433

91st Congress
1st Session

JOINT COMMITTEE PRINT

THE ECONOMICS OF MILITARY PROCUREMENT

REPORT

OF THE

SUBCOMMITTEE ON ECONOMY IN GOVERNMENT

OF THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

MAY 1969

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE

29-493 O WASHINGTON : 1969

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 20 cents

JOINT ECONOMIC COMMITTEE

[Created pursuant to sec. 5(a) of Public Law 304, 79th Cong.]

WRIGHT PATMAN, Texas, *Chairman*

WILLIAM PROXMIRE, Wisconsin, *Vice Chairman*

HOUSE OF REPRESENTATIVES	SENATE
RICHARD BOLLING, Missouri	JOHN SPARKMAN, Alabama
HALE BOGGS, Louisiana	J. W. FULBRIGHT, Arkansas
HENRY S. REUSS, Wisconsin	HERMAN E. TALMADGE, Georgia
MARTHA W. GRIFFITHS, Michigan	STUART SYMINGTON, Missouri
WILLIAM S. MOORHEAD, Pennsylvania	ABRAHAM RIBICOFF, Connecticut
WILLIAM B. WIDNALL, New Jersey	JACOB K. JAVITS, New York
DONALD RUMSFELD, Illinois	JACK MILLER, Iowa
W. E. BROCK 3D, Tennessee	LEN B. JORDAN, Idaho
BARBER B. CONABLE, JR., New York	CHARLES H. PERCY, Illinois

JOHN R. STARK, *Executive Director*

JAMES W. KNOWLES, *Director of Research*

ECONOMISTS

RICHARD F. KAUFMAN ROBERT H. HAVEMAN JOHN R. KARLIK

FRAZIER KELLOGG DOUGLAS C. FRECHTLING (*Minority*)

SUBCOMMITTEE ON ECONOMY IN GOVERNMENT

WILLIAM PROXMIRE, Wisconsin, *Chairman*

SENATE	HOUSE OF REPRESENTATIVES
JOHN SPARKMAN, Alabama	WRIGHT PATMAN, Texas
STUART SYMINGTON, Missouri	MARTHA W. GRIFFITHS, Michigan
LEN B. JORDAN, Idaho	WILLIAM S. MOORHEAD, Pennsylvania
CHARLES H. PERCY, Illinois	DONALD RUMSFELD, Illinois
	BARBER B. CONABLE, JR., New York

RICHARD F. KAUFMAN, *Economist*

CONTENTS

LETTERS OF TRANSMITTAL

MAY 23, 1969.

To the Members of the Joint Economic Committee:

Transmitted herewith, for your consideration and use and for the use of others Members of Congress and other interested parties, is a report entitled, "The Economics of Military Procurement" by the Subcommittee on Economy in Government.

Sincerely,

WRIGHT PATMAN,
Chairman, Joint Economic Committee.

MAY 22, 1969.

Hon. WRIGHT PATMAN,
Chairman, Joint Economic Committee,
U.S. Congress, Washington, D.C.

DEAR MR. CHAIRMAN: Transmitted herewith for your consideration and use and for the use of other Members of Congress, the business and academic communities, and other interested parties, is a report entitled "The Economics of Military Procurement," prepared by the Subcommittee on Economy in Government.

The report is based upon hearings which the subcommittee held in November 1968 and January 1969, continuing the work over many years of its predecessor, the Subcommittee on Federal Procurement and Regulation. These hearings have concentrated on the economic aspects of military procurement.

The absence of effective controls over the procurement of weapons systems and the existence of questionable practices in the Department of Defense is creating economic inefficiencies and waste, a subsidy to defense contractors, and an inflated defense budget. Huge cost overruns, waste and inefficiency have become the hallmarks of military procurement.

The hearings on which this report is based reinforce the judgment made by this subcommittee on earlier occasions that far-reaching changes must be brought about in order to obtain economy of operations in the Department of Defense.

Sincerely,

WILLIAM PROXMIRE,
Chairman, Subcommittee on Economy in Government.

THE ECONOMICS OF MILITARY PROCUREMENT

Introduction

Last year, fiscal year 1968, $44 billion was spent on defense procurement, equivalent to about 25 percent of the Federal budget. Total defense spending reached $80 billion. In recent years numerous instances of inefficiency, excessive profits, and mismanagement in defense contracting have been revealed by this subcommittee, other committees of Congress, and the General Accounting Office. Increasing concern over the enormous amounts spent on military procurement prompted the Subcommittee on Economy in Government of the Joint Economic Committee to hold hearings on profits and cost control in defense procurement. Testimony was received on November 11, 12, 13, and 14, 1968, and January 16, 1969.[1] [2] [3]

The subject matter of the hearings, economic aspects of military procurement, may be perceived as a relatively narrow set of issues. In the subcommittee's view, however, the enormous commitment of national resources to military systems makes the details and facts of procurement practices a central public policy issue. The wasteful, inefficient practices uncovered in the course of the hearings raise basic

[1] Due to the pressure of other responsibilities, Senator Symington was unable to fully participate in the hearings and other committee deliberations pertaining to this report and makes no judgment on the specific recommendations made therein.

[2] Congressman Donald Rumsfeld, Senator Len B. Jordan, and Senator Charles H. Percy, while in general agreement with this report, call attention to the fact that all the information and testimony cited in this report relate to procurement contracts in effect prior to the end of 1968. It is their belief that the irregularities and deficiencies in the procurement process reported here will encourage the new administration, which took office January 20, 1969, after the conclusion of this subcommittee's hearings, to press forward with the reforms necessary to save the American taxpayers millions of dollars while providing the defense capability necessary for peace and security.

They are encouraged that on April 30, 1969, Defense Secretary Melvin R. Laird expressed his concern over the costly C–5A transport plane and ordered the Air Force to make a thorough review of the multibillion-dollar contract. Secretary Laird said:

> I am determined to insure that full and accurate information on C–5A procurement, and all other procurement matters, is given to the Congress and to the public promptly. I also am determined to insure that past mistakes in the procurement of this transport aircraft will not be repeated.

They believe that the healthy, constructive pressures of a free enterprise system must be allowed to operate to provide a rebirth of competition in many of the sectors of the economy which provide the material needed for our national security. The leadership and stimulation needed in these areas must come from the new civilian leadership in the Department of Defense and the White House. It is their hope and belief that the new Administration will provide this leadership.

[3] Representative Barber B. Conable, Jr., states: "The hearings on this matter were held last year prior to my appointment to the Joint Economic Committee. Since I did not have an opportunity to hear the testimony, I neither endorse nor dissent from the conclusions herein."

questions concerning the Defense Department's management of its own affairs. It also makes us skeptical concerning the effectiveness and care with which the Defense budget is scrutinized by pertinent agencies outside of the Pentagon. If this government is to serve the public interest, close scrutiny of these billions of dollars of expenditures must be given high priority.

In the judgment of the subcommittee, there is 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. Indeed, the inefficiencies described in this report, in addition to being difficult to contend with, raise questions about the very nature and size of the Department of Defense, its place within the framework of the executive branch of Government, and its relationship and responsiveness to Congress. The real needs of the Nation, military and civilian, are too important to endanger through bureaucratic arrangements in an agency which in too many instances has been unable to control costs or program results.

I. Military Procurement Policy: A Problem of Uncontrolled Costs

A. *There exists in the Department of Defense a set of practices and circumstances which lead to:*

1. Economic Inefficiency and Waste

The extensive and pervasive economic inefficiency and waste that occurs in the military procurement program has been well documented by the investigations of this subcommittee, by other committees of the House and Senate, and by the General Accounting Office. The absence of effective inventory controls and effective management practices over Government-owned property is well known. In the past, literally billions of dollars have been wasted on weapons systems that have had to be canceled because they did not work. Other systems have performed far below contract specifications. For example, one study [1] referred to in the hearings shows that of a sample of 13 major Air Force and Navy aircraft and missile programs initiated since 1955 at a total cost of $40 billion, less than 40 percent produced systems with acceptable electronic performance. Two of the programs were canceled after total program costs of $2 billion were paid. Two programs costing $10 billion were phased out after 3 years for low reliability. Five programs costing $13 billion give poor performance; that is, their electronics reliability is less than 75 percent of initial specifications.

Actual costs of expensive programs frequently overrun estimated costs by several hundred percent. Assistant Secretary of the Air Force Robert H. Charles testified that "The procurement of our major weapons systems has in the past been characterized by enormous cost overruns—several hundred percent—and by technical performance that did not come up to promise." The greatest amount of cost overruns occur in negotiated, as opposed to competitive, contracts. Even where overruns do not occur, there is evidence that prices are being negotiated at too high a level from the beginning. Most procurement dollars are spent in the environment of negotiation. It is precisely in this area that the DOD has the heaviest responsibility for obtaining the best military equipment and supplies at the least possible price. In the judgment of the subcommittee, the DOD has not adequately fulfilled this responsibility.

2. A Subsidy to Contractors

The major portion of procurement costs are in the costs of research and development, material, labor, and overhead for which contractors are reimbursed. In theory, competition requires contractors to be efficient in order to minimize costs and maximize profits, and ineffi-

[1] "Improving the Acquisition Process For High Risk Military Electronics Systems," Richard A. Stubbing, CONGRESSIONAL RECORD, Feb. 7, 1969, p. 1450.

29-493 O—69——2

cient contractors should not be able to underbid their more efficient competitors. Competition is a method of cost control. However, as we have said, most defense contracts are awarded through negotiation, not competition. A number of mechanisms, such as the cost and other price data submissions required by the Truth-in-Negotiations Act, and incentive contracting, have been designed to act as cost controls for negotiated contracts, in lieu of competition. In the judgment of the subcommittee, these mechanisms have not constituted an effective system of controls over the costs of procurement.

The result of the absence of effective cost controls, coupled with a number of policies and practices discussed in this report, has resulted in a vast subsidy for the defense industry, particularly the larger contractors. These practices include loose handling of Government-owned property, interest-free financing of contractors, absence of comprehensive profits reports and studies, lack of uniform accounting standards, reverse incentives, and a special patent policy lucrative to the contractor. All of these things tend to benefit the contractor at the public's expense.

3. An Inflated Defense Budget

The total effect of unnecessary cost overruns, of hidden profits in "fat" contracts, of inefficiency and waste, and of the absence of cost controls is to create a bloated defense budget. Admiral Rickover testified that $2 billion of excessive costs results from the absence of uniform accounting standards alone. There is evidence that literally billions of dollars are being wasted in defense spending each year.

It is the judgment of the subcommittee that the defense budget has been bloated and inflated far beyond what an economy minded and efficient Department of Defense could and should attain.

B. These practices include:

1. Low Competition and High Concentration

Defense buying practices are reducing competition for Government contracts and increasing economic concentration within the defense industry. Formally advertised competitive military contract dollar awards dropped from 13.4 percent in fiscal year 1967 to 11.5 percent in fiscal year 1968. Single source procurement increased to 57.9 percent. These figures constitute a record low for competition and a record high for single source procurement over the past 5 years. Negotiated procurement in which more than one source was solicited comprised 30.6 percent of total contract awards, also a record low over the past 5 years.

The DOD maintains that there is a substantial degree of competition in negotiated procurement where more than one source of supply was solicited. However, too often in these cases technical performance rather than price has been the basis for contract awards. Competition must involve dollar cost as well as nonprice elements such as technical performance and date of delivery. Activity involving only one nonprice element usually cannot be considered competition, nor does it contribute beneficially to the public interest in defense procurement.

It is widely acknowledged that *true* competition significantly reduces the costs of procurement. Some experts believe that in the absence of effective competition, procurement costs are 25 percent to 50 percent higher than what they would be under competitive conditions. However, instead of competition, it is becoming increasingly clear that the "buy-in, get well later" method is commonly employed by contract rivals. Under this approach, a contractor may bid a lower price, higher performance, and earlier delivery than his rivals, knowing Pentagon officials will accept increased costs, less than promised performance, and late delivery. Inadequate management controls at the highest levels of Government have contributed to the development of these practices. The prevalence of these practices goes far in explaining why the estimated costs of individual contracts almost always increased and the performance of the weapon procured was often less than promised. Weapons procured in this manner, in the absence of true competition, have been characterized by high costs, poor performance, and late delivery of the end product.

DOD procurement is highly concentrated. A relatively small number of contractors receive most of the dollar value of defense contract awards. In fiscal year 1968, the 100 largest defense contractors were awarded 67.4 percent of total defense contracts, the highest percentage since 1965. To get on the list of the top 100 in fiscal year 1968 required $50 million in awards, up from $46 million in fiscal year 1967. These large contractors generally have assets of $250 million or more. Small firms (as defined by the Small Business Administration) received only 18.4 percent of defense prime contracts in fiscal year 1968, down from 20.3 percent in fiscal year 1967 and 21.4 percent in fiscal year 1966.

The larger, dominant defense firms tend to hold entrenched positions. Eighty-four of the top 100 firms appeared on both the fiscal year 1968 and fiscal year 1967 lists. Eighteen of the top 25 in 1967 were in the top 25 in 1968. The same five companies received prime contract awards of more than $1 billion each in fiscal year 1968 as in fiscal year 1967. There is other evidence of entrenchment and concentration in the defense industry, such as the tendency of divisions of certain large contractors to obtain major contracts from one service, for example, the Air Force, while divisions of the same or other large contractors consistently obtain major awards from the other services. In some specific areas of military procurement the Government does business not only with sole-source suppliers, but with absolute monopolies. The nature of the purchases and the limited quantities may not be adequate to justify more than one producer. For this reason, the Federal Government must improve its capability to control procurement costs in the absence of competition.

2. Government-Owned Property

In addition to the lack of competition for defense contracts, the Defense Department's policy of providing Government-owned property and working capital to defense contractors constitutes a Government subsidy and contributes to concentration within this industry. The cost of Government-owned equipment supplied to contractors sometimes exceeds the value of property owned by the

company. While the total value of Government-owned property in the hands of contractors declined from $14.6 billion in fiscal year 1967 to $13.3 billion in fiscal year 1968, reflecting primarily a drop in the amount of materials, in the important category of industrial plant equipment costing over $1,000, there was an increase from $2.6 to $2.7 billion. A disproportionate amount of this equipment was held by the larger contractors. Defense Department assurances that it is aware of the problems surrounding the use and control of the enormous amount of Government-owned property have so far yielded little tangible results in the form of improved performance in this area.

Last year this subcommittee found loose and flagrantly negligent management practices in defense procurement largely on the basis of facts surrounding Government-owned property furnished to contractors. [1] The subcommittee has no reason to alter this judgment.

3. Progress Payments

The Pentagon makes so-called progress payments to reimburse contractors for up to 90 percent of incurred cost, on a pay-as-you-go basis. These payments are not necessarily related to progress in the sense of work completed. Costs are often incurred greatly in excess of original estimates. It is possible, for example, for a contractor to incur costs equal to 75 percent of the original contract price while completing only 50 percent, or less, of the job. A more accurate term would be "incurred-cost reimbursement payments."

The important point is that the payments are made interest-free, prior to completion or delivery of the end-product. The contractor could operate largely without his own working capital, on capital supplied by the Federal Government, particularly in expensive, long leadtime procurement. For example, in the C–5A case, Lockheed received "progress" payments of $1.207 billion on reported incurred costs of $1.278 billion, as of December 27, 1968. In addition, the contract is being performed in a Government-owned plant. The plant and the Government-owned facilities employed at the plant have an original acquisition cost of $113.8 million.

In effect, considering the extensive use of Government-owned property and Government-supplied working capital—"progress payments"—the Defense Department provides negative incentives for the use of private capital, and tends to develop a financial stake in its contractors, especially those larger contractors which it favors with great amounts of Government-owned property and interest-free working capital. Contractors so favored have a sizable competitive advantage over others in the defense and civilian industries, and are actually highly subsidized.

Money advanced to contractors in the form of progress payments are really no-interest Government loans which inflate contractors' profits. Armed with free working capital a contractor may be able to bid low for more Government work, "finance" commercial work, or otherwise compete unfairly in the commercial market.

[1] Economy in Government Procurement and Property Management, Report of the Subcommittee on Economy in Government, Joint Economic Committee, April 1968.

4. Patent Policy

The Government's patent policy similarly tends to reduce competition and increase the concentration of economic power. Briefly, the Government permits contractors to obtain exclusive patent rights, free of charge, on inventions produced in the performance of Government contracts. The Defense Department normally retains only a nonexclusive royalty-free license for itself. The contractor, in other words, obtains a monopoly which he can exploit for his own private gain in the commercial market for inventions paid for by public moneys. This "fringe benefit" of doing business under Government contracts does not get reported as part of the contractor's profits. In effect, the public pays twice. Once through the Government contract; again in the marketing of the private monopoly.

It should be noted that the contractor's own patent policy differs from that of the Department of Defense. When contractors award contracts to independent research institutes, the contractors, not the research institutes, retain the patent rights. Further, the employees of contractors generally must agree that the contractor gets the patent rights to any inventions developed during their employment.

Admiral Rickover and Professor Weidenbaum agreed that permitting contractors to obtain patent rights from Government contracts reduces competition in defense industries because the "ins" get a competitive advantage over the "outs." Rickover stated that one-half of the patents acquired by contractors as a result of Government-financed research and development work are owned by 20 large corporations, "* * * the very same companies that receive the lion's share of contracts."

In contrast to general Government policy, the Atomic Energy Commission and the National Aeronautics and Space Administration are required by law to take Government title to inventions developed under Government contracts, subject to waiver of rights by the Government. The Government's policy amounts to a special privilege to contractors at the expense of taxpayers.

5. Subcontracting and Profit Pyramiding

The study of subcontracting in defense procurement is important for at least two reasons. First, subcontracting can provide an opportunity for small business to participate in Government work. Most small businesses cannot obtain prime contract awards. But they can supply prime contractors with a variety of goods and services. Second, profits in subcontracts turn up as part of the costs of the prime contract. Information about the amount and type of subcontracting and of subcontract profitability could be a valuable guide to current procurement costs and future policy. Unfortunately, the Defense Department has not been able to supply good information on these subjects.

DOD's collection of subcontracting data is inadequate. The only data which has been collected is the percentage of subcontracts that go to small business, on the basis of sampling. In fiscal year 1968, 886 large prime contractors awarded subcontracts worth $15.2 billion. Of

this sum, $6.5 billion went to small businesses, according to DOD. DOD also *estimates* that approximately 50 percent of the total amount of prime contract awards is subcontracted. This estimate seems to be based on data gathered by DOD during 1957–63 when prime contractors were required to report such information. Data on the total amount of subcontracting has not been collected since 1963. DOD cannot state with certainty whether subcontracting has increased or diminished since 1963, or whether prime contractors are tending to keep more or less of their work in-house.

Because DOD no longer collects complete data on subcontracting, we cannot know whether subcontracting is being awarded competitively or through sole sources, what kinds of work are being subcontracted, or whether subcontractors are required to submit cost data in compliance with the Truth in Negotiations Act. Admiral Rickover testified that there is a lack of effective price competition both at the prime contract and subcontract levels in shipbuilding procurement and that some major subcontractors have never provided the cost data required by the Truth in Negotiations Act.

Another serious omission has been the failure to collect information on subcontractor profits. The DOD profit review system compiles profit data for a sample of prime contract awards. These figures do not reflect profits taken by subcontractors which could involve several tiers. For example, a prime contractor might purchase a piece of machinery from a subcontractor. The subcontractor might purchase a component for the machinery from another subcontractor, and so on. Each of the subcontractors will earn a profit on the item supplied. The same final item, therefore, is likely to include a profit as part of its cost for each time it changed hands. In this manner, subcontractor profits are pyramided, layer upon layer, into the final cost.

When the prime contractor obtains the item, he, too, will add his profit to its cost. The Government pays for it on the basis of the prime contractor's cost plus the prime contractor's profit. Included in the prime contractor's cost are the pyramided profits of several subcontractors. However, profits are often considered to be only the amount realized by the prime contractor. Profit studies normally do not consider the hidden, pyramided layers of subcontractors' profits buried in the prime contractor's costs. Whether subcontractor profits are reasonable is entirely unknown to DOD or any other Government group. For this reason alone, defense profits may be seriously underestimated because the studies include only prime contractors' profits. The present policy of not gathering adequate information on subcontracting could be calculated to minimize the total amount of defense profits that are reported and to frustrate the thorough study of this important subject.

It is well recognized that subcontractors doing Government or non-Government business should be allowed to earn reasonable profits for their work. The issue here is that the DOD does not collect sufficient information to know whether subcontractors' profits on defense contracts are reasonable or excessive. The available data is also inadequate to reveal the level of competition among subcontractors, and the precise interrelationships between the prime contractors and the subcontractors. Further, it is presently not possible to determine whether prime contractors are charging the Government unreasonably for work done by subcontractors. In the subcommittee's judgment,

the thorough study and full disclosure of all the facts with respect to subcontractors' costs and profits, and their effects on the final costs to the Government, is frustrated by the DOD's present policy and practice.

6. Noncompliance and Waiver of the Truth-in-Negotiations Act

The Truth-in-Negotiations Act was passed in 1962. Its purpose was to give the Government better access to contractors' cost data so as to place Government on a more equal footing with industry in negotiating the prices of contracts. The Act is supposed to protect the taxpayer against overpricing where there is no true competition.

Investigations by this subcommittee and others over the past 2 years have demonstrated widespread noncompliance and other shortcomings with truth in negotiations. The Government's failure to fully implement it seems to be one of the major reasons. Lack of implementation occurs in two ways. First, the Government contracting officer can make a determination that competition is adequate, or that the price is based on a standard catalog price, and therefore that the Act should not apply. Such determination can be made with respect to a negotiated procurement even though there is, in fact, little or no actual competition for the contract. Once there is a determination that adequate competition exists, the Government does not obtain or evaluate cost and pricing data, or require the contractor to reveal the basis for his cost estimates, or to certify the completeness or accuracy of his cost information. Nor does the Government subsequently review the contractor's books or records. In effect, the price is set on the basis of uncertified, unevaluated data supplied by the contractor.

Second, the Government can waive the requirements under the Act for cost data. There is evidence that waivers are granted to many large contractors. In one recent case, the Navy waived the requirement for cost data in a $10 million procurement of propulsion turbines. According to Admiral Rickover, the price of the equipment was substantially higher than for similar equipment on a prior order. In addition, the price included a profit of 25 percent of costs. The contractor was one of the only two available sources capable of building the machinery. In response to requests for cost data, the contractor declined on the grounds that the proposed price was established "in competitive market conditions" and that "to supply any cost estimating data could only lead to misunderstanding." The waiver was granted over Admiral Rickover's objections.

The subcommittee also received evidence that the manufacturers of large computers are simply refusing to supply information specified in the Truth-in-Negotiations Act on orders for new design computers. In the face of contractor refusals to supply cost or pricing data for computers costing millions of dollars each, the Government has waived the provisions of the Act. According to the testimony of the General Services Administration, the Government is faced with a take-it-or-leave-it situation. The contractor will simply refuse to sell if the Government insists on the cost data. Moreover, there is evidence that few basic material suppliers such as steel mills, nickel producers, and forging suppliers comply with the cost data provisions of the Act.

Again, the tactic is (1) to persuade the Government contracting officer that competition is adequate, or that the price is based on a standard catalog price, and that the Act should not apply; or (2) to obtain a waiver of the cost data provisions.

The Truth-in-Negotiations Act permits the Government to make preaward audits of contractors' books to determine the adequacy of cost data in cases where the Act is applied. Investigations by GAO have revealed substantial overcharges to the Government as a result of the failure of the Department of Defense to obtain adequate cost and pricing data. Because preaward audits were not always effective in disclosing inadequate cost estimates, Congress amended the act to give the Government postaward audit rights, Public Law 90–512. The effectiveness of the postaward audit provision has not yet been determined. However, it should be kept in mind that the postaward audit provision cannot solve the problem of the failure to apply the Act, or the granting of waivers. Furthermore, the Comptroller General testified to this subcommittee in 1967 that a GAO review showed there had been full compliance with the Act in only about 10 percent of the transactions tested. We are not aware that the record of compliance has improved.

7. Absence of Uniform Accounting Standards

In addition, the Truth-in-Negotiations Act often cannot place the Government on a more equal footing with industry in negotiating the prices of contracts, even when there is compliance, because of the inherent difficulties of determining costs and profits under present accounting practices.

For example, it may not be possible for the Government to determine whether direct and indirect costs on Government and commercial work have been properly allocated by the contractor. In one case, reported by Admiral Rickover, the Navy allowed a shipbuilder to charge salaries and other pay directly on Government contracts, while similar costs on commercial contracts were charged as overhead and allocated to both Government and commercial work. The Government was thus paying directly for work done on Government contracts and indirectly for work done on commercial contracts. The Navy had accepted these costing methods because the contractor's system conformed to "generally accepted accounting principles." In this particular case the GAO eventually found that the Government had been overcharged by over $5 million.

The fact is that there is wide disagreement on how particular costs should be handled and profits calculated under "generally accepted accounting principles." For this reason, experts may come to completely different conclusions about costs or profits in an individual case. In a case still pending, where the Government entered into several multimillion dollar contracts with the Westinghouse Co. for nuclear propulsion components, the contractor indicated his price included a 10-percent profit based on costs. GAO found that the contractor made actual profits of 45 to 65 percent of costs, and that he knew or should have known at the time he submitted cost breakdowns that the higher profits would be realized. Later the Defense Contract Audit Agency decided the contractor should have expected to realize 20- to 27-percent profits. Thus, two different Government auditing

agencies are in sharp disagreement over the amount of profits in these contracts. The vagueness of "generally accepted accounting principles" is generally acknowledged. In a recent case, the Armed Services Board of Contract Appeals stated in its opinion:

> "Except insofar as the ASPR (Armed Services Procurement Regulation) cost principles themselves reflect generally accepted accounting principles, it is difficult for the Board or the parties to cost contracts to govern their determinations by such an elusive and vague body of principles."

Under the Armed Services Procurement Regulations, cost principles are set forth for cost-reimbursement-type contracts for the purpose of denying certain costs, such as bad debts. These principles are not mandatory in fixed-price contracting. Yet fixed-price contracts constitute more than 75 percent of defense procurement. Thus there are no mandatory cost principles in the regulations for 75 percent of defense procurement. The cost principles that do exist have the effect of only disallowing certain items. They do not constitute uniform standards.

Finally, contractors are not required to maintain books and records on firm-fixed-price contracts, constituting 53 percent of defense procurement. Where contractors are required to maintain records, they must conform only to "generally accepted accounting principles," and may not show the cost of Government work. Admiral Rickover testified that a sole source supplier of nuclear propulsion units refuses to keep accounting records showing the cost of manufacturing the components. Thus, although he complies with the Truth-in-Negotiations Act, the absence of accounting records prevents a determination of whether his prices are reasonable. For example, a contractor may submit cost data at the time the price of the contract is being negotiated, but afterwards, during performance of the contract, not keep adequate books and records. Colonel Buesking testified, "I have yet to see a contractor's accounting system in major programs that can adequately determine the unit cost of hardware."

Uniform accounting standards for all defense contracts have been advocated to facilitate the measurement of costs and profits. The GAO is now undertaking a feasibility study of such standards at the direction of Congress. Regardless of the outcome of the study, it is clear that the Government often cannot determine the reasonableness of costs or profits on defense contracts under present cost accounting methods.

8. Voluminous Change Orders and Contractors' Claims

It is often necessary to make changes in the design or production of an item after the contract is awarded. This is especially true for the more complex weapons and equipment such as missiles, fighter planes, bombers, and their electronic components. There may be thousands of changes on such procurements. The production of the B–47 bomber in the 1950's involved about 8,000 changes. The Minuteman program has involved at least that number. Change orders generally increase the cost of a contract.

The Government pays the price if it originated the change or was in any way responsible for it. Because of the great number of changes, and the fact that the total cost of the changes may exceed the original

price of a given contract, it would be reasonable to assume that records are maintained of the cost of each individual change and of their origin as to the Government's liability. Again, DOD has failed to keep adequate records or to even require that contractors keep adequate records.

Contractors are not required to account for change notices separately. As a result, it is usually not 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 have been. Admiral Rickover testified.

> "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 system will never show the cost of the work. The Government can never really evaluate the amounts claimed or check up to see if it paid too much."

Under the present system of nonaccountability, it is possible for contractors to inflate costs by pricing changes, and to attribute cost overruns to contract changes. In the vernacular of the world of defense contracts, change notices are sometimes referred to as contract nourishment.

Many claims against the Government result from formal contract changes. Others are produced by constructive change notices which may occur in a telephone conversation between a DOD official and an officer of the contracting company. The contractor might obtain relief orally from meeting a contract specification, or claim that an act God or a strike prevented him from meeting the contract schedule.

Regardless of the origin of a claim, the Government is often at a disadvantage in meeting it. A contractor may have a large staff begin preparing and documenting a claim the day work begins on the contract. Although fully documented, however, accounting records seldom support the costs claimed. Nevertheless, the claim may be pursued over a period of years until it is finally disposed of. DOD does not keep records of unfounded or exorbitant claims, nor does it consider such information in awarding subsequent contracts.

9. The Failure of Incentive Contracting

Another attempt to find a substitute for competition has been the use of incentive contracts. The Defense Department began using incentive contracts extensively in 1962. The shift in emphasis reflected the widely held belief within the Defense Department that the cost-plus-fixed-fee (CPFF) contracts commonly used up to that time for major weapons systems procurement did not result in adequate control over costs. Since 1962 the decline of CPFF contracts and the increase of incentive contracts has been substantial.

The goal of the incentive contract is to motivate the contractor to be efficient and control his costs. The mechanism is a provision in the contract entitling the contractor to retain a portion of any cost underrun as additional profits. That is, the Government and the contractor agree on a target cost as part of the contract price. They also agree on a profit as part of the price. If the actual costs turn out to be less than the target cost, the contractor retains part of the

underrun as an increased profit. If the actual cost exceeds the target costs, the contractor must bear a portion of the overrun and his profit is reduced. The profit-sharing provision is the hoped for incentive which will cause the contractor to increase the underrun so as to increase his profit.

The Defense Department has maintained that incentive contracting is an improvement over cost-plus-fixed-fee contracts. Beyond question, the problem of cost control during the period when CPFF contracts predominated was very great. Assistant Secretary of the Air Force Robert H. Charles referred in his testimony to the "enormous cost overruns of several hundred percent" for major weapons systems procurement in the past. He attributed a substantial portion of the cost overruns to the use of cost reimbursement type contracts and the absence of price competition.

The question, however, is, first of all, whether incentive contracting is, in principle, an effective means of controlling the costs of procurement, and secondly, whether it has succeeded in practice. The Defense Department claims success on both counts, although conceding the difficulty of demonstrating the effectiveness of incentive contracts as opposed to CPFF contracts, since they cannot both be utilized on the same project at the same time. On the other hand, much evidence was received which casts doubt on the proposition that incentive contracts result in cost savings, at least in practice.

Indeed, the experience of incentive contracting shows that it can increase both profits *and costs*. For while a contractor may increase his profit by performing efficiently to produce an underrun, another way of producing an underrun is to inflate the original target cost as much as possible. As Irving Fisher of the RAND Corp. pointed out in the hearings November 13, 1968, the problem of overstated target costs is significant because most weapon system procurement is negotiated without price competition, and many of the development contracts awarded competitively are awarded on the basis of technical or nonprice rivalry. In situations where target costs are negotiated, the opportunity for contractors to increase them is great.

The evidence suggests that incentive contracts have not accomplished their intended goal of increased efficiency or reduced costs, and that they may actually be contributing to a general upward shift in target costs. Whether this is inherent in the incentive contracting approach, or the result of poorly applied but valid concepts, we are not prepared to say. However, we feel that burden of proof that the concept is indeed valid rests squarely on the Department of Defense. We are so far unconvinced that this approach is the best that can be designed to effectively control procurement contract costs.

10. The Conceptual Problems in Using Historical Cost Analysis and the Failure to Use "Should Costing"

The analysis of cost and pricing data is a crucial factor in determining the amount the Government spends on weapons programs. Without good cost analysis and cost estimation, the Government is unable to control the costs of procurement, much of which is based on original estimates. That is, the price of a contract is negotiated on the basis of cost estimates submitted by the contractor. An inflated estimate can result in an inflated price unless DOD can properly evaluate

estimated cost data. Yet, as indicated above, the Defense Department's ability to adequately analyze cost data is severely limited by the lack of information on profitability, the absence of data on subcontracting, the shortcomings of the Truth-in-Negotiations Act, and the nonexistence of uniform accounting standards.

Another obstacle to adequate analysis is the fact that cost estimation presently relies extensively on past experience; that is, historical costs are used to provide estimates of the future costs of proposed weapons systems. Historical costs refer to the actual costs of performing earlier contracts. They are often insufficient and misleading guides to estimating the costs of new contracts for several reasons. For example, it is possible for the cost of performing a contract to be inflated intentionally or through contractor inefficiency, and for the costs of that contract to influence the estimation of costs on subsequent contracts.

As the testimony showed, historical costs are no better than the underlying data on which they are based. If the costs of previous procurements were obtained without competition, estimates based on them probably would not be comparable to costs determined competitively. As we know, most procurements in the DOD data bank were not awarded competitively. In fact, many of the earlier contracts were the CPFF type in which some of the most extreme cases of cost overruns occurred.

The use of historical costs may give the contractor a premium to inflate his cost base. The inflated costs of previous contracts may then become the new cost base figure for subsequent production runs and subsequent contracts. If profit is calculated by DOD as a percentage of costs, the contractor may be given a profit motive to increase costs. The only party hurt in this scheme is the American taxpayer.

Implicit in the criticism of historical cost is the point that the cost of a particular contract may have been excessive because of contractor inefficiency. The possibility that contractor inefficiency may be a significant problem was brought out in the testimony of Colonel Buesking (U.S. Air Force, retired) and A. E. Fitzgerald, Deputy for Management Systems, Office of the Assistant Secretary of the Air Force. Both witnesses compared the probable cost approach, which employes historical costs, and the should-cost approach to Government estimates.

The should-cost approach attempts to determine the amount that weapons systems or products *ought* to cost given attainable efficiency and economy of operation. The method of determining the should-cost figure is based on a combination of industrial engineering and financial management principles. Briefly, a study is made at a contractor's plant of each of the cost elements of the contractor's operation to ascertain what the product should cost the Government, assuming reasonable efficiency and economy on the part of the contractor. Obviously, this approach differs sharply from the traditional one in which costs are estimated in advance on the basis of earlier costs, and in which the Government thereafter reimburses the contractor for incurred and allocable costs without finding out whether the costs were reasonable.

According to the testimony, when the should cost approach was employed by the Navy in connection with the TF–30 engine contract for the F–111 program, substantial inefficiencies were detected in the contractor's plant. As a result of the study, the contract price was later reduced by more than $100 million.

It is difficult to see how the Government can be assured that incurred costs will be reasonable on negotiated contracts without the benefit of a should-cost type in-depth study and evaluation. Col. A. W. Buesking (U.S. Air Force, retired) testified that selected evaluations of resource planning and control systems conducted to assess contractor's capability to meet standards of efficiency revealed that control systems essential to prevent excessive costs were absent. He estimated that costs in such plants are 30 to 50 percent in excess of what they might be under competitive conditions. When Admiral Rickover was asked to comment on Colonel Buesking's statement, he said, "His estimate is a conservative one." Establishing objective cost performance standards would be an important step toward cost control.

11. Absence of Ongoing Cost Reports to Congress

Equally important is the need for devising a method to periodically report actual costs to Congress as they are incurred on large negotiated contracts. Presently, it is difficult for the Members of Congress and the public to know whether a program is staying within or exceeding original cost estimates and the negotiated price, during the period of contract performance. Reports of actual costs should be correlated with planned cost of work segments satisfactorily completed. In this way, cost estimates could be compared with incurred costs.

It may also be desirable to relate progress payments to real progress, in the sense of work segments satisfactorily completed, rather than simply incurred costs, and to report the volume and cost of contract change notices. Finally, a full cost report system would include the profit rate negotiated and realized, and estimated and realized profits as a return on investment. If this were done, Congress would at least have available to it indicators of contract objectives and contract costs which would make it possible to detect serious overruns and delays, and to determine on an ongoing basis the cost status of the contract.

C. *The manifestation of these practices are:*

1. High Defense Profits

Perhaps the most glaring fact about defense profits is that not enough is known about them. The DOD cannot accurately state what profits are in defense procurement. First, it defines profits as a percentage of costs, and does not report profits as a return on investment. Second, DOD does not obtain complete information about profits on firm fixed-price contracts. During fiscal year 1968, firm fixed-price contracts made up about 53 percent of total expenditures for defense procurement. Third, without uniform accounting standards, it is difficult, if not impossible, to discover the costs and profits in defense production unless months are spent to reconstruct contractors' books. The reason for this is that contractors are not required to maintain books and records on most defense contracts. Thus, while the profit *rate* is designated at the time a contract is negotiated, the profit actually realized in the performance of the contract cannot be known and verified without an expensive, time-consuming audit.

The DOD collects data on less than half of annual contract awards, and the data it collects is inadequate. Studies conducted independently

of the Pentagon are admittedly sketchy. Among other problems, (1) the trend toward conglomerate mergers among large defense suppliers obscures the opportunity for determining defense profits as their data is published in the aggregate without separating sales and profits by division, and (2) neither the DOD nor their contractors will readily furnish profit data to congressional or academic investigators.

No complete and comprehensive study of this subject has ever been made by any agency of the executive branch or by the GAO. Contractors are not required to report their profits on most Government contracts. The DOD does not keep adequate records of contractors' profits. In view of the tens of billions of dollars of taxpayers' money spent on defense contracts each year, the Government's lack of knowledge about defense profits is inexcusable.

One difficulty is in defining what is meant by profits. GAO and DOD surveys deal with profits as a percentage of costs. On this basis a 10-percent profit rate on a contract for a weapon that cost $1 million to produce would result in a profit of $100,000. But profits as a percentage of costs or sales is often an inaccurate indicator of true profits. For example, if a contractor is able to use Government-owned equipment or operate in a Government-owned plant, he may have a relatively small investment in a given contract. In such a case, his profit may be more accurately measured as a percentage or return on investment. Thus, on a $1 million contract, performed in a given year, where the contractor had an investment of $500,000 worth of plant and equipment, a $100,000 profit would be equal to a 20-percent return on investment.

An example of how a low profit as a percentage of costs can be misleading is found in a case decided by the Tax Court involving Air Force contracts (*North American Aviation Inc.* v. *Renegotiation Board, 1962*). In that case, while the contract provided for 8 percent profits as a percentage of costs, the Tax Court found the contracts returned 612 percent and 802 percent profit on the contractor's investment in 2 succeeding years, according to Admiral Rickover. In that case 99 percent of the contractor's sales was to the Government. Indeed, profits as a return on investment is the preferred method of measuring profitability. Stockholders are concerned with the return on their investment, not with profits as a percentage of costs or sales. Return on investment is also a better indicator of the profit in relation to the contractor's input.

It is interesting to note that defense companies operate on smaller profit margins, based on percentage of costs, than do typical industrial corporations. Basically, this is because they often operate with large amounts of Government-supplied capital. Professor Murray Weidenbaum studied a sample of large defense contractors doing three-fourths or more of their business with the Government compared with similar sized industrial companies doing most of their business in the commercial market. Net profits as a percentage of stockholders' investment was 17.5 percent for the defense contractors and 10.6 percent for the industrial firms, for the period 1962–65.

The first question asked in this investigation was whether defense contractors' profits are too high. Much criticism of defense profits has been made in recent years. Critics maintain there is a serious problem

of excessive profits. Others assert the opposite, that defense profits may be too low.

Although our present knowledge is incomplete, there is evidence that profits on defense contracts are higher than in related nondefense activities, and higher for the defense industry than for the manufacturing industry as a whole. There is also evidence that this differential has been increasing. The arguments of the Department of Defense to the contrary are unconvincing. The Pentagon's own figures show a 22-percent increase in profit rates on negotiated contracts under the weighted guidelines method of profit computation. GAO found a 26-percent increase in a study comparing the 5-year period from 1959 through 1963 with the average profit rate negotiated during the last 6 months of 1966. DOD claims the increases relate only to "going in" profits negotiated, and that actual "coming out" or realized profits are less. But the DOD in-house profit review survey shows that contractors are coming out with profits that are substantially the same as the going in rates. In addition, when Admiral Rickover made a comparison of profits reported and actual profits as determined by Government audit for five contractors, actual profits were found to be much higher than profits reported. Admiral Rickover also testified that suppliers of propulsion turbines are insisting on 20- to 25-percent profit on costs as compared with 10 percent a few years ago, that several nuclear equipment suppliers are requesting 15- to 20-percent profit, that profit percentages on shipbuilding contracts doubled in the past 2 years, and that a large company recently priced equipment to a Navy shipbuilder at a 33-percent profit.

Col. A. W. Buesking testified that profits based on return on investment in the Minuteman program, from 1958 to 1966, were 43 percent. Profits for the large companies seem to be relatively higher than the smaller and medium-sized ones, according to the studies already completed.

Officials of the Department of Defense have attempted to answer the criticism of high profits in defense contracting by citing Renegotiation Board figures. Yet, in the annual reports, the Renegotiation Board warns against using its figures for generalizing about defense profits. One of the reasons for not using these figures is the fact that a large amount of contract awards are exempt from renegotiation and therefore do not show up in the totals for renegotiable sales. In addition, the Board does not publish figures for profits as a return on investment, nor does it disclose the names of contractors who have been ordered to return excessive profits to the Government and the amounts involved. Unless such disclosures are made so that profits on renegotiable sales can be fully analyzed, we agree that Renegotiation Board figures should not be used to generalize about profitability in defense contracting.

Officials of the Department of Defense have also attempted to answer its critics with the results of a study performed by the Logistics Management Institute (LMI). LMI was created by the DOD and in the past has worked almost exclusively for DOD. The LMI profits study was financed by DOD.

The LMI study used unverified, unaudited data which was obtained through the voluntary cooperation of a sample of defense contractors. Those who did not wish to do so did not participate in

the study. Forty-two percent of those contacted provided no data. As Admiral Rickover pointed out, one of the faults with such a study is that the contractors making high profits would naturally be reluctant to supply information and could simply choose not to participate. In addition, the study fails to distinguish between profits of the larger contractors and the medium sized and smaller ones.

These facts are cited to underline the continued need by Congress for an objective, independent, and comprehensive study of defense profits. This need cannot be satisfied by a DOD in-house study, or by an organization dependent upon the DOD for its funds.

2. Cost Overruns: The C–5A Cargo Plane

The Air Force selected the Lockheed Aircraft Corp. as the airframe prime contractor for the C–5A, a large, long-range, heavy logistic aircraft, on September 30, 1965, after proposals had been received in response to Requests for Proposals (RFP) from 5 firms, and preliminary contracts had been entered into with 3 of them in 1964. It is not clear, from the evidence, how much *price* competition had to do with the selection. Secretary Charles testified that there was competition among the firms. But when asked how low Lockheed's bid was compared to the others, he refused to disclose the figures on the grounds that "this is company proprietary information". A similar procedure resulted in the selection of General Electric as the engine manufacturer.

The contract with Lockheed is a negotiated, fixed price incentive fee contract. It is also the first contract utilizing the total package procurement concept (TPPC). Two major objectives of the concept, according to the Defense Department, are to discourage contractors from buying in on a design and development contract with the intention of recovering on a subsequent production contract, and to motivate contractors to design for economical production and support of operational hardware. Thus, TPPC is supposed to act as a deterrent against cost overruns and less-than-promised performance. To accomplish this, all development, production, and as much support as is feasible of a system throughout its anticipated life, is to be procured in a single contract, as one total package. The contract includes price and performance commitments to motivate the contractor to control costs, perform to specifications, and produce on time. As the C–5A is an incentive contract (TPPC does not necessarily result in incentive contracting) it contains the usual financial rewards and penalties associated with incentive contracting.

The C–5A contract for the airframe provides for five research, development, test and evaluation (R.D.T. & E.) aircraft plus an initial production run of 53 airplanes (the total of 58 planes is called run A), and a Government option for additional airplanes. The present approved program for the C–5A is 120 airplanes comprised of run A (58 airplanes) plus run B (57 airplanes) plus five airplanes from run C.

The testimony received during the November 1968 hearings indicated a cost overrun in the C–5A program totaling as much as $2 billion. A "cost overrun" is the amount in excess of the original target cost. According to the testimony, the program originally called for 120 C–5A airplanes to cost the Government $3.4 billion, but because of cost overruns mainly being experienced in the performance of the Lockheed contract actual costs would total $5.3 billion.

Following the November hearings, Senator Proxmire asked GAO to investigate into the causes and amount of the C–5A overruns and other matters relating to the contract.

On November 19, 1968, the Air Force announced, in a press release, that the original estimate for 120 C–5A aircraft was $3.1 billion, compared to the current estimate of $4.3 billion. Subsequently, in response to a request by the subcommittee, Mr. Fitzgerald, who was responsible for the development of the management controls used on the C–5A and who was on a steering committee directing a financial review of the C–5A, supplied a breakdown of the estimates of C–5A program cost to completion. This data showed Air Force estimates for 120 airplanes was $3.4 billion in 1965, and $5.3 billion in 1968, indicating an overrun of about $2 billion. The difference between the Air Force press release and the data supplied by Mr. Fitzgerald seems to be accounted for in the figures for spare parts. The data supplied by Mr. Fitzgerald shows $0.3 billion for spares estimated in 1965, and $0.9 billion in 1968. If the figures for spares are added to the estimates in the Air Force press release, the two sets of figures are close to one another.

In the January 16 followup hearing, GAO reported on its investigation, the nature of which is discussed below on page 40. Briefly, GAO transmitted to the subcommittee figures supplied by the Air Force 2 days prior to the hearing. These figures indicated a substantial overrun but a smaller total cost for the overall C–5A program than the $5.3 billion figure shown in the November hearings. The reason for the lower total was the omission by the Air Force of the costs of the spares.

Nevertheless, testimony and other evidence received in the course of the hearings confirmed the existence of the approximately $2 billion overrun in the C–5A program, the reverse incentives contained in the repricing formula, and large overruns in other Air Force programs. The latest estimate of the total cost of 120 C–5A's, including spares, provided by Secretary Charles, is $5.1 billion. This is close to the estimate previously supplied by Mr. Fitzgerald, and about $2 billion more than was estimated in 1965. The following table shows the estimates supplied by Mr. Fitzgerald, the Air Force press release of November 19, 1968, and Assistant Secretary Charles:

COMPARISON OF ESTIMATES OF C–5A PROGRAM

[in billions of dollars]

	Fitzgerald		Air Force press release [1]		Charles	
	1965	1968	1965	1968	1965	1968
120 aircraft:						
R.D.T. & E. plus production	$3.1	$4.4	$3.1	$4.3	----------	$4.3
AFLC [2] investment	.3	.9	----------	----------	----------	.8
Total	3.4	5.3	3.1	4.3	----------	5.1

[1] The Air Force press release of Nov. 19, 1968, did not provide cost breakdowns between R.D.T. & E. (research development, testing, and engineering), production runs, and AFLC investment. The figures given seem to omit AFLC investment.

[2] AFLC (Air Force Logistics Command) investment submitted by Fitzgerald includes spare parts; that submitted by Charles includes initial spares, replenishment spares, and support. Table submitted by Secretary Charles (hearings, pt. 1, p. 311) does not include estimates for 1965.

The cost growth in the C–5A program can be seen in the table. The figures supplied by Fitzgerald show an increase from $3.4 billion in 1965 to $5.3 billion in 1968. The Air Force press release can be reconciled with the Fitzgerald figures if the AFLC investment (spares) is added to each of the estimates. Thus, the $3.1 billion estimate for 1965 would total $3.4 billion, and the $4.3 billion estimate for 1968 would total $5.2 billion. Secretary Charles' own figures for 1968 total $5.1 billion. The subcommittee rejects the attempts of Air Force spokesmen to minimize the size of the program or the size of the overrun by removing spares as an item of cost. Spares are an integral part of the C–5A program and should be included in any consideration of costs.

According to the Air Force, the cost growth in the C–5A program has resulted from normal development problems associated with complex weapons and inflation. However, the subcommittee notes that the C–5A was chosen for the first application of the total package procurement concept partly for the reason that it was not considered a highly complex weapon system requiring technological advances beyond the state of the art. The inflation argument, which is supposed to account for $500 million of the cost growth, appears questionable. The contract contains an inflation provision to protect the contractor from unforeseeable price changes in the economy, to go into effect 3 years after the issuance of the initial contract, that is, October 1, 1968. The initial 3-year period was supposed to be considered a normal business risk. The Air Force official explanation of this provision states: "The contract thus included in the price an amount which reflected a projection of the mounting cost trend in the economy of labor, materials, equipment, and subcontract prices." If future inflation for at least 3 years was included *in the price*, it is hard to see why inflation should be a major factor in later increasing the price. Without a more thorough investigation of the C–5A program, the technical problems encountered, the failure to anticipate them at the time of the negotiations, and operations of the inflation provision, the subcommittee cannot form any firm conclusions about the reasons for the enormous overrun.

A repricing formula built into the contract was also revealed in the November testimony. The repricing formula is one of the most blatant reverse incentives ever encountered by this subcommittee. It should be recalled that the C–5A contract is supposed to represent an important step toward cost control. An Air Force manual on the total package procurement concept dated May 10, 1966, states that "It should produce not only lower costs on the first production units, but, in turn, a lower take-off point on the production learning curve, thus benefiting every unit in the production run." The facts about the C–5A are just the reverse. Costs for the first production units are greatly exceeding original estimates, resulting in a higher take-off point on the production learning curve, thus inflating every unit in the production run. In addition, the contract is supposed to provide the Government with binding commitments on price and performance. Obviously, there is in fact no binding commitment on price if the price can be modified upwards, as is being done in the C–5A, because actual costs are exceeding estimates. Whether the actual performance of the C–5A lives up to its promise remains to be seen. On the matter of delivery, it is interest-

ing to note that the Air Force announced on February 25, 1969, a 6-month delay in the first operational C–5A aircraft, from June 1969 to December 1969.

Not only were the price increases made possible by the repricing formula, but the cost overruns which are resulting in the higher prices may very well have been encouraged by the existence of the formula and by the nature of the formula. For the mere fact that a repricing provision existed in the contract constituted a built-in get-well remedy for almost any kind of cost growth. According to this provision, the price of the second increment (run B) could be increased on the basis of excessive actual costs on the first increment (run A). The motivation, if any, of the incentive feature of the contract is thereby largely nullified, provided the contractor is confident that the Government will exercise the option. Why bother to keep costs down if their increase forms the basis for a higher price? Additionally, because of the nature of the formula, the higher the percentage of overrun over the original contract ceiling price on the first increment, the higher the percentage by which the second increment is repriced.

The subcommittee learned, on the morning of the January 16, 1969, hearing, that the Air Force had exercised the run B option for 57 additional C–5A aircraft, apparently committing the Government to spend at least $5.1 billion on aircraft originally estimated to cost $3.3 billion. The subcommittee was dismayed to learn that this decision was made before the completion of the GAO investigation and without a full disclosure of the reasons for the cost overruns. The public interest in economy in Government was not served by this precipitous decision, announced a few hours before the start of a congressional hearing and a few days before the inauguration of the new President.

II. Pentagon Policy on Information and Personnel: A Problem of Executive Secrecy and Employee Control

A. Secrecy and failure to disclose information on the C–5A and other Air Force programs

To inquire into the problem of profits and cost control in a major weapons system procurement, the subcommittee first questioned the Deputy Assistant Secretary of Defense for Procurement about the C–5A on November 12, 1968. However, when this high procurement official was asked to comment on whether the contract price had been overrun, neither he nor anyone of a large number of backup people accompanying him were able to provide any information. In view of this official's high capacity, and the later disclosure of an enormous overrun in the C–5A program, the subcommittee is somewhat puzzled by the witnesses' unresponsiveness and lack of information on this matter.

A profit rate of 10 percent of costs was established by the Air Force and given in the request for proposals. However, when asked what the profit would be as a return on investment, the Deputy Assistant Secretary of Defense for Procurement replied that they did not know. In an insert for the record later submitted, he stated that Lockheed's profit on the C–5A contract "cannot really be estimated at this point in the program."

While the realized profits on net investment cannot be precisely known until the contract is completed, it can be estimated on the basis of what is known. The Air Force ought to know Lockheed's investment in the C–5A, the depreciation charges for which it has been reimbursed by the Government, the amount of operating capital, and the dollar equivalent of the 10 percent profit rate on costs provided in the contract. From these facts plus the number of years needed to perform the contract, at least a preliminary estimated return on investment could be made.

Perhaps the most significant facts reported by GAO in the January 16 followup hearing concerned the difficulties it was faced with by the Air Force and the contractor in trying to obtain information. In short, GAO was unable to complete its investigation. For example, the Air Force refused, until 2 days prior to the hearing, to provide information requested by GAO on costs to produce the first 58 planes, causes of the overrun, and whether January 31, 1969, was a firm date under the contract by which the Government was required to exercise its option on run B. The grounds of the refusal were that cost estimates for run A were an important element to be considered in negotiating for the option quantity and public disclosure of this information might compromise the negotiations between the Air Force and Lockheed.

On January 14, 1969, the Air Force supplied GAO with some of the data requested. However, because of the short period of time remaining before the hearing on January 16, GAO was not able to analyze or verify the information received. GAO was also unable to identify the

reasons for the overruns. The Air Force refused to provide the C–5A requirement studies requested on the grounds that such information is not releasable.

When GAO requested estimates of cost overruns from the contractor, it was refused and advised to write to the Air Force Systems Program Office. At the time of the hearing, GAO had not received a reply to its letter to the Systems Program Office. According to GAO, access to recorded costs, as opposed to estimated future costs and overruns, was given.

GAO also testified that the Air Force told it the information on overruns would be made available to GAO provided GAO promised not to make it public. Secretary Charles later testified that the possibility of providing the information on overruns to Congress on a restricted basis, that is, on the condition that there would be no public disclosure, was not discussed with GAO. Further, when asked whether the Air Force would have supplied the information to Congress on such a condition, Secretary Charles replied that it probably would not have supplied the data.

Clearly, the Air Force failed to fully cooperate with GAO in its investigation of the C–5A overruns. It withheld the requested information for almost 7 weeks, then provided some information by letter less than 2 days before the hearing. The information that was finally provided was less than complete and independent corroboration and analysis of the Air Force data prior to the January 16 hearing was not possible. In effect, GAO was not able to do much more than transmit to the subcommittee the contents of the Air Force letter of January 14, 1969.

The subcommittee was shocked to learn that the repricing formula has been used on at least two other major weapons procurements, and of large overruns on other TPPC contracts. The subcommittee queried Secretary Charles on the cost status of some of these contracts. On the SRAM (short range attack missile), in which the repricing formula was used, the subcommittee was informed that "disclosure of any Air Force estimates is premature and could prejudice the Government's position in its efforts to obtain the best price in negotiations with the contractor." The subcommittee has reason to believe that the Air Force is simply concealing from the public the fact that there is a large overrun in this program.

On the Mark II Avionics program (radars, computers, and inertial equipment for the F111D) the original contract price for R.D.T. & E. and production was $143 million. Secretary Charles conceded that the actual cost "may go as high as $360 million."

On the Mark XVII program (reentry system for Minuteman), the original contract price for R.D.T. & E. was $36.4 million. The cost to completion at the time this contract was terminated was $70.2 million.

The subcommittee also requested cost overrun information for the B–52, Minuteman, F–4 and F–111 programs. Secretary Charles stated he would try to provide the information for the record. However, he later told the subcommittee in a written statement that information on the cost overruns in those programs which would permit a meaningful comparison with the experience on the C–5 is not readily available and that it is doubtful that useful information for comparison purposes could be developed.

The subcommittee believes the Air Force evaded the request for cost overrun information on major programs. It should not be as difficult as the Air Force is making it seem to supply information on original estimated program and unit costs, current status, and estimated cost to completion. The subcommittee is deeply concerned over what appeared to be a pattern at the highest levels of the Defense Department and the Air Force of nonresponsiveness, failure to disclose, evasiveness, and even concealment of information relating to profits, costs and cost overruns on military procurements throughout the inquiry. The difficulties encountered by the subcommittee in the C–5A investigation, the great reluctance of the Air Force to cooperate, and its attempts to obstruct the subcommittee, as will be further demonstrated in the next section of this report, is a case in point.

B. *The Fitzgerald affair*

A. E. Fitzgerald is the Deputy for Management Systems, Office of the Secretary of the Air Force. As stated in the discussion of the C–5A cost overruns, he was responsible for the development of the management controls used on the C–5A program and was also a member of the steering committee directing a financial review of the C–5A. Mr. Fitzgerald's work in connection with the C–5A program was, however, only a part of his broader responsibility for developing improved cost controls. His efforts in this regard extend over a period of many years in both private and public employment. The subcommittee invited Mr. Fitzgerald to testify in the hearings on the economics of military procurement because of the high quality of his past work and his widely acknowledged expertise.

The circumstances surrounding the appearances before the subcommittee of A. E. Fitzgerald, on November 13, 1968, and January 16, 1969, and the substance of his testimony, raise questions that go even beyond the important question of cost controls in defense procurement. These questions penetrate to the heart of the relationship between the executive and legislative branches of government, to the ability of Congress to gather facts, and to the right of the people to know the truth about the ways its dollars are being spent by the Defense Department.

1. Interference With Witness

First, an effort was made within Department of Defense to prevent Fitzgerald from appearing before the subcommittee as a witness. It was only because of the repeated urging of the subcommittee, following the letter of invitation to Fitzgerald dated October 18, 1968, that he was granted permission to make an appearance. When this permission was granted, however, the subcommittee was advised by Department of Defense that Fitzgerald was to appear as a "backup" witness. The principal witness, according to Department of Defense, was to be another individual, one with whom the subcommittee was not familiar, had not communicated with, and did not invite.

Second, Fitzgerald was directed by some anonymous official in the Department of Defense not to provide the subcommittee with a written statement. The subcommittee had requested that a written statement be submitted by the witness prior to the hearing, as is the usual practice. A written statement permits the witness to order his ideas and facts, including statistical data, charts, and other exhibits,

into a well-thought-out form, and provides the subcommittee with an opportunity to familiarize itself with the testimony and have a more fruitful dialog with the witness. After inquiring of Department of Defense and Air Force spokesmen in November and December 1968, the committee is still not certain why the witness was directed to not prepare a written statement, or who originated the directive to so restrict his testimony.

Third, transmittal of written inserts prepared by Fitzgerald at the subcommittee's request, to supplement his oral testimony, were unduly delayed by officials of the Pentagon. The request for additional cost data on the C–5A and other information was made by Senator Proxmire on November 13, 1968. Fitzgerald prepared his supplemental testimony and submitted it to his superiors for transmittal to the subcommittee within 2 or 3 days after his original appearance. The supplemental testimony included a breakdown of the C–5A probable costs to completion, drawn from independent estimates performed by Air Force Systems Command and the Air Force Staff Cost Estimating Specialists. Because there had been no public disclosure of the C–5A overrun prior to the hearings, it was extremely important for the subcommittee and the Congress to have the cost estimates.

Yet, despite repeated inquiries to DOD by the subcommittee the full supplemental testimony was not transmitted to the subcommittee until January 15, 1969, 2 months after they had been prepared by Fitzgerald and 1 day before the January 16 hearing.

Fourth, the Air Force transmitted to the subcommittee for insertion in the record data and documents purporting to represent the supplemental testimony of Fitzgerald. These materials were received by the subcommittee on December 24, 1968. They were labeled, "Insert for the record/testimony of A. E. Fitzgerald." A routine check with Fitzgerald revealed that the cost estimates for the C–5A contained in the materials were not the same cost estimates which he had submitted along with the materials to his superiors.

Apparently, Air Force officials had altered the cost estimates submitted by Fitzgerald prior to transmitting them to the subcommittee. The effect of the change in figures was to reduce the amount of the C–5A overrun.

The Air Force was advised that the subcommittee would accept as the "Testimony of A. E. Fitzgerald" only the data and information that the witness himself wished to include in the record. Subsequently, on January 15, the subcommittee received the package referred to above. The second package was also labeled "Insert for the record/testimony of A. E. Fitzgerald."

Fifth, on September 6, 1968, Fitzgerald was notified that his job was reclassified and brought under civil service regulations. The reclassification gave him job tenure and would prevent his dismissal without cause. However, less than 2 weeks after he testified in November, he received a second notice advising him that the first notice was a mistake. He no longer had tenure or job protection.

The Air Force stated on January 16, 1969, that the mistake was due to a rare "computer error," that he was not entitled to tenure in the first place. The Air Force has also denied that any punitive action has been taken against Fitzgerald as a result of his appearance before the subcommittee. Yet, during the hearing a memorandum to the

Secretary of the Air Force from his administrative assistant, dated January 6, 1969, was produced setting forth three types of actions "which could result in Mr. Fitzgerald's departure." The actions set forth were: (1) adverse actions for cause, (2) reduction in force, and (3) conversion of Fitzgerald's position from excepted category to career service, and not selecting him in the subsequent competitive procedures. In explaining the third possibility, the memo states "this action is not recommended since it is rather underhanded and would probably not be approved by the Civil Service Commission, even though it is legally and procedurally possible." This action indicates not only that it was possible to convert Fitzgerald's position from excepted to career service, but also that disciplinary action against him was at least under serious consideration and made the subject of study and reduced to writing.

The subcommittee's evaluation of the evidence with respect to the testimony of A. E. Fitzgerald, and the events following his appearance before this subcommittee, were well expressed by the chairman in his closing remarks on January 16, 1969:

> Chairman PROXMIRE: "Well, Mr. Fitzgerald, I want to say to you finally that you have been an excellent witness, and if there were a computer into which you could put courage and integrity, you certainly would be promoted rather than have your status in such serious and unfortunate jeopardy.
>
> "The Air Force can say, and the armed services can say, that their officials are free to speak any time and tell the Congress the facts as they see them. But it is going to be very hard for the public and the Congress to accept that if there is any further disciplinary action against you."

2. CONCEALMENT OF OVERRUN

The almost frantic efforts on the part of the DOD to first prevent, then restrict, then interfere with Fitzgerald's testimony cannot obscure the facts which indicate a huge C–5A overrun, or the fact that were it not for this courageous Government employee the overrun may have remained undisclosed. As recently as March 5, 1968, the Air Force assured another committee of Congress that the current costs of the C–5A were within the original cost estimates, "in the range where it should be between the target and the ceiling costs." Yet, Fitzgerald testified that overruns were detected by the Air Force in the summer of 1966, through monthly reports submitted by Lockheed.

It is interesting to note that the requirement for monthly contractor reports had been initiated by the Office of Financial Management of the Air Force as an effort to improve procedures to control the C–5A program. The growth of the overrun in the monthly reports prompted a visit by an Air Force team, including Fitzgerald, to the Air Force plant in Marietta, Ga., in November 1966. A review of cost data at that time revealed overruns of 100 percent in key segments of the program. At that time, the contractor denied there was a substantial overrun. But 3 weeks later the Air Force team revisited the plant and the contractor conceded there was a large overrun.

While the overrun was steadily growing, evidence of its existence began disappearing from DOD internal reports. To compensate for

the absence of good cost reports, the Air Force teams went to the plant in Marietta to attempt to keep up with the program, However, according to Fitzgerald, early in 1968 internal Air Force reports began showing either no overrun or overruns far less than those generally acknowledged to exist. When Fitzgerald requested audit assistance to find out why the reports appeared to be in error it became apparent that the internal Air Force reports "had been changed by direction from higher headquarters." Fitzgerald was unable to determine who in the Government had ordered the changes in the reports. One of the reports referred to in testimony January 16, 1969, containing C–5A cost estimates for the spring of 1968, includes the following statement: "The resulting aeronautical system division cost team estimates for Lockheed are not shown in this report per direction of higher headquarters." The audit requested by Fitzgerald was never completed.

Only after the November 1968 hearings before this subcommittee did the Air Force officially acknowledge that there was a large overrun in the C–5A program. It is unfortunate, and still unexplained, why corrective action was not taken when the overrun was first discovered in 1966. The Air Force did not seem to be as zealous to control costs as it was to control employees who wanted to control costs.

3. Cost Control as an Antisocial Activity

Considerable testimony was received on the need to protect and encourage Government personnel attempting to keep the costs of procurement down. But cost control has been interpreted by many within and outside of Government as antisocial activity. The phenomenon of officials in the bureaucracy pushing for ever-enlarged programs is widely known. To such bureaucrats, any employee who wants to cut costs, and possibly reduce the size of the program, is stepping out of line.

The problems encountered by Fitzgerald in connection with the C–5A were underlined by Admiral Rickover. According to the admiral, subordinates in DOD are supposed to "hew to the party line." Personnel who speak out against excessive costs may be subjected to disciplinary action. Rickover testified: "We have all heard of cases where Government personnel were apparently 'punished' for speaking out against the policies of their superiors. I do not mean the spectacular punishments that might be meted out to a dissenter in other countries; but there are subtle methods of reprisal that have been brought to bear against subordinates who publicly refuse to toe the agency line."

Colonel Buesking similarly observed that the sanctions have been imposed on those who have attempted to bring about major improvements in reducing costs. He testified: "It has been my personal observation that a number of competent people who did attempt to stimulate major change in the cost environment are no longer involved in working that particular environment."

In a written statement submitted for the record by Fitzgerald, a civilian employee of the Navy, Mr. Gordon Rule, cautioned his fellow employees engaged in controlling costs to expect resistance not only from the contractor but from people in the Government as well. Mr.

Rule stated: "This 'homefront' resistance can be much more brutal than that from a contractor."

The subcommittee is deeply disturbed over the evidence of the lack of support for those conscientious individuals in DOD who want to reduce procurement costs. The negative attitude toward cost control and the apparent hostility against those who try to perform this function, is another example of "reverse incentives" in military procurement.

Complicating the job of cost control for cost-conscious personnel is the relationship of DOD with the defense industry as seen in the interchange of personnel. A preliminary survey has revealed over 2,000 retired, high-ranking regular military officers now employed by the 100 largest contractors. Only officers of the rank of Army, Air Force, and Marine Corps colonel, or Navy captain and above were included in the survey. The total represents almost three times the number of retired military employed per company that existed 10 years ago. The survey did not include former DOD civilian employees now working for contractors, nor did it include the number of former contractor officials now employed by DOD. Admiral Rickover and many other persons believe that the heavy interchange of personnel is at least partly responsible for the absence of adequate cost controls in military procurement.

III. Recommendations

Military industrial indicators

The Federal Government has not been adequately controlling military spending. As a result, substantial unnecessary funds have been spent for the acquisition of weapons systems and other military hardware. Mismanagement and laxity of control over this expensive program are creating heavy burdens for every taxpayer. The evidence is convincing that procurement expenditures can be substantially reduced without diminishing national security. Good information is a condition precedent to the attainment of Government control over military procurement. Presently we do not have sufficient information about much of the procurement process including profitability, status of program costs, overruns, subcontracting, military prices, cost allocation, performance, and number of retired military employed by defense contractors. The recommendations that follow are designed to establish a basis for developing methods to systematically obtain and publicly disclose this information.

The GAO is being asked to develop what might be considered military-industrial indicators. Ideally, when compiled, the information can be distributed in a single publication to the Congress. It is important that GAO, the investigative and auditing arm of Congress, develop this information system under its existing statutory authority, without resorting to questionnaires soliciting voluntary submissions of data. One of the most serious deficiencies in the military procurement program has been the failure of the Defense Department to provide itself, the Congress, and the public with the information necessary for a proper accounting of the tens of billions of dollars spent each year. This information should now be developed through congressional initiative and published on an on-going basis by an agency independent of the defense establishment.

The purpose of military-industrial indicators is to provide the basis for on-going reports to Congress and the public of the status of military expenditures, with individual program costs and other appropriate breakdowns. The taxpayers are entitled to know how their money is being spent for military purchases, and whether it is being well spent.

1. The GAO should conduct a comprehensive study of profitability in defense contracting. The study should include historical trends of "going-in" and actual profits considered both as a percentage of costs and as a return on investment. Profitability should be determined by type of contract, category of procurement, and size of contractor. Information for the study should be collected pursuant to the statutory authority already vested in the GAO. The GAO should also devise a method to periodically update and report the results of its profits study to Congress.

2. Total-package and other large contracts amounting to hundreds of millions of dollars and extending over several years should be broken down into smaller, more manageable segments. It should be possible to break contracts into segments short enough in duration for periodic evaluation of accomplishment, representing parts of the total program with definable objectives, and yet large enough to include acknowledged functions such as engineering and manufacturing, and work sequences such as design phases and fabrication lots.

3. GAO should develop a weapons acquisition status report, to be made to Congress on a periodic basis, and to include the following information:

a. Original cost estimates, underruns and overruns on work completed as of effective date of report, current estimated cost at completion, total actual cost, including underruns or overruns, scheduled and actual deliveries and other major accomplishment milestones such as major design reviews, first article configuration inspection, roll out and flight of first airplane, launching of ship, and so forth, for all programs in excess of $10 million. Estimated and actual unit costs should be included. Where there are cost variances, whether they be underrun or overrun, GAO should separate them into their components such as labor, labor rates, overhead rates, material and subcontract costs, and general and administrative expense.

b. So-called "progress payments," made by the Government on firm-fixed and fixed-price incentive contracts in excess of $1 million, compared to work segments satisfactorily completed, rather than simply costs incurred.

c. Technical performance standards which would compare actual performance of weapons systems and other hardware to contract specifications.

d. Impact on costs, schedules, and technical performance of authorized contract changes from contract base line described in *a.*, *b.*, and *c.* above. GAO should be prepared to furnish backup data to support impact on a change-by-change basis.

4. GAO should develop a military procurement cost index to show the prices of military end products paid by the Department of Defense, and the cost of labor, materials, and capital used to produce the military end products.

5. GAO should study the feasibility of incorporating into its audit and review of contractor performance the should-cost method of estimating contractor costs on the basis of industrial engineering and financial management principles. The feasibility study should, if possible, be completed by the end of the current calendar year.

6. GAO should compile a defense-industrial personnel exchange directory to record the number and places of employment of retired or former military and civilian Defense Department personnel currently employed by defense contractors, and the number and positions held by former defense contractor employees currently employed by the Defense Department.

The directory should include the names of all retired military or former military personnel with at least 10 years of military service,

of the rank of Army, Air Force, or Marine colonel or Navy captain or above, former civilian personnel who occupied supergrade positions (GS–16 and above) in the Department of Defense, and former defense contractor employees who occupy supergrade positions (GS–16 and above) in the Department of Defense.

Department of Defense Activities

7. The Defense Department should collect complete data on subcontracting including total amount of subcontracts awarded, competitive and negotiated awards, subcontract profits, type of work subcontracted out, the relationship between the prime contractor and the subcontractors, the amount of business done by the subcontractor for the prime contractor, and compliance with the Truth-in-Negotiations Act. GAO should have access to this information and should make it available to Congress on an on-going basis.

8. The Defense Department should require contractors to maintain books and records on firm-fixed-price contracts showing the costs of manufacturing all components in accordance with uniform accounting standards.

9. The subcommittee once again makes its longstanding and unheeded recommendation that DOD make greater use of true competitive bidding in military procurement, and that the tendency to award contracts by noncompetitive negotiation be reversed.

Legislative Action

10. Legislative action should be taken to make the submission of cost and pricing data mandatory under the Truth-in-Negotiations Act for all contracts awarded other than through formally advertised price competition procedures, and in all sole source procurements whether formally advertised or not.

11. Legislative action should be taken to establish uniform guidelines for all Federal agencies on the use of patents obtained for inventions made under Government contract.

○