. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 4). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 18701, 90th Cong., 2d sess., 1968.
- \*S 90-2 Ada  
 FY 69
- S-18. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1969 (Part 5). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 18701, 90th Cong., 2d sess., 1968.
- S-19. U.S. Congress. Senate. Department of Defense Appropriation Bill, 1969.  
 Rept. 1516 from the Senate Committee on Appropriations to Accompany H.R. 18707, 90th Cong., 2d sess., 1968.
- \*S 90-2 Mrp  
 V. 5
- \*91-1 U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 1). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 15090, 91st Cong., 1st sess., 1969.
- Ada  
 FY 70
- S-21. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 2). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 15090, 91st Cong., 1st sess., 1969.
- \*S 91-1 Ada  
 FY 70
- \*S-22. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 3). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 15090, 91st Cong., 1st sess., 1969.
- S 91-1 Ada  
 FY 70

- S-23. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 4). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 15090, 91st Cong., 1st sess., 1969.  
 \*S 91-1  
 Ada FY 70
- S-24. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 5). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 15090, 91st Cong., 1st sess., 1969.  
 \*S 91-1  
 Ada  
 FY 70
- S-25. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1970 (Part 6). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 15090, 91st Cong., 1st sess., 1969.  
 \*S 91-1  
 Ada  
 FY 70
- S-26. U.S. Congress. Senate. Department of Defense Appropriation Bill, 1970. Rept. 607 from the Senate Committee on Appropriations to Accompany H.R. 15090, 91st Cong., 1st sess., 1969.
- S-27. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 1, Department of Defense). Hearings before a subcommittee of the Senate Committee on Appropriations, 91st Cong., 2d sess., 1970.  
 \*S 91-2  
 Ada  
 FY 71
- S-28. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 2, Department of Army). Hearings before a subcommittee of the Senate Committee on Appropriations, 91st Cong., 2d sess., 1970.  
 \*S 91-2  
 Ada  
 FY 71
- S-29. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 3, Department of Navy). Hearings before a subcommittee of the Senate Committee on Appropriations, 91st Cong., 2d sess., 1970.  
 \*S 91-2  
 Ada  
 FY 71
- S-30. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 4, Department of Air Force). Hearings before a subcommittee of the Senate Committee on Appropriations, 91st Cong., 2d sess., 1970.  
 \*S 91-2  
 Ada  
 FY 71
- S-31. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1971 (Part 5, Secretary of Defense). Hearings before a subcommittee of the Senate Committee on Appropriations, 91st Cong., 2d sess., 1970.  
 \*S 91-2  
 Ada  
 FY 71
- S-32. U.S. Congress. Senate. Department of Defense Appropriation Bill, 1971. Rept. 1392 from the Senate Committee on Appropriations to Accompany H.R. 19590, 91st Cong., 2d sess., 1970.
- S-33. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 1). Hearings before a subcommittee of the Senate Committee on Appropriations, 92d Cong., 1st sess., 1971.  
 \*S 92-1  
 Ada  
 FY 72



- S-34. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 2). Hearings before a subcommittee of the Senate Committee on Appropriations, 92d Cong., 1st sess., 1971.
- \*S 92-1  
Ada  
FY 72
- S-35. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 3). Hearings before a subcommittee of the Senate Committee on Appropriations, 92d Cong., 1st sess., 1971.
- \*S 92-1  
Ada  
FY 72
- S-36. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1972 (Part 4). Hearings before a subcommittee of the Senate Committee on Appropriations, 92d Cong., 1st sess., 1971.
- S-37. U.S. Congress. Senate. Department of Defense Appropriation Bill, 1972. Rept. 92-498 from the Senate Committee on Appropriations to Accompany H.R. 11733, 92d Cong., 1st sess., 1971.
- S-38. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 1, Department of Defense, etc.). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 16593, 92d Cong., 2d sess., 1972.
- S-39. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 2, Department of Army). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 16593, 92d Cong., 2d sess., 1972.
- S-40. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 3, Department of Navy). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 16593, 92d Cong., 2d sess., 1972.
- S-41. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 4, Department of Air Force). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 16593, 92d Cong., 2d sess., 1972.
- S-42. U.S. Congress. Senate. Committee on Appropriations. Department of Defense Appropriations for Fiscal Year 1973 (Part 5, June 30, 1972, Budget Amendment, etc.). Hearings before a subcommittee of the Senate Committee on Appropriations on H.R. 16593, 92d Cong., 2d sess., 1972.
- S-43. U.S. Congress. Senate. Department of Defense Appropriation Bill, 1973.
- \*S 92-1243  
Rept. 92-1243 from the Senate Committee on Appropriations to Accompany H.R. 16593, 92d Cong., 2d sess., 1972.

- S-44. U.S. Congress. Senate. Committee on Armed Services. Military Procurement Authorization for Fiscal Year 1968. Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate Committee on Appropriations on S. 666, 90th Cong., 1st sess., 1967.  
 \*S 90-1  
 ASm  
 FY 68
- S-45. U.S. Congress. Senate. Authorizing Appropriations during Fiscal Year 1968 for Procurement of Aircraft, Missiles, Naval Vessels and Tracked Combat Vehicles, and Research and Development, Test and Evaluation for Armed Forces. Rept. 76 from the Senate Committee on Armed Services to Accompany S. 666, 90th Cong., 1st sess., 1967.  
 \*S 90-1  
 Mrp  
 v.1
- S-46. U.S. Congress. Senate. Investigation by the Committee on Armed Services. Rept. 969 from the Preparedness Investigating Subcommittee of the Senate Committee on Armed Services to Accompany S.R. 225, 90th Cong., 2d sess., 1968.  
 \*S 90-2  
 Mr  
 v.1
- S-47. U.S. Congress. Senate. Committee on Armed Services. Authorization for Military Procurement Research and Development Fiscal Year 1969 and Reserve Strength. Hearings before the Senate Committee on Armed Services on S. 3293, 90th Cong., 2d sess., 1968.  
 \*S 90-2  
 ASa  
 FY 69
- S-48. U.S. Congress. Senate. Authorizing Appropriations for Military Procurement, Research and Development, Fiscal Year 1969 and Reserve Strength. Rept. 1087 from the Senate Committee on Armed Services to Accompany S. 3293, 90th Cong., 2d sess., 1968.  
 \*S 90-2  
 Mr  
 v.1
- S-49. U.S. Congress. Senate. Committee on Armed Services. Additional Procurement of M-16 Rifles. Hearings before the Special M-16 Rifle Subcommittee of the Preparedness Investigating Subcommittee of the Senate Committee on Armed Services, 90th Cong., 2d sess., 1968.  
 \*S 90-2  
 ASap
- S-50. U.S. Congress. Senate. Amending Section 2306 of Title 10, United States Code, To Authorize Multi-year Procurements in Certain Cases. Rept. 1313 from the Senate Committee on Armed Services to Accompany H.R. 15789, 90th Cong., 2d sess., 1968.  
 \* S 90-2  
 Mr v.3
- S-51. U.S. Congress. Senate. Committee on Armed Services. Additional Procurement of M-16 Rifles. Report by the Special M-16 Rifle Subcommittee of the Preparedness Investigating Subcommittee of the Senate Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1968.
- S-52. U.S. Congress. Senate. Amending the Truth in Negotiations Act. Rept. 1506 from the Senate Committee on Armed Services to Accompany H.R. 10573, 90th Cong., 2d sess., 1968.
- S-53. U.S. Congress. Senate. Committee on Armed Services. Authorization for Military Procurement Research and Development Fiscal Year 1970 and Reserve Strength (Part 1). Hearings before the Senate Committee on Armed Services on S. 1192 and S. 2407, 91st Cong., 1st sess., 1969.



- S-54. U.S. Congress. Senate. Committee on Armed Services. Authorization for Military Procurement Research and Development Fiscal Year 1970 and Reserve Strength (Part 2). Hearings before the Senate Committee on Armed Services on S. 1192 and S. 2407, 91st Cong., 1st sess., 1969.
- S-55. U.S. Congress. Senate. Authorizing Appropriations for Fiscal Year 1970 for Military Procurement, Research and Development, and Further Construction of Missile Test Facilities at Kwajalein Missile Range, and Reserve Strength. Rept. 91-290 from the Senate Committee on Armed Services to Accompany S. 2546, 91st Cong., 1st sess., 1969.
- S-56. U.S. Congress. Senate. Committee on Armed Services. CVAN-70 Aircraft Carrier. Joint Hearings before the Joint Senate-House Armed Services Subcommittee (Appointed Pursuant to P.L. 91-121) of the Senate Committee on Armed Services, 91st Cong., 2d sess., 1970.
- S-57. U.S. Congress. Senate. Committee on Armed Services. Report on Joint Senate-House Armed Services Subcommittee on CVAN-70 Aircraft Carrier. Committee Print. Washington, D.C.: Government Printing Office, 1970.
- S-58. U.S. Congress. Senate. Committee on Armed Services. Authorization for Military Procurement Research and Development Fiscal Year 1971 and Reserve Strength (Part 1). Hearings before the Senate Committee on Armed Services on S. 3367 and H.R. 17123, 91st Cong., 2d sess., 1970.
- S-59. U.S. Congress. Senate. Committee on Armed Services. Authorization for Military Procurement Research and Development Fiscal Year 1971 and Reserve Strength (Part 2). Hearings before the Senate Committee on Armed Services on S. 3367 and H.R. 17123, 91st Cong., 2d sess., 1970.
- S-60. U.S. Congress. Senate. Committee on Armed Services. Authorization for Military Procurement Research and Development Fiscal Year 1971 and Reserve Strength (Part 3). Hearings before the Senate Committee on Armed Services on S. 3367 and H.R. 17123, 91st Cong., 2d sess., 1970.
- S-61. U.S. Congress. Senate. Authorizing Appropriations for Fiscal Year 1971 for Military Procurement, Research and Development, and Further Construction of Missile Test Facilities at Kwajalein Missile Range, and Reserve Strength. Rept. 91-1016 from the Senate Committee on Armed Services to Accompany H.R. 17123, 91st Cong., 2d sess., 1970.
- S-62. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1972 Authorization for Military Procurement, Research and Development, Construction and Real Estate Acquisition for Safeguard ABW and Reserve Strengths (Part 1). Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate

\*S 92-1  
ASa  
FY 72

Committee on Appropriations on S. 939 and H.R. 8687, 92d Cong., 1st sess., 1971.

- S-63. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1972 Authorization for Military Procurement, Research and Development, Construction and Real Estate Acquisition for Safeguard ABM and Reserve Strengths (Part 2). Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate Committee on Appropriations on S. 939 and H.R. 8687, 92d Cong., 1st sess., 1971.  
\*S 92-1  
ASa  
FY 72
- S-64. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1972 Authorization for Military Procurement, Research and Development, Construction and Real Estate Acquisition for Safeguard ABM and Reserve Strengths (Part 3, Research and Development). Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate Committee on Appropriations on S. 939 and H.R. 8687, 92d Cong., 1st sess., 1971.  
\*S 92-1  
ASa  
FY 72
- S-65. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1972 Authorization for Military Procurement, Research and Development, Construction and Real Estate Acquisition for Safeguard ABM and Reserve Strengths (Part 4, Research and Development). Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate Committee on Appropriations on S. 939 and H.R. 8687, 92d Cong., 1st sess., 1971.  
\*S 92-1  
ASa  
FY 72
- S-66. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1972 Authorization for Military Procurement, Research and Development, Construction and Real Estate Acquisition for Safeguard ABM and Reserve Strengths (Part 5, Bomber Defense, etc.). Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate Committee on Appropriations on S. 939 and H.R. 8687, 92d Cong., 1st sess., 1971.  
\*S 92-1  
ASa  
FY 72
- S-67. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1972 Authorization for Military Procurement, Research and Development, Construction and Real Estate Acquisition for Safeguard ABM and Reserve Strengths (Part 5, Supplement). Hearings before the Committee and the Subcommittee on the Department of Defense of the Senate Committee on Appropriations on S. 939 and H.R. 8687, 92d Cong., 1st sess., 1971.  
\*S 92-1  
ASa  
FY 72  
Suppl.1
- S-68. U.S. Congress. Senate. Committee on Armed Services. Advanced Prototype. Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971.
- S-69. U.S. Congress. Senate. Committee on Armed Services. Close Air Support. Hearings before the Special Subcommittee on Close Air Support of the Preparedness Investigating Subcommittee of the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971.  
\*S 92-1  
Asc

- S-70. U.S. Congress. Senate. Authorizing Appropriations for Fiscal Year 1972 for Military Procurement, Research and Development, and Further Construction of Missile Test Facilities at Kwajalein Missile Range, and Reserve Strength. Rept. 92-359 from the Senate Committee on Armed Services to Accompany H.R. 8687, 92d Cong., 1st sess., 1971.
- S-71. U.S. Congress. Senate. Authorizing Appropriations for Fiscal Year 1972 for Military Procurement, Research and Development, and Further Construction of Missile Test Facilities at Kwajalein Missile Range, and Reserve Strength. Conference Rept. 92-447 to Accompany H.R. 8687, 92d Cong., 1st sess., 1971.
- S-72. U.S. Congress. Senate. Committee on Armed Services. Weapon Systems Acquisition Process. Hearings before the Senate Committee on Armed Services, 92d Cong., 1st sess., 1971.  
\*S 92-1  
ASw
- S-73. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1973 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selective Reserve Strength (Part 1, Manpower). Hearings before the Senate Committee on Armed Services on S. 3108, 92d Cong., 2d sess., 1972.  
\*S 92-1  
ASa  
FY 73
- S-74. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1973 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selective Reserve Strength (Part 2). Hearings before the Senate Committee on Armed Services on S. 3108, 92d Cong., 2d sess., 1972.  
\*S 92-1  
ASa  
FY 73
- S-75. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1973 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selective Reserve Strength (Part 3). Hearings before the Senate Committee on Armed Services on S. 3108, 92d Cong., 2d sess., 1972.  
\*S 92-1  
ASa  
FY 73
- S-76. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1973 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selective Reserve Strength (Part 4). Hearings before the Senate Committee on Armed Services on S. 3108, 92d Cong., 2d sess., 1972.  
\*S 92-1  
ASa  
FU 73
- S-77. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1973 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selective Reserve Strength (Part 5). Hearings before the Senate Committee on Armed Services on S. 3108, 92d Cong., 2d sess., 1972.  
\*S 92-1  
ASa  
FY 73

- S-78. U.S. Congress. Senate. Committee on Armed Services. Fiscal Year 1973 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selective Reserve Strength (Part 6, Bomber Defense, etc.). Hearings before the Senate Committee on Armed Services on S. 3108, 92d Cong., 2d sess., 1972.
- \* S 92-2  
ASa  
FY 73  
\*S 92-2  
ASa  
FY 73/Adden.1  
S-79. U.S. Congress. Senate. Committee on Armed Services. Addendum 1: Amended Military Authorization Request. 92d Cong., 2d sess., 1972.
- S-80. U.S. Congress. Senate. Committee on Armed Services. Essentiality of Specialty Skills to National Security. Hearings before the Subcommittee on General Legislation of the Senate Committee on Armed Services, 92d Cong., 2d sess., 1972.
- S-81. U.S. Congress. Senate. Committee on Armed Services. Weapon Systems Acquisition Process. Hearings before the Senate Committee on Armed Services, 92d Cong., 2d sess., 1972.
- \*S 91-2  
ASw
- S-82. U.S. Congress. Senate. Authorizing Appropriations for Fiscal Year 1973 for Military Procurement, Research and Development, and Further Construction of Missile Test Facilities at Kwajalein Missile Range, and Reserve Strength. Rept. 92-262 from the Senate Committee on Armed Services to Accompany H.R. 8687, 92d Cong., 2d sess., 1972.
- S-83. U.S. Congress. Senate. Committee on Armed Services. Close Air Support. Report of the Special Subcommittee on Close Air Support of the Preparedness Investigating Subcommittee of the Senate Committee on Armed Services. Committee Print. Washington, D.C.: Government Printing Office, 1972.
- S-84. U.S. Congress. Senate. Committee on Banking and Currency. Extension of Defense Production Act and Uniform Cost Accounting Standards. Hearings before the Subcommittee on Production and Stabilization of the Senate Committee on Banking and Currency on S. 3302, 91st Cong., 2d sess., 1970.
- S-85. U.S. Congress. Senate. Committee on Foreign Relations. Arms Sales to Near East and South Asian Countries. Hearings before the Subcommittee on Near Eastern and South Asian Affairs of the Senate Committee on Foreign Relations, 90th Cong., 1st sess., 1967.
- S-86. U.S. Congress. Senate. Committee on Foreign Relations. Arms Sales and Foreign Policy. Committee Print. Washington, D.C.: Government Printing Office, 1967.
- S-87. U.S. Congress. Senate. Committee on Foreign Relations. Arms Control and Disarmament Act Amendment, 1968. Hearings before the Senate Committee on Foreign Relations, 90th Cong., 2d sess., 1968.



- S-88. U.S. Congress. Senate. Committee on Foreign Relations. Foreign Military Sales. Hearings before the Senate Committee on Foreign Relations on S. 3092, 90th Cong., 2d sess., 1968.
- S-89. U.S. Congress. Senate. Committee on Foreign Relations. Arms Control and Disarmament Act Amendment, 1970. Hearings before the Senate Committee on Foreign Relations on S. 3544, 91st Cong., 2d sess., 1970.
- S-90. U.S. Congress. Senate. Committee on Foreign Relations. Foreign Military Sales Act Amendment, 1970-71. Hearings before the Senate Committee on Foreign Relations on S. 2640 etc., 91st Cong., 2d sess., 1970.
- S-91. U.S. Congress. Senate. Committee on Foreign Relations. Documents Relating to War Power of Congress, the President's Authority as Commander-in-Chief, and War in Indochina. Committee Print. Washington, D.C.: Government Printing Office, 1970.
- S-92. U.S. Congress. Senate. Committee on Foreign Relations. Arms Control Implications of Current Defense Budget. Hearings before the Subcommittee on Arms Control, International Law and Organization of the Senate Committee on Foreign Relations, 92d Cong., 1st sess., 1971.
- S-93. U.S. Congress. Senate. Committee on Foreign Relations. War Powers Legislation. Hearings before the Senate Committee on Foreign Relations on S. 731 etc., 92d Cong., 1st sess., 1971.
- S-94. U.S. Congress. Senate. Committee on Foreign Relations. Arms Control and Disarmament Act Amendments. Hearings before the Senate Committee on Foreign Relations on S. 3200, 92d Cong., 2d sess., 1972.
- S-95. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, Budgeting. Hearings before the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations, 90th Cong., 1st sess., 1967.
- S-96. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, Budgeting: Official Documents. Prepared by the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations. Committee Print. Washington, D.C.: Government Printing Office, 1967.
- S-97. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, Budgeting: Selected Comments. Prepared by the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations. Committee Print. Washington, D.C.: Government Printing Office, 1967.

- S-98. U.S. Congress. Senate. Committee on Government Operations. Equitable Distribution of R & D Funds by Government Agencies (Part 2). Hearings before the Subcommittee on Government Research of the Senate Committee on Government Operations on S. 110, 90th Cong., 1st sess., 1967.
- S-99. U.S. Congress. Senate. Committee on Government Operations. Equitable Distribution of R & D Funds by Government Agencies (Part 3). Hearings before the Subcommittee on Government Research of the Senate Committee on Government Operations on S. 110, 90th Cong., 1st sess., 1967.
- \*S 90-1  
GOe
- S-100. U.S. Congress. Senate. Committee on Government Operations. Study of Certain Aspects of National Security and International Operations. Rept. 962 of the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations, 90th Cong., 2d sess., 1968.
- \*S 90-2  
Mrp  
v.1
- S-101. U.S. Congress. Senate. Senate Permanent Subcommittee on Investigation. Rept. 991 of the Senate Permanent Subcommittee on Investigations of the Senate Committee on Government Operations to Accompany S.R. 216, 90th Cong., 2d sess., 1968.
- \*S 90-s  
Mrp  
v.1
- S-102. U.S. Congress. Senate. Study of Research and Development Programs Financed by the Federal Government. Rept. 994 by the Subcommittee on Government Research of the Senate Committee on Government Operations to Accompany S.R. 227, 90th Cong., 2d sess., 1968.
- \*S 90-2  
Mrp  
v.1
- S-103. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, Budgeting (Part 3). Hearings before the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations, 90th Cong., 2d sess., 1968.
- S-104. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, Budgeting, Uses and Abuses of Analysis. Memorandum Prepared at Request of the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations, 90th Cong., 2d sess., 1968.
- S-105. U.S. Congress. Senate. Committee on Government Operations. Establish a Commission on Government Procurement. Hearings before the Senate Committee on Government Operations, 91st Cong., 1st sess., 1969.
- S-106. U.S. Congress. Senate. Committee on Government Operations. Capability of GAO to Analyze and Audit Defense Expenditures. Hearings before the Subcommittee on Executive Reorganization of the Senate Committee on Government Operations, 91st Cong., 1st sess., 1969.
- \*S 91-1  
G0c
- S-107. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, budgeting (Part 5). Hearings before the Subcommittee on National Security and International Operations of the Senate Committee on Government Operations, 91st Cong., 1st sess., 1969.
- \*S 91-1  
G0pp



- S-108. U.S. Congress. Senate. Committee on Government Operations. Planning, Programming, Budgeting. Inquiry of the Subcommittee on National Security and International Operations for the Senate Committee on Government Operations, 91st Cong., 2d sess., 1970.  
\*S 91-1  
G0p
- S-109. U.S. Congress. Senate. Committee on Government Operations. TFX Contract Investigations (Second Series) (Part 1). Hearings before the Permanent Subcommittee on Government Operations of the Senate Committee on Government Operations, 91st Cong., 2d sess., 1970.  
\*S 92-1  
G0t
- S-110. U.S. Congress. Senate. Committee on Government Operations. TFX Contract Investigations (Second Series) (Part 2). Hearings before the Permanent Subcommittee on Government Operations of the Senate Committee on Government Operations, 91st Cong., 2d sess., 1970.  
\*S 92-1  
G0t
- S-111. U.S. Congress. Senate. Committee on Government Operations. TFX Contract Investigations (Second Series) (Part 3). Hearings before the Permanent Subcommittee on Government Operations of the Senate Committee on Government Operations, 91st Cong., 2d sess., 1970.  
\*S 92-1  
G0t
- S-112. U.S. Congress. Senate. Committee on Government Operations. TFX Contract Investigation. Rept. 91-1496 by the Permanent Subcommittee on Investigation of the Senate Committee on Government Operations, 91st Cong., 2d sess., 1970.  
\*S 92-1496
- S-113. U.S. Congress. Senate. Financial Management in the Federal Government. Prepared by the U.S. General Accounting Office for the Senate Committee on Government Operations, S.Doc. 92-50, 92d Cong., 1st sess., 1971. Vol. II.  
\*S 92-50
- S-114. U.S. Congress. Senate. Committee on the Judiciary. Separation of Powers (Part 1). Hearings before the Subcommittee on Separation of Powers of the Senate Committee on the Judiciary, 90th Cong., 1st sess., 1967.
- S-115. U.S. Congress. Senate. Committee on the Judiciary. Competition in Defense Procurement. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary Pursuant to S.R. 233, 90th Cong., 2d sess., 1968.  
\*S 90-2  
Jc
- S-116. U.S. Congress. Senate. Committee on the Judiciary. Competition in Defense Procurement, 1969. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary Pursuant to S.R. 40, 91st Cong., 1st sess., 1969.
- S-117. U.S. Congress. Senate. Committee on the Judiciary. Executive Impoundment of Appropriated Funds. Hearings before the Subcommittee on Separation of Powers of the Senate Committee on the Judiciary, 92d Cong., 1st sess., 1971.

- S-118. U.S. Congress. Senate. Committee on the Judiciary. Executive Privilege, Withholding of Information by the Executive. Hearings before the Subcommittee on Separation of Powers of the Senate Committee on the Judiciary on S. 1125, 92d Cong., 1st sess., 1971.
- S-119. U.S. Congress. Senate. Committee on the Judiciary. Controls or Competition. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary Pursuant to S.R. 32, 92d Cong., 2d sess., 1972.
- S-120. U.S. Congress. Senate. Committee on Labor and Public Welfare. Scientific Manpower Utilization, 1965-1966. Hearings before the Special Subcommittee on Utilization of Scientific Manpower of the Senate Committee on Labor and Public Welfare on S. 2662, 89th Cong., 1st and 2d sess., 1965 and 1966.
- S-121. U.S. Congress. Senate. Committee on Labor and Public Welfare. Impact of Federal Research and Development Policies upon Scientific and Technical Manpower. Report and Recommendations of the Subcommittee on Employment of the Senate Committee on Labor and Public Welfare. Committee Print. Washington, D.C.: Government Printing Office, 1966.
- S-122. U.S. Congress. Senate. Committee on Rules and Administration. Office of Technology Assessment for Congress. Hearings before the Subcommittee on Computer Services of the Senate Committee on Rules and Administration on S. 2302 and H.R. 10243, 92d Cong., 2d sess., 1972.
- S-123. U.S. Congress. Senate. Select Committee on Small Business. Planning, Regulation and Competition. Hearings before subcommittees of the Senate Select Committee on Small Business, 90th Cong., 1st sess., 1967.
- S-124. U.S. Congress. Senate. Select Committee on Small Business. Technology Transfer. Hearings before the Subcommittee on Small Business of the Senate Select Committee on Small Business, 90th Cong., 1st sess., 1967.
- S-125. U.S. Congress. Senate. Select Committee on Small Business. Prospects for Technology Transfer. Report of the Subcommittee on Science and Technology of the Senate Select Committee on Small Business. Committee Print. Washington, D.C.: Government Printing Office, 1968.
- S-126. U.S. Congress. Senate. Select Committee on Small Business. Technology Transfer (Part 1). Hearings before the Subcommittee on Science and Technology of the Senate Select Committee on Small Business, 91st Cong., 2d sess., 1970.
- S-127. U.S. Congress. Senate. Select Committee on Small Business. Improvements in Government Small Business Procurement Practices, Adopted Pursuant to Recommendations. Committee Print. Washington, D.C.: Government Printing Office, 1970.

- S-128. U.S. Congress. Senate. Select Committee on Small Business. Small Business and Labor Surplus Area Set-Asides and 8(a) Subcontracts. Hearings before the Subcommittee on Government Procurement of the Senate Select Committee on Small Business, 91st Cong., 2d sess., 1970.
- S-129. U.S. Congress. Senate. Select Committee on Small Business. Federal Paperwork Burden (Part 2). Hearings before the Subcommittee on Government Regulation of the Senate Select Committee on Small Business, 92d Cong., 2d sess., 1972.

#### Books

- Argyris, Chris. Personality and Organization. New York: Harper and Row, 1957.
- Johnson, R.A.; Kast, F.E.; and Rosenzweig, J.E. The Theory and Management of Systems. New York: McGraw-Hill Book Co., Inc., 1963.
- Forrester, Jay W. Industrial Dynamics. Cambridge: MIT Press, 1968.
- Fox, J. Ronald, ed. Defense and Aerospace Glossary for Project Management. Washington, D.C.: Hawthorne Publishing Company, 1970.
- Proxmire, William. Report from Wasteland; America's Military/Industrial Complex. New York: Praeger Press, 1970.
- Fitzgerald, Arthur Ernest. The High Priest of Waste. New York: Norton, 1972.

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