

THE ACQUISITION OF WEAPONS SYSTEMS

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BEFORE THE
SUBCOMMITTEE ON
PRIORITIES AND ECONOMY IN GOVERNMENT
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THE ACQUISITION OF WEAPONS SYSTEMS

WEDNESDAY, APRIL 28, 1971

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON PRIORITIES AND
ECONOMY IN GOVERNMENT OF THE
JOINT ECONOMIC COMMITTEE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 5302, New Senate Office Building, Hon. William Proxmire (chairman of the subcommittee) presiding.

Present: Senator Proxmire; and Representatives Moorhead and Brown.

Also present: John R. Stark, executive director; James W. Knowles, director of research; Loughlin F. McHugh, senior economist; Richard F. Kaufman, Ross F. Hamachek, and Courtenay M. Slater, economists; George D. Krumbhaar, Jr., minority counsel; Walter B. Laessig and Leslie J. Barr, economists for minority; and A. Ernest Fitzgerald, consultant.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

Chairman PROXMIRE. The subcommittee will come to order.

Today the Subcommittee on Priorities and Economy in Government resumes hearings on "The Acquisition of Weapons Systems." Testimony will be received this morning and tomorrow and the subcommittee will then recess until the latter part of next month when we will reconvene.

We have invited the Assistant Secretary of Defense for Installations and Logistics, Barry Shillito, to testify. Mr. Shillito informed us that he would be visiting Vietnam at the time of the April hearings and therefore would not be available. However, he has agreed to appear as a witness next month upon his return.

The question that needs to be faced is whether this Nation can afford to continue doing business as usual in the area of military procurement.

The evidence becomes stronger daily that we are not getting value for the dollars we are investing in our weapons programs.

At times there seems to be a national sweepstakes in progress to see which service and which aerospace contractor can achieve the greatest cost overrun and the worst technical performance on any given project. The latest in a long line of entries is the Navy Grumman F-14 aircraft program. Such veterans as the C-5A, the F-11 and the Mark 48 torpedo are way ahead, of course. But, coming up fast on the outside are the ABM and the B-1 bomber.

The trouble is that both the American taxpayer and national security are being trampled under a veritable stampede of runaway defense contracts.

For guidance and help in trying to understand and solve the difficult problems that have been disclosed we have asked Admiral Rickover to appear this morning. The Nation already is indebted to Admiral Rickover for pioneering efforts in nuclear-powered war ships and for his work on the Polaris submarine. Admiral Rickover has also been an outspoken, candid critic of procurement practices and has urged the Congress to more carefully scrutinize the expenditure of funds it has entrusted to the Department of Defense.

Admiral, we are most appreciative of your appearance here and you may proceed in any way you wish.

STATEMENT OF VICE ADM. H. G. RICKOVER, DEPUTY COMMANDER FOR NUCLEAR PROPULSION, NAVAL SHIP SYSTEMS COMMAND, U.S. NAVY

Admiral RICKOVER. Mr. Chairman, it is an honor for me to appear before this committee to discuss current problems in defense procurement. I have testified many times in past years about deficiencies in defense contracting and the waste of billions of dollars which has resulted from it. In testifying on defense procurement I express my own views, which as you know, rarely coincide with those of my superiors in the Department of Defense.

First, let me make it perfectly clear that I am deeply concerned about the rapid decline in the military posture of the United States relative to that of our potential adversaries. The weapons systems we must have in order to maintain the strength to defend ourselves are inherently expensive. Therefore it is essential that we conduct our military procurement in a manner which insures the maximum amount of defense for each dollar spent. We simply cannot afford to waste any of the money made available for our defense efforts, since such waste undermines our national security.

PROCUREMENT SYSTEM WEAKENS NATION

My concern stems also from the weakening of our Nation as a whole by a procurement system that rewards inefficiency; that applies one set of rules for large, influential contractors and more stringent rules for everyone else; that often ranks the public interest second to contractors' interests. These are, in the end, conditions that could undermine our national institutions and our way of life.

Many current problems in defense procurement stem from the almost amoral way that many business leaders conduct their business and the great influence these business leaders have on the Defense Department's procurement policies. Some senior defense officials formerly held key jobs in industry. Defense officials deal regularly with industry representatives, officially and socially, while the public has no similar forum in which to have its interests represented. Consequently, the industry viewpoint usually prevails in defense procurement.

You invited me here to talk about defense profits. Profits are the obvious starting point for investigating defense procurement. They are the standard of performance and achievement in the business community. Today the businessman who demonstrates acuity in business acquisitions, cash flow, and financial manipulation gets more recognition in the business world than his counterpart who spends his time trying to manufacture high-quality products efficiently. Consequently, many large companies today are virtually unmanaged while their officers are busy acquiring new businesses, lobbying for more favorable laws and regulation, or devising new ways to make their actual profits look higher or lower depending on whether they are talking to stockholders, to the customer, or to the Internal Revenue Service. Many corporate officials, particularly in conglomerates, couldn't care less whether they sell manure or missiles so long as they can show a profit.

There are many ways to make profits. A contractor can undertake to improve the management and efficiency of his day-to-day operations and so produce a product for less cost. To sell a common product, like bread or bolts, in highly competitive markets, a company must constantly strive for greater efficiency in order to stay in business and turn a profit.

Defense business is different, however. Only about 11 percent of the defense procurement budget is awarded under truly competitive conditions. Fifty-seven percent of the defense procurement budget is spent under sole-source contracts. Because of the complexity and high cost of today's military weapons, the Department of Defense is dependent on these contractors. Knowing this, large defense contractors can let costs come out where they will, and count on getting relief from the Department of Defense through changes and claims, relaxations of procurement regulations and laws, Government loans, follow-on sole-source contracts, or other escape mechanisms. Wasteful subcontracting practices, inadequate cost contracts, shop loafing, and production errors mean little to these contractors since they will make their money whether their product is good or bad, whether the price is fair or higher than it should be; whether delivery is on time or late. Such matters are inconsequential to the management of most large defense contractors, since, as with other regulated industries, they are able to conceal the real facts concerning their management ineptitude from the public and from their stockholders, until they stumble finally into the arms of Government for their salvation.

For many years now, I have described fundamental deficiencies in defense procurement to this committee and to other committees of Congress. Defense officials concede that there are problems in defense procurement. However, those responsible seem apathetic and unwilling to take corrective steps.

Take defense profits. Contrary to what you might think, defense contractors do not have to account to the Department of Defense, to Congress, or to the public for costs and profits on defense contracts. For years I have recommended that defense contractors and subcontractors should be required to submit a report on each defense order over \$100,000, revealing costs and profit in accordance with common standards—just as it is done on income tax returns. The Defense De-

partment refuses to demand this. In deciding whether or not defense profits are too high, it relies instead on generalized studies, industry arguments, and Renegotiation Board reports.

For the most part, the criticisms I have made for the past 8 years in my testimony still hold true today. The Department of Defense has been unwilling to correct obvious procurement deficiencies. I would like to illustrate this by showing you where some of the profit-related issues I raised in the past now stand. First, is the question of profits on Defense contracts.

PROFITS ON DEFENSE CONTRACTS

The Department of Defense does not have an effective system to check profits on its contracts. No one knows how much profit defense contractors actually make. The Pentagon doesn't know, the General Accounting Office doesn't know, the Congress doesn't know, the taxpayers don't know. We spend \$35 billion or more every year without knowing how much of it goes for profit.

The Defense Department gets cost and profit reports on only part of its contracts. Although last year the Department of Defense spent about \$14 billion under firm fixed price contracts, no profits data are collected on these contracts.

In addition, the Defense Department's profit reports do not cover subcontracts, even though about half of the defense procurement outlay ends up in subcontracts. Yet, the GAO report indicates that as a percentage of sales, subcontractors get even higher profits than prime contractors.

Generally, there is not much true competition in subcontracting. My experience is that prime contractors pay little attention to getting the best possible prices for their subcontracts, because subcontract prices can be passed on directly to the Government.

In the case of subcontracts, both the prime contractor and the subcontractor get a profit on the same work. Moreover, the subcontractor may in turn subcontract some of his work to another contractor, a "second tier" subcontractor. Thus, the total amount of profit actually paid on a defense contract is much higher than the profit paid just to the prime contractor. But the Defense Department's profit reporting system records only the prime contractor's profit—and in many cases, not even that.

In the absence of an effective profit reporting system, the Department of Defense has conducted studies to try to determine what profits defense contractors really make. The first studies were conducted by the Logistics Management Institute (commonly known as LMI), a think-tank created by Pentagon procurement officials. These studies relied on unverified data provided voluntarily by defense contractors. The obvious fault of such studies is that when a contractor knows his figures will not be audited, he is apt to report profits lower than they actually are.

Because of deficiencies in the LMI profit studies, Congress directed the General Accounting Office to make an independent study of defense profits. The General Accounting Office report, however, suffered from similar deficiencies—its conclusions were also based on unaudited profit data.

The General Accounting Office profit report itself confirms that unaudited profit information volunteered by defense contractors is unreliable. A GAO random check on the data submitted by contractors revealed that actual profits averaged about 10-percent higher than reported on the questionnaires. In addition, in a separate part of its study, the General Accounting Office audited 146 specific contracts. This audit showed profits much higher than those reported by contractors. Here is a table showing the differences:

[In percent]

Pretax profits	Unaudited figures supplied by contractors	GAO audit of 146 contractors
As a percentage of costs.....	4.4	6.9
As a return on total capital.....	11.2	28.3
As a return on equity capital.....	21.1	56.1

Despite these findings, the General Accounting Office, at the insistence of the Defense Department, used the unaudited profit information as the basis for its main conclusion. After being groomed by defense industry groups and the Department of Defense, the General Accounting Office report was not much different from the LMI reports. This is what the Defense Department and its contractors wanted to hear.

If the Defense Department's profit reporting system and these profit studies were accurate, you might at least expect them to reach consistent conclusions. In fact, there are large differences between profit figures that turn up in the profit studies and those in the Defense Department profit reporting system. For example, the LMI profit reports and the General Accounting Office report show actual or "coming out," profits much lower than negotiated, "going in" profits. The Department of Defense profit reporting system, however, shows that "coming out" profits coincide closely with "going in" profits for cost reimbursement, redeterminable, and incentive contracts.

Another unexplained difference is that profits reported on a contract-by-contract basis in the Department of Defense profit reporting system are substantially higher than the profit figures reported to the General Accounting Office. The Defense Department figures show average profit on costs of about 8 percent—almost twice as high as those reflected in the General Accounting Office report.

Both the LMI and the General Accounting Office profit studies took considerable time and effort. This type of study would be unnecessary if the Department of Defense had a reliable profit reporting system. Defense contractors know how much profit they are making; the Government should know as well. The taxpayer ought to be spared these needless studies.

RETURN ON INVESTMENT

The General Accounting Office profit study stresses the importance of relating profits to a contractor's investment, rather than to his costs, as is currently the practice in the Department of Defense. I agree. I have been emphasizing this point in testimony for years.

The Defense Department's current profit policies reward inefficiency. Under today's defense procurement regulations, the higher the costs on a defense contract, the higher the profit. Contractors have no incentive to invest in new machine tools or other facilities which could make defense work more efficient. There is instead a strong incentive for a contractor to maintain minimum investment with the highest possible cost base for determining profit.

Last year I reported to my superiors a specific example of the inequities of the present practice of figuring profits as a percentage of costs. Two contractors were each awarded noncompetitive contracts for the same kind of job. Contractor A's costs were \$26 million—45 percent higher than contractor B's for a comparable scope of work. Yet contractor A was paid \$1.4 million more profit than contractor B. The contractor with the higher costs was awarded a higher profit than the more efficient contractor.

In my judgment, the most valuable aspect of the General Accounting Office study is the clear statement that the Department of Defense must begin to take the contractor's investment into account in setting profits on defense work. Until defense profit policies are changed, situations like the one I just described will crop up again and again. Congress will have to watch this closely. The Department of Defense, if it does change its procedures to consider return on investment, will probably come up with a formula to guarantee defense contractors even higher profits, so that the defense industry will accept the change.

UNIFORM COST ACCOUNTING STANDARDS

To measure profits accurately, it is necessary first to measure costs accurately—to measure costs in accordance with consistent and uniform standards. Until last year defense regulations provided only a "guide" for determining costs on most defense contracts. However, in its recent study of the feasibility of establishing uniform cost accounting standards for defense contracts, the General Accounting Office confirmed my testimony of many years that even these guides were not adequate for the purpose of determining costs on defense contracts. As a result it is virtually impossible to determine actual costs and profits on most defense contracts.

To give you an example, here is an accounting trick I learned of only the other day. One of my suppliers has two methods of calculating a cost of sales figure. In pricing new business, he uses what I will call method A. Method A gives a low cost of sales figure which results in a high plantwide general and administrative expense rate. Using this method he calculates an \$8 million cost of sales figure for work performed to date under one contract. He uses method B, however, in billing the Government for progress payments under this same contract because he gets more progress payments by showing higher costs. Method B yields a cost of sales figure of about \$16 million—\$8 million more than method A. Thus, his cost of sales for this particular contract is either \$16 million or \$8 million depending on whether he decides to use method A or method B. Either method is acceptable under today's defense procurement rules.

That gives you a pretty good example how absurd the whole thing is.

Last year, as a first step toward greater uniformity in accounting, the Defense Department accepted and implemented my recommendation to make its accounting guides mandatory for all defense contracts. And an important step toward providing a sound basis for defense procurement was made with the passage of the uniform cost accounting standards legislation last summer—to which you contributed greatly, Mr. Chairman. Even so, it will be some time before we have an adequate basis for determining costs and profits on defense contracts.

To me the establishment of proper accounting standards is fundamental to the improvement of defense contracting. Consistent and uniform standards are essential to measuring efficiency, evaluating the reasonableness of prices, and calculating profits. However, even this fundamental step faces a difficult future. First, uniform cost accounting legislation was passed over the vigorous objections of the defense industry lobby, and with only lukewarm support from the Department of Defense, which had for years opposed it.

Industry has representation on the Cost Accounting Standards Board itself. The Comptroller General appointed, as the industry representative, a critic of uniform cost accounting standards. This industry representative has made it clear that he will try to get more liberal accounting rules for industry.

Now that legislation has been enacted, the defense industry's lobbying tactic, of course, will be to embrace the concept and attempt to steer the standard to industry's advantage. Already defense contractors are bringing their great influence to bear. The press recently reported a reception given by the National Security Industrial Association for the Comptroller General and his deputy for the purpose of getting better acquainted, now that the Comptroller General is heading the Cost Accounting Standards Board. In January 1971, the Council of Defense and Space Industry Associations formally extended to the Cost Accounting Standards Board its offer of "assistance" and "suggested guidelines for the modus operandi" of the Board.

Considering the great pressure defense contractors are bringing to bear on the Uniform Cost Accounting Standards Board, it will be difficult for it to arrive at fair standards. Congress itself will have to keep close watch over the activities of the Board to see that it does the job it was created to do; that its work is not undermined by the pervasive lobbying of defense industry pressure groups.

I respectfully urge, Mr. Chairman, that you not only watch the operations of this Board closely, but require it to complete its work in a reasonable time. Because otherwise you will be either dead or President before they finish. [Laughter.]

Chairman PROXMIRE. You are right on that first alternative. [Laughter.]

Would you like to suggest a date you think would be reasonable?

Admiral RICKOVER. You remarked, at the time the law was being considered in Congress, that 24 months from passage of the law would be reasonable. I suggest that you require them to adhere to that schedule. When a general has to fight a battle, he isn't told he has 3 years to think it over and then fight the battle.

Chairman PROXMIRE. Twenty-four months from the time the law was enacted?

Admiral RICKOVER. Yes, sir. There is absolutely no reason why it should take any longer. The issues are clear; they are susceptible of solution. The morals of the issue are obvious. The lack of accountability for public funds is the kind of thing that has our young people so much up in arms. Many times they rightly see the horrible things that are being done by their elders and the horrible things being done in Government.

So I think the development of uniform cost accounting standards for defense contracts is not only important from the standpoint of saving money; it is also important for the future of our country to show our youth that we who are entrusted with the conduct of our Government can act responsibly.

THE RENEGOTIATION ACT

Congress enacted the Renegotiation Act of 1951 to check against excessive profits. However, in my opinion, the act is largely ineffective.

In 1951, the renegotiation process was considerably stronger than it is today. Congress itself has weakened the process by adding exemptions and loopholes to the act every year or two when the act comes up for renewal.

In September 1969, I testified before the House Government Operations Committee on deficiencies in the renegotiation process. I pointed out that we have the semblance, not the substance, of effective renegotiation.

The Renegotiation Board generally recovers excess profits and voluntary refunds in excess of the Board's annual operating cost. However, it provides no real assurance that defense contractors are being limited to reasonable profits.

Industry encourages the notion that renegotiation is an effective insurance against excessive profits. It attacks the Renegotiation Act at every opportunity. It presses for additional loopholes and exemptions in the Renegotiation Act. It lobbies to abolish the Board, claiming that the Truth-in-Negotiations Act and proposed improvements in Department of Defense procurement practices obviate the need for renegotiation. Nothing could be further from the truth.

What I see and hear about the Renegotiation Board is inconsistent with what I know about contractors and government procurements. I believe that the public is being misled. I believe that industry is making far more than it should on defense contracts, and that, if the truth were known, defense contractors are actually happy to have the Renegotiation Board. In its current weak state, the Renegotiation Board poses no serious threats to their profits, and the process of successfully clearing the Renegotiation Board tends to sanctify defense profits in the eyes of the uninformed, and lends an aura of sanctity to what is going on.

The fact is that renegotiation as it is carried out does not adequately protect the public. It is out of date with the current situation in defense contracting.

Take just one example: the growth of large industrial concerns and so-called conglomerates. In 1951, when the Renegotiation Act was passed, most of the Navy's major private shipbuilders were independent companies. They had their own corporate managements which were

devoted chiefly to shipbuilding. Since 1951, most of these shipbuilders have been taken over by giant industrial concerns. Therefore, the Renegotiation Board no longer sees shipbuilding profits because they are averaged with profits on missiles or electronics or with any other defense activities of the parent corporation. In this way, large corporations can protect excessive profits on one line of defense work by averaging them with moderate profits on other defense work. This arrangement gives the conglomerates a substantial edge over smaller firms and offers the public no real protection.

RENEGOTIATION BOARD DOES NOT MONITOR SHIPBUILDER'S PROFITS

Neither the Renegotiation Board nor anyone else in the Government is keeping track of profits on shipbuilding contracts. I asked government officials involved with the Navy's shipbuilding program to tell me how much profit shipbuilders were making on Navy contracts. They did not know. The Navy had no overall record of what profits were being made on shipbuilding contracts. As a result of my question, the Navy asked the Defense Contract Audit Agency what profits were being made on shipbuilding contracts. The Defense auditors didn't know either, but they said they would find out. Later they said the shipbuilders would not release the data.

Since these shipbuilders do almost all their work for the Government, it seemed to me that the Government has a right to know what profits are being made on Navy contracts. Therefore, I made an issue of this matter. Now I understand that two large shipbuilders have agreed to give their profit data to the Navy. This is in 1971.

Let me give you an example to show you why I am concerned about shipbuilders' profits. One typical shipbuilder I deal with had about \$230 million in Navy business last year—more than 95 percent of his total sales. Nearly all of his defense contracts are either cost-type contracts or incentive-type contracts under which the Government bears the major risk of cost overruns, thus assuring the shipbuilder's profit. The negotiated profit rates on his contracts vary, but average over 10 percent. If he actually earned 10 percent on his Navy work—and I believe he made at least that much—then he would have made \$23 million in profit on his Navy contracts.

This shipbuilder has non-government-owned assets of about \$60 million. Thus, his return on investment—\$23 million profit on assets totaling about \$60 million—was about 38 percent last year. This is over twice the average return on investment indicated in Fortune's 1970 survey of the 500 largest industrial concerns. And it is several times higher than the 4 or 5 percent you or I can earn on our investment in a bank deposit.

Chairman PROXMIRE. Have you computed the return on equity for that shipbuilder? Do you know what the return on his equity capital is?

Admiral RICKOVER. Yes, sir; it is over 50 percent profit on equity. Of course, return on equity is the common way businessmen measure profitability.

Chairman PROXMIRE. That is the usual way, of course.

Admiral RICKOVER. Yes, sir. Any other measure of profits can be misleading. Take the A. & P., for example. They make, I believe, nine-tenths of 1 percent profit on their sales. But they make perhaps

8 or 9 percent a year actual profit on their equity, and that is the figure businessmen refer to when they talk about A. & P.'s "profit." In the same way, when you buy a stock—let's say you invest \$100—if the stock goes up, and you make 5 or 6 percent profit, you are referring to the return on your \$100 investment. This is the normal way. But Defense Department contractors would like to do it differently. They want to deal only with the return on sales.

Chairman PROXMIRE. And the comparable figure here would be over 50 percent.

Admiral RICKOVER. This shipyard earned close to 50 percent return on equity last year, sir.

Chairman PROXMIRE. Can you give us the name of that shipbuilder?

Admiral RICKOVER. Sir, I would rather not. You can ask the Defense Department for the name of the shipbuilder. But I would rather not single out this particular shipbuilder if that is agreeable with you, sir.

Chairman PROXMIRE. All right.

Admiral RICKOVER. The next item is quite important, and I think it is one of the primary reasons for having this hearing.

TRUTH-IN-NEGOTIATIONS ACT

The Truth-in-Negotiations Act was enacted in 1962 to put the Government on an equal footing with industry in negotiating costs and profits on defense contracts. However, it has been neither effectively implemented nor properly enforced by the Department of Defense.

COMPUTER, STEEL, NICKEL, AND FORGING INDUSTRIES DO NOT FURNISH DATA

A large number of defense contractors, including many of the Nation's largest companies, regularly refuse to provide the cost and pricing data required by the Truth-in-Negotiations Act. In some cases, entire industries have decided not to comply with the law.

The Atomic Energy Commission and the General Services Administration report that the computer industry as a whole refuses to provide the cost and pricing data required by the law, even though the Government buys about \$3 billion worth of computer equipment each year. I am told the same is true in the tire, ball-bearing and communication industries.

I am plagued by this problem in my own work. For example, large steel companies producing HY-80 and HY-100 steel for Navy ships have for years refused to obey the law requiring them to furnish cost and pricing data. These specialty steels were developed at government expense and are used almost exclusively on defense production. Only a few firms make these steels. The two principal suppliers so set their prices that when transportation costs are added to their quoted prices, the total cost to the consumer is exactly the same.

The General Accounting Office looked into this situation 6 years ago: It found that the companies were making high profits on the specialty steels, and that there was no real competition for these products. This is exactly the kind of situation where the Government

needs the protection of the Truth-in-Negotiations Act. But the steel companies adamantly refuse to comply, and no one has been able to obtain cost and pricing data on these steel procurements.

In nickel procurement, where one supplier has a virtual monopoly, the same situation obtains. The company refuses to provide cost and pricing data.

The forging industry is another example. Even though in many cases the Government has supplied production facilities to facilitate the contractors' performance of defense contracts, these suppliers defy the Truth-in-Negotiations Act and refuse to provide cost and pricing data for the forgings they supply.

SHIPBUILDER CIRCUMVENTS LAW

The Truth-in-Negotiations Act also requires a prime contractor to obtain cost and pricing data on subcontracts over \$100,000. Instead of following this requirement, contractors—often with the assistance of government contracting officials—have devised various means to avoid obeying the law. One shipbuilder purchased \$3.4 million of steel on a sole-source basis for a Navy ship. To circumvent the requirements of the Truth-in-Negotiations Act, he actually issued 1,200 separate purchase orders, so that no single order was above the \$100,000 threshold. In contrast, to meet requirements on a commercial ship where the Truth-in-Negotiations Act does not apply, the same shipbuilder awarded several contracts in excess of \$100,000 to the same supplier for the same material.

Other prime contractors resort to similar devious devices to avoid compliance with the law. The act exempts competitive procurements from the requirement for cost and pricing data. I have seen procurements labeled "competitive" simply because other suppliers were asked to bid. In order to evade the act, one procurement was called "competitive" where the only other bid was 250 percent above the low bid. Just recently I reported to my superiors that a large shipbuilder claimed he was buying nickel alloys on a "competitive" basis—without obtaining cost and pricing data—even though only one company produces the alloys.

Contractors also take advantage of the provision of the act which exempts procurements of "standard commercial items" sold to the general public. You would be surprised at some of the military items that suddenly become "standard commercial items" when it is necessary to get around the Truth-in-Negotiations Act.

This disregard for the law exists because the Defense Department does not enforce the act. The Department of Defense has been unwilling to require compliance from large defense contractors. Computer manufacturers, steel manufacturers, nickel producers, forging suppliers, divisions of some of the Nation's largest defense contractors—whole segments of the defense industry—refuse to comply with the Truth-in-Negotiations Act. This situation is well recognized at the operating level; yet senior Department of Defense procurement officials act as if it did not exist.

I have one suggestion to make to Congress on this point. When you pass a law, instead of passing one law, you should pass two laws—one for large corporations and one for ordinary citizens. The law for cor-

porations should exempt them from any requirements imposed on citizens. That way, the corporations can refuse to comply with requirements that apply to ordinary citizens, and they will not be breaking the law.

In a letter dated April 21, 1970,¹ to the chairman of this committee, the Defense Department stated that, generally speaking, defense contractors have provided cost or pricing data when required by law except in a few selected cases; that, with the exception of two firms, the Department of Defense does not know of any industries or companies that refuse across-the-board to provide cost and pricing data; and that since the passage of the law, the Department of Defense has granted only a minuscule number of waivers. At the time that letter was written, the problems in obtaining compliance with the Truth-in-Negotiations Act had been well documented in congressional testimony. In addition, within the 6 months preceding the Defense Department's letter, I had referred several specific instances of noncompliance to my superiors and requested their assistance in obtaining cost and pricing data. In at least two cases the Navy had requested the Department of Defense to assist in negotiations with forging suppliers who refused to comply with the law.

It is incomprehensible to me that defense procurement officials do not know of any companies that refuse to comply. Many defense contractors are quite open about it. Here is a sample of the responses, and these are all quotes:

"Pursuant to your request for cost information covering the manufacture of stainless steel rod containing isotopic boron 10, I hope you appreciate our policy of retaining our cost information for our use. This is a consistent practice which we have followed throughout our history."

Next one—"Upon your request we have given every consideration to supplying either you or the U.S. Navy a completed (cost data) form. In view of the obvious importance of what position we take on this matter, our uppermost management was consulted. Their decision was we will not submit subject form under any circumstances."

Next one—"This is to confirm our conversation that our policy does not provide for submittal of (cost data) form nor will we allow an audit by government contracting officer."

Next one—"Please be advised that (we) will not submit cost and pricing data on the inquiry referred to above. Further, in the event (we are) tendered a purchase order pursuant to the subject inquiry, we would not accept such a purchase order if such acceptance was conditioned on our submission of cost and pricing data."

There is a law, the Defense Production Act, under which a contractor can be mandated to accept defense contracts. But since this company won't comply with the Truth-in-Negotiations Act, I suppose it wouldn't comply with the Defense Production Act either.

"We must respectfully decline to furnish cost and pricing data to either (the prime contractor) or the Government."

Nor has the General Accounting Office been of much assistance in resolving these problems. Late last year the General Accounting Office issued a report on the Truth-in-Negotiations Act. In researching for

¹ The correspondence referred to may be found on p. 701.

the report, the General Accounting Office found overcharging on more than half the procurements reviewed. Its recommendations, however, dealt only with minor issues. The report did not mention the problem of industry noncompliance with the act.

In summary, the Truth-in-Negotiations Act has not been effectively implemented or enforced by the Department of Defense. As a result many large defense contractors—whole segments of defense industry—do not comply with the act. To obtain compliance, the Department of Defense will have to use the leverage of its purchasing power. Contractors that refuse to comply with the Truth-in-Negotiations Act should be ineligible for contract awards, just as they are when they do not comply with other Federal laws such as the Davis-Bacon Act or the Equal Employment Opportunity Act. In parallel, the Department of Defense should be required to tighten up its procedures for monitoring compliance with the Truth-in-Negotiations Act.

CLAIMS AGAINST THE GOVERNMENT

Many defense contractors argue that they should be getting higher profits because of the high risk in performing defense contracts. Theoretically when a defense contractor takes a firm fixed-price contract, he assumes a risk that he will make or lose money on the contract. In practice, however, this is rarely the case. Most defense contractors eliminate this risk by the technique of making claims against the Government.

There has been a sharp increase in the frequency and amount of contractor claims during the past few years—particularly shipbuilder claims. Today claims are a way of life. A contractor can turn almost any contract into a cost-plus transaction simply by submitting claims for changes or for extra work he allegedly performed beyond the requirements of the contract. In this way, the price of the work and the contractor's profits can be adjusted upward, even on a so-called "fixed-price" contract. Contractors retain claims lawyers and they train personnel at all levels in how to recognize and report situations that could possibly be used as a basis for claims. Some contractors have set up special claims and change groups to handle their claims. They start preparing claims the day they get a contract.

The actual costs of performing the extra work claimed are seldom supported by the contractors' accounting records. Instead, the contractor will prepare an inflated estimate which gives him room to negotiate an overall settlement that is satisfactory from the contractor's standpoint. The contractor submits his claim—usually with voluminous paperwork prepared by his legal staff—and then starts clamoring for a settlement. Since many claims involve matters that occurred months and years before the claims were submitted, Government officials often settle these claims with little firsthand knowledge of the facts.

Part of the increase in claims activity over the past few years may be due to Washington claims lawyers. These law firms probably get a fee based on how much they can get from the Government. One prominent Washington attorney—and I am not going to name him, Mr. Chairman—who served most of the 1950's as General Counsel to one of the military departments, today handles claims against the Govern-

ment for several large defense contractors. Another leader in the claims business was formerly the Chairman of the Armed Services Board of Contract Appeals. After occupying key jobs in the Defense Department, these men are well prepared to prosecute claims against the Government—working across the table from their former colleagues and employees.

I saw in the paper recently an article about 12 lawyers, all of whom had high-level jobs in the executive branch, who are now representing private industry in suits against the Postal Service. These men had jobs of the highest rank in the Post Office Department, the Justice Department, and other agencies. Having left these positions of public trust, they are now able to use their experience and influence to obtain concessions for private gain, to the Government's disadvantage.

Now, this situation is not illegal, sir. But my personal opinion is that it is immoral.

Almost any defense contractor is able to evade his contract if he so chooses. For some contractors it may be more profitable to pursue claims against the Government than to perform the contract. It is like some mail-order houses; they make more money from the interest on charge accounts than on their sales:

NAVY SETTLES CLAIMS BY BARGAINING

The Navy's method of settling claims may be contributing to the increased number of claims. The Navy tends to settle its claims by bargaining. In one case, the Navy settled a multimillion dollar claim at nearly the full amount claimed by the contractor without even completing a legal analysis of the case. The Navy counsel wasn't even consulted on the amount of the final settlement arranged by the contracting officer.

Chairman PROXMIRE. Can you give us the name of that case; another case in which they have settled on a \$1 million payment?

Admiral RICKOVER. Sir, I prefer that you request it from the Department of Defense. I am not in a position to volunteer the information. I cite this case as an example to illustrate the point I wanted to make, not to single out a particular company.

Chairman PROXMIRE. All right.

Admiral RICKOVER. My opinion is that the Navy should not be making payments for claims unless these payments are based on strict legal entitlement and a factual determination of amounts due. Any claim, or any item in a claim, that is not solidly grounded in fact or in law should be eliminated from claims settlements. If a shipbuilder considers he is entitled to payment for any item not clearly covered by contract, or not susceptible to factual determination, those items should be resolved by the courts and not by the Navy. As a check on the Defense Department, the General Accounting Office should review contractor claims to make sure they are being resolved on their merits.

I can tell you from personal experience how these claims work. A company assembles all sorts of claims, real or fancied, over the life of a contract—it may be a period of years. Meanwhile, the people who were responsible for this contract in the Government have moved to other jobs. No one is left who is familiar with the details of the claim. The records are massive and confusing. The only recourse the Gov-

ernment has is to settle on a negotiated basis for a lump sum. So the contractor generally asks perhaps 50 percent more than he really wants and after some negotiations, he generally ends up with about 10 percent more than he ever expected to get. It is a very simple thing.

Mr. Chairman, if you want to make some money so that you can run for office again, I advise you to get into the claims business. It will more than pay for your campaign expenses, sir.

GOVERNMENT-OWNED EQUIPMENT IN DEFENSE CONTRACTORS' PLANTS

To the extent defense contractors can get and keep government-owned tools to perform government and commercial work, they are able to expand their capacity and profit base without increasing their capital outlay. This enhances their total profits and their return on investment.

In prior testimony, I have pointed out some problems in the administration of Government-owned tools in contractor plants. I pointed out that the Department of Defense was routinely authorizing use of government machine tools, even after the work for which the tools were originally provided had been completed. As a result the Government is incurring considerable additional costs because the machine tools were not available for other bona fide defense needs. I said that suppliers accustomed to using government-owned machine tools had no incentive to invest in machine tools. In addition, suppliers holding government-owned machine tools have a decisive competitive advantage over suppliers without government tools because these tools can also be used in the performance of commercial work. The token rental rates charged by the Government for such commercial uses are quite inadequate to offset the competitive advantage.

Senator Proxmire has introduced the "Fair Industrial Competition" bill to tighten up the administration of government-owned tools in the hands of defense contractors. The proposed bill will aid in discouraging further abuses. The Joint Economic Committee, by spotlighting these problems in prior years, has already made some progress in getting the Department of Defense to improve its regulations and its handling of government-owned tools.

Department of Defense profit policies are a major contributing factor in this problem. As long as the Department of Defense relates profit only to cost, suppliers will have no incentive to provide facilities for Government work. This is another reason why you should try to get the Department of Defense to face up to the need for consideration of supplier investment in its profit policies.

RECOMMENDATIONS

I have previously provided detailed recommendations which, if implemented, would go a long way toward correcting some of the procurement deficiencies I have mentioned today. In short, I have recommended the following:

1. Defense procurement regulations must be revised so that return on investment is considered in establishing profit rates on defense contracts.
2. Contractors should be required to report costs and profits on

any defense order over \$100,000. The Department of Defense should periodically summarize these reports for Congress.

3. The development and implementation of uniform cost accounting standards must be expedited.

4. The Truth-in-Negotiations Act must be strengthened and enforced.

5. The Renegotiation Act must be strengthened and made permanent.

6. The General Accounting Office should make a review of contractor claims to insure that claims are being settled on their merits.

7. Congress should maintain close surveillance over government-owned facilities in contractor plants and related methods of financing production equipment. Finally, revising defense profit policy to consider return on investment would materially cut down contractors' reliance on government-owned facilities.

CONCLUSIONS

None of the problems I have described here today are new. I have frequently raised them with my superiors in the Defense Department. I have also testified about them to various committees of Congress.

The Department of Defense has done little to correct these deficiencies, nor will it do so in the future unless it is prodded by Congress. What progress has been made to date has been prompted by Congress.

Mr. Robert Anthony, the former comptroller for the Department of Defense, sized up the situation correctly in testimony before the House Banking and Currency Committee last year. Discussing the inadequacies of the accounting rules in the Armed Services Procurement Regulations, he said:

The facts are that despite the glaring inadequacies that have been pointed out repeatedly over a period of years, few changes have been made. I see no likelihood that significant improvements will be made so long as the responsibility remains in the Pentagon.

I agree with Mr. Anthony and that is why Congress must take the initiative.

Through the influence of former defense industry personnel in key government positions, and through the social and business dealings with defense contractors, the Defense Department has adopted a business philosophy that too often puts defense contractors' interests above the public interest. It is no longer necessary for defense contractors to perform efficiently in order to earn a profit. The defense industry has convinced the Department of Defense that we have no right to know how defense contractors spend public funds or how much profit they make on military hardware. The Defense Department accepts loose accounting rules that make it impossible to determine costs and profits with reasonable accuracy.

Today, the scales of justice are weighted toward defense contractors—and "Justice" herself wears no blindfold. It is this sort of favoritism that leads to disrespect for the law. Is not the equity of 73 million U.S. taxpayers—your constituents—to be considered as valid as that of the small number of defense contractors and subcontractors?

LEGISLATIVE OVERSIGHT MUST BE IMPROVED

If there is ever to be a noticeable improvement in defense procurement practices, Congress will have to take a more active interest in defense procurement than it has in the past. Little or nothing will be done unless Congress does it.

And I might interject here, you remember it was John Stuart Mill nearly 150 years ago who said that he considered the prime function of a parliament was its oversight function; that public issues were so vast and so great—and this a century ago—that the legislative body couldn't regulate every aspect of government. The day-to-day operation of the government would have to be left to specific bureaus and agencies, and the Parliament's main job, as Mill saw it, was to oversee these agencies.

I think our own Congress should consider its function in Mill's terms, because actually, the Members of Congress cannot really control the Government's actions.

The budget, for example, is prepared by the executive branch by officials not elected but appointed. Congress may make small changes in the budget but most of the items in it are fixed and you have to go along with them.

In my opinion, the only way our duly elected representatives can exercise power as Members of Congress is to vastly increase the supervisory function of Congress.

A century or so ago, Disraeli said of England that "the Privileged and the People form two nations." It was a dichotomy few Americans at that time would have applied to our own country. For we were a democracy and England was not—though she has long since become one.

I am not at all certain that we can today assert with confidence that we are one Nation, not two; that our laws apply with equal force to every American; that there are no privileged segments set off from the people at large; that there is not a nation composed of large corporations and another composed of the people—a corporate America and an America of individual citizens.

Certainly there are "the privileged and the people" where taxation is concerned. There are two sets of rules, one for the privileged segment for whom loopholes have been written into our tax laws, the other for the rest of the people who are paying taxes on all of their income. There is indeed a dichotomy and it is much on people's minds. For it is contrary to every principle on which this Nation was founded.

Surely, equality before the law was the first of these principles alongside the accountability of the Government to the people. Privileged status reflects superior power wielded by one segment of the population over the rest. If any one thing is more destructive of democracy than anything else, I believe it is power not based on the will of the people, and privilege bestowed by government on those who wield such power.

Thank you, sir.

Chairman PROXMIRE. Thank you very, very much, Admiral Rickover. Your testimony is what we have grown to expect from you; highly competent, blunt, and most useful for those who seek to secure more for our defense dollars and secure more quality in defense production.

You posed a very serious challenge to the profit study made by the General Accounting Office. Elmer Staats, the General Accounting Office head, will be here tomorrow, and will be testifying at 10 a.m. We will be interested in pursuing the very significant and solid charges you have made in that respect.

You have also made some highly serious charges involving a deliberate, calculated, widespread violation of the law. And what is disturbing about it is that you have made charges that have been regarded by some as being too emphatic in the past, but you have a record of being disturbingly correct, right. You are very careful when you go into these things, and we have found repeatedly you know exactly what you are talking about.

REFUSAL TO COMPLY WITH TRUTH-IN-NEGOTIATIONS ACT

You mentioned the lack of compliance with the Truth-in-Negotiations Act. This matter has concerned us on the committee for some time. We have asked the GAO and the Pentagon about this repeatedly. Can you name some of the steel and forging companies that have refused to comply with the law?

Admiral RICKOVER. I will name some that I have encountered in the course of my business over the past few years. In a few cases we have been able to prevail and get the data after prolonged discussion. In most cases, however, the suppliers have adamantly refused to supply the data.

Here are the names: United States Steel Corp., Bethlehem Steel Corp., International Nickel Co., Lukens Steel Co.—

Chairman PROXMIRE. Lukens?

Admiral RICKOVER. Yes, sir. Lukens Steel Co., ARMCO Steel Corp., Ladish Co., Cameron Iron Works, Carpenter Steel Co., Wolverine Tube Division of the Universal Oil Products Co., ESCO Co., Wyman-Gordon Co.

I am sure if you had the GAO or the Department of Defense look into this, you would find many more.

Chairman PROXMIRE. You also mentioned the computer industry.

Admiral RICKOVER. Yes, sir.

Chairman PROXMIRE. Can you identify the firms in that industry who have refused to comply?

Admiral RICKOVER. Twice in the past 5 years I have had to buy large multi-million-dollar computer installations to perform highly technical research and development work at two Government-owned laboratories. Both times the computers were bought from the same source. On the second procurement, the cost data issue was debated for months. Finally, in April 1970, the computer manufacturer "won." He would not provide cost and pricing data, so the AEC had to waive the act.

The General Services Administration testified before the Joint Economic Committee in November 1968 that a number of computer firms refused to provide cost and pricing data in compliance with the Truth-in-Negotiations Act. The companies identified then were: IBM Corp., Control Data Corp., RCA Corp., Burroughs Corp., Honeywell Information Systems, Univac Data Processing Division of Sperry Rand Corp.

COLLUSIVE BIDDING IN THE STEEL INDUSTRY

Chairman PROXMIRE. Admiral, practices of the steel industry are of particular concern. I understand that steel companies in the past have been investigated because of suspected collusive practices including identical bidding on defense contracts. As you know, GAO formerly concluded in 1965 that there was identical bidding in the steel industry, that there was not adequate competition for the special type of steel used on nuclear submarines, and that the Navy should require compliance with the Truth-in-Negotiations Act. As I say, that was made back in 1965.

I also understand the year before that, in 1964, the Navy asked the Federal Trade Commission to investigate the receipt of identical bids from United States Steel and Lukens Steel. Now you tell us that the practice of identical bids exists today. Do you know whether the FTC ever acted on the Navy's request for an investigation or whether the Navy has ever followed up on this request?

Admiral RICKOVER. I have a list here of the Government's actions on that—a chronology of the Navy's dealings with the steel companies on purchase of specialty steels. Would you like to hear it?

Chairman PROXMIRE. Yes.

Admiral RICKOVER. In 1951, the Federal Trade Commission issued a consent decree providing that the United States Steel Corp. and other steel producers should cease certain collusive pricing practices, including the use of pricing formulas which produce identical delivered costs. That was in 1951.

From 1951 to 1961—it appears that nothing new happened on this matter during this time.

Chairman PROXMIRE. Between 1951 and 1961 and after that order was issued, nothing happened? There was no responses; the prices continued to be identical and collusive?

Admiral RICKOVER. I do not know, sir. Probably they did. I do not have any further specific information until the issue came up again in the early 1960's. In the period 1961 to 1964, the Navy Department sent a series of letters to the Federal Trade Commission reporting the receipt of identical bids from United States Steel and Lukens Steel on various orders of steel. The two companies priced their offers in such a way that when delivery costs to the shipyards are included, the prices from both are identical. The Navy received no answer from the Federal Trade Commission. But, of course, it is now only 10 years later. I am sure they were quite busy checking up on other important matters: brassieres, and ladies' stockings, and so on.

In January 1965 the GAO issued a report stating that the Navy did not obtain cost and pricing data as required in the Truth-in-Negotiations Act on purchase of HY-80 steel. The GAO reported that the two suppliers quoted identical prices and concluded that there was not adequate competition on these steel procurements. The GAO recommended the Navy obtain cost and pricing data on future steel procurements. In response, the Navy promised the GAO that cost and pricing data would be obtained.¹

¹ The report referred to is reprinted beginning on p. 619.

In 1967 the Defense Supply Agency, which also purchases HY-80 steel, reported to the GAO that it had obtained effective competition on the purchase of steel and therefore it would not request cost and pricing data from steel suppliers.

Then in 1969 I learned this situation was still going on.

In December 1969 and January 1970, in two memorandums to the Commander, Naval Ship Systems Command, I reported on the purchase of HY-80 and another specialty steel at one major shipyard. The steel suppliers quoted prices which made the delivered cost identical. Although the shipyard purchased several million dollars' worth of specialty steels annually, it did not obtain cost data in accordance with the Truth-in-Negotiations Act.

The Commander of the Naval Ship Systems Command reported in January 1970 that he agreed with the "basic facts" in my report. He directed a review of the situation and stated that, in the future, the Navy would not consent to the shipyards' steel procurements until cost data have been obtained.

I advise you not to hold your breath, Mr. Chairman, until this is accomplished. The Navy and the shipbuilders have been unsuccessful in repeated attempts to obtain cost and pricing data on HY-80 steel.

Chairman PROXMIRE. This is strictly illegal?

Admiral RICKOVER. It is, sir.

Chairman PROXMIRE. It is a conspicuous violation of law?

Admiral RICKOVER. I believe it is. I could go on with the chronology.

Chairman PROXMIRE. Why don't you?

Admiral RICKOVER. Next we get to March 1970. In March 1970, the Commander, Naval Material Command, reported that steel companies still refused to provide cost data on Navy and shipbuilder purchase orders. He authorized the placement of purchase orders without cost data in order to meet emergency requirements.

In April and May 1970, the steel companies formally refused a shipbuilder's request to provide cost data on sales of HY-80 and HY-100 steel.

They pointed out that the Defense Supply Agency determined in 1967 that cost data need not be furnished on its procurements, and thus the shipbuilder should not obtain such data on Navy procurements.

In August 1970, Mr. Chairman, you asked the GAO to investigate procurement practices and cost controls at private shipyards which have large Navy ship construction contracts. You specifically requested a review of the shipyard's implementation of the Truth-in-Negotiations Act.

In October 1970, I wrote to the Commander, Naval Ship Systems Command, stating that there had been no change in the situation in the 10 months since his reports were prepared, and urged prompt action.

In November 1970, the Assistant Secretary of the Navy requested Department of Defense assistance in obtaining cost and pricing data on procurements of HY-80 and HY-100 steel.

In February 1971, the Assistant Deputy Secretary of Defense replied that the Navy's problems in dealing with the steel companies should be resolved by the Navy. The Department of Defense would not become involved.

In March 1971, the Navy General Counsel wrote to the Federal Trade Commission. He stated that Navy shipbuilders were still receiving identical bids from suppliers of specialty steels. He requested an answer to the Navy's early 1960's letters to the FTC.¹

The Navy then wrote the Department of Defense, pointing out again that without a concerted Department of Defense effort the steel companies will not be convinced to comply with the law. The Navy also asked the General Accounting Office to audit the steel companies' production costs for HY-80 and HY-100 steel.

I hope you do not think I am exaggerating this problem, sir.

Chairman PROXMIRE. I think you have given us the facts. We are going to have Mr. Shillito in, and we will certainly ask him about these matters.

GOVERNMENT GUARANTEE OF LOCKHEED LOAN

In recent days, we have heard broad hints from the administration that it will request a Government loan guaranteed from the Congress for the Lockheed Aircraft Corp. The Government's fear seems to be that if Lockheed went bankrupt, the national economy and the national interest would be seriously endangered. Would you care to comment on the effect and significance of a Lockheed bankruptcy, assuming it does go into bankruptcy? Do you see any national security implications in such an event?

Admiral RICKOVER. Mr. Chairman, we in this country pride ourselves on the superiority of our free-enterprise captitalistic system; we proclaim hatred of the Soviet communistic system. A totalitarian system constitutes a kind of gigantic political, economic conglomerate in which the managers own all of the stock, set their own rules of accounting, and have little or no competition. They are a group of managers free to dispose of the resources of the Nation unencumbered by political pressures.

However, when men in Communist Russia fail, in Government or in industry, they are summarily dismissed. We, on the other hand, protect those who fail and grasp them even more tightly to the Government's bosom. We let them privatize profits and socialize losses.

I am reminded of Herbert Spencer's aphorism that to protect men from the results of their folly is to fill the world with fools.

Recently, Mr. Donald T. Regan, chairman of Merrill Lynch, Pierce, Fenner & Smith, one of the largest and most prominent Wall Street brokers, said of stockbrokers who might fail: "So what if they go bust? What God-given right do they have to stay in business? That is what the country and capitalism are supposed to be all about."

You should bear in mind that there are about 10,000 business failures in the United States each year. And almost all of these involve very small businesses where a man loses all of his savings and faces the situation on his own. If the Government has the obligation to save the large corporation, what then is its obligation to the small grocer, baker, or tailor who goes bankrupt?

If a small grocer or baker goes bankrupt, he has lost all of his money. But take the case of the Penn Central officials. Most of them still have

¹ The letter referred to and a letter from Chairman Proxmire to the Federal Trade Commission are reprinted at pp. 706 and 707.

their jobs, and those few who have left are receiving considerable severance payments. Ask any Penn Central officials if they are in need because of the bankruptcy. If necessary, I will be glad to send each one of them a loaf of bread every day to take care of their families.

Chairman PROXMIRE. With respect to Lockheed—

Admiral RICKOVER. Let me raise one other point that Lockheed and other large corporations should keep in mind. Corporations cannot expect to be free of Government control if they come to rely on Government beneficence. If, as is being claimed, the Government has an obligation to rescue a giant defense firm, then the Government has the obligation to see that the firm is properly managed. This will inevitably lead to state socialism.

Chairman PROXMIRE. Well, Lockheed, as you know, is our No. 1 defense contractor in terms of the volume that it has sold to the Federal Government. It also occupies a great deal of Government property. The Marietta, Ga., plant, as I understand, is owned by the Federal Government. It uses a great deal of Government equipment. And as you pointed out, you had a bankruptcy with the Penn Central, and you changed the management, but you still have the equipment running; you still have the services provided. In your judgment, as a defense expert, as one who has served this country for many years in the Navy, in your judgment, what effect on defense, if any, would it have if Lockheed had to go through bankruptcy?

Admiral RICKOVER. My personal opinion is: the work would go on in the same way, because the people who do the work would probably not be affected. What happens when the president of any large corporation leaves the firm? The work goes on. Generally, the executives change in a bankruptcy. I think it would have but little effect on the operations of the company.

The Penn Central railroad went bankrupt. But as far as I know, they are still using the same time schedules. From the point of view of operations, it doesn't make much difference who is running the company. Penn Central is probably being managed much better because of its bankruptcy. In fact, the new management found some freight cars that has been missing for a long time.

But I want to warn you there may be dangers in bringing in new management. You may remember during the war, when you went west from Washington, in order to get a pullman berth you had to tip the pullman conductor. Many people complained to the railroad company about this, and the railroad first decided to fire those conductors. But after thinking it over, the railroad company decided it was best to keep the same men on the job, because they had already made their pile, and if new conductors were hired, they would start all over again.

Chairman PROXMIRE. So you think this would not necessarily, or would not have any effect probably on our procurement of ships?

Admiral RICKOVER. Bankruptcy would have an effect on the stockholders, possibly, and on some of the officials of the company.

Chairman PROXMIRE. But actual defense equipment?

Admiral RICKOVER. It would not significantly affect the delivery of defense equipment, in my opinion. I doubt they would liquidate the company. However, I am not an expert in the aerospace industry.

PROTECTION OF INDUSTRY

I would like to make one more point about businessmen and Government which concerns what I have said.

There is in the Defense Department a feeling among the people in the field that their superiors do not want them to enforce the regulations strictly against contractors. I think this idea has permeated the entire defense organization. The Department of Defense has come to be essentially a regulatory body whose function is to protect the industries it is dealing with, like other regulatory bodies in Washington.

One reason for this attitude is that industry is heavily represented in high-level Government offices. It has been standard practice for years to appoint leaders of the defense industry to ranking civilian positions in the Defense Department. There is some value to this. It certainly brings men with business experience and professional acumen into the Government.

The problem is; during their lifetime of working in a given field, these men usually acquire a viewpoint that accords with the philosophy and practices of their business organizations. I do not mean to imply that they are not sincere or they do not try to do their best. But what they think is right for the Government and what is acutally right for the Government may be two different things.

This interchange of top officials has given the defense industry a network of business-oriented men in policymaking positions in the Department of Defense. This is one major reason why the opinions of industry are so well reflected in defense procurement policy.

I once had a discussion with a Jesuit who aspired to be a scientist. I pointed out to him that he could not spend 14 years studying how to live by faith and then expect to engage in an enterprise which was based on having no faith. And the same applies to executives who have spent years in business. Even though these people are completely honest, it is almost impossible to overcome ingrained attitudes.

Chairman PROXMIRE. Congressman Moorhead would like to pursue the subject.

Representative MOORHEAD. That leads me to the question I wanted to ask you, Admiral Rickover, on the attitudes and the psychology in the defense industry if the Congress does approve this guaranteed loan for Lockheed. Would that not be a message to all defense industry that the Government is going to protect them from their mistakes and their inefficiencies? Wouldn't it be another example of what you call— you say the Defense Department has adopted a business philosophy that too often puts defense contractors' interest above the public interest? Wouldn't this be a clear message?

And, conversely, if we refused to; wouldn't it be a message that everybody had better straighten up and do right?

Admiral RICKOVER. Mr. Moorhead, I do not think the Defense officials who do this believe they are doing something contrary to the public interest. When you are brought up with a certain philosophy, that is the philosophy you carry out. I do, however, believe if the Government keeps on protecting companies that go bankrupt, as Herbert Spencer said—that I stated earlier—"When you protect men from their follies, you will create a nation of fools."

I also pointed out that we are really far more tolerant of poor performance than is the Russian Government. They do not tolerate failure. Sometimes people in Russia have even paid with their necks.

In the United States, in contrast, we rush to protect big business when it gets into trouble. We do not do this for small companies. They are permitted to go bankrupt. It is only the very large companies that are subject to this consideration; not the intermediate companies and certainly not the small businessman.

Representative MOORHEAD. But if the Congress makes it clear that we will not permit this kind of protection of follies, then hopefully we will not have a defense contracting nation composed of fools; is that your position?

Admiral RICKOVER. That is correct. The Government should not protect businessmen against the risk of losses.

POSSIBLE ANTITRUST VIOLATIONS

Chairman PROXMIRE. Admiral, let me get back to the steel cases. You stated a refusal to provide cost data constitutes a violation of the Truth-in-Negotiations Act. What about the antitrust laws? If there is collusive bidding, isn't this in violation of the antitrust laws and shouldn't the Antitrust Division of the Justice Department be investigating that situation for possible prosecution? Why hasn't this matter been referred to the Justice Department?

Admiral RICKOVER. Apparently it was decided that the issue should be raised with the Federal Trade Commission first. After I raised the issue, the Navy recommended to the Department of Defense that this matter should be reported to the Department of Justice. The Department of Defense declined to get into the matter. The Navy then discovered that it had raised a similar issue with the Federal Trade Commission about 10 years ago but had never followed up on it. I suppose that is why the Navy decided to write to the Federal Trade Commission. Either way, I doubt that much will be done. I think you will remember what Mr. Dooley said: even the Supreme Court follows the election returns.

ELECTED OFFICIALS' DEPENDENCE ON CONTRIBUTORS

Chairman PROXMIRE. Well, the election results would be on your side.

Admiral RICKOVER. No, sir. But you are touching on a deeper issue—the issue of campaign contributions. Hopefully Congress is doing something about it. As long as it is possible for large corporations and for the wealthy to make large campaign contributions, and as long as it takes several million dollars to run for office, the dependence of elected officials on wealthy contributors is inevitable.

Let me be perfectly frank. My opinion is that there has never been a legislative body in the history of the world that is as capable of doing as effective a job for its country as our Congress, if they were freed from the albatross of the large sums of money which have to be used in order to seek election. I think that is the basic problem. You know that as well as I.

Chairman PROXMIRE. We are beginning to do something about it. It is not enough. It is late.

Admiral RICKOVER. You are making a start. I think the further you go in freeing candidates from the burden of raising large sums of money for their campaigns, the sooner you stop election campaigns from lasting 4 years and limit them, as in England, to just a few weeks, the better it will be for this country. But as long as public officials are dependent on campaign contributions you will not get the independence we need for effective Government, sir.

It has nothing to do with the Republican or Democratic parties. It is a problem common to both parties.

Chairman PROXMIRE. Could I ask you whether you referred these steel cases for prosecution by the Justice Department.

Admiral RICKOVER. The Navy recommended to the Department of Defense that this problem be taken up with the Justice Department. To my knowledge, this has not yet been done.

Chairman PROXMIRE. Well, I intend to follow up, in view of your testimony this morning, which is so well documented, I intend to ask the Justice Department to act under the antitrust laws and to prosecute.

Admiral RICKOVER. I wish you luck, sir.

Chairman PROXMIRE. I must say, I have asked the Justice Department for other action in enforcing the law in this law and order administration, without great success. But I will pursue it.

Admiral RICKOVER. I will not hold my breath, sir.

DISPARITY IN PROFIT REVIEWS

Chairman PROXMIRE. You mentioned the disparity between profits shown in the GAO study and in the Pentagon's profit review. Can you explain this disparity? The profits shown in the GAO study and the Pentagon profit review?

Admiral RICKOVER. The GAO relied on unverified information. You may remember that the law setting up this study authorized subpoena power and the power to look at all relevant contractor records. The GAO did not choose to avail itself of the full authority of the law; it gathered the profit data with questionnaires.

Thus, in spite of the Defense Department's profit reporting system, and in spite of the studies by LMI and GAO, no one yet knows what profits are being made on defense contracts. All of the profit reports to date have been defective. The Defense Department profit reporting system provides data on only about half of the prime contracts, and no data on subcontracts. The GAO and Logistics Management Institute studies are not reliable because both relied on unverified figures.

I have seen evidence that indicates profits may be increasing. From my experience, prices are climbing much faster than costs. Prices for some of my equipment have doubled in the past few years. I understand that other countries can deliver a complete ship for less than we have to pay in this country for the materials alone to build a comparable ship.

Chairman PROXMIRE. To what extent is this a matter of difference in wage rates?

Admiral RICKOVER. For a standard merchant ship, the material alone costs more here than it costs to build a complete ship overseas.

Chairman PROXMIRE. That material is fabricated to some extent?

Admiral RICKOVER. Yes, sir.

Chairman PROXMIRE. So there is a labor component in it?

Admiral RICKOVER. That is right, but the high cost of constructing American ships cannot be attributed entirely to high wage rates. Much of it is due to inefficiency. The Japanese, who have to import iron ore, can build a large tanker for less than the material alone costs in America.

NEED FOR PROFIT REPORTING SYSTEM

Chairman PROXMIRE. You generally express criticism of all profit studies that have been completed. In your opinion how should a study of profits be conducted?

Admiral RICKOVER. The best thing to do over the long run is to establish a system whereby defense contractors would report the actual profit earned on each contract and on each major subcontract, on a contract-by-contract basis. I mean by that a complete reporting system, which covers all prime contracts, including fixed-price, and all subcontracts that are greater than, say, \$100,000. This would have to be considerably more inclusive than the Defense Department's current profit reporting system. The profit reports should then be checked.

Once such a system is in effect, it would not require much more than a report filed by the contractor—like an income tax return—at the completion of each contract. This would not be an excessive burden. I am sure contractors compute their profits for their own records; there is no reason why they can not provide the same information to the Government.

Industry, of course, will claim that this is a major intrusion on the contractors. But an ordinary citizen has to reveal how much money he makes and how he makes it each year for income tax purposes. Why, then, is it an imposition for business corporations to be required to report how much money they make on defense contracts?

Chairman PROXMIRE. But the method of making the study of defense profits that you think would be effective would be on the basis of a thorough audit rather than a questionnaire?

Admiral RICKOVER. Yes, sir. The Government should audit the contractors' reported profit figures. The large discrepancy between the audited and unaudited profit figures in the GAO report is proof that contractor furnished profit figures are not always reliable.

Another essential for accurate profit reporting is uniform cost accounting standards. Unless and until we get uniform cost accounting standards, we will never be able to make meaningful measurements of costs and actual profits on defense contracts.

PROFIT STANDARDS

Chairman PROXMIRE. Admiral, there has been a lot of talk about the unreasonableness or reasonableness of defense profits, a lot of discussion of it. Can you give us any guidance on how we can arrive at what would be a reasonable figure? Do you think the Congress ought to set up standards of profitability on defense contracts?

Admiral RICKOVER. Yes, sir, Mr. Chairman. When you have true competition you can depend on market forces to establish reasonable profit levels. But true competition only exists in about 11 percent of all defense contracts.

Chairman PROXMIRE. It is very hard to extend it much, as you know.

Admiral RICKOVER. Where you have true competition, as, say, buying flour or clothing, I do not think you should get into profit standards. But when you start getting into the remaining 89 percent of defense contracting, you must have standards. You have to allow some leeway, depending on what kind of job it is, what chances the contractor is taking, and what the contractor contributes to the job in terms of effort and investment.

Most defense contracting is noncompetitive—essentially it is all cost-plus, no matter whether it is called fixed price, incentive, redeterminable, or so on. If it quacks like a duck and it looks like a duck, generally it is a duck, regardless of what people call it.

Since most defense contracts end up being cost-plus, profit rules should be framed to take this fact into consideration. To establish what profit rates might be appropriate for such contracts, we might look to the public utilities. I believe they are allowed about 10 percent return on investment by the various utility commissions.

Chairman PROXMIRE. You are talking about return on equity capital?

Admiral RICKOVER. Yes, sir. And then, as a final check on profit levels, you must also get an effective Renegotiation Board, not just a facade.

RENEGOTIATION ACT NEEDS TEETH

Mr. Moorhead was present when I testified to the House Government Operations Committee about the Renegotiation Board more than a year ago. At that time, I went into considerable detail on the shortcomings of the Renegotiation Board as it exists today—the lack of uniform cost accounting standards, the loophole exemptions, the superficial review of contractor cost-and-profit statements, and the shortage of manpower. The Renegotiation Board has fewer employees now than at the time of the Korean war, even though it now covers about twice as much business as it did at that time. You must give the Renegotiation Act teeth. Make it permanent by legislation and remove all the loopholes.

Chairman PROXMIRE. I have other questions, Admiral. I want to get from the Defense Department the various correspondence you have referred to, particularly the correspondence regarding problems at the shipyards. I intend to put this information into the record.

COST CONTROL DIFFICULTIES

Representative MOORHEAD. Admiral, I would like to ask you about two weapons systems, the nuclear carriers, CVAN's 68 and 69. The General Accounting Office recently decided the degree of concurrency between R. & D. and production as a factor causing schedule slippage and cost growth. Could you tell us the difficulties you faced, particularly on the cost of growth? Is it—does it exist? Is it chiefly the fault of some of the things you have testified to in your testimony?

Admiral RICKOVER. Some of it is. A lot of it is due the fact that we are developing new equipment with new technology. If you have an engineering conscience, you want to make sure the equipment is made right, because it has to last for 30 years. In any large development program, there are bound to be mistakes in design and manufacture.

I think that in blaming the military for overruns and performance problems, you must consider what the project is they are working on. If it is a follow-on job, it should be simple. But on contracts involving large new developments, you can have serious and costly problems even on relatively minor components. Take one piece of equipment, one for a huge \$600 million ship. If that one item gets held up, it delays the entire ship, and the cost of the entire ship goes up. We have to think in terms of the entire ship. That is why we must do extraordinary things and sometimes spend a great deal of money on the smaller items in order to get them on time. Of course, you can always stretch out a schedule and build in lots of extra time so that nothing is ever late. But my experience has been that the longer you take to complete a project, the more it costs. Also, I find that lax schedules are missed about as often as are tight schedules.

The greatest overall economy comes from completing the job in the shortest time practicable. That is also the way to keep technology advancing, since we learn by doing.

During World War II, the Manhattan project worked 24 hours a day. They did the job much faster and cheaper than it could have been done on a normal schedule. As you know, overhead costs on any project build up over time; on complex defense projects, you often find that the overhead buildup sometimes costs more than it costs to expedite the work.

Most of my life has been involved in research, development, design, production, and operation of ships. My program covers the entire spectrum of development—from basic research in nuclear physics to the selection and training of people who man the Navy's nuclear fleet. So I can talk with some feeling and knowledge about the problems of developing and managing defense projects.

There are going to be mistakes in any development project. Part of the development is to overcome mistakes. We have made our share of mistakes in the nuclear program but we have accomplished a great deal. The space program is another successful program. Yet there have been plenty of mistakes there, too. And, they have spent a lot of money.

I believe it cost about \$24 billion to land the first man on the moon. We have built and are building 124 atomic-powered ships for a total of about \$18 billion. Ninety-seven of these ships are operating. The total cost of the naval nuclear program over the past 20 years, to set it up, build our laboratories and prototypes, conduct the necessary research and development, design and build 124 nuclear-powered warships, train crews, et cetera—the total cost since the inception of the program—is only about \$18 billion. I think that we have been reasonably efficient.

Waste is inevitable on any large undertaking. The problem is to minimize it. Probably I get only 20 cents of real value on the dollar; but compared to many defense projects that may be reasonable efficiency. I know I haven't answered your question directly, sir.

Representative MOORHEAD. I will ask you another one about another program. Are you familiar with an essay Capt. Robert H. Smith wrote in the U.S. Naval Institute Proceedings, in which he discussed the destroyer escort?

Admiral RICKOVER. Sir, destroyer escorts are not my business. I am a submarine man, mostly.

Representative MOORHEAD. It makes very serious charges, saying that it is the greatest mistake in ship procurement the U.S. Navy has known. I wonder if you would want to look at that article, or excerpt I have, and see if you can give us the benefit of your judgment, your judgment being one that the Congress respects.

Admiral RICKOVER. I recommend that you ask the people who are in charge of that project. It would be out of place for me to comment on it, sir.

Representative MOORHEAD. Thank you, Mr. Chairman.

Chairman PROXMIRE. Admiral, thank you very, very much for a superlative performance, as always. You have been most helpful to us.

Admiral RICKOVER. Thank you very much. You know how deeply I appreciate testifying here. I hope that maybe 1 percent good may come out of this, sir.

Chairman PROXMIRE. I say 99 percent.

Our next witnesses will come up as a body, representatives of the tool and die industry. Mr. William E. Hardman, executive vice president, National Tool, Die & Precision Machining Association, Washington, D.C.; Mr. William Gentz, president, Gentz Industries, Inc., Detroit, Mich.; Mr. Robert H. McCullough, president, Fibreform Electronics, Inc., Los Angeles, Calif.; and Mr. William C. Brashares, attorney, Peabody, Rivlin, Cladouhos & Lambert, Washington, D.C.

Gentlemen, we are very happy to have you here. I apologize. The hour is late, as you can tell. You were present while Admiral Rickover was testifying. He had a very detailed statement.

We would appreciate it if you would abbreviate your statement in any way you wish. The whole statement will be placed in the record.

Mr. Hardman, why don't you take charge and lead off, and let the other men follow you.

STATEMENT OF WILLIAM E. HARDMAN, EXECUTIVE VICE PRESIDENT, NATIONAL TOOL, DIE & PRECISION MACHINING ASSOCIATION, WASHINGTON, D.C.

Mr. HARDMAN. Thank you, Mr. Chairman. We all have very brief statements this morning. I do not think they can be summarized to make them any briefer than they are.

My name is William E. Hardman, and I am executive vice president of the National Tool, Die & Precision Machining Association, a trade organization headquartered in Washington, D.C., representing approximately 8,000 small businesses across the country. These companies are engaged in work essential to all mass production and metalworking: the production of dies, tools, molds, gages, special machines and other similar items, and the service of precision machining. Like any critical industry—and those particularly related to metalworking—we have had a deep and continuous involvement in defense-related work.

Accordingly, our association has maintained a protracted interest in procurement policies of the Federal Government: specifically, those areas in which we have felt that such policies have been disadvantageous for small businesses.

Mr. Chairman, we all listened with interest and full agreement with Admiral Rickover's comments with regard to the disparity that exists

in our procurement agency's treatment of large and small contracts. We could easily expend ourselves relating the discriminatory treatment of small business, starting with the award of the contract on a truly competitive basis, all the way through renegotiations, with the sophisticated use of exemption and federally accepted accounting methods for noting overhead and GA costs on Government work, certainly giving the large contractors a tremendous advantage.

One of the big profits of the big crime, which has just now come to the surface, is the use of Government-owned equipment and that is why we are here.

MISUSE OF GOVERNMENT-OWNED EQUIPMENT IN HANDS OF CONTRACTORS

In the course of our participation over the past several years in a number of hearings before subcommittees of the House Small Business Committee, we have commented on a number of problems in the procurement area. But the problems we have found most distressing and most fundamental have been the abuses growing out of the Government's huge investment in machine tools and other production equipment which have been leased to large prime contractors for both Government and commercial usage.

I realize that your subcommittee has also taken a deep interest in this subject. The Government's huge investment in production equipment has represented a tremendous expenditure of taxpayer's dollars, while also maintaining a very high priority in the total defense budget. We believe this program began as a well-intentioned, essential program in World War II (and later in Korea) to meet objectives that could not otherwise be obtained. However, following Korea, the program went totally out of control, and has since resulted in a huge and unnecessary involvement by the Government in the private economy.

Specifically, the Government has created billions of dollars in equipment capacity in the plants of private contractors, much of which bears little or no relationship whatever to the original Government programs for which it was leased. Now—after many investigations, studies, hearings in Congress, and other proceedings—there has seemed to develop a general consensus that the Government should do something to change this situation. But all parties involved have terribly underestimated the deep entrenchment of these leasing programs in our total economy and, in particular, in the defense-related economy. We are hopeful that these hearings, and the information that is developed in them, will help to speed the day when some meaningful phaseout program gets underway.

Our interest in this subject is very simple, and we do not hesitate to call it a selfish interest. Over the past 20 years, Uncle Sam has supplied billions of dollars worth of IPE (Industrial Production Equipment) to the large defense prime contractors that constitute a major customer market for our industry. Most of this equipment has consisted of standard, general purpose machine tools—the same type of machinery which our companies have purchased themselves with their own funds, bearing the full risk of ownership. Most important, usage by a prime contractor of Government-owned IPE has not been limited solely to Government contract work. Rather, it has been used to expand into supplier markets such as ours, with the prime contractor

performing both Government and commercial work. This means that small businesses with privately purchased IPE find it difficult to compete with such primes and, accordingly, have lost a large segment of their traditional markets.

The economics are basic and very simple: the system at its best gives a contractor a huge competitive advantage, because Government IPE is not costing as much as private equipment (assuming full usage) and involves no risk of under-utilization. If you do not use it, you do not pay for it.

That is at its best. But, it has not really worked that way. The system has, in fact, permitted virtually unrestricted use of IPE for any purpose a prime contractor wishes to make of it. And in many cases, including some recent ones we will discuss later, little if any thought is given to any reasonable charge for use.

What should be done about this? We should unwind the Government machinery-leasing program as best we can. Here are the priorities as we view them:

RECOMMENDATIONS

1. Abolish commercial use completely. This is the prime area of abuse and inequity.

2. Lease no further IPE except in truly essential situations.

3. Pull IPE out of Government-owned, contractor-operated and private contractor facilities unless it is truly essential and continues to be so.

4. Develop some workable means to sell or otherwise dispose of surplus IPE removed from contractor plants, with emphasis on competitive sale.

With that general comment, let me turn to our other witnesses who will offer some recent circumstances of an abusive nature in the IPE leasing program that underscore some of the inequities that I have suggested. I might add that while there are only two company representatives here this morning, the information we will provide comes from quite a number of companies in the industry. I am compelled to say also that, while we are satisfied as to the reliability of all information we are presenting to the subcommittee, we could not, in most cases, give complete documentary proof of these situations, nor would we wish to disclose publicly the names of individuals in the various involved companies who have gathered information. Of course, all of the situations we will comment on before the subcommittee this morning could easily be investigated by the Government, and the truth of our assertions documented. Indeed, we are very hopeful that our participation in these hearings will help to bring about just such an investigation. We feel sure that, when all of the facts are on the table, there will be total agreement in Congress and in the executive branch that action to cure these unfortunate circumstances can no longer be delayed.

Mr. Chairman, I will turn now to our two representatives from the industry. First, I will introduce Mr. William Gentz, president of Gentz Industries in Detroit, Mich. Following Mr. Gentz, we will hear from Mr. Robert H. McCullough, president of Fibreform Electronics, Inc., in Los Angeles, Calif.

Completing our testimony this morning will be our association legal counsel, Mr. William C. Brashares, a member of the Washington law firm of Peabody, Rivlin, Cladouhos and Lambert. Following his remarks we will all be happy to respond to any questions the subcommittee members may have.

Thank you.

Chairman PROXMIRE. Thank you very much, Mr. Hardman.

Mr. Gentz, please proceed.

STATEMENT OF WILLIAM GENTZ, PRESIDENT, GENTZ INDUSTRIES, INC., DETROIT, MICH.

Mr. GENTZ. Mr. Chairman, my name is William Gentz and I am president of Gentz Industries, Inc., in Detroit, a small company that builds basic jet engine parts for a wide variety of different customers. Our company has traditionally done a large share of its work in defense and aerospace industries, principally as a subcontractor to some of our country's largest defense firms.

I find it very difficult to come here and testify on problems that tend to place your industry and my own major customers in an unfavorable light. However, these problems affect the interest of every private business and every taxpayer, and unless those of us who have knowledge of the problems come forth, we can hardly expect either sympathy or improvement. Accordingly, I agreed to appear at your request to advise the subcommittee of some specific cases of abuse in the IPE leasing program that have come to my attention either through my own experience or from other firms in our industry.

GOVERNMENT EQUIPMENT FOR COMMERCIAL WORK

Those of us who have competed for years for subcontracts for tooling in aircraft and aerospace programs have grown accustomed to the gigantic presence of DOD's IPE in prime contractor plants. It gives a prime an ability and an incentive to do Government work he would otherwise subcontract to us. We have also seen this IPE appear in program after program of a strictly commercial nature, totally unrelated to the reasons for giving the IPE to the primes.

Just taking the more recent commercial aircraft programs built in the United States, some of which are still under construction, a tremendous amount of tooling and machining work that small businesses could have handled—and could have performed at lower cost under true competitive conditions—has been subcontracted from one major prime to another major prime and performed on Government IPE. Here are some of the more notable occurrences in 1970 and 1971 that we have heard about:

Aeronca subcontracted \$500,000 in tooling to North American on the Boeing 747, the work to be performed substantially, if not entirely, on Government equipment.

McDonnell-Douglas gave Aeronca over \$3 million in orders on the DC-10.

Goodyear sent North American \$5 million in orders on the 747.

Boeing sent North American \$7 million in orders on the 727, 737, and 747.

McDonnell-Douglas sent \$5 million in orders to Convair on the DC-10.

McDonnell-Douglas sent \$4 million in orders to North American on the DC-8.

Northrop sent \$3 million in orders to the North American on the 747.

Chairman PROXMIRE. Was all that work done on Government equipment?

Mr. GENTZ. To the best of our knowledge, all or most of it.

Chairman PROXMIRE. Thank you.

Mr. GENTZ. The Lockheed L-1011 Airbus has been a subject of much of this practice. Lockheed has used Government leased IPE in Government-owned, contractor-operated ("GOCO") facilities in Van Nuys, Calif., and Marietta, Ga., for L-1011 work. In the case of Marietta, we learned that 5,000 orders were involved. I understand that the Pentagon was asked to investigate this and that they specifically confirmed this information. They refused to do anything to stop it, however. According to our information, L-1011 tooling orders also went to the DOD leased facilities of LTV in Detroit and Martin in Baltimore.

Rohr Corp., Chula Vista, Calif., sent some of the tooling on its DC-10 subcontracts to its leased facilities in Riverside, Calif.

These situations represent many millions of dollars worth of purely commercial work that would have gone to small businesses on a cost competitive basis but for the fact that Uncle Sam put duplicate capacity in the majors' plants and to a very large extent gave them a blank check as to its use. Hundreds of small businesses in my part of the country and even more in California would not have had to close their doors in 1970 if the Government had not made this IPE available for commercial work.

We think the mere fact that the Government has created this unjustified capacity is a shocking wrong. But apparently it's only the little firm that mortgages its soul to buy its own equipment that feels so strongly about the situation. Others, including most people in Government, shrug it off with some vague comment about the mobilization base and the rental formulas that are supposed to keep everything in perspective. That's the trouble, I suppose, in many of the areas your subcommittee investigates. The IPE monster grew so easily because when a procuring facility or a prime contractor saw a need for some piece of equipment, all higher authority accepted the need on faith.

RENTAL RATES LEASED EQUIPMENT INADEQUATE

But what about this matter of rental rates on leased IPE? There is a so-called uniform formula which charges a certain percentage per month of the acquisition cost of the tool, and the percentage declines as the tool gets older. The formula is hopelessly inadequate in many ways. Basically, it just bears no relation to the cost of ownership or even a commercial lease. Nor does the decline in rates as a function of age bear any relation to actual value of the equipment.

Even if the formula made any sense, it seems to be ignored in some very significant cases. Instead, contractors and Government contract personnel negotiate rentals on an individual basis. Two examples of the results of such negotiations may shed some light. The Lockheed

L-1011 work that went to LTV in Detroit to be done in a Government-owned, contractor-operated facility, was performed under a negotiated arrangement that featured a "composite" rental rate (meaning for all IPE employed) of \$0.31 per hour. A true industrial rate—one that a firm paying for its own equipment would have to charge—would be on the order of \$4 per hour.

This LTV work represented \$3 to \$5 million in orders, or roughly 350,000 hours, and it required LTV to scramble all over the country to find additional toolmakers. It even advertised in southern California where many small firms that lost out on this work were laying off their skilled people, and LTV picked them up.

An arrangement similar to the LTV situation was entered between Lockheed and Boeing, Wichita for L-1011 tooling. In this case a 76 cents-per-hour composite rate was worked out. We have no idea why they used a different rate. While 250,000 hours were initially targeted for Boeing, we understand that for some reason the parties did not go through with the arrangement.

We do not know what rate was negotiated for Martin's L-1011 work in Baltimore. It is likely that this arrangement involved the most work of all the situations we have noted.

These arrangements are only a few of many such negotiated deals involving commercial use of IPE. And the matter of ridiculously low rental rates is only one aspect of the problem. Consider what other possibilities exist for utilizing DOD's leased facilities to best advantage where Government and commercial programs are going on in the same GOCO plant. Consider how easy it would be to use IPE rent free on commercial work when the rent-free arrangement was figured only into the Government contract being performed. Even though Government personnel may periodically check the contractor's records of Government and commercial IPE use, the supervision process does not go beyond the papers themselves. There is no way, or at least DOD has not found any way, to monitor actual usage of its machine tools. The entire system is really based on nothing stronger than an assumption that contractors will accurately record and pay for actual machine use.

We believe that commercial use must be stopped completely. It has always been abused and will always be abused as long as it is permitted. Virtually every agency in Government or study group that ever considered the pros and cons of commercial use has recommended discontinuance of it. Yet today, a full 20 years after serious criticism of the practice began, we are still no closer to action or a solution. In fact, we find that the total lack of supervision and restriction found by the General Accounting Office in its 1966 report is still the case. The law says no commercial use of IPE over 25 percent of capacity, yet DOD hasn't informed many contractors of this, and from the hundreds of continuing cases of above 25 percent usage, DOD may receive only a dozen applications a year for permission to do so. Through our taxes, we are subsidizing our competition and/or our customers.

Mr. Chairman, what hope do we possibly have to cure some of the truly complicated difficulties in our procurement system when we can't eliminate such a simple and wholly unnecessary favoritism as this?

We hope this subcommittee can increase the pressure for change and improvements.

Thank you.

Chairman PROXMIRE. Thank you very much, Mr. Gentz.

Mr. McCullough, please proceed.

STATEMENT OF ROBERT H. McCULLOUGH, PRESIDENT, FIBREFORM ELECTRONICS, INC., LOS ANGELES, CALIF.

Mr. McCULLOUGH. My name is Robert McCullough. I am president of Fibreform Electronics, Inc., in Los Angeles, Calif. I am appearing this morning at the request of this subcommittee to provide information on the effects on small business of the use of Government-leased production equipment by the major prime contractors.

My business consists of about 25 highly skilled employees, a building and roughly \$250,000 worth of machine tools. We specialize in precision machining work in the aerospace field. Typically, a prime contractor will send us a blueprint or a rough casting of a part, and we will proceed to machine the solid metal stock or casting to a finished part meeting tolerances as close as a few millionths of an inch. For the 25 years of our existence, we have been almost completely committed to defense or aerospace related work.

Our company, like hundreds of others in southern California, has been going through a painful transition in the past year. Our traditional area of work has declined and we are fighting for new types of work in many areas we never looked at before.

UNFAIR COMPETITION STEMMING FROM MISUSE OF IPE

It is perhaps because of the tremendous drop in our traditional work in the past several years that we have become particularly aware of the effects on our markets of the IPE provided by the Government to many of the prime contractors we sell to. We always knew this equipment existed and was involved in a great deal of the same work we were doing, but demand for Government work was greater and there was still an overflow of that work plus other commercial programs. The decline in Government work has led to the primes turning this great capacity loose on commercial and Government subcontract markets they did not seek before. And, costwise, a company buying its own equipment can't compete with this capacity.

Our own company had a rough experience with Government-leased IPE just recently. We had participated for several years in making parts for Hughes Aircraft in the TOW missile program. The program has been segmented into what we refer to as annual "buys," and in each of the first 2 years we were awarded a substantial amount of the machining work on a particular part. For the third-year buy, we were bidding on the greatest number yet of these units. To our great surprise, we discovered that a General Electric facility in New York had bid on the same work and was quoting a price substantially below ours. As a result, GE won most of the work that would otherwise have gone to us and other small firms in California.

GE operates with an overhead far higher than a small company such as ours. There are only two possible explanations for GE's sub-

stantially lower bid. One is that GE was going to use Government equipment, at a fraction of its true rental value. An additional possibility is that GE wished to "buy in" on the program, gain some experience on it, and then bid against Hughes for the prime contract on the fourth-year buy. In any case, we know that GE is the largest holder in the country of Government-owned IPE. We also know that GE recently obtained a nondefense lease of an entire Air Force plant, including equipment, in Johnson City, N.Y., which permits unlimited commercial work.

We do not know all the details, but we believe that an investigation would show that GE gained this work partly or entirely because of a cost advantage based on having Government-owned equipment. If GE is successful in using this advantage to take the entire program over, hundreds of small businesses in California, such as ours, will lose work that is vitally important to their survival.

An interesting situation also developed recently on a prime contract for rocket warheads in which a small firm in Long Beach, Calif., lost out by a wide margin to the Marquardt Co., a large prime that had held the same prime contract previously. Apparently, the Government put somewhere between \$500,000 and \$1 million in special equipment in Marquardt's plant in earlier years for production of this warhead. Yet in bidding this round, Marquardt reflected the cost of only a small fraction of this equipment and came up with an incredibly low figure. Marquardt claims that it's going to use some of its own equipment that it acquired with its own funds as a "standby" line, and will leave the Government equipment idle. But, when the small firm offered to lower its bid if it could get the idle Government equipment, the Army claimed it was not available.

This case, if it were investigated, might illustrate the serious allocation and surveillance problems noted earlier. Who paid for the "standby" line? What actual use of the Government equipment is to occur? Why is the Army insisting on keeping this equipment in a plant where it isn't necessary, at least for pricing purposes?

These situations are the farthest thing from a free enterprise, competitive economy we are so proud to claim in this country. The tragedy is that once the Government gives equipment to a contractor, DOD and the contractor act in every way thereafter as if he owns it and has every right to use it however he can.

LOCKHEED L-1011

The recent reaction of the Pentagon to our association's complaint about the commercial Lockheed L-1011 work in Georgia takes the cake on this score. Assistant Secretary Shillito said interference with Lockheed's subcontracting decisions would be contrary to the free enterprise system. The Government spends taxpayer money to put equipment into a plant for some purportedly essential defense purpose, permits its use at a ridiculously low price for totally non-Government work, and then can't halt the abuse because it would be interference with natural market forces.

We hope the Pentagon and our friends in the large prime plants will respond to the leadership of Congress in ending this wasteful and unfair IPE leasing situation.

Thank you.

Chairman PROXMIRE. Thank you. It is a very interesting case you cited to us in the Huges Aircraft TOW missile program. In fact, I think I will ask the GAO to investigate that. It seems like an extraordinary situation and I would like to have it called to their attention.

Mr. Brashares, please proceed.

STATEMENT OF WILLIAM C. BRASHARES, ATTORNEY, PEABODY, RIVLIN, CLADOUHOS & LAMBERT, WASHINGTON, D.C.

Mr. BRASHARES. In the wake of the Admiral's comment on Washington attorneys, I would like to make it perfectly clear I have never worked for the Government.

Chairman PROXMIRE. That is reassuring; thank you.

Mr. BRASHARES. I am pleased to respond to your request to appear this morning as counsel for the National Tool, Die & Precision Machining Association. These hearings could provide effective pressure for change in procurement policies that have long been criticized by this association as well as many other groups.

The matter of phasing out the IPE leasing program and abolishing commercial use may seem a simple matter as we have discussed it. When the discussion turns to mobilization bases, defense capability, and the like—which you will hear about from the DOD witnesses later—however, the zest for reform turns to blank stares. It's an awfully easy matter to bury in paper plans and endless statistics. That may be why so many billions of dollars worth of general purpose machine tools are in contractor plants today and also why they can be explained generally; but rarely specifically.

It may be significant, then, that whenever the hard facts and figures have been looked at, the IPE leasing, and particularly commercial use, have been criticized.

In a 1966 report the General Accounting Office noted case after case of abusive commercial use and recommended that consideration be given to eliminating it entirely.

GAO's recent report on contractor profits recommended that contractors using Government equipment should have this lower risk reflected in lower negotiated profit levels under the weighted guidelines.

The Rand Corp.'s 1969 report on Government furnished equipment—prepared for the Air Force and based on Air Force equipment—noted that leased IPE was almost entirely general purpose (thus duplicating private capacity), that it was too easy to use equipment for commercial work, that by favoring certain contractors with leased equipment, the Government was losing the benefits of increased competition, and, concluding: the Vietnam buildup of the Air Force IPE inventory "should be halted and alternatives sought before the problem becomes mountainous."

Another private study group, the Logistics Management Institute, which the Admiral mentioned this morning, rendered a report in 1967 for the Assistant Secretary of DOD (I. & L.) called "Weighted Guideline Changes and Other Proposals for Incentives for Contractor Acquisition of Facilities." Among other things, the report urged an increase in rental rates for commercial use. Rates were increased subsequently, but not as high in most cases as LMI thought would be

"equal to commercial rates or what it would cost a contractor if he owned the equipment."

LMI observed in its report: "DOD's policy, as expressed many times since 1956, has been for the Government to withdraw from the facilities-furnished field. It has executed this policy vigorously." Thus the words of LMI, whose head back in 1967 was Barry J. Shillito, the man who now administers this entire program as DOD's Assistant Secretary for Installations and Logistics.

DOD PURCHASE OF MACHINE TOOLS HAS INCREASED

To illustrate the phaseout, LMI noted that 1955 to 1965 machine tool purchases by DOD averaged about \$50 million per year but that purchases went up to \$140 million in 1966. (That was about 5 percent of total U.S. machine tool sales in 1966, incidentally.)

In late 1969, DOD Deputy Assistant Secretary John Malloy confirmed in a House Small Business Subcommittee hearing that DOD was spending about \$100 million per year for new machine tools in the previous several years. This being, in Mr. Shillito's words, a vigorous phaseout policy, we are thankful DOD did not maintain the status quo.

In reviewing these past reactions to the IPE leasing program, I don't mean to ignore the involvement of Congress, particularly this subcommittee and Mr. Corman's House Small Business Subcommittee on Government Procurement. Your subcommittee's 1967 report noted the failure of contractors to seek approval for commercial use in excess of 25 percent and cited examples of abusive commercial use.

We are also aware of the legislation recently introduced by your chairman, S. 1469, to abolish commercial use and place tight but reasonable limits on future IPE leasing. Mr. Corman's subcommittee issued a report in 1970 condemning these abuses in the IPE leasing program and recommending reform. Incidentally, Mr. Malloy testified in the House hearings that DOD itself was taking steps to "eliminate the leasing of Government equipment for other than Government work." Perhaps if all parties were communicating we would find a surprising level of agreement.

We are concerned as to whether all of this study, restudy, and criticism of the IPE situation is having any effect at the Pentagon. We have seen policy statements and orders relating to phaseout of IPE leasing come forth from the Pentagon in the past several years. We heard former Deputy Assistant Secretary, General Stanwix-Hay, openly condemn the inequities of the program and assure a prompt phaseout before another House Small Business Committee in 1969.

Just last December we learned that DOD was undertaking an intensive mobilization study before going ahead with any phaseout plans. In February, Deputy Secretary Packard issued a memorandum reiterating generally the phaseout policy, but creating exemptions from phaseout for some awfully broad and vague situations, one of which would defer action on individual cases where removal of Government-owned IPE would "work an economic hardship." Perhaps there should be some comparison of economic hardships based upon the kinds of situations you have heard about earlier today.

Mr. Chairman, if your subcommittee can somehow untangle the facts, figures, and personalities that have delayed reform in this mat-

ter for 20 years, you will have made a magnificent contribution to the taxpayers, the principle of competition and the small business community. I hope our information and views have been of some help.

Thank you.

Chairman PROXMIRE. Thank you, gentlemen. I think you have made a devastating case, and I will do my best to call it to the attention of other Members of the Senate and House. There are several things we can do to press for action on my bill, which will accomplish what you ask, and which is now pending in the Armed Services Committee. We have had similar legislation in the committee before, without action, but on the basis of your testimony here, which is well documented and gives specific examples, I think we are in a much stronger position now to proceed.

I am giving serious consideration—we don't know how the situation is going to develop—to offering the bill as an amendment on the Defense Procurement Act when it comes up in June.

Now, one ingredient in the success or failure of that amendment, if it is offered, would be the degree to which your association would take an active interest. Tell me something about your association. How many members are there? How many employees are employed by the members, and so forth?

Mr. HARDMAN. Mr. Chairman, sometimes this industry, the tool and die industry, has been called the prototype of small business. There are probably now 8,000 shops or companies of the industry and between 1,500 and 1,600 are represented by membership in our association.

Chairman PROXMIRE. I am sorry; I missed that figure.

Mr. HARDMAN. Between 1,500 and 1,600 member firms in our association. There is no other national association, so we truly represent the entire industry. It is a highly skilled industry, as you probably are aware. The average employment across the Nation is 30 persons. And the size of the shops range anywhere from five people to as high as 600. Virtually all employees are highly skilled employees.

Chairman PROXMIRE. So with the average number of employees, 30; a numerical average, you would have about 45,000 to 50,000 employees who are affected; is that correct?

Mr. HARDMAN. In the association, yes. In the industry, there are probably a quarter of a million highly skilled employees.

Chairman PROXMIRE. I think your testimony adds up to one of the most serious indictments of defense contracting practices concerning the use of Government-owned property, that I have heard. If I understand you correctly you are saying that the Pentagon and its larger contractors are knowingly employing Government-owned equipment to unfairly compete with smaller contractors and with commercial companies such as yourselves. Would you care to elaborate on this point?

DOD UNRESPONSIVE

Mr. HARDMAN. That is certainly our contention in instance after instance, as has been noted by our witnesses here.

One amazing thing: We have gone to the Assistant Secretary of DOD for Installations and Logistics, and faced him with the overall problem, also with one instance that happened a few days prior to our meeting with him where 5,000 tool orders for the L-1011 were

shifted from the Los Angeles facility of Lockheed to the Marietta plant of Lockheed, which is, of course, practically—I believe everything is Government-owned there, except the cafeteria. Mr. Shillito did not deny that this had been done, and our own intelligence in the situation was verified by the then Director of Small Business Policy in DOD, by a telephone call, and he was amazed that our intelligence was so accurate.

Two weeks later, after the meeting with the Assistant Secretary, the same gentleman, the then Director of Small Business Policy, told me pointblank in a face-to-face meeting that none of this was true; that none of these orders were shipped over to Marietta and he denied ever having said they were or that our intelligence was correct.

So we, in our general dealings with DOD, feel they are totally unresponsive. My personal feeling is they are unresponsive to the Chief Executive, to the Congress, and to the people. Too often the case has been made for them that they are such a huge amorphous mass that nothing can be done. Well, I do not believe that. As a citizen I think something can be done.

Mr. BRASHARES. I think it might be added, too, Mr. Chairman, while these facts we have testified to may seem very shocking to you and to the public in general, I am sure that when read by many of the people in the Defense Department, the reaction will be: what else is new?

This has been going on an awfully long time and as one witness has stated, it has been very deeply entrenched. The attitude that has developed is that it is simply part of the game; it is the way things are.

Chairman PROXMIRE. According to your testimony, especially the figures showing an increase in purchases since the 1955-1965 period, any argument that DOD has this program under control and is phasing it out just isn't the case.

Mr. BRASHARES. That is right. And the most recent confirmation of what we are concerned about, that this phaseout really has been put on the back burner and is going to be studied to death, is this most recent memorandum of Deputy Secretary Packard which, in effect, cuts the support out from under his memorandum a year ago, in which he asked that all procurement branches asked contractors to begin a phaseout. Each contractor was to state how soon he could dispose of the equipment he had in his possession.

Actually, the Pentagon did not require the contractor to provide such information, or, in any event, they have not made the information public. It might be interesting if you asked them when they appear what reports they received back. Apparently, now they have decided to put it under study and to bury it as a general mobilization preparedness problem. It seems very unlikely anything is going to be done unless Congress exerts some pressure.

LOCKHEED L-1011

Chairman PROXMIRE. I find most shocking the assertion that Government-owned equipment turned over to Lockheed has been used on the L-1011. In other words, equipment turned over to a defense contractor for use on a defense contract is being used in connection with the purely commercial L-1011 program. Can you give us additional details on that, please?

Mr. BRASHARES. I think the exact dollar amount involved, the exact equipment involved, is something we cannot give you, because we simply do not have it. The fact that the work went to Marietta seems to have been completely confirmed and the fact it was performed on Government equipment is completely confirmed. Anyone questioned from the Pentagon will have to admit everything in the Lockheed's Air Force plant No. 6 is Government-owned, except as Mr. Hardman said, perhaps the cafeteria.

So that is about as much as we can say. There has been some suggestion that not only were Government facilities used for commercial work, but the fact that both Government and commercial programs were being performed simultaneously there may well have resulted in some allocations of commercial program costs to the Government program. This, of course, is an awfully serious charge and one we would not make unless we had complete documentation.

But you can see from the nature of the thing, that it would be something very tempting and very easy for a contractor to get involved in. When you have a plant full of Government equipment and two programs there, it is difficult to tell exactly which costs go to which contract. This is something that points up the inherent danger of putting equipment in the contractor's plant and letting it be used for anything other than essential Government work.

INSTANCES OF BANKRUPTCY

Chairman PROXMIRE. Do you know of any cases of businesses, whether they belong to your association or not, that have gone bankrupt or that are close to bankruptcy as a result of the practices you have described? Actually gone bankrupt? Obviously, it has contributed to the deterioration in the position of your firms and may have been a contributing factor in some cases, but do you know any cases where it has been a predominant factor?

Mr. HARDMAN. Yes; first of all, the answer is: Yes. Second, in the interest of time and so forth, we have tried to keep the number of witnesses down for our group, but we had thought of bringing in one former plant owner who went out of business directly as a result of competition from another company that had similar equipment, Government-owned, in his plant, and who took this man's most profitable contract away at a time when things were a little rough.

THREATS OF REPRISALS

Chairman PROXMIRE. I understand that individual firms that have complained of these practices in the past have been disciplined for their actions. Do you know of any such cases where a contractor has been made to suffer because he complained of his treatment, either by the Pentagon or one of the large aerospace firms?

Mr. HARDMAN. The threat of reprisals whenever a small business testifies, obviously small business in the manufacturing field, their customers are large customers and the threat of reprisal is always there.

And let me explain that for a moment. I don't think for a minute that the chief executives of the large corporations of America would stoop to the petty practice of issuing orders down the line to: "Let's cut this guy off the earth; let's cease doing business with him." Nor do

I think they would issue an order down the line after such testimony as we are giving today, saying: "Be careful; don't discriminate against those fellows just because they testified." I don't think the chief executives of the large corporations concern themselves either way.

The fact of the matter is that the heads of purchasing departments of the large corporations and buyers themselves have some kind of what I would call "misplaced loyalty" to their company. And when anyone seems to criticize any of the practices, quite often reprisals result.

To answer your question specifically; yes. I had a fine example of this. A small firm in Connecticut, a member firm that has been making a particular item on a subcontract for GE, I think it is. GE has just recently shut out this company totally from all business because GE took her job away from the company itself. The company didn't complain but they investigated to see if it couldn't be a small business set-aside for the particular part. They had engineered tooling and manufactured the parts for 2 years and all of a sudden GE came in with their engineers, observed how it was being done, and then shortly after pulled the part in-house.

Because this company did check out with the Director of Small Business Policy in the Defense Department to see whether or not this couldn't be a small business set-aside, the fact that it went that far has shut him off from all business with that particular plant of GE. This would stem directly from the purchasing advantage.

Chairman PROXMIRE. How about reprisal from the Department of Defense?

Mr. HARDMAN. Well, we have heard that a verbal order has been issued not to have anything to do with the "tool and die gang."

Chairman PROXMIRE. One other question: Will you let us know if you detect any change in the attitudes of the Government or your prime contractors after your testimony here today? If there are any reprisals we would like to know about it.

Mr. HARDMAN. We certainly will, sir.

Chairman PROXMIRE. I want to thank you gentlemen. Your appearance here is an act of courage and also a very definite contribution. I think you have done a superlative job of documenting your case. This is the first time we have had this kind of documentation in this depth and it is going to help a lot.

I am going to yield to Congressman Brown, but I must tell Congressman Brown that I am going to yield the Chair to him; too. Unfortunately, I have to go to a hearing by the Transportation Appropriations Subcommittee because right now Mr. Beggs of the Transportation Department is testifying on the termination payments for the SST.

I know Mr. Brown would want me to be there to protect the SST's interest.

Representative BROWN. I tell you, there is a quorum call of the House. So I will only occupy 5 minutes, if you want to remain.

Chairman PROXMIRE. No; you go right ahead.

He is a very fair man, as well as a very able man.

DISPOSITION OF UNNECESSARY GOVERNMENT MACHINE CAPACITY

Representative BROWN (presiding). Mr. Hardman, I am interested in whether or not the order in which you list the recommendations in your testimony is a strong priority basis of those recommendations?

Or is it for all time, let me say, for any circumstance in which we may be involved as a society, or is it a current priority relating to the cutback situation in military procurement?

Mr. HARDMAN. I see the essence of your question. I believe that over the long haul or recommendations pertain virtually for all time, unless some very special situation were to pertain.

You see, Congressman Brown, there is a capacity, a machine capacity in the United States, that is absolutely enormous, owned by private capital and by entrepreneurs of small business, medium-sized business. It is only the handful out of all the businesses in the United States, a relative handful of very large contractors that do not own major percentages of their own equipment. The capacity, however, of the United States to do this kind of work is very, very great. And this has been part of the testimony brought out here today.

Representative BROWN. Currently?

Mr. HARDMAN. Has been for many years; is currently and probably will continue to be.

Representative BROWN. I have businesses in my community which has responded to the request of the military industrial complex—I guess you could say the defense establishment—to get into defense production activities in connection with the buildup with the war in Vietnam. They are otherwise involved in other industrial pursuits. They responded in World War II, and they responded again in the Korean war, and they responded in the war in Vietnam. And each time they were able to procure additional machinery on which to do this work.

Now, since the cutbacks in the defense part, they are not so sure they want to play that game any more, because they do not have the equipment that they can use in the transition to peacetime production in their plant, because of this provision.

They are dissatisfied, as I understand it, with the opportunity to buy that equipment at realistic values. They feel that the equipment has been depreciated and should have been depreciated by the Government to a considerable extent and we ought to be able to buy it, or some arrangements should be made where they could utilize it more in transition.

Would you argue to that position?

Mr. HARDMAN. Before I do, I would like to see if any of my colleagues here would like to address themselves to that.

Mr. BRASHARES. I would say there is a legitimate interest on the part of a contractor such as you have mentioned in obtaining ownership of that equipment. We recognized this in all of our statements on the subject.

Representative BROWN. This seemed to be item 4 in Mr. Hardman's priority list, and that is why I am a little confused about why it has such low priority.

Mr. BRASHARES. It has a low priority only in comparison to other points. That comes into the question after some of the other points have been actually carried out. If commercial use is eliminated, if leasing of Government equipment is restricted only to the cases where it really is essential to our national interest, then the Government has billions of dollars worth of equipment that it no longer needs.

Representative BROWN. What does it do with it?

Mr. BRASHARES. Presently, it can sell on a competitive basis or negotiated basis to the contractor or put it in a depot or leave it in the contractor's plant.

Representative BROWN. What happens if it is put in a depot?

Mr. BRASHARES. It stays there and waits for some future need that may come. That is essentially the policy behind it. People argue much of the equipment in these depots has very limited value for future purposes.

Representative BROWN. For what reason?

Mr. BRASHARES. It may be old or highly specialized; a number of reasons.

Representative BROWN. Would you list a couple of others? I think you have missed a couple.

Mr. McCULLOUGH. The technology of equipment changes.

Representative BROWN. Indeed. What you had to work with in the war in Vietnam 5 years ago may very well not be appropriate, either to civilian use 5 years hence, or now. Or for conversion to military use 5 years hence or now. Is that not correct?

Mr. BRASHARES. That is correct.

Representative BROWN. What would be the point then under that basis in stockpiling it?

Mr. BRASHARES. We are not arguing for stockpiling. We are arguing for getting rid of it in a variety of different ways and we would be most pleased with a competitive sale. Your constituent has the problem under present law if he wishes to buy it from the Government on a competitive basis, which is the only way they can sell personal property. It has to be made surplus, referred to all other Government agencies, and eventually will come up to be sold on a competitive basis.

Representative BROWN. Would you give me the time process?

Mr. BRASHARES. It is very unwieldy and could take months. This is why we are quite in agreement with the provision in the bill that Senator Proxmire introduced: the Fair Industrial Production Act, because it would shortcut this whole procedure and permit the Government to go in immediately and make a competitive sale of these items so the person in possession would have an immediate and fair chance to get it if he is willing to pay the fair price.

Representative BROWN. Is there a limitation on the fair price in your viewpoint?

Mr. BRASHARES. In the legislation?

Representative BROWN. In your viewpoint. What would be the parameters in a fair price?

Mr. BRASHARES. The only way we could describe it is one that is determined by competitive bidding. You would find from auctioneers around the country who have been very busy in the last year, selling machine tools to companies that have gone out of business, that even in these times there is good demand. The prices are down far below what they were a few years ago. But there is a significant demand. You have people turning up at these auctions. So they can achieve competitive and reasonable prices based upon the market.

CONVERTING TO PEACETIME PRODUCTION

Representative BROWN. What would you say of the relative competitive position of the company which has devoted its effort to military production on a piece of Government equipment and then at the termination of that military need, must find a market for its production

or a product that it can go on into in a civilian way? Either on the equipment it then has or on the equipment it might bid for or new equipment that it might have to purchase to undertake that civilian product? Are they at a competitive disadvantage because they have undertaken Government production, military production, over the company that resisted that temptation to get into Government production and continued to produce civilian products or nondefense items?

Mr. BRASHARES. Congressman, I think you have got the thing turned around. The point is: he got the Government equipment and therefore does not assume the risk that everybody else who brought their own equipment did. The man sitting to my right has been engaged for 25 years in aerospace work, mostly in connection with Government contracts. He has never had a piece of Government equipment in his plant. The Government demand has dropped to practically nothing, and he has the problem, much greater than the one you are suggesting, of finding a way to use equipment he has paid for and is having to pay for over a period of years.

Representative BROWN. Was it an optional matter with you as to whether you utilized that system of Government provision of equipment?

Mr. McCULLOUGH. It is not available to me. It is just as simple as that.

Representative BROWN. Because you are a subcontractor?

Mr. McCULLOUGH. Size is a factor and various other aspects of it. Subcontracting, too.

Representative BROWN. Would you want to address yourself to the company that has been in your position with the federally supplied equipment, and has the same problem you have of converting to peacetime production?

Mr. McCULLOUGH. I am in the same position with Admiral Rickover. I would have to have a sheet as big as this house to name them all in that connection. All of our major primes have Government-owned equipment and the sooner that they buy their own damned equipment, they will operate it more efficiently, will be more competitive, and that is the whole gist of what we are trying to say. Get rid of it and make them competitive with me. We are more efficient in our operation by 30 percent on an equal basis, same equipment, same everything. I will do a better job. This is the statistic available for anybody.

Representative BROWN. You are limiting the problem to those who have been in defense production with or without Government equipment. I am trying to add a dimension to it: those who have been in defense production with or without Government equipment as opposed to those who have not been in defense production. That hardly existed in World War II, but it apparently is fairly common in the Vietnam war, because we have both the guns and butter philosophy, thanks to the leadership we had when we got involved in that war.

What is your feeling about that kind of a situation? You see what I am getting at?

Mr. McCULLOUGH. Yes; I understand.

Mr. BRASHARES. I think your point is well taken. A company that is trying to make the transition and would like to be available to do

Government work in a national emergency, but is not going to specialize—

Representative BROWN. Without regard to what they want to be in the future, just is stuck now, due to the fact that they responded to a national need and got into Government work and now somebody else, who has not been doing Government work, is still, you know, they have a slightly competitive advantage because they have been producing civilian goods, and here is the outfit that has to convert to a civilian economy.

Mr. BRASHARES. This has all been built into the equation. When they started the job the negotiations must have gone something like this: they said to the Government: We would like to help, but we cannot go out and buy the equipment to do the job because the job might last 6 months and we will be out of the business."

Representative BROWN. You are bringing the argument back to Mr. McCullough, who has had the problem.

I would like to have Mr. McCullough and the guy who used the Government equipment on one side of the argument and I want to ask the question—I don't want to insist you answer the question I asked—but that is: as against people who have not gotten into Government production whatsoever, what is the parameter there? What is the equation there? Can you tell me that?

Mr. BRASHARES. I am not sure—I realized you asked the question and rephrased it several times. I thought the burden of it was that if the company is not a Government contractor in its normal times, but becomes one, how is he to make the transition back.

Representative BROWN. No; the question is: How does a company that has responded to the Federal need during a wartime situation, such as we have had in Vietnam, and gone into Government military production, whether or not they have done business the way Mr. McCullough has done it or the way my general contractor did—"little" is a relative term—with Federal equipment, regardless of that, what is their position relative to the guy who never responded to that temptation to get into Government contracting and has stayed long in the civil production area.

What is in the equation for these contractors in that situation?

Mr. GENTZ. They are both at a disadvantage.

Representative BROWN. They are both at a disadvantage. How is that disadvantage resolved in terms of conversion, can you tell me, to peacetime production for Mr. McCullough's operation, and for my contractor's operation, which did take advantage of the possibilities of using Government equipment?

Mr. GENTZ. That is the \$64,000 question.

Representative BROWN. I would submit, maybe that \$64,000 question would move up from No. 4 to a little higher in the priority list, the one that you have listed as No. 4. Would you want to comment on that?

Mr. BRASHARES. As I said before, we put it there because it seems to us to fit at that place. But, we assure you it is a very important item on the list.

I think that the question you are raising is a very critical one to all of the people in this association. It is the whole question of how do businesses, particularly small businesses, make a transition when their

traditional areas of work, or a temporary market such as you are speaking of, subside.

And it is difficult. I commend to you Congressman Corman's subcommittee report that just came out last October on this very subject. "Small Business and Defense Cutbacks."

Representative BROWN. Yes, Mr. Gentz.

Mr. GENTZ. Two weeks ago we were at an exposition in Cleveland. We displayed some wares we made, primarily gas turbine parts, high quality and quality specs and quality control for the Air Force. We were primarily in a civilian industry, civilian market. A lot of people looked at it; everybody admired it; everybody said: "What can you do with it? We can't afford it."

We have got men trained to make this type of stuff but the civilian economy could care less. And you don't retrain the men and there is no money to retrain them with.

Representative BROWN. You just defined the problem rather than offering the solution.

ABOLISH COMMERCIAL USE

Mr. GENTZ. That is what I say. The solution is the \$64,000 question.

Representative BROWN. It occurs to me either one of your recommendations would call for the total depreciation, regardless of period of time, of whatever equipment was provided for military use; is that right?

Mr. HARDMAN, you say "abolish commercial use completely," which would mean the company that used it, had used this loaned equipment, would either be paid for the use of the equipment on some kind of a basis that would see its use completely depreciated or the Government would be obliged to depreciate it in the cost of whatever it purchased. Is that right, if there was no price to the manufacturer, no depreciation to the manufacturer?

Mr. HARDMAN. Our only intent on that particular item is just as it says: we believe that under the present law, our set of rules actually implemented it from DOD, that Government-owned equipment in the hands of contractors should not be used for commercial work, because it is certainly against the free enterprise system and sets up unfair competition for all others.

Representative BROWN. So somebody would have to charge that piece of equipment off to a Government contractor; is that correct? The government or the contractor; one or the other?

Mr. HARDMAN. Yes.

REMOVE IPE UNLESS ESSENTIAL

Representative BROWN. And the third item would have what bearing in this same relationship? Pull IPE out of Government-owned or operated and private-operated facilities. That just means you wouldn't—

Mr. HARDMAN. That means out of the \$4 billion or so dollars worth of Government owned machine tools that presently reside in prime contractor plants, the vast majority of it should be pulled out as rapidly as possible because most of that equipment is common, ordinary

everyday machine tools, the kind that private capital has purchased; the small businessman has purchased; that exist in many, many other plants and never should have been put in there in the first place.

If a contractor, an outfit like Lockheed does not have thousands and thousands of lathes and drilling machines purchased with its own money, what right does it have to bid on large weapons systems? Everybody else in business has those machines; this is our point.

RETAIN SOME GOVERNMENT CAPACITY

Representative BROWN. What if we got into a situation where you did not have the facilities available in the industry in general? A World War II overnight?

Mr. HARDMAN. That is a rare situation. Conceivably it could happen. We believe that the Government should and will have to always own certain kinds of equipment for defense purposes. We would be the last people to tell them to get rid of it. We believe that Uncle Sam will always have to own some of the large special pieces of equipment that no contractor would be able to purchase or take the risk of purchasing and keeping around his plant idle for some time.

But what we are really talking about is getting rid of all of the general purpose stuff. There is no reason for ever having supplied it in the first place.

Representative BROWN. Thank you very much. I guess we are adjourned until the next session of this subcommittee, which is tomorrow at 9:30 a.m.

(Whereupon, at 12:30 p.m., the subcommittee recessed, to reconvene at 9:30 a.m., Thursday, April 29, 1971.)

(The following information was subsequently supplied for the record:)

MAY 18, 1971.

HON. JOHN H. CHAFEE,
Secretary of the Navy,
Washington, D.C.

DEAR MR. SECRETARY: On April 28, 1971, Admiral Rickover testified before the Joint Economic Committee on various problems in defense procurement. In order to complete the record of the hearings, I would like you to provide some information and documents the Admiral referred to in his testimony.

Would you please provide the following:

1. Admiral Rickover mentioned a shipbuilder who had \$23 million in Navy business last year, which represented more than 95 percent of the shipbuilder's total sales. According to the Admiral, the shipbuilder has about \$60 million in nongovernment-owned assets and he earned about 38 percent return on assets last year. Please provide the name of the shipbuilder and the exact figures for his return on total assets and return on equity in 1970.

2. Admiral Rickover discussed the problem of shipbuilding claims, and he mentioned that two Washington claims lawyers have been most active in the shipbuilding claims business. He indicated that one of them had been general counsel to one of the military departments and the other was formerly the chairman of the Armed Services Board of Contract Appeals. Please provide the names of these two lawyers and identify what restrictions, if any, apply to former government officials' participation in this sort of business activity.

3. Admiral Rickover discussed a case where the Navy settled a multimillion dollar shipbuilding claim at nearly the full amount without completing a legal analysis of the case. Please provide the name of the shipbuilder and the facts concerning this settlement.

4. Admiral Rickover alluded to a series of reports he has submitted to his superiors regarding procurement practices, cost control problems, and profit levels of the Navy's principal shipbuilders. Please provide copies of all reports

on private shipyards that Admiral Rickover has submitted for the past 2 or 3 years.

5. In discussing the Truth-In-Negotiations Act, Admiral Rickover referred to two Navy requests for Department of Defense Assistance in negotiations with forging suppliers who refused to comply with the law. These requests would have come in late 1969 or early 1970. Please provide copies of the two Navy memoranda to the Department of Defense.

As we would like to have these materials for inclusion in the publication of the hearings, I would appreciate your cooperation.

Sincerely,

WILLIAM PROXMIRE,
Chairman, Subcommittee on Priorities and Economy in Government.

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
Washington, D.C., August 6, 1971.

HON. WILLIAM PROXMIRE,
Chairman, Subcommittee on Priorities and Economy in Government, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: This is in further reply to your recent letter concerning the testimony of Vice Admiral H. G. Rickover before your subcommittee concerning various matters relating to defense procurement.

The Navy appreciates the opportunity to assist the subcommittee in its studies. The enclosure contains all of the information that you requested except that included in item number 1, which was received from the shipbuilder in business confidence. That information has not been provided because the shipbuilder has objected to its public disclosure, and it is our understanding that you do not desire information which cannot be so disclosed.

In his testimony, Admiral Rickover directed attention to many of the problems which we encounter in managing our portion of the defense procurement program. Many steps have already been taken to improve the management of those programs. In the field of shipbuilding alone, a few representative examples in one area—general administration—are as follows: the posture of the organizations of the Supervisors of Shipbuilding, Conversion and Repair, USN (SUP-SHIPS), which administer new-construction ship contracts, have been enhanced by building up their manning levels; project officers have been established at three SUPSHIPS to manage large, complex programs; and the role of the ship-acquisition project managers has been strengthened. The Department is looking forward to reviewing the complete record of the hearings and will, of course, take steps (within our jurisdiction) to implement those recommendations which will strengthen our procurement policies and procedures.

I trust that the foregoing information and that contained in the enclosure will be helpful to the subcommittee.

Sincerely yours,

CHARLES L. ILL,
Assistant Secretary of the Navy
(Installations and Logistics).

INFORMATION RELATING TO VICE ADM. H. G. RICKOVER'S TESTIMONY, APRIL 28, 1971

The two "Washington claims lawyers" mentioned by Admiral Rickover are Messrs. F. Trowbridge vom Baur and Gilbert A. Cunso. Mr. vom Baur, of the firm vom Baur, Coburn, Simmons & Turtle, served as General Counsel of the Navy from December 15, 1953, until April 30, 1960. Mr. Cuneo was a member of the Armed Services Board of Contract Appeals and its predecessor, the Army Board, from 1946 until 1958. He is now a partner of the firm of Sollars, Conner & Cuneo. The current statutory restrictions on activities of former Government civilian employees were enacted in 1962 and are now contained in section 207 of title 18, United States Code. These provisions impose a lifetime ban on former officers or employees of the U.S. Government with respect to their acting as agents or attorneys for anyone, other than the United States, in matters in which the United States is a party or has a direct or substantial interest and in which the former employees participated "personally and substantially" while holding a

Government position. There is a one-year prohibition on matters in which an employee had "official responsibility" at any time during the last year of his Government service, but in which he did not participate personally and substantially. This one-year period runs from the date when the employee's "official responsibility" for that matter ended. The statute (then section 284 of title 18, United States Code) in effect at the time Messrs. vom Baur and Cuneo left the Government service prohibited a former U.S. employee for two years after leaving Government employment from prosecuting a claim against the United States involving any matter directly connected with his duties while employed by the U.S. Government.

The case referred to by Admiral Rickover is the claim by Todd Shipyards Corporation on its two contracts to build fourteen DE 1052-Class ocean escorts. These contracts were awarded in 1964 to Todd's Seattle and San Pedro shipyards. The claim was initially submitted by Todd in 1967, and the settlement was consummated by the contracting officer with the execution of appropriate modifications to the contracts on March 27, 1969. The claim totaled \$114.3 million and was settled for \$96.5 million. A special team consisting of contracting, technical, legal and audit personnel evaluated the claim. There was a technical and legal analysis of the claim, and an audit review. The settlement of the claim was based on a legal memorandum which stated that if certain facts were present, the Government would be liable for the costs attributable thereto. However, claims settlement counsel did not participate in the determination of the quantum of the settlement. The settlement of the Todd claim was the subject of a General Accounting Office (GAO) review. The results of this review are contained in GAO Report E-171096 dated April 28, 1971.

The first portion of the series of reports that Admiral Rickover referred to concerning procurement practices, cost-control problems, and profit levels are published in the Appendix to Part 7 of the report of hearings on appropriations for Fiscal Year 1971 before the Subcommittee on Department of Defense, Committee on Appropriations, House of Representatives. For your convenience, a copy of that report is attached. Attachments 1(a) through 1(e) are the second portion of the series of reports. It is noted that these documents were prepared for internal use and for that reason were intended "For Official Use Only." In order to make these documents available for publication in the record of the hearings, it has been necessary to delete the names of the shipbuilders involved and other information which would identify them.

Attachments 2(a) and 2(b) are the Department of the Navy memoranda to the Department of Defense to which Admiral Rickover referred in his testimony concerning the "Truth-in-Negotiations Act" (Public Law 87-653). Attachment 2(c) is also provided for purposes of continuity, as this memorandum is mentioned in attachment 2(b).

APPENDIX TO PART 7 OF THE REPORT OF HEARINGS ON APPROPRIATIONS FOR
FISCAL YEAR 1971 BEFORE THE SUBCOMMITTEE ON DEPARTMENT OF
DEFENSE, COMMITTEE ON APPROPRIATIONS, HOUSE OF REPRESENTATIVES

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C. 20360.

[In reply refer to 08H Ser 1337, 30 Apr 1969]

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS &
LOGISTICS).

Via:

- (1) Commander, Naval Ship Systems Command.
- (2) Chief of Naval Material.

Subj: Review of Controls over Construction Costs of Nuclear-Powered Ships at
(Shipyards B).

Encl: (1) NAVSHIPS 08 Trip Report dtd 25 April 1969.

1. The Naval Ship Systems Command is presently involved in (several) long term nuclear shipbuilding programs at (Shipyards B). These programs are expected to result in negotiated contracts for a large amount of Naval nuclear ship construction work over the next several years. (Shipyards B) is presently constructing (several ships) under a fixed-price incentive contract. In addition, under letter contracts, (the shipyard) is building (one ship and) procuring long leadtime components for a (number of other ships).

Since the Government bears nearly all the risk of cost overruns under these contracts, I recently had two of my representatives conduct a limited review to find out how (the shipyard) controls shipbuilding costs on Navy contracts. A report covering this review is attached as enclosure (1).

2. This enclosure indicates the following deficiencies in controls over shipbuilding costs at (Shipyards B):

a. *Cost Controls.* The present (Shipyards B) cost control system cannot be relied upon to control costs adequately under Navy shipbuilding contracts. A recent (shipyard) internal report stated "there is evidence of widespread mischarging of costs." There seems to be no comprehensive system of labor checks to ensure that work is charged properly. These deficiencies are important, particularly in connection with cost-type contracts, fixed-price-incentive contracts, and letter contracts. The Government bears most if not all the risk of cost overruns under these types of contracts. (The shipyard) management acknowledged that their present cost control system is deficient and indicated that this problem had been recognized as early as 1966. Nevertheless, (the shipyard) has not yet established an effective cost control system for naval ship construction. Enclosure (1) indicates that implementation of an improved cost control system for (ship construction) has been deferred until 1970. Meanwhile, construction of these ships and work under other Navy contracts where the Government bears the risk of cost overruns are proceeding without effective cost controls.

b. *Procurement Practices.* (Shipyards B's) procurement system cannot be relied upon to obtain minimum prices for material and equipment. (The shipyard) tends to use competitive procurement procedures in non-competitive situations. For example, (the shipyard) recently submitted for NAVSHIPS 08 technical review sole source procurements totaling \$1.7 million for which they had not obtained and evaluated supplier cost and pricing data in accordance with requirements of the Truth-in-Negotiations Act (PL 87-653). As a result of the NAVSHIPS 08 review, (the shipyard) was required to obtain the necessary data. After obtaining cost and pricing data, the company was able to negotiate price reductions totaling \$230,000 on these procurements—13% less than the original prices it had recommended and which were forwarded without any recommendation by the Supervisor of Shipbuilding. Enclosure (1) indicates that (the shipyard) is still not obtaining and using supplier cost and pricing data in all cases where this is required by current Department of Defense procurement regulations.

c. Navy Review of (Shipyard B's) Procurements. The Navy's procedures for reviewing (Shipyard B's) procurements have been ineffective. Even though materials and equipment account for about 40 percent of the costs of the shipbuilding contract, the Navy does not review individual subcontracts, regardless of dollar amount or degree of competition. Instead, about once a year, the Navy reviews the (the shipyard's) procurement system and based upon these reviews, has invariably authorized (the shipyard) to place subcontracts without specific Government review and approval of individual subcontracts.

In November, 1968, a special Naval Ship System Command audit team reviewed the (the shipyard's) procurement system and concluded :

The contractor's procurement system is *adequate, affords maximum protection* of the Government's interests and assures procurement of materials at the *lowest price* consistent with quality and required delivery, schedules. (Emphasis added.)

My experience, to the contrary, is that the (the shipyard's) procurement system cannot be relied upon to obtain minimum prices for material and equipment. Considering the deficiencies found in recent months, I consider that Government review of individual subcontracts is essential if the Navy is not to be charged considerably higher costs than warranted for equipment and material.

d. Pricing and Administration of Change Orders. Neither (Shipyard B) nor the Government is presently able to determine the actual cost of changed work on ship construction contracts. Change orders have generally been found to increase shipbuilding contracts by 12 to 16 percent. Yet there is no way of verifying whether change orders have been over-priced. This is so because there is no record of actual costs for the work required to accomplish the changes. Further, as much as two-thirds of the estimated cost of a change is composed of standard "add-on" factors such as supervision, overtime, and general and service labor although it may not be proper to change all of these "add-ons" to every change.

e. Internal Audits and Appraisals. (Shipyard B) does not appear to have a centralized program for systematic examination and appraisal of its internal operations. Their internal auditors seem to be concerned primarily with financial type auditing such a payroll accuracy verification, rather than with the efficiency of shipyard operations or effectiveness of cost control procedures.

3. Competition for nuclear-powered ship construction contracts is limited and in many cases non-existent. Since profits on shipbuilding contracts are computed as a percentage of costs, high shipbuilder costs result in higher profits in the long run. Under these circumstances the Navy cannot, in my opinion, afford to rely on shipbuilders to reduce ship construction costs.

4. Government contracts account for about 80 to 85 percent of the total work at (Shipyard B). Since 1962, (the shipyard) has received over \$1.2 billion in Navy prime contracts. From my experience and as confirmed by the findings in enclosure (1), it appears that (shipyard) management, the Supervisor of Shipbuilding, and the Defense Contract Audit Agency have not taken adequate action to protect the U.S. Government against higher than necessary costs.

5. In view of the large value of Navy shipbuilding contracts (at (Shipyard B) I consider that as a minimum the following action should be taken :

a. (The shipyard) should not be permitted to delay until 1970 implementation of effective cost controls for construction of (the current ships) and for other contracts where the Government bears the risk of cost overruns. Further, (the shipyard) should be required to establish an effective system to insure that charges for naval ship construction work are valid and accurate.

b. The Navy should review each major purchase order over \$100,000 and smaller orders on a spot check basis prior to order placement to insure that prices are reasonable and that (the shipyard) is complying in all respects with the requirements of the Truth-in-Negotiations Act.

c. The Navy should require (the shipyard) to maintain records of actual costs of work to accomplish change orders, particularly in situations where the change must be accomplished before a final change order price can be negotiated. (The shipyard) should also be required to keep cost records which adequately support the reasonableness of pricing factors used in estimating the cost of changed work.

d. The Navy should require (the shipyard) to establish an effective program of internal reviews and appraisals of its operations. The Supervisor of Shipbuilding should be required to review and monitor this program. In addition the

Supervisor should establish his own independent program of formal appraisals of (shipyard) operations that affect prices of Navy contracts.

6. The conditions described in the attached report should be of serious concern to the Navy. These problems are not unique to (shipyard B). If reviews similar to this limited review at (this shipyard) were conducted at other shipyards, the findings would be substantially the same.

7. It is becoming more difficult for the Navy to obtain authorizations for the ships it needs in view of the criticism by the Secretary of Defense and various Congressional committees over the constantly increasing costs of constructing naval warships. They have made repeated statements expressing dissatisfaction with the Navy's management of its shipbuilding programs and the resultant delays and cost increases. I am concerned that unless immediate steps are taken to improve control of shipbuilding costs, authorization of needed Navy ships will be curtailed.

H. G. RICKOVER,

Deputy Commander for Nuclear Propulsion.

Copy to Assistant Secretary of the Navy (Installations & Logistics), Chief of Naval Material.

[Enclosure (1) to NAVSHIPS 08H, Memo Ser 1337 of 30 Apr 1969]

APRIL 25, 1969.

TRIP REPORT

Subject: Review of (shipyard B's) Cost Controls, Budgeting Procedures and Procurement Functions.

Dates of Visit:

9-19 December 1968.

7-11 April 1969.

Place: (deleted).

Persons making trip:

(Deleted)

(Deleted)

Naval Ship Systems Command, Nuclear Power Directorate.

Organizations visited and persons contacted:

1. (Deleted)

a. Financial:

(Deleted) Vice President & Comptroller.

(Deleted) Computer Center Director.

(Deleted) Asst. Mgr. Data Collection & Control.

(Deleted) Internal Auditor.

b. Operations:

(Deleted) Asst. General Mgr., Production and Budget Control.

(Deleted) Budget Control Supervisor.

(Deleted) Manager of Nuclear Construction.

(Deleted) Asst. Superintendent, Machine Shops Division.

(Deleted) Asst. Foreman, Production Control, Machine Shops Division.

(Deleted) Purchasing Agent.

(Deleted) Buyer.

(Deleted) Buyer.

(Deleted) Buyer.

c. Atomic Power Division:

(Deleted) Chief of Nuclear Engineering Operation.

(Deleted) Chief Engineer Nuclear New Design.

(Deleted) Operations Staff Design Supervisor.

d. Production:

(Deleted) Production Manager.

(Deleted) Contracts Division Manager.

(Deleted) Cost Engineer.

(Deleted) Industrial Engineering Division Manager.

(Deleted) Asst. Cost Engineer (New Construction).

2. SUPERVISOR OF SHIPBUILDING, USN

(Deleted) Commanding Officer.

(Deleted) Contracting Officer.

(Deleted) Deputy Contracting Officer.

(Deleted) Contract Negotiator.

3. DEFENSE CONTRACT AUDIT AGENCY, RESIDENT OFFICE, (Deleted)

(Deleted) Resident Auditor.

(Deleted) Auditor.

(Deleted) Auditor.

4. PITTSBURGH NAVAL REACTORS REPRESENTATIVE (USAE), (Deleted)

(Deleted.)

1. *Purpose:* The purpose of these trips was to perform a limited review of how (shipyard B) controls shipbuilding costs on Navy contracts, how costs are charged, and what controls are in effect for procurement of materials and equipment for these contracts.

2. *Background:* NAVSHIPS is presently involved in (several) long term nuclear shipbuilding programs at (shipyard B) which are expected to result in negotiated contracts for a large amount of naval nuclear ship construction work over the next several years. On 13 June 1968 (shipyard B) received a negotiated fixed-price-incentive-type contract from the Navy for construction of (two) naval nuclear ships of one class and work on these ships is in progress. Also, (the shipyard) is constructing (one ship of another class) under a letter contract which was awarded on 31 March 1967. Under another letter contract (the shipyard) is procuring long leadtime components (for a third class of ships). Under the terms of these contracts, the Government bears nearly all the risk of cost overruns. In view of this assumption of cost risk by the Government, Vice Admiral H. G. Rickover requested that we perform a limited review of (the shipyards) cost controls and procurement practices to determine whether these controls could be relied upon to ensure economical ship construction.

3. *Summary:* Our review disclosed several areas where (the shipyard) may not have effective cost controls over shipbuilding work and where procurement practices may be resulting in ship construction costs that are higher than necessary. In addition, we believe that the Supervisor of Shipbuilding, USN, and (the shipyard's) practices in pricing and administering change orders are not adequate to ensure reasonable prices or effective cost control for changes to ship construction work. Finally, it appears that (the shipyard) has no centralized internal audit and appraisal program to review and report on the effectiveness of its operations. These areas are discussed in greater detail in the following paragraphs.

4. *Cost controls:* We reviewed payments made on several existing firm-fixed price Government contracts to see whether (shipyard B) was experiencing cost overruns where the full risk of such overruns was borne entirely by the company in accordance with the terms of the contract. Contracts for construction of (several previous ships) were included in the contracts reviewed. We found that as of March 1969, projected costs for (deleted) exceeded current contract price by about \$5 million. A December, 1968, internal (shipyard) report on direct labor budgets showed a projected 311,000 hour overrun on (deleted) and a 150,000 hour overrun on (deleted). Based on discussions with the Vice-President for Finance, the Assistant General Manager for Production, and Operating Division management personnel and our own limited review of cost control by (shipyard) management, it appears that:

a. The (shipyard's) budget control system does not effectively use the cost estimates developed for negotiating ship prices as budgets for controlling actual costs during ship construction. Further, under the present budget system, it is possible to meet all working level budgets and still overrun the ship construction contract.

b. About 50 percent of all (shipyard) construction work is presently being performed without any form of cost budgeting.

c. About 70 percent of ship construction costs are allocated to the various ship contracts by shop working level supervisors. A recent (shipyard) internal report stated there is evidence of widespread mischarging of costs. There seems to be no comprehensive system of labor checks to ensure that work is costed properly.

d. Approximately 7 percent of total construction labor costs for naval ships are charged as miscellaneous labor. Further, there is a labor category called "general and service labor" which can be allocated to contracts as either direct or indirect charges. There appears to be no accurate way to determine whether these labor costs are correctly charged and whether these charges are reasonable.

Based on our limited review, it appears to us that the present (shipyard B) cost control system cannot be relied upon to adequately control costs under shipbuilding contracts. This deficiency is particularly important in connection with

cost-type, fixed-price-incentive, and letter contracts where the Government bears most if not all the risk of cost overruns.

As early as 1966 (shipyard B), appears to have recognized that there were serious deficiencies in their cost control procedures. Discussions with management personnel indicated that a revised budget control system is presently being tried in a few of the operating division shops. (The shipyard) had planned to fully implement this revised budget control system for (ships under construction) by August 1969, but this has now been delayed until 1970. Meanwhile, there appears to be no effective cost control system for the (ships under construction).

We consider the observed (shipyard) cost control deficiencies to be particularly serious, warranting immediate attention by high level management at (shipyard B), the Defense Contract Audit Agency, and the Supervisor of Shipbuilding, USN—all of whom have responsibility for insuring effective cost controls on Government contracts. It did not appear to us that this matter is receiving adequate attention from the Supervisor of Shipbuilding, USN, or the DCAA Resident Auditor at (the shipyard). No one in these Government offices that we talked to appeared to have a detailed knowledge regarding (shipyard) studies and planning with respect to improving its cost controls and no one appeared to be pressing (shipyard B) for progress in establishing effective cost control procedures.

5. *Government Reliance on Approved (shipyard B's) Procurement System:* Under the terms of NAVSHIPS cost-type and incentive contracts with (shipyard B), the company is required to submit for Government review and approval all proposed subcontracts for materials and equipment in excess of \$100,000. This requirement has been waived at (shipyard B) on the basis that the Supervisor of Shipbuilding (SUPSHIPS) reviews the (shipyard's) procurement system periodically. Based on these reviews SUPSHIPS has approved the (the shipyard's) procurement system and appears to rely almost entirely on this approved procurement system to ensure reasonable prices on subcontracts. Accordingly, the Supervisor's Office does not review proposed subcontracts regardless of the dollar amount and does not have a regular program to review in detail individual procurements on a spotcheck basis. The Contracting Officer at SUPSHIPS indicated that he had no practical alternative but to rely on an approved (shipyard) procurement system because he did not have sufficient personnel to review subcontracts over \$100,000.

In November 1968, a special NAVSHIPS audit team reviewed the (shipyard's) procurement system and concluded that:

The contractor's procurement system is adequate, affords maximum protection of the Government's interests and assures procurement of materials at the lowest price consistent with quality and required delivery schedules.

As will be discussed below, we do not consider the (shipyard's) procurement system adequate, nor do we believe that it can be relied upon to insure reasonable prices to the Government for subcontracted work.

6. *Procurement Practices:* In 1967 (shipyard B) placed approximately 38,000 purchase orders amounting to over \$104 million for materials, equipment, and other subcontracted work. About 40 to 50 percent of the cost of a typical shipbuilding contract is for outside purchases; for this reason, procurement practices at (the shipyard) could have an appreciable effect on the cost of a naval ship. Much of (the shipyard's) outside procurement is for complex equipment from a limited number of suppliers. Despite this lack of true competition for many items of shipboard equipment, (the shipyard) tends to rely on bid prices as if they were competitive without obtaining cost and pricing data as required by the Truth-in-Negotiations Act of 1962 (Public Law 87-653).

It appears to us that (shipyard B) has not adequately implemented the requirements of the Truth-in-Negotiations Act. In December 1967, NAVSHIPS 08 included a special requirement in the letter contract for construction of (Deleted) that (Shipyard B) submit proposed subcontracts for propulsion plant equipment in excess of \$100,000 to NAVSHIPS for review and approval prior to placement. Subsequent NAVSHIPS review of procurements recommended by (the shipyard) disclosed that (the shipyard) had not obtained and evaluated supplier cost and pricing data in some cases where consideration of such data was required by the Truth-in-Negotiations Act. After (the shipyard) was required to obtain supplier cost and pricing data, this data revealed that there were large unwarranted contingencies and excessive profits in the prices previous-

ly recommended by (the shipyard). Subsequent negotiations resulted in reduced prices.

In July 1968, in a meeting with NAVSHIPS 08, (shipyard B) representatives indicated a general lack of familiarity with the requirements of the Truth-in-Negotiations Act. However, they agreed to take steps to comply with the requirements of this law. Apparently, (the shipyard) had not implemented the requirements of the Truth-in-Negotiations Act prior to that time. Based on our limited review it appears that (the shipyard) is now obtaining the required cost and pricing data in those cases when only one bid is received. However, in other cases involving limited competition, (the shipyard) makes awards on the basis of the bids received without obtaining supplier cost and pricing data. In some cases it appears that (the shipyard) is devoting considerable effort to *avoid* obtaining and evaluating supplier cost and pricing data. Despite the limited number of suppliers for many items of ship hardware, (the shipyard) buyers tend to classify a procurement as "competitive" thereby avoiding any requirement to obtain and evaluate cost and pricing data even in circumstances where the competition is clearly limited.

The following are examples of specific procurements where (shipyard B) either did not obtain cost or pricing data or where after being required to obtain this data, lower prices were negotiated:

a. A sole-source quote was received by (the shipyard) for (deleted) main circulating pumps at a price higher than that recently paid for identical (deleted) pumps. Rather than obtaining the certified cost and pricing data required for a non-competitive procurement, (the shipyard) attempted to construct a "competitive situation" by obtaining a bid from another supplier, even though there was no reason that this second supplier could quote a lower price. In this manner, (the shipyard) could conclude that the procurement was competitive, and thus avoid the requirements for cost and pricing data.

b. (Shipyard B) awarded a purchase order for the (deleted) moisture separators to the only qualified vendor without obtaining cost and pricing data and without evaluating this data to insure a reasonable price. In this case (the shipyard) originally received three bids and recommended an award to the low bidder. NAVSHIPS could not accept this recommendation because the low bidder's design, based on past performance could not be expected to meet the Navy's performance requirements. Only one of the three bidders could supply equipment meeting the Navy requirements. (The shipyard) subsequently awarded the subcontract to the sole acceptable bidder at a considerably higher price than the low bidder had quoted. (The shipyard) did not obtain or evaluate the supplier's cost or pricing data before making the award; rather, they concluded that adequate competition existed even though one design was technically acceptable.

c. In procuring deaerating feed tanks for (deleted) (the shipyard) submitted a recommendation to NAVSHIPS to buy these tanks at \$407,000. NAVSHIPS rejected this recommendation and requested that cost and pricing data be obtained from the vendor and a revised procurement award recommendation be submitted based on reasonableness of the vendor's costs. As a result of evaluating the vendor's cost data, (the shipyard) was able to negotiate the price down from \$407,000 to \$352,000.

d. (The shipyard) requested NAVSHIPS approval to place a subcontract for main circulating sea water pumps for (deleted) at a price of \$311,000. This price was about \$75,000 higher than was paid for similar pumps a year earlier. (The shipyard) accepted this price as reasonable without obtaining the supplier's cost and pricing data. NAVSHIPS 08 asked (the shipyard) to obtain and evaluate the supplier's cost data. After technical review and additional negotiations based on the pump supplier's cost data, the price was reduced to \$220,652, a reduction of 30 percent.

e. In a procurement for (deleted) reactor plant salt water circulating pumps, (the shipyard) received a \$128,000 sole source quote in June 1968. In September 1968, a bid of \$68,000 was received from a second vendor. (The shipyard) then placed the order with the second vendor on the basis of "adequate price competition" without reviewing the supplier's cost and pricing data. Since the procurement was for less than \$100,000 no Government approval was required and the order was placed without further analysis to verify the reasonableness of the second vendor's bid.

It further appears that there is inadequate management attention to the procurement function at (shipyard B). A considerable portion of the company's business is subcontracted, but the number of management personnel concerned

with subcontracting appears disproportionately small. Management reviews of large procurements appear to be perfunctory and we found no evidence of an effective system for regular in-house audits of procurement operations. In addition, there seem to be no adequate safeguards for controlling access to supplier bid information to prevent improper disclosure. We consider these to be major deficiencies that require attention.

Based on our limited review at (shipyard B) and our experience with recent procurements submitted by the company for NAVSHIPS approval, we do not agree that the (the shipyard's) procurement procedures are adequate to insure reasonable prices to the Government for subcontracted work. We consider that there are serious deficiencies in (the shipard's) procurement practices which may be resulting in higher than necessary costs on Government contracts. This area also needs immediate attention from the Supervisor of Shipbuilding, USN and the Defense Contract Audit Agency to initiate prompt corrective actions with (the shipyard) management.

7. *Pricing and Administration of Change Orders:* Change orders generally increase the price of ship construction contracts by 12 to 16 percent. Typically, about 900 to 1,200 change orders are issued during the construction of every naval ship. Based on our limited review of this area it appears that:

a. Neither (shipyard B) nor the Government can determine the actual cost of changed work from (the shipyard's) accounting records. Thus, there is no sound basis for pricing changed work or for controlling the cost of changed work. There seems to be no way to tell whether or not change orders have been properly priced since there is no record of actual costs.

b. The pricing of change orders is further complicated by the (the shipyard's) practice of applying "add-on" factors to their raw estimate of basic labor cost to cover other associated costs. These "add-ons" can account for as much as two-thirds of the total estimated cost of the change. However, there appear to be no accounting records to substantiate that the factors used by (the shipyard) and accepted by SUPSHIPS reflect actual additional costs of these "add-on" factors such as supervision for changes.

c. It appears that SUPSHIPS does not always exercise sufficient care in reviewing change orders. In one case, SUPSHIPS issued a maximum priced change order in the amount of \$2.0 million for (deleted) even though a (shipyard) price proposal previously submitted for this work was \$1.8 million.

d. Current cost information is not always effectively used in negotiating changes. In one instance for the (deleted) Post Shakedown Availability, no DCAA audit of the change proposal was requested even though almost half the proposed costs were for material which could be verified by audit. A subsequent DCAA audit showed that \$80,000 of the material cost was questionable.

8. *Internal Audit and Appraisals:* We found that (shipyard B's) financial organization included an internal audit department. However, in reviewing the functions of this audit department, we found that it is primarily concerned with financial type auditing such as payroll accuracy determination. Our impression was that there is no centralized examination and reporting to (shipyard) management on how effectively the company's operations are being conducted.

9. *Recommendations:* Based on our limited review of (shipyard B's) operations, we recommend the following:

a. *Cost Controls.* (The shipyard) is presently working to develop an effective budgetary control system for ship construction work. However, there is no definitive schedule implementing this revised system and actual implementation may be continually deferred in the absence of a firm schedule. Meanwhile costs are being incurred on several Navy contracts without effective control. We recommend that (the shipyard) be required to prepare a definitive schedule for developing and implementing effective budgetary controls over ship construction work and that these controls be established expeditiously. Further, the Supervisor of Shipbuilding, USN should take immediate steps to review (the shipyard's) actions in implementing these effective cost controls for work under Government contracts. In addition, the Supervisor of Shipbuilding, USN should require (the shipyard) to establish an effective system of labor checks to verify the accuracy of labor changes.

b. *Procurement.* The Supervisor of Shipbuilding, USN should take immediate action with (shipyard) management to require (the shipyard) to obtain and use suppliers' cost data in pricing materials and equipment under circumstances of limited competition. Until (the shipyard) has demonstrated satisfactory per-

formance in this regard, we recommend that the Supervisor of Shipbuilding review and approve each procurement over \$100,000.

c. *Changed Work.* It is recommended that the Supervisor of Shipbuilding, USN take immediate action with (shipyard) management to require adequate accounting and effective cost control for changed work, particularly for change orders over \$100,000. In addition, the Supervisor of Shipbuilding should request the Defense Contract Audit Agency to review (the shipyard's) cost "add-ons" for changed work and to establish necessary procedures to determine whether or not these cost changes as quoted by the company are reasonable costs applicable to changed work.

d. *Internal Review.* The Supervisor of Shipbuilding, USN should require (the shipyard) to establish a program of centralized internal reviews and appraisals of (shipyard) operations. Reports of the findings of these reviews and corrective action taken should be provided to the Government. In addition, the Supervisor of Shipbuilding, USN should also make periodic formal appraisals and reports of (the shipyard's) functional operations. We believe such appraisals would help bring operating deficiencies to attention of higher management for appropriate action and resolution.

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C. 20360.

[In reply refer to 08H-01354, 23 September 1969]

MEMORANDUM FOR THE COMMANDER, NAVAL SHIP SYSTEMS COMMAND.

Subj: Cost Controls at (Shipyard B).

Encl:

(1) Report to Admiral Rickover dated 29 August 1969.

(2) Report on technical analysis of (Shipyard B's) claim for costs incurred in installing long-life core in (SSN —).

1. In a memorandum to the Assistant Secretary of the Navy (Installations & Logistics) dated 30 April 1969, I forwarded a report concerning procurement and cost control practices at (Shipyard B).

This report, which was forwarded via your office, indicated serious deficiencies in the company's procurement, pricing, and cost control practices. Specifically, in the area of cost controls, the report showed that:

a. (The shipyard) had no effective budget system to control labor costs;

b. The company's own survey of its cost controls indicated widespread mischarging of costs;

c. Under the company's budget system, it was possible to meet all working level budgets for a given ship and still overrun the contract;

d. (The shipyard) management was aware of these problems. However, it had deferred plans to implement an improved cost budgeting system until 1970.

2. Enclosure (1) is a subsequent report which points out that nothing has been done to improve cost controls at (the shipyard) in the four months since I raised the issue. (The shipyard) has again deferred an improved cost budgeting system, and it appears that an improved system may not be put into effect at all. The report also points out that the company's present system for collecting and reporting costs is too flexible to permit effective cost control. In the specific case of direct labor, for example, there are no controls over 50 percent of direct labor charges.

3. The situation with regard to the (one new construction project) is particularly serious. Although more than two years of work and \$63 million in costs have been incurred on this ship, no budgets have been established for the ship. Consequently, there is no control over costs incurred in construction of the (ship). Enclosure (1) further indicates that millions of dollars are being charged against the (ship) under "miscellaneous" cost accounts that cannot be controlled or audited. In at least one case, costs for work on a commercial ship were charged to the (Navy ship). Since the (Navy ship) is being built on a letter contract, there is no incentive for (the shipyard) to control the construction costs of this ship; in fact, higher costs will provide a larger profit base in the definitized contract and in follow-on contracts. Thus, the Government itself must take steps to ensure that the remaining work is done efficiently and economically.

4. Enclosure (1) also discusses (shipyard B's) pricing of a change order on the (SSN —). (The shipyard) originally estimated that it would require 11,000 additional manhours to perform this job. The actual cost of the work

turned out to be much less; only about 2,000 additional manhours were charged to the cost account covering the bulk of the work. Yet (the shipyard) based its price for the change order on the original estimate, apparently disregarding actual cost records that were available when the company submitted its price. Enclosure (2), the report of a technical analysis of the same claim, shows that (the shipyard) failed to credit the Government for the cost of work that did not have to be done as a result of the change order. Further, (the shipyard) charged as a direct cost to this change order shipyard facilities which will remain at (the shipyard) for use on future contracts.

5. The nature and extent of the overcharges in this particular claim indicate the need for effective safeguards to protect the Government in claim settlements. Normally the Supervisor of Shipbuilding settles such claims locally. In this case, I had my own people review the claim because the funds requested by the Supervisor of Shipbuilding to cover it seemed excessive. My representatives are now working with the Supervisor of Shipbuilding on this particular case. However, I am concerned that this inflated claim is representative of others submitted by (shipyard B).

6. In my 30 April memorandum I recommended steps the Navy could take to improve cost controls at (the shipyard). Enclosures (1) and (2) reemphasize the need for prompt Government action. With regard to the items discussed above, I recommend that NAVSHIPS take the following actions:

a. Require (the shipyard) to implement without delay an effective cost budget system for (the new construction project) in order to establish some measure of control over the cost of work on the (project);

b. Require (the shipyard) to establish without delay budgets and accounting records that will ensure adequate cost control on other major programs such as the (deleted) program and the (deleted) program;

c. Ensure that claim settlement procedures at (the shipyard) and other shipyards are adequate to detect overcharging on claims resulting from change orders. As a minimum, I recommend that an authorized officer of the company be required to certify each claim, regardless of amount, to the effect that:

(1) Costs claimed do not exceed the actual cost of the work performed;

(2) Costs claimed have been charged in accordance with Government-approved accounting procedures;

(3) Prior payment for the same work has not been received.

H. G. RICKOVER,
Deputy Commander for Nuclear Propulsion.

Copy to CHNAVMAT, ASSTSECNAV (I&L).

[Enclosure (1) to NAVSHIPS 08H, Memo Ser 01354 of 23 Sep 1969]

UNITED STATES GOVERNMENT MEMORANDUM.

Date: AUGUST 29, 1969.

To: VADM H. G. Rickover.

From: (Deleted).

Subject: Review of (shipyard's B's) Cost Controls for Construction of (naval nuclear ships).

1. The purpose of this memorandum is to advise you of the results of my review to date of (shipyard B's) cost control system on contracts for the construction of (naval nuclear ships) and other contracts where the government absorbs a significant share of cost overruns or cost underruns.

2. In April 1969, I reported to you that:

a. The cost controls in effect at (the shipyard) could not be relied upon to adequately control shipbuilding costs.

b. (Management) was aware of deficiencies in its present cost control system and was in the process of developing an improved cost budgeting system.

c. (The shipyard's) schedule for implementation of this improved system on (nuclear ship construction programs) had slipped from August 1969 to early 1970.

3. In recent discussions with the (shipyard B's) Manager of Contracts (name deleted) and the Vice President for Administration (name deleted). I was told that implementation of an improved cost budgeting system has been further deferred and may not be adopted at all. I was advised that the cost of the new system is being weighed against possible benefits. In the meantime no budgets

have been issued for (one major ship construction project) because (the shipyard) considers that "the scope of work for the remainder of this year cannot be determined." Cost budgets for (two other ships) are currently being prepared under the existing system at (the shipyard) and are presently scheduled to be issued prior to keel laying. As I have previously reported to you, (the shipyard) has recognized deficiencies in its existing cost budgeting system so the effectiveness of (these) budgets currently being establishing will be questionable.

4. For the past several weeks, I have reviewed in greater depth the existing (shipyard) system for estimating, charging, collecting and reporting costs. My findings from this review continue to point out a strong need for improved controls over costs of naval ship construction at (the shipyard).

My review confirms that number of weaknesses exist in the present cost control system and that these weaknesses may be resulting in higher than necessary costs of naval ship construction. For example:

a. *Labor Budget*—(Shipyard B) utilizes a labor incentive program in several of its large departments. About half the total yard direct labor is under this program. While I have not completed a full review in this area, I have found several practices which indicate the need for improvement in (shipyard) cost controls. Examples are:

(1) Under the incentive program, estimates are established for individual jobs for the purpose of providing an efficiency standard. Trades personnel are paid a bonus if time worked is equal to or less than the time allotted by the estimate. However, I can find no controls for insuring that the individual estimates used in the incentive program are consistent with the overall ship's budget. It appears possible to underrun all individual estimates and still overrun the total estimated costs for the ship.

(2) The Navy is paying a special labor bonus for irradiated reactor plant work. It appears that this bonus has been in effect for at least two years. Under present procedures, trades personnel are paid a bonus even though the actual time on the job is longer than the estimated time required. Currently, it appears that once the estimate is developed, a flat 13% bonus is applied. The bonus is then increased or decreased by 13% for every hour the actual work under or overruns the estimate. Thus, actual time would have to exceed the estimated time by 100% before all bonus is lost. Because most irradiated reactor plant work is performed under cost-type contracts, the full cost of the bonus in addition to the actual cost of the work is charged to the government. I have been unable to find out whether the Navy has agreed to this bonus system.

The remaining direct labor (about 50% of the total) is not controlled by either the labor incentive program or the cost budgeting system. Thus for about half the direct labor costs there are no effective controls to insure that direct labor costs are within ship estimates.

b. *Charging, Collecting, and Reporting Costs*—(Shipyard B) establishes "charge numbers" for the purpose of charging, collecting and reporting costs. These charge numbers appear to be issued and administered by the Contracts Division. This Division is also responsible for preparing the estimates for Navy prime contract requests, for developing cost control budgets once a prime contract is awarded and for estimating Navy change orders. Thus, the same Division is responsible for preparing contract proposals, issuing budgets and controlling how costs are charged and reported.

The system for charging, collecting, and reporting costs is very flexible. It appears that waterfront, shops, overhead departments, and engineering personnel can at any time charge their time directly to any one of over 8,250 charge numbers. In addition, there are certain "cost keeping" or "dummy" charge numbers. These charge numbers collect costs which are later distributed to other charge numbers, sometimes by computer based on predetermined percentages. Such costs can be allocated between charge numbers on one ship or between charge numbers of several ships. Under this system, the company has great flexibility in deciding how costs are charged among its contracts. I believe this flexibility precludes effective cost control. For example:

(1) Overhead is a large part of the shipyard's total cost. However, overhead departments have the option of charging their time directly or to cost; however, it can also be charged to overhead accounts. It does not appear possible to control either direct costs or overhead costs under these circumstances.

(2) The largest miscellaneous cost charge number for (our major ship construction project) has already collected some \$1.2 million in costs from about 45 different departments. Of the \$1.2 million miscellaneous charges, about half

came from service departments such as Contracts which are considered typically overhead functions. There appears to be no control over who can charge what work to these charge numbers or any of the 8,000 or so other charge numbers at (the shipyard).

(3) In checking charge numbers for (the ship), I found that the charge number for "General Reactor Plant Drawings" has been charged 61,000 manhours from 27 different departments. The validity of charges to this account from such departments as welding, shipfitters and heavy machine shops appears questionable to me.

(4) Supervision is charged to only one cost charge number per hull rather than to specific jobs. The ratio of supervision for the Machinery Installation Department to the total straight direct labor on (a commercial ship), was 11%. The ratio of supervision of this department thus far on (the Navy's ship) is 43%.

c. *Comparison of Actual and Estimated Costs*—The present cost control system does not appear to provide for adequate comparison of actual and estimated costs. For example:

(1) I found that the costs for certain bracket work on (another commercial ship) were charged to (a Navy ship). I found this error by checking job estimates on (the Navy ship) to timekeeping reports. Normally, I believe such an error would have gone undetected under the (shipyard's) cost control system because job estimates are not routinely matched with actual costs.

(2) In connection with the change order to install a different core in (SSN —) on 1 August 1968, one month after the work was performed, the (Shipyard's) Contract Department estimated that installation of the new core would require 11,000 manhours over that required to install the previous design. However, in checking return costs for the month of June 1968, when the work was actually performed, I found that the total increase for the charge number for installation of reactors was only 2,000 manhours, less than one fifth of the amount proposed by (the shipyard) for change order pricing purposes. Review of the individual work tickets indicated that installation work by the lead trade for the new core was about 50% of that required to install the previous design core in (a previous ship).

(3) In January 1968, (shipyard B) management decided to build (* * *) main condensers (one Navy ship) because the (shipyard's) estimate of \$850,000 was less than an adjusted low bid of about \$1.0 million from an outside vendor. The total actual cost incurred to date on this job appear in several different charge numbers and therefore is difficult to determine. However, I developed a rough estimate from the costs shown on certain charge numbers plus various add-ons and it appeared to me that actual costs might overrun the original \$850,000 estimate by about \$100,000. I found no evidence that (the shipyard) has established a budget to compare the cost of building the condenser with the original estimate that was used as the basis for the decision to manufacture the condenser inhouse.

5. In summary, my review, while not complete, indicates that (shipyard B) has not taken effective action to adequately budget for and control costs of constructing (naval nuclear ships) or on other contracts where the government shares cost overruns or underruns. I consider the government should require (the shipyard) to promptly implement a more effective system for controlling costs on these contracts. I consider this matter should be taken up formally with the Supervisor of Shipbuilding so that he may initiate appropriate corrective action with the contractor. If you consider it appropriate, I will discuss this matter directly with the Supervisor of Shipbuilding and will advise you of what action is to be taken.

(ENCLOSURE (2) DELETED IN ITS ENTIRETY DUE TO CLASSIFICATION)

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C., 20350.

[In reply refer to OSH-1394, 23 October 1969]

MEMORANDUM FOR THE COMMANDER, NAVAL SHIP SYSTEMS COMMAND.
Subj: Need for Improved Procurement and Cost Control Practices in the Construction of Naval Ships.

Ref:

- (a) NAVSHIPS ltr Ser 08H-1337 dtd 30 April 1969.
- (b) SHIPS 08 memo Ser. 08H-01354 dtd 23 September 1969.
- (c) COMNAVSHIPS memo dtd 6 October 1969.

1. In reference (a) I forwarded to you a report which identified major deficiencies in procurement practices and cost controls at (shipyard B). I pointed out that these deficiencies were responsible for wasting millions of dollars each year, and that this would continue unless the Navy took prompt and adequate corrective actions. In reference (b) I sent you a follow-up report indicating additional problems discovered in this area; I pointed out that nothing has yet been done to correct deficient procurement practices and cost controls at (this shipyard) as reported in reference (a).

2. Reference (c) is your reply to my memoranda. In it you state that NAVSHIPS' review of these matters has not yet been completed, but that you will advise me shortly of your decision with respect to my recommendations. You further state that "we must ensure that the cure is not more costly than the cost risk of similar deficiencies occurring in the future, that the corrective actions we require of (shipyard B) do not place them in a less competitive position for competitive fixed-price procurements, and that the corrective actions are practical and obtainable and do not generate misleading data."

3. I do not consider that "cure" of the issues I raised will be "more costly than the cost risk of similar deficiencies occurring in the future . . ." The Navy should know what it pays for; know what ships actually cost to build; have effective control over ship construction costs; see to it that shipbuilders follow economical and required procurement practices. Without these features, competent and economical management of our shipbuilding program cannot exist.

4. Further, I do not understand the significance of your comment "we must ensure . . . that the corrective actions we require of (shipyard B) do not place them in a less competitive position for competitive, fixed price procurements." From what I have observed over many years there is little, if any, *real* competition in the naval shipbuilding industry. (Shipyard B is presently the sole-source for several major shipbuilding programs. They have also received a number of ship overhaul and conversion contracts. Even in the SSN 637 class construction program—where several shipbuilders bid on the same contract—the competition did not, to my mind, assure reasonable prices.

5. For many years Navy shipbuilders have been sheltered from competition, by the geographic factors in earlier years, or by factors such as workload, design, or scheduler considerations as is now the case. In effect, the Navy's major shipbuilders can count on sufficient sole-source or cost-plus contracts to support them regardless of their efficiency or their ability to control costs. The Department of Defense policy of calculating profits as a percentage of cost, rather than as a return on investment, serves to reward higher costs in the industry with higher profits.

6. The Navy must face up to the fact that there is little, if any, true competition in the shipbuilding industry and that, as a direct result, the industry is neither efficient nor economical. Further, it has little incentive to become efficient or economical under existing Navy contracting and contract administration policies and procedures.

7. If the steadily rising cost of ships is to be halted, the Navy must take corrective actions that are, in your words, "practical and obtainable and do not generate misleading data." We must, in addition, require adequate Government surveillance of shipbuilder operations. Such surveillance has been proved to be ineffective at all major shipyards. For this reason I do not understand your concern expressed in reference (a) about unfair competitive advantage.

8. The current situation in shipbuilding is urgent and serious. Improper procurement practices and inadequate cost controls have increased and continue every day to increase costs on Government contracts. The Navy cannot afford to treat these gross deficiencies lightly or to invoke delay in their correction. I consider it inappropriate under the circumstances—particularly with the present Congressional displeasure at inefficient Defense procurement practices—to procrastinate further.

H. G. RICKOVER.

CC: CNM, ASN (I&L).

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

[In reply refer to 08H-6403, 23 December 1969]

MEMORANDUM FOR THE COMMANDER, NAVAL SHIP SYSTEMS COMMAND.

Subj: Deficiencies in Procurement of Hull Steel by (Shipyard B).

Ref:

- (a) NAVSHIPS ltr 0763 :JF :dsr Ser 334 of 24 November 1969.
- (b) VADM Rickover memorandum Ser 08H-1337 of 30 April 1969.
- (c) VADM Rickover memorandum Ser 08H-01354 of 23 September 1960.

Encl: (1) Report of Practices Followed by (Shipyard B) in Procuring Hull Steel for Construction of (deleted).

1. Reference (a) identified the actions you intend to take with respect to deficiencies in shipyard cost control and procurement practices I described in references (b) and (c). You have asked for my comments on your proposed action plan.

2. I have not studied reference (a) sufficiently to provide you with detailed comments at this time. However, I will comment as soon as possible.

3. Recently, I found what appears to be a major problem in the procurement of hull steel by (shipyard B). Substantial amounts of HY 80 and HY 100 steel are required in the construction of (deleted). The General Accounting Office in June 1965 issued a report to Congress criticizing the way the Navy and its shipbuilders procured HY 80 steel used in the construction of nuclear submarines. Therefore, I asked one of my representatives to review how (shipyard B) currently procures this material. Enclosure (1) is the report I have received.

4. The General Accounting Office report stated that the Navy and its shipbuilders should obtain cost and pricing data from HY 80 steel suppliers in order to comply with the requirements of the Truth-in-Negotiations Act. The Navy agreed. Today, more than four years later, enclosure (1) indicates that (shipyard B) is still not obtaining cost and pricing data from HY 80 and HY 100 steel suppliers.

5. Enclosure (1) also identifies specific problems in (shipyard B's) procurement of high tensile steel. Apparently, the shipyard has bought about \$3.4 million worth of high tensile steel from (a large steel supplier) without bothering to obtain competitive bids from other qualified firms and without bothering or evaluating supplier cost and pricing data. Further, (the shipyard) has broken the \$3.4 million total requirements from (that firm) into more than 1200 individual orders, such that apparently no individual high tensile steel order for (deleted) exceeds \$100,000—the lower limit for requiring cost and pricing data under the Truth-in-Negotiations Act. Through these practices, it appears to me that (the shipyard) is not taking maximum advantage of its potential bargaining power to obtain hull steel at lower prices.

6. I am bringing this matter to your attention so that appropriate corrective action may be taken. In this regard I recommend that NAVSHIPS check the procurement of hull steel at other shipyards to ensure that deficiencies previously pointed out by the General Accounting Office have been corrected as promised by the Navy and to ensure that hull steel required in naval ship construction programs is being procured in the most economical manner.

H. G. RICKOVER.

Copy to Assistant Secretary of the Navy (Installations and Logistics), Chief of Naval Material.

[Enclosure (1)]

REPORT OF PRACTICES FOLLOWED BY (SHIPYARD B) IN PROCURING HULL STEEL FOR
CONSTRUCTION OF (DELETED)

I. BACKGROUND

In 1965, the General Accounting Office (GAO) issued a report to Congress concerning procurement of HY 80 steel plate from (two steel companies) for use in the construction of Navy ships. The GAO report stated:

"... neither the Navy nor its prime shipbuilding contractors had obtained and evaluated cost data for the purpose of determining the reasonableness of the

Identical mill prices charged by these two steel suppliers. These companies constituted the principal available sources of supply for this essential material which is used almost exclusively in the construction of nuclear submarines and other naval vessels. These cost data properly certified by the contractors, in our opinion, should have been required and considered by the Navy and its prime shipbuilders in the negotiation of prices under the Armed Services Procurement Regulation prior to December 1, 1962, and under Public Law 87-653 thereafter."

The GAO report explains that HY 80 steel plate is a specialized item produced in accordance with military specifications. It is produced principally by two steel makers.

The firms quote identical catalog mill prices for this material. The GAO reported that, depending on the way the figures were presented, the rate of profit on costs for (one firm) varied from 3.5% to 14.5% and for (the other) from 22.9% to 26.8%. The GAO concluded that there are sufficient differences in the costs of producing HY 80 steel plate, and in the profits to be realized from identical prices, to require cost and pricing data from both manufacturers in any future negotiated procurements of HY 80 steel plate (or successor types) as required by the Truth-in-Negotiations Act.

The Navy agreed with the GAO findings. The following is quoted from the GAO report:

"With regard to our first proposal, the Navy stated that procurement of HY 80 steel plate by formal advertising had been discontinued and that cost or pricing data was now being required and certifications were requested in accordance with the provisions of ASPR 3-807.3. In addition, the Navy stated that successor types of plate and other types of steel will be considered for similar treatment as conditions warrant.

"With regard to our second proposal, the Navy indicated that prime contractors had been advised to obtain cost or pricing data on all HY 80 steel-plate procurements and to obtain certifications in accordance with the provisions of their prime contracts."

II. PROCUREMENT OF HY 80 AND HY 100 FOR (DELETED)

In view of the GAO's findings, and because hull steel is a significant cost factor in Navy ships, a review was conducted of how HY 80 and HY 100 steel was being procured by (shipyard B) for (deleted). It appears that HY 80 and HY 100 steel plate is still being procured as described in the GAO report. The bids of both suppliers seem to be identical when transportation costs are considered, and certified cost or pricing data, as required by the Truth-in-Negotiations Act, are not being obtained.

(Shipyard B) procurements of HY 80 and HY 100 steel plate for (deleted) total nearly \$9 million—\$3,650,000 to (one firm) \$5,250,000 to (another), and \$5,000 to (a third firm).

For each of the purchase orders reviewed, bids were solicited from (two firms). In each case the (first firm's) bid was slightly higher than the price quoted by (the other firm). However, penciled notes in (shipyard) purchase files adjusted the two bids by adding the freight costs from each mill to (the shipyard). These adjustments made the bids identical. In several of the procurements reviewed, (one firm) advised (the shipyard) that they were raising their prices. Within 30 days, in each case, (the other firm) increased their prices by an identical amount. Thus, the prices from these two independent suppliers remained identical. (Shipyard B) purchasing personnel stated that because the bids are identical after transportation costs are considered, award to (one firm) or (another) is dependent upon "company policy." (In certain cases (the shipyard) solicited bids from (the third firm) as well.

However, the files state that (the third firm) was nonresponsive because of higher prices and because they were unable to supply all the items on order.)

III. PROCUREMENT OF HIGH TENSILE STEEL FOR (DELETED)

In addition to HY 80 and HY 100 steel, (shipyard B) has procured about \$3.4 million worth of high tensile steel for use on (deleted). A review of the shipyard's high tensile steel procurements revealed what appears to be two major deficiencies:

Failure to obtain competitive bids for high tensile steel requirements

(Shipyard B) is buying large quantities of high tensile steel plate on a sole-source basis, even though there is more than one supplier for this material. A review of these purchases indicates that (the shipyard) has been awarding the purchase order to (another large steel company) without soliciting bids from other vendors and without performing an evaluation as to the reasonableness of prices paid. Shipyard procurement personnel acknowledged this purchasing procedure, although they recognize that there are other vendors. They claim that procurement of high tensile steel from (this company) would always result in the lowest cost because of transportation considerations. The (company's) orders are shipped by barge from (a nearby plant).

It may be that the "catalogue prices" for high tensile steel are the same for all suppliers, and thus (the shipyard) considers it unnecessary to solicit competitive bids. However, the shipyard's large requirements for steel could give it a strong bargaining point in a competitive situation. The potential for \$3.4 million worth of orders might well induce one or more steel companies to quote below the standard price in order to win the business. At least, (the shipyard) should allow all potential suppliers to bid. It does not appear that (the shipyard) has made any effort to use its potential bargaining position to obtain lower prices for high tensile steel used on (deleted) through competitive bids or negotiations.

Failure to obtain supplier cost and pricing data in sole source procurements

The Truth-in-Negotiations Act requires that prime contractors obtain and review subcontractor cost and pricing data in all noncompetitive procurements over \$100,000. A review of purchase orders for high tensile steel revealed no evidence that cost or pricing data had been obtained and evaluated. Although the procurements of high tensile steel for (deleted) totalled more than \$3.4 million, (shipyard B) had split them into more than 1200 separate purchase orders. No one purchase order exceeded \$100,000. Shipyard procurement personnel claim that the major factor in determining the number of the (company's) purchase orders was the scheduling and size limitations of barge shipment. However, shipyard purchase records show that where the Truth-in-Negotiations Act does not apply, (the shipyard) has placed high tensile steel orders in excess of \$100,000. For example, on one commercial hull, the high tensile steel procurements totalled only \$650,000. Two of these procurements were in excess of \$100,000.

IV. CONCLUSIONS

(Shipyard B) has recently been awarded a contract to procure materials for (deleted) unless there is prompt action taken to correct the practices used by (the shipyard) in the procurement of hull steel, the company's procurements of hull steel for the new (ship) will probably be no better than those for (deleted). (Shipyard B) should be required to solicit bids from all qualified sources and to obtain and review cost or pricing data in those cases where competitive bids are not obtained. The Navy should take action necessary to correct the deficiencies identified in the 1965 GAO report. It should also insure that its contractors establish effective purchasing procedures for other specialty steels used in ship construction.

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C. 20360.

[In reply refer to 08H-706, 29 January 1970]

MEMORANDUM FOR THE COMMANDER NAVAL SHIP SYSTEMS COMMAND.

Subj: Deficiencies in Procurement of Hull Steel by (Shipyard B).

Ref:

(a) Deputy Commander for Nuclear Propulsion Memorandum 08H 6403 dated 23 December 1969.

(b) Commander NAVSHIPS Memorandum 0763: JF dsr Ser: 3 dated 7 January 1970.

1. In reference (a) I pointed out several major deficiencies in the way (Shipyard B) procures specialized HY 80 and HY 100 hull steel and other high tensile steels under Navy contracts. I pointed out that in 1965 the General Accounting Office found HY 80 steel contracts which had been awarded on the basis of prices quoted by the steel suppliers were resulting in profits of up to 26% on costs. From its review the GAO recommended and the Navy agreed

that on subsequent procurements cost and pricing data would be obtained from HY 80 steel suppliers to assure that the quoted prices were reasonable in relation to the cost of producing this steel for the Navy. Recently, however, I found that (the shipyard) is procuring HY 80 and HY 100 steel for (a major shipbuilding program) on the basis of quoted prices and without obtaining cost and pricing data to determine whether the prices being paid are reasonable.

2. In reference (a) I also pointed out that (the shipyard) bought about \$3.4 million worth of high tensile steel from (a large steel corporation) for construction of (several ships) without obtaining or evaluating (the steel corporation's) cost and pricing data. In buying this steel, (the shipyard) placed more than 1200 individual orders with (the steel corporation). None of these orders exceeded \$100,000—the lower limit for obtaining cost and pricing data under the Truth-in-Negotiations Act. Thus it appears to me that (the shipyard) is neither complying with the Truth-in-Negotiations Act nor taking maximum advantage of its potential bargaining power to obtain the lowest possible prices for this steel.

3. In reference (b) you verified the facts I reported in reference (a). In addition, reference (b) pointed out that:

a. The Supervisor of Shipbuilding, (deleted), reviewed and consented to some of the (the shipyard's) HY 80 and HY 100 steel orders prior to their placement.

b. In one case the Supervisor of Shipbuilding requested that cost and pricing data be obtained from HY 80 and HY 100 steel suppliers; the steel suppliers refused to provide such data. The Supervisor later consented to this order on the basis that the prices quoted by the suppliers were identical to those obtained and accepted by the Defense Industrial Supply Center for the same type steel under a formally advertised procurement.

c. Since late 1967, the Defense Industrial Supply Center has been procuring HY 80 and HY 100 steel without obtaining and evaluating supplier cost and pricing data on the basis that there is adequate price competition. The Deputy Assistant Secretary of Defense (Procurement) and the General Accounting Office were informed of this in 1967.

4. In reference (b) you also state that NAVSHIPS will review the procurement of HY 80 and HY 100 steel and that if competition is not considered adequate, NAVSHIPS will either obtain supplier cost and pricing data or request a waiver of the Truth-in-Negotiations Act. Reference (b) also indicates that the Supervisor of Shipbuilding will determine if (the shipyard) orders are being consolidated whenever possible, and if maximum competition is being obtained.

5. I am well aware that large steel suppliers have been and continue to be reluctant to furnish cost and pricing data to the Government and that in some cases they have refused to do so. However, I do not believe the Government should be deterred from requiring cost and pricing data in cases where such data are required by the Truth-in-Negotiations Act. The Navy uses substantial quantities of HY 80 and HY 100 steel in its shipbuilding programs—\$9 million has been spent to date for this material on the (deleted) alone. Moreover, the Government has spent considerable sums to develop HY 80 and HY 100 steel. Although the Navy is the primary customer for this steel, it is my understanding that these procurements have been exempted from renegotiation under the Renegotiation Act. In these circumstances, I believe NAVSHIPS has a definite responsibility to insure that the prices it pays are reasonable.

6. The determination of adequate price competition is a difficult one. It has been my experience that far too often procurements have been classified as being competitive when the competition obtained at best was limited and of marginal effectiveness in holding prices to reasonable levels. In addition, much of our ship construction is contracted for on the basis of the shipbuilder's estimated costs. In such cases, higher costs can easily mean higher profits. Thus, there is often no real incentive or pressure from shipbuilders on suppliers to keep prices down. It also may be to a shipbuilder's advantage to buy in small quantities—even if this means paying higher prices—in order to minimize the funds required to perform Government contracts.

7. I recommend that NAVSHIPS find out whether the prices which have been and are being paid for HY 80 and HY 100 steel are reasonable. It appears that the 1965 General Accounting Office review is the only factual check that has ever been made in cost incurred and profits realized by HY 80 and HY 100 steel suppliers under Navy orders. I recommend that you arrange with the Defense Contract Audit Agency or, if necessary, the General Accounting Office itself to check actual cost records of the steel suppliers involved to determine what costs are being in-

curred and what profits are being made on contracts and subcontracts for HY 80 and HY 100 steel. I would further recommend that you take appropriate actions at all shipyards to insure that steel orders are consolidated and procured competitively to the maximum extent possible.

H. G. RICKOVER.

Copy to Assistant Secretary of the Navy (Installations and Logistics), Chief of Naval Material.

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C. 20360.

[In reply refer to 08H-714, 16 February 1970]

MEMORANDUM FOR THE COMMANDER, NAVAL SHIP SYSTEMS COMMAND.

Subj: Control of Ship Construction Costs at (Shipyard B).

Ref:

- (a) Deputy Commander for Nuclear Propulsion Memo to Assistant Secretary of the Navy (Installation & Logistics) Ser 08H-1337 dated 30 April 1969.
- (b) Deputy Commander for Nuclear Propulsion Confidential Memo to Commander, Naval Ship Systems Command Ser 08H-01354 dated 23 September 1969.
- (c) Commander, Naval Ship Systems Command letter to Assistant Secretary of the Navy (Installation & Logistics) 0763:JF:dsr Ser 334 dated 23 November 1969.
- (d) DCAA (deleted) Report dated 30 January 1970 on (Shipyard B's). Estimating System.
- (e) Deputy Commander for Nuclear Propulsion Memo to Assistant Secretary of the Navy (Installation & Logistics) Ser. 08H-370 dated 13 November 1968.
- (f) Chief of Naval Material Memo to Assistant Secretary of the Navy (Installation & Logistics) Ser MAT 02:RGF dated 15 May 1969.

Encl: (1) Memorandum to VADM H. G. Rickover dated January 26, 1970; Subj: Cost Controls at (Shipyard B).

1. In references (a) and (b), I pointed out a number of serious deficiencies in procurement, pricing and cost control practices at (shipyard B). Reference (c), on which you asked my comments, is your report to the Assistant Secretary of the Navy (Installation and Logistics) and the Chief of Naval Material on these deficiencies, identifying corrective actions planned by NAVSHIPS. My comments on each of the four principal sections of reference (c) are contained in the following paragraphs.

2. *Cost Control.*—In references (a) and (b) I pointed out that (shipyard B) has no effective budget system to control labor costs. Under the company's system it is possible to meet all working level budgets for a given ship and still over-run contracts.

Reference (c) however states:

- a. (The shipyard) has a reasonably good cost control system;
- b. An effective system exists to insure that costs as charged are valid and accurate;
- c. Some improvements can and should be made in the cost control system and that (the shipyard) has agreed to adopt the NAVSHIPS recommendations for improvement;
- d. Pending issuance of the Department of Defense (DOD) Guide for Performance Measurement described in DOD Instruction 7000.2 and an implementing Naval Material Command (NAVMAT) instruction and manual, NAVSHIPS will obtain copies of (the shipyard's) cost reports. The Supervisor of Shipbuilding at (deleted) (SUPSHIPS) and the Defense Contract Audit Agency (DCAA) office at (deleted) will monitor and expedite implementation of NAVSHIPS recommended improvements to the cost control system.

Comments

I do not understand how the (shipyard B's) cost control system can be classed "reasonably good" when their cost budgets do not and cannot act as a prompt and effective check on work actually being performed in the shops and on the waterfront. Under the (shipyard's) system it is impossible to identify specific cost

overruns in a timely manner or to make effective use of budgetary controls to safeguard against mischarging of costs. I identified this problem in references (a) and (b). In January 1970 the special NAVSHIPS team negotiating the contract for construction of (deleted) also found that present (shipyard) cost controls are not adequate to insure that work performed by their operating departments are within established budgets. Enclosure (1) states:

"The review to date shows that there are two significant deficiencies in the present (shipyard) cost control system:

1. There is no way to insure that work performed by the operating departments is within cost budgets established under the (the shipyard's) cost control system.

2. It could take up to several months to determine whether a cost overrun condition exists and the reason therefor."

The January 30, 1970 Defense Contract Audit Office report on (shipyard B's) estimating system (reference (d)) also refers to this problem. It states:

"We now believe that the contractor should use the hardware oriented, work breakdown structure of the current production control system for cost accumulation . . . The present cost numbering system is too broad to pinpoint problems at the work package level. Rather than simply increase the number of cost categories, the cost numbering system should coincide with the production control numbering system so that *variances between budgeted and actual hours can be analyzed below the departmental level*. If the contractor cannot evaluate variances at the work package level, inefficiency will simply be perpetuated when cost returns are used as the basis for proposals." [Emphasis added].

The lack of effective cost control at (the shipyard) leads to higher than necessary costs to the Government and thereby does great harm to the Navy's submarine and surface ship construction programs. Nearly all Navy work at (the shipyard) is being performed under sole source, negotiated contracts under which the Government bears all or at least a substantial portion of cost overruns. Since profits on these contracts are negotiated as a percentage of estimated costs, higher costs result in higher profits in the long run. The company has little or no incentive to keep costs down. Therefore the Navy itself must take the initiative. Minor corrective measures will not suffice. Action is needed *now* to establish an effective cost control system.

3. *Subcontracting*—In references (a) and (b), I listed numerous deficiencies in (shipyard B's) procurement practices, particularly failure to comply with the Truth-in-Negotiations Act and failure to evaluate or negotiate subcontract prices effectively.

Reference (c) states:

"The second basic issue involves subcontracting. The question here is what level of subcontract procurement performance should be expected from a contractor under a contract containing the "Consent to Subcontract Clause."

Reference (c) further states:

- a. Armed Services Procurement Regulation (ASPR) contract clauses do not require contractors to conduct subcontract procurements in the same manner as Government procurement is conducted.

- b. NAVSHIPS will recommend a change to ASPR so that contractors would be contractually required to perform all the functions the Government would perform if it were awarding a contract in excess of \$100,000.

- c. Approval of the contractor's procurement system has been withdrawn. All applicable subcontracts will require Government consent prior to placement.

Comment

The issues I raised in references (a) and (b) do not hinge on the language of the ASPR "Consent to Subcontract clause." The point is that (the shipyard) is not managing its procurements in a business-like manner and in accordance with the requirements of the Truth-in-Negotiations Act—to the financial detriment of the Government. More to the point, little or nothing is being done to require (the shipyard) to improve its procurement operations.

In November, 1968, I pointed out deficiencies in (shipyard B's) procurement practices (reference (e)). In April, 1969, I provided a more detailed account of procurement deficiencies at (shipyard B) (reference (a)). In May, 1969, the Chief of Naval Material confirmed the issues I raised. He said in reference (f):

"The significant results of these studies are as follows:

a. A significant portion of shipbuilding subcontracts are non-competitive (whether considering price or technical competition).

b. Adequate pricing data is not being obtained on these subcontracts.

c. Less than adequate effort is being made by prime contractors to:

1. Ensure adequate competition,

2. Perform adequate price analysis and conduct adequate negotiations.

d. Bid prices on ships are in fact inflated by the sole source nature of many of the major subcontracts.

e. Adequate emphasis is not being placed on P.L. 87-653 (Truth-in-Negotiations Act) and subcontract management by prime shipbuilding contracts. These results are borne out, I believe, by a similar review performed by Vice Admiral Rickover in the nuclear area."

In reference (c) you state that a CPSR (Contractor Procurement System Review) of (shipyard B's) procurement system "to flush out deficiencies" is scheduled for February, 1970, more than one year after I first raised the issue. Reference (c) states further that SUPSHIPS will take "continuing action" to correct shipbuilder procurement deficiencies, i.e., we will go back to "business as usual."

I see no reason to continue studying and reviewing the procurement situation at (shipyard B). I consider that the deficiencies have been identified and confirmed. What is needed now is a firm commitment from (the shipyard) to upgrade its entire procurement operation so that subcontracting is conducted efficiently. I see no need to await further reviews or changes in ASPR clauses before requiring this.

4. *Contract Changes*—In reference (a) I pointed out that because (shipyard B) does not collect costs of change orders separately, neither (the shipyard) nor the Government is presently able to determine the actual costs of changed work on ship construction contracts. There is no way to determine whether change orders have been overpriced.

In reference (c) you state that it is not feasible to maintain cost records for individual changes.

Comments

I do not agree that it is not feasible for the shipyard to maintain cost records for individual changes. I recognize that it may be difficult to establish rules for accounting for costs of changes. But the problem is not insurmountable. The shipbuilder prepares technical instructions and detailed work packages for change orders; I do not understand why he cannot account for the costs related to such technical instructions and work packages.

Obviously shipbuilders prefer not to account separately for the cost of each change. By lumping changes together and commingling their costs with other work, shipbuilders can overcharge the Government and make it impossible for the Government to know whether or not the price was too high.

I recommend that this issue be taken up with the Defense Contract Audit Agency and with the General Accounting Office to determine what rules should be established with regard to accounting for changes.

I consider that NAVSHIPS must require contractors to account for changes if it is to establish effective cost control and if it is to maintain the integrity of its fixed priced type contracts.

5. *Internal Audits*—In reference (a) I recommended that the Navy require (shipyard B) to establish an effective program of internal reviews and appraisals of its operations. In reference (c) you state that (the shipyard) is expanding its internal auditing staff to 12 from the present complement of 9. In reference (c) you imply that this problem is the responsibility of the Defense Contract Audit Agency (DCAA) not NAVSHIPS.

Comments

In reference (a) I stated that (the shipyard's) internal auditors seem to be concerned primarily with financial type auditing such as payroll verification. The addition of 3 more such auditors at (the shipyard) will not correct the problem I raised. The need is for a strong internal audit organization whose efforts would be directed toward more efficient shipyard operations and more effective purchasing and cost control procedures. NAVSHIPS should obtain specific commitments from (shipyard) management to establish such an internal audit program.

The Navy, not DCAA, defends shipbuilding budget requests in Congress. Claims and overrun (cost growth) problems hinder the Navy in getting DOD

and Congressional approval of its shipbuilding programs. The final responsibility for efficient and economical shipbuilding, therefore, cannot be shunted to local Government auditors.

6. For the reasons explained above, I believe that the actions you have described in reference (c) are inadequate to obtain any substantive improvements in (shipyard B's) procurement, pricing and cost control practices.

7. It appears to me that references (a) and (b) were referred for action to the very people in NAVSHIPS who for years have had the responsibility for administering shipbuilding contracts—the same people who are responsible for existing unsatisfactory conditions. Thus, the comments in reference (c), predictably tend to understate the problems and obfuscate the issues. Reference (c) gives the impression that NAVSHIPS now has all the problems under control. I know of no significant improvements in any of the problem areas I identified.

8. In my opinion, NAVSHIPS is not administering its shipbuilding contracts properly. Thus, after many years of dealing with (shipyard B) and spending billions of dollars there, NAVSHIPS finds itself in the position where it must today initiate action to require (the shipyard) to implement effective cost controls; to correct fundamental deficiencies in its procurement system; to implement the requirements of the Truth-in-Negotiations Act which was passed by Congress eight years ago; and to implement an effective system of internal review. These facts are ample evidence that NAVSHIPS has not been effective in administering its shipbuilding contracts at (shipyard B).

9. I believe that these issues should be taken up with the President of (shipyard B) and his commitment obtained for prompt and effective corrective action. I will be pleased to assist in this regard. Delay in obtaining such commitments and corrective actions will lead to further unnecessary cost to the Government.

10. I also recommend that the administration of Navy shipbuilding contracts be thoroughly reviewed. In my opinion, the Navy must reorganize and strengthen its administration of these contracts.

H. G. RICKOVER.

Copy to Assistant Secretary of the Navy (Installation & Logistics), Chief of Naval Material.

(Enclosure 1)

UNITED STATES GOVERNMENT MEMORANDUM.

Date: January 26, 1970.

To: VADM H. G. Rickover.

From: M. C. Greer.

Subject: Cost Controls at (Shipyard B).

BACKGROUND

In connection with the negotiations with (shipyard B) to definitize a contract for construction of (deleted) the NAVSHIPS negotiating team is performing a review of how (the shipyard) controls ship construction costs. This review was considered necessary in order to determine whether or not (the shipyard's) cost control system is adequate to effectively control the costs of labor and material during (deleted) construction.

SUMMARY AND CONCLUSIONS

The review to date shows that there are two significant deficiencies in the present (shipyard) cost control system:

1. There is no way to insure that work performed by the operating departments is within cost budgets established under the (shipyard) cost control system.

2. It could take up to several months to determine whether a cost overrun condition exists and the reason therefor.

Thus it will be necessary to establish a special reporting system to review costs in constructing (deleted) and other nuclear ships. The Navy should require (the shipyard) to improve its cost control procedures. In addition, the Navy should take steps to provide for adequate review of (the shipyard) costs and cost control procedures by the Supervisor of Shipbuilding.

DISCUSSION

On 16 January 1969, a meeting was held at NAVSHIPS to review (the shipyard) cost controls for constructing (deleted). This meeting confirmed that (the shipyard) has prepared and issued operating budgets for constructing (deleted). These budgets allocate contract dollars among cost groupings at the departmental level.

Separate from the cost control system, (the shipyard) has a production control system for managing the work. Under the production control system the total construction effort is broken down into discrete time phased packages of work for accomplishment by shop and waterfront trades. (The shipyard) also establishes manhour estimates for performing certain individual jobs in accordance with a labor incentive system. However, when questioned as to whether or not costs could be controlled under these various systems, the (shipyard) Contracts Manager stated that under the present system there is no way to insure that work performed by the operating departments under the production control system is within the cost budgets established by the cost control system. He also stated that (the shipyard) had been working at resolving this problem for some time but had not yet found a satisfactory solution.

Based on these discussions the NAVSHIPS Contracting Officer recommended that a special NAVSHIPS team headed by the (deleted) Program Manager be established to work with (shipyard) Cost Department personnel in developing a cost reporting system which will provide a valid means of determining the status of (deleted) labor construction costs and predicting cost overruns.

On 22 January the NAVSHIPS team and representatives from the Supervisor of Shipbuilding and the resident Defense Contract Audit Office met with (shipyard) Contracts and Cost Engineering personnel at (the shipyard) (shipyard) personnel explained that three basic cost reporting systems exist at (the shipyard) :

- a. A cost budget/cost reporting system by specific cost accounts.
- b. A cost budget/cost reporting system functional department.
- c. A profit and loss report by hull.

Costs as reported under the first two systems were reviewed in detail by the NAVSHIPS team. The third system involving profit and loss cost reporting was not made available for review. Based on its review the NAVSHIPS team concluded it was not possible to determine from the existing cost reports the status of costs incurred for ship construction work versus the expected costs to completion. Neither did the cost reporting system provide a means of identifying where or why cost overruns occurred so that specific corrective action can be taken to limit the overrun or prevent its recurrence. (Shipyard) personnel stated that they compared the general trend of departmental labor costs to budgeted costs to determine whether a cost overrun condition exists. (The shipyard) agreed that it could take several months to detect a cost overrun from the cost reporting system.

It is apparent that improvements in the existing (shipyard) cost control system are necessary. It was also apparent that because [deleted] construction work had been in progress for two years, it would not be possible to develop a reliable cost control system which related work as performed under the production control system to budgeted costs developed from a negotiated ship construction price. Instead, emphasis will have to be placed on developing a cost reporting system which will provide a means of determining the status of [deleted] labor costs. These costs will then have to be analyzed against the progress of the work in order to ferret out potential problems. The NAVSHIPS team will develop requirements for reporting cost progress and the expected completion costs of each cost grouping. (The shipyard) agreed to review the NAVSHIPS requirements, and incorporate those requirements which are compatible with the existing cost control system.

On 23 January 1969, I telephoned the Supervisor of Shipbuilding, [deleted] to inform him of the results of the NAVSHIPS review. I also asked who in his organization was responsible for monitoring the contractor's cost control system so that we could work with him in developing the Navy's cost reporting requirement. The Supervisor stated he had one person in the Purchasing Section who coordinated the correspondence and other actions pertaining to cost control. However, there was no one person with specific responsibility to monitor (ship-

yard) costs or (shipyard) cost control procedures. I recommended that he take steps to assign someone this responsibility. The Supervisor made no specific commitment to do so.

RECOMMENDATION

In view of the large amount of Navy business which will be awarded to (shipyard B) on the basis of negotiation rather than competitive prices and the Government risk of cost overruns on these contracts, I recommend that you again take this matter up with the Commander of the Naval Ship Systems Command. I believe that the Commander should obtain specific commitments from the President of (shipyard B) to initiate immediate improvements in its cost control system. I further recommend that action be taken to provide for adequate review of shipyard costs and cost control procedures by the Supervisor of Shipbuilding at [deleted] and at other shipyards where the Government bears substantial cost risk in its contracts.

M. C. GREER.

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

[In reply refer to 08H-718, 19 Feb. 1970]

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS & LOGISTICS).

Via:

- (1) Commander, Naval Ship Systems Command.
- (2) Chief of Naval Material.

Subj:

Procurement Practices and Cost Control under Navy Contracts with (Shipyard A) for Design, Construction, and Overhaul of Nuclear Submarines.

Ref:

- (a) Deputy Commander for Nuclear Propulsion Memorandum to the Assistant Secretary of the Navy (Installations & Logistics) Ser 08H-01354 of 23 September 1969.
- (b) Commander Naval Ship Systems Command Letter to the Assistant Secretary of the Navy (Installations & Logistics) Ser 357 of 24 November 1969.
- (c) Commander Naval Ship Systems Command Letter to the Assistant Secretary of the Navy (Installations & Logistics) 0763:JF:dsr Ser 2 of 20 January 1970.
- (d) Deputy Commander for Nuclear Propulsion Memorandum to Commander, Naval Ship Systems Command Ser 08H-714 of 16 February 1970.

Encl:

- (1) Comments on NAVSHIPS review of (shipyard A) Subcontracting.
- (2) Comments on NAVSHIPS review of (shipyard A) Cost Control.
- (3) Comments on NAVSHIPS review of (shipyard A) Progress Payments.
- (4) Comments on NAVSHIPS review of Principles and Procedures for Settling Shipbuilder Claims and Change Orders.
- (5) Comments on NAVSHIPS review of Government Surveillance of Operations at (shipyard A).

1. On September 13, 1969, I forwarded to you a comprehensive report, reference (a), pointing out many serious deficiencies in cost control and procurement practices under Navy ship design, construction and overhaul contracts with (shipyard A). This report shows that the Government is paying more than it should for the work being done; there are wide-spread deficiencies in procurement practices; there is inadequate control over labor and material costs charged to Government contracts and inadequate Government surveillance of contractor operations. I pointed out that the situation at (this shipyard) warranted further investigation by experienced procurement and cost control specialists to establish the full facts and to develop comprehensive corrective measures to preclude such waste of Government funds in future. I gave several specific recommendations for corrective action at (this shipyard) and at other shipyards.

2. On November 24, 1969, Commander, Naval Ship Systems Command (COMNAVSHIPS), by reference (b), forwarded to you reports on these deficiencies from the Resident Defense Contract Audit Agency (DCAA) Auditor and from the Supervisor of Shipbuilding (SUPSHIPS) at (deleted). On January 20, 1970, COMNAVSHIPS, by reference (c), forwarded to you six enclosures summarizing NAVSHIPS review of the issues I had raised and presenting his conclusions and planned actions with regard to my recommendations.

3. In their reports, the Resident DCAA Auditor and SUPSHIPS took exception to many of the issues I had raised. COMNAVSHIPS also expressed disagreement with several of my conclusions and recommendations. In those cases where COMNAVSHIPS indicated agreement with me, he cited at some length NAVSHIPS actions which have been or were being taken, indicating that most or all of these actions were taken or would have been taken regardless of my report. In sum, the conclusions of the Resident DCAA Auditor, SUPSHIPS (deleted), and COMNAVSHIPS are that my report is in error with respect to many basic facts; that in those areas where my report is correct, the cognizant officials were already well aware of the problems and were taking appropriate actions to correct them; and that the thrust of many of my recommendations would be to treat (shipyard A) as a "captive" plant, contrary to the Department of Defense (DOD) policy of "disengagement" which contemplates minimal interference in a contractor's operations. In reference (c) COMNAVSHIPS states:

"... Our SUPSHIPS offices are staffed in an austere manner in accordance with the DOD policy of disengagement; tightening control and surveillance over the Contractor would require increased SUPSHIPS personnel. Nowhere in any of the recommendations made by the Deputy Commander is it contended that a better ship would result, only that the contract cost would be lower. I am unable to determine that the short-range costs of closer surveillance of flexibly-priced contracts, due to increased contractor overhead and increased SUPSHIPS staffing will be offset by the savings that are implied by the suggestions of reference (a) . . ."

4. COMNAVSHIPS statement that "nowhere in any of the recommendations made by the Deputy Commander is it contended that a better ship would result, only that the contract cost would be lower" is not germane to the issues I raised. Of course I am interested in obtaining high quality ships. I am also interested in carrying out Presidential, Congressional, Secretary of Defense, Secretary of Navy, Chief of Naval Material, COMNAVSHIPS and your own instructions to see to it that work is done in the most economical manner.

5. (Shipyard A) is a "captive" plant by its own choice: more than 98 percent of all business at the yard is Government work. Most of this work is under sole source, negotiated contracts under which the Government bears all or a substantial portion of any cost overruns. Since profits on these contracts are negotiated as a percentage of estimated costs, higher costs, in the long run, result in higher profits. Thus the contractor has little or no incentive to keep costs down. In these circumstances the Government cannot afford to rely on (the shipyard) to protect the Government's financial interests—as my report amply shows.

6. Instead of thoroughly investigating the issues I raised, COMNAVSHIPS has simply referred my report to the very people who for years have had the responsibility for administering shipbuilding contracts—the very same people who are responsible for the unsatisfactory conditions at (this shipyard). Their response, of course, is that everything is under control and being well-handled by the existing organization. Thus, there have been no significant improvements in any of the problem areas I pointed out.

7. Enclosure (1) through (5) contain my detailed comments on each of the principal issues covered by COMNAVSHIPS in references (b) and (c). I strongly disagree with the conclusions drawn by COMNAVSHIPS and with those of the Resident DCAA and of SUPSHIPS at (deleted). For example:

a. In enclosure (1) to reference (c) COMNAVSHIPS states that the procurement deficiencies I reported were known prior to my 13 September 1969 report: that Government approval of (the shipyard's) procurement system was permitted to lapse on 1 October 1969; and that the Supervisor of Shipbuilding will take "continuing action" to correct contractor procurement deficiencies.

The procurement deficiencies at (shipyard A) should have been known long before September, 1969. My November, 1968, letter to your predecessor

and my follow-up letters to you in February and March, 1969 concerning the need for improvement in ship procurement practices were attempts to bring the problems in this area to the attention of the responsible Navy officials. However, it is obvious that little has been done to improve (shipyard A's) procurement practices. Attachment A to enclosure (1) of this letter is a current example of poor procurement practices by (the shipyard) resulting in NAVSHIPS repeated rejection of (one shipyard) procurement recommendation. Most significant is the failure of (shipyard) management to recognize the seriousness of the deficiencies in their procurement practices. Obviously NAVSHIPS has not been effective in getting contractor management to work constructively to correct procurement practices.

b. The Resident DCAA Auditor states that the contractor's system for the accounting and control of labor costs is adequate and that the Government's surveillance of the contractor's labor charging practices has also been adequate. I can ascertain no factual basis for this conclusion. These areas have not been reviewed adequately. Numerous deficiencies still exist in the contractor's material control system; as of 31 December 1969, the Government was still being denied access to pertinent financial information. I do not know whether the Government auditor has yet been able to obtain access to such information.

c. COMNAVSHIPS reports that the present progress payment procedure which allows (the shipyard) to obtain payment from the Government for materials before (the shipyard) actually incurs the cost and before materials are issued from inventories is "acceptable to NAVSHIPS and DCAA." COMNAVSHIPS further points out that progress payments on fixed priced type contracts are based on physical completion rather than incurred costs. The implication is that (the shipyards) mischarging of material costs has no impact on shipbuilding contract payments.

Again I do not believe NAVSHIPS has looked adequately into the issues I raised. The contractor certainly considers that advance charging of material costs to the Government has a significant effect on shipbuilding contract payments. For example, (the shipyard) recently paid one of its employees an incentive award of \$1,231 for suggesting that certain miscellaneous inventories of stock be charged off to the Government before they are used, so that a progress payment could be collected. The employee, in his suggestion, stated:

"Presently the Government cannot be billed until the material is actually used. By adopting an allocated type inventory for this material, the Government can be billed when the material is paid for because it is bought for use on a specific contract. Then, in effect, the Government finances this inventory for (the shipyard). . . . [This suggestion] generates funds for (the shipyard)."

Thus, in this case the Government will not only be paying higher progress payments, it will also have to pay 98% of the incentive award which led to the higher progress payments by the Government.

d. COMNAVSHIPS considers present procedures for handling claims and contract changes to be adequate. I cannot understand how such a conclusion could be reached when contractors are allowed to commingle costs of changes with other work such that there is no firm basis for the Government to verify the costs claimed by contractors.

e. Present hiring practices by the Supervisor of Shipbuilding are acceptable to NAVSHIPS even though about one-third the personnel representing the Government at (the shipyard) are former (shipyard) employees. While the practice of staffing Government contract administrative offices with former contractor employees may be permitted by law or regulation, such action surely cannot be in the Government's interest.

f. The lack of detailed Government surveillance of the contractor's operations at (the shipyard) is attributed by COMNAVSHIPS to DOD's policy of "disengagement", under which the Government relies on the contractor to control costs under Government contracts. Such an approach, particularly in a shipyard doing 98% of its business with the Government, makes no sense. With respect to this question of contractor-Government relationships there is no question but that the Navy has been complying *fully* with "the DOD policy" of minimal interference. As a result, the contractor is engaging in a wide variety of practices which are no doubt beneficial to *him*, but costly to the *taxpayer*.

8. The issues I raised are fundamental to sound administration of the Navy's shipbuilding program. They are not minor procedural matters as one might infer from reading the referenced COMNAVSHIPS letters to you. I believe that the seriousness of these issues and their adverse impact on the Navy is not yet understood. Unless we take prompt action to bring costs under control, the Navy will not be able to get funds from Congress to build all the ships it needs.

9. The NAVSHIPS actions on the issues I raised in reference (a) reminds me of a similar experience more than 10 years ago. In 1959, I pointed out several overcharges on Government contracts by (another) shipyard to the Comptroller of the Navy. His response was to tell me that I should mind my own business and that I could rest assured his auditors were seeing to it that the Government was being treated fairly. It was not until the GAO two years later investigated the issues I raised that the Navy finally took action to recover these overcharges. The result was a GAO report to Congress and severe criticism of the Navy—criticism which could have been avoided had Navy officials taken corrective measures when I raised the issues, instead of defending their past actions. Moreover, it took the Navy 7 years to settle these issues on an after-the-fact basis. The Navy then had to settle for 50 cents on the dollar for money it wasted because of inadequate contract administration. I hope the Navy will not again wait for the GAO to raise the issue with Congress before it takes action to correct procurement and cost control deficiencies at (Shipyard A) as well as at other shipyards.

10. Over the years, I have worked hard to improve administration of our shipbuilding contracts. I have spent a great deal of my time and that of my leading people in pointing out deficiencies that come to my attention to cognizant naval authorities. Invariably the response to my comments by the officials concerned is to deny that real problems exist, and to cloud the issue with bureaucratic policy and procedural comments in defense of what they have been and are doing. Little or no action is taken. Inevitably, however, the facts come to light. I do not make comments and recommendations lightly or without careful consideration of the facts.

11. In my opinion these issues warrant your personal attention and direction. Without such personal involvement, nothing will be done; references (b) and (c) clearly attest to this. I recommend that you take these issues up with (the parent corporation's) management and to obtain commitments for prompt and effective corrective actions. Further, I recommend that you assign a competent and qualified person to keep track of the progress made in correcting these deficiencies and keep you advised of progress. Finally, I recommend that steps be taken to thoroughly review the administration of Navy shipbuilding contracts. Our SUPSHIPS organizations devote much time to the review and inspection of technical data, plans, ship construction and so forth. Their effort is also needed to review and monitor cost control, procurement, and management of contractor operations.

H. G. RICKOVER.

Copy to
Assistant Secretary of the Navy
(Installations & Logistics)
Chief of Naval Material.

[Enclosure (1)]

VADM RICKOVER COMMENTS ON NAVSHIPS REVIEW OF (SHIPYARD A)
SUBCONTRACTING

1. *Problem & Recommendations, as Stated in VADM Rickover's Report Dated September 23, 1969:* There are widespread weaknesses in the company's procurement operations.

Specifically:

a. Procurement files do not adequately justify prices being paid by (the shipyard).

b. There seems to be an excessive and unwarranted amount of sole-source procurement. It appears that many of these sole-source procurements have been overpriced.

c. (The shipyard), is not making effective use of the Truth-in-Negotiations Act to obtain the lowest possible prices for the Government.

d. Insufficient effort is being expended to reduce the cost of supplies and materials charged to Government contracts.

e. Competitive procurements are not handled properly. As a result, there is no assurance that all qualified firms have an equal opportunity in the bidding process or that reasonable prices are being obtained.

f. The lax procedures and practices employed in the procurement of equipment and material for Government contracts are in sharp contrast with the close attention paid by (the shipyard) and (the parent corporation's) Management in procurements involving corporate funds.

The Navy should withdraw approval of the procurement system. The company should be required to submit all proposed subcontracts in excess of \$25,000 for Government review and approval prior to placement.

2. COMNAVSHIPS Response & Proposed Action: COMNAVSHIPS states:

"The approval of the system was permitted to lapse on 1 October 1969. Prior consent of the Contracting Officer to the placement of a subcontract is now required for subcontracts under those contracts containing the

"Subcontracts" clause NAVSHIPS does not consider it necessary to negotiate an agreement with the contractor to modify existing contractual requirements in order to obtain the contractual right to approve all subcontracts in excess of \$25,000. NAVSHIPS will direct SUPSHIPS to review on a sampling basis, to the extent of available resources, subcontracts over \$25,000 under those contracts containing the "Subcontract" clause."

Proposed Action:

Item	Target date
a. SUPSHIP actions to correct contractor's Procurement deficiencies -----	Continuing Action.
b. SUPSHIP to conduct sampling reviews of subcontracts over \$25,000 -----	Continuing Action.

3. Comments on COMNAVSHIPS Response and Proposed Action:

Enclosure (1) to reference (b) states that "prior to the review reported by reference (a), NAVSHIPS became concerned with the subcontracting procedures in the shipbuilding industry." The enclosure went on to state that SUPSHIP became aware "that deficiencies existed in the contractor's system in placing subcontracts prior to the review contained in reference (a). This concern was reflected in a letter of 8 July 1969 to NAVSHIPS requesting that a qualified Procurement Methods Analyst be provided to conduct a review of the contractor's procurement system."

The problem should have been known for some time. In November, 1968, I reported to the Commander of the Naval Ship Systems Command, the Chief of Naval Material, and the Assistant Secretary of the Navy (Installations & Logistic's) a number of specific examples of (shipyard A's) and (shipyard B's) procurements which indicated serious deficiencies in the procurement operation of these two yards. In April, 1969, I submitted a detailed report of deficiencies in procurement and cost control practices at (shipyard B). However, (shipyard A) continued to operate under a Government-approved procurement system until Government approval was allowed to lapse on October 1, 1969—the normal expiration date for the approval granted the year before.

Although I raised this issue in November, 1968, a Government review of (shipyard A's) procurement system was not conducted until October-November, 1969. This review confirmed the deficiencies I reported. Thus more than a year has passed since I first pointed out problems regarding how (the shipyard) was conducting its procurements under Government contracts. During this time, (shipyard) procurements were running at an annual rate of \$50 to \$80 million; about 30% of the cost of each ship built at (the shipyard) is spent through (the shipyard's) purchasing department.

Attached to this enclosure is a series of letters between NAVSHIPS and (the shipyard) on a pending forging procurement for SSN (deleted). It is apparent from (the shipyard's) actions and their statements that nothing concrete has been accomplished by NAVSHIPS or SUPSHIP "continuing action" to correct procurement deficiencies. Of most significance is that (the shipyard's) management does not appear to recognize the seriousness of the deficiencies in their procurement practices. Thus NAVSHIPS has not been effective in getting (the shipyard's) Management to take action to upgrade its procurement operations.

I consider that NAVSHIPS has placed too much concern on procedural matters and in defending past actions. NAVSHIPS has operated too long on the premise that its shipbuilding contracts have been awarded in a highly competitive market

such as one might expect to find in procuring bread or clothing. This accounts for the belief on the part of many Government officials that the Government can rely on its contractors to spend public funds prudently.

The principle involved is fairly simple. Large amounts of Government funds are at stake in the procurement operation of shipbuilders such as (Shipyard A). There is ample evidence that these funds are not being spent prudently. I have repeatedly pointed out that shipbuilders have no incentive to tighten up their procurement organizations. Shipbuilding is a noncompetitive business. The Navy must take action with its shipbuilders to get their procurement on a sound basis so that the Navy gets fair value for its money.

[Attachment A to Enclosure (1) to NAVSHIPS letter 08H-718 dated February 19, 1970]

PROCUREMENT OF MAIN SEA WATER SYSTEM FITTINGS FOR SSN (DELETED)

(Shipyard A) letter dated November 25, 1969, requested NAVSHIPS consent to procure SSN (deleted) main sea water system fittings from (a component supplier) at a price of \$482,014.79.

NAVSHIPS letter 08H-6402 dated December 19, 1969, disapproved the (shipyard's) request noting bid procedures were not adequate to support a competitive award, negotiations were not conducted with all suppliers in a competitive range and (the shipyard) did not perform a price analysis to establish the reasonableness of the recommended price. NAVSHIPS requested (the shipyard) reopen negotiations with both bidders.

(Shipyard A) letter dated January 6, 1970, forwarded by SUPSHIPS letter Ser. 400-4C dated January 8, 1970, requested NAVSHIPS approval to proceed with award of the main sea water fitting order as originally recommended and without reopening negotiations.

NAVSHIPS letter 02B:JF:epm Ser 1 dated January 29, 1970, again disapproved the (shipyard's) request due to the previously noted deficiencies. (The shipyard) was requested to reopen negotiations with both (component suppliers) to obtain the lowest price for the required work.

(Shipyard A) letter dated February 10, 1970, forwarded by SUPSHIPS letter Ser. 400-23C dated February 12, 1970, requested NAVSHIPS concurrence to a proposed procedure in handling this procurement. (The shipyard) proposes to issue a new invitation to bid to (both component suppliers). (The Shipyard) requests NAVSHIPS approval to accept the low bid without further negotiation.

NAVSHIPS letter 022C:JF:epm Ser 2 dated February 18, 1970, insists that (the shipyard) reserve the right to negotiate if necessary to obtain a reasonable price. (The shipyard) is again informed that Government consent to this procurement will not be granted unless (the shipyard) can establish the reasonableness of the price.

NOVEMBER 25, 1969.

Subject: Request to Award Purchase Order E-701-350 for Procurement of CuNi Butt Weld Fittings for Main Sea Water System to (Supplier X) in the amount of (deleted).

Reference: (a) Contract No. (deleted) for SSN (deleted).

Enclosure:

- (1) (Shipyard A) Purchase Order No. E-701-350.
- (2) Bid Comparison Sheet. Inquiry 51/701-350/9.
- (3) (Supplier X) Quotation dated 10/3/69, EW-1003-1.
- (4) (Supplier Y) Quotation dated 10/9/69, 2183 BL.
- (5) (Supplier Y) Revised Quotation dated 11/4/69, 2183 BL.
- (6) Telegram to (Supplier Y) dated 11/6/69.
- (7) Report of Trip to (Supplier X) dated 10/23/69, (name deleted).
- (8) Evaluation of (Supplier X) Capabilities to Produce 16" CuNi Fittings for SSN (deleted) dated 10/28/69, (name deleted).
- (9) NQC Survey Report dated 10/28/69, (name deleted).
- (10) Report of Trip to (Supplier X) dated 10/23/69, (name deleted).
- (11) Survey of SSN (deleted) Main Sea Water Fitting Vendor, dated 10/28/69, (names deleted).
- (12) (Contract No. deleted)—SSN (deleted) Design—Purchase of Main Sea Water Fittings (Purchase Inquiry No. E-701-350), dated 10/31/69, (names deleted).
- (13) Trip Report dated 11/6/69, File No. 392JLM-5014/M-12.

NAVAL SHIPS SYSTEM COMMAND,
 Department of the Navy,
 Code 022, Washington, D.C. 20360

(Attention: (Name deleted) Contracting Officer)

SIR: Your consent is requested to award the subject purchase order, enclosure (1), to (Supplier X) in accordance with Clause 24 of reference (a) entitled "Subcontracts (April 1967)".

I. Description of Subcontract

Hardware to be procured by enclosure (1) consists of 16' CuNi Seamless Butt Welding Fittings for Main Sea Water System. This is a first time development and manufacture of fittings of this particular size and material. Covered by this order are 64 total pieces of various configurations, including elbows, tees and reducers.

(Supplier X) will produce tubes from billet stock, procured from (a sub-tier supplier) by the reverse extrusion process, in lengths up to 60'. Extrusions are machined on I.D. and O.D. to specific size required for fitting manufacture.

Fittings will be formed by various methods, both cold and a combination of cold and hot. Basically for elbows, the J method will be used which consists of forcing cold tubing over a mandrel with a controlling O.D. die to the desired size and shape.

Other configurations are manufactured by different methods, a detailed description of which is covered by enclosure (13).

Manufacture of these fittings requires close process and dimensional controls from the raw material stage to the shipment of finished fittings.

(Supplier X's) process allows for the close control that is required.

II. Degree of Competition and Selection Competence

Quotations were received from only two (2) vendors of four (4) solicited. Quotations received were (deleted) (supplier X) and (deleted) (supplier Y). (Supplier X) was the low bidder for the total procurement package. Our reasons for the selection of (supplier X) other than the fact that (supplier X) was low bidder, are as follows:

(a) (Supplier X) has consistently supplied (Shipyard A) quality fittings at competitive pricing.

(b) (Supplier X) has maintained reliable delivery schedules. Schedule is a critical consideration.

III. Price and Delivery Comparison

1. Since this is a first time procurement for these items, there is no previous order for a direct price comparison.

2. (Supplier X) quoted 8-10 months delivery in comparison with a 14 month delivery from the competitive source. This 8-10 month delivery supports the in-yard requirements of (the shipyard). (Supplier X) was selected for evaluation due to their overall low bid position (tools and hardware combined) and the substantially lower quoted price of the hardware alone.

3. A comparison of hardware only prices on this award, indicates a savings of 25-30% on future orders. Further reductions will be sought on subsequent buys as this vendor's efficiency improves with experience. Since these buys are usually in the high-dollar classification, the savings should be substantial.

IV. Use of Government Owned Facilities

(Supplier X) has stated that no Government owned facilities will be required for the manufacture or testing of these fittings.

V. Anticipated Subcontracting

The sole sub-tier contract, in excess of \$100,000.00, is the procurement of CuNi material from (a sub-tier supplier) (120,000 pounds of (raw material) @ \$1.32 per pound). The price is from the (sub-tier supplier's) published price listing. (Supplier X) will comply with all contractual requirements pertinent to subcontracts and purchased material that are invoked in enclosure (1).

(The sub-tier supplier) was selected as the raw material supplier because of proven ability to produce nickel bearing alloys of the highest quality. Material quality is of paramount consideration when producing fittings of this size. There is no other prime supplier of this nickel alloy material. (The sub-tier supplier) has a Nuclear Quality Control System approved to MIL-Q-9858.

VI. Make or Buy Decision

(The shipyard) does not possess the capability for the manufacture of these specialized Butt Weld Fittings. Because of the technical skills and manufacturing facilities required, it must be designated a buy item.

VII. Type of Contract

This procurement is a fixed price contract, subject to adjustment for price of raw material in effect at time of delivery from (the sub-tier supplier) to (supplier). The price is now based on 120,000 pounds of (raw material) @ \$1.32 per pound as purchased from (the sub-tier supplier). We were unable to obtain firm fixed priced proposals from either bidder due to the unstable condition of the nickel market.

VIII. (Supplier X) Procurement System

(Supplier X) has satisfactorily completed contracts for similar hardware under Government contracts and has satisfactorily completed numerous (shipyard A) purchase orders in the various overhaul programs. Based on (supplier X's) past experience in manufacturing hardware to Military Specifications, for the Government and this yard, their procurement system is considered adequate for the task to be performed.

IX. General Information Pertinent to the Contract

1. The one (1) small business solicited, [deleted], declined to bid.
2. (Supplier X) is not a foreign contractor. Foreign sub-tier contractors will not be utilized by this vendor. Neither (Supplier X) nor (the sub-tier supplier) are in any way affiliated with (shipyard A).
3. This purchase order incorporates special tooling as a separate item of cost. This tooling will remain the property of (Supplier X). This is the forged fitting industry practice. It provides for (Supplier X) to retain and maintain the tooling at no cost to (the shipyard) for the production of these or similar fittings in the future. The purchase order tooling charge also covers the cost of equipment modification necessary to adapt existing forging presses to the manufacture of these fittings.
4. This purchase order does not include charges for special test equipment or other lease or service arrangements.
5. Other than the one small business solicited [deleted], the scope of the work on this purchase order restricts consideration to large business. Labor surplus areas cannot be considered for the same reason.
6. The (Supplier X) tooling and equipment modification costs for this procurement are higher than the nearest competition [deleted], but (Supplier X's) processing and equipment capability allow for production of finished fittings at lower cost and with better hardware delivery [deleted] and 8-10 months delivery vs [deleted] and 14 months delivery). This tooling has the added advantage of being adaptable to manufacture of other sizes, should the need for other size systems arise.
7. (Supplier X) has evidenced consistently superior performance in delivery of Butt Weld Fittings to (the shipyard).

To further evaluate their capabilities and facilities, a survey and a series of meetings were held recently at their manufacturing facilities. The findings of these discussions and the survey results are submitted herewith as enclosures (7) through (13).

8. (Supplier X) will manufacture fittings and coordinate the entire job from their (deleted) plant. This facility has a Quality Control System approval to MIL-Q-9858. The most recent system survey was 12/5/68.

9. (Supplier X's) performance to Nuclear Quality requirements for SSNs (deleted) has been above average for their product line as substantiated by (shipyard) Nuclear Receiving Inspection records.

10. (Supplier X) has stated that they have adequate financing to perform this order. (Supplier X) presently has an annual sales volume in excess of \$80 million, of which approximately \$20 million is in custom forgings to the major aircraft and aerospace manufacturers. Therefore this purchase represents a comparatively small portion of their overall productive capability. The acceptance of this order by (Supplier X) is consistent with their plan to change their emphasis towards "more specials and less standards".

On November 6, 1969, enclosure (5), a revised bid was received from (Supplier Y). (Supplier Y) was advised by wire, enclosure (6), dated November 6, 1969, that their revised bid was received too late for consideration.

(The shipyard) has elected not to consider the (Supplier Y) revised bid for the following reasons:

1. Source selection has been made on bid responses received on October 3 and October 9, 1969.
2. Final technical agreement was reached with (Supplier X) on October 2, 1969.
3. (Supplier Y's) revised bid was received thirty-four (34) days after the final response date requested by (the shipyard).
4. Consideration of the November 6, 1969 (Supplier Y) proposal, in view of its timing, would compromise the integrity and purpose of our competitive bid system.

The analysis herein establishes to the satisfaction of the undersigned that the price for the subject purchase order is reasonable. Your consent to award the subject purchase order to (Supplier X) is respectfully requested.

Very truly yours,

(Name deleted),
Manager of Procurement.

DEPARTMENT OF THE NAVY,
 NAVAL SHIP SYSTEMS COMMAND,
 Washington, D.C.

[In reply refer to 08H-6402, Dec. 19, 1969]

From: Commander, Naval Ship Systems Command.

To: Supervisor of Shipbuilding, Conversion and Repair (deleted).

Subject: (Shipyard A) Recommendation to Procure Main Sea Water System

Fittings for SSN (deleted) NAVSHIPS disapproval of with comments.

Ref: (a) (Contract No. deleted) (SSN deleted) (Shipyard A) letter to NAVSHIPS dated 25 November 1969, Request to Award Purchase Order E-701-350 w/enclosures

(b) NAVSHIPS ltr 0763:JF:dsr Ser 278 of 23 September 1969.

1. Reference (a) requests NAVSHIPS consent to procure SSN (deleted) main sea water system fittings from (supplier x) at a price of (deleted).
2. NAVSHIPS has the following comments on (shipyard A's) proposal:
 - a. The bid procedures followed by (shipyard A) do not appear adequate to support a competitive award. The following is a chronology prepared from information presented by (the shipyard) in reference (a):

26 August 1969-----	Inquiry Issued.
9 September 1969-----	Original Bid Due Date.
1 October 1969-----	Revised Bid Due Date.
3 October 1969-----	(Supplier x) Bid Received (deleted).
9 October 1969-----	(Supplier y) Bid Received (deleted).
6 November 1969-----	(Supplier x) Revised Bid Received (deleted).
	Rejected by (the shipyard) as a late bid.

From the above chronology it appears that (the shipyard) did not follow formal bid opening procedures. For example, all bids were received after the revised bid due date. There is no indication that all potential bidders were informed of an extension to the revised bid due date. Further it is not clear that (the shipyard) opened all bids concurrently or that adequate safeguards were taken to preclude unauthorized release of bid information prior to the time all bids were received.

b. The information contained in reference (a), does not support award through a negotiated procurement either. Specifically although the bids of (supplier y) and (supplier x) are obviously within a competitive range (deleted) to (deleted), it appears that (the shipyard) did not negotiate price or delivery with (supplier y). (The shipyard's) negotiations with (supplier x) seem to have been limited to those fittings for which (supplier y) had submitted a lower bid. The potential for obtaining a lower price through effective negotiations appears obvious because (supplier y) subsequently offered a price (deleted) lower than the price (the shipyard) negotiated with (supplier x) and recommended to NAVSHIPS. Consequently, NAVSHIPS has no assurance that (the shipyard) has obtained the lowest price available.

c. Reference (a) does not provide sufficient information to establish that the recommended price is reasonable. Specifically:

- (1) (The shipyard) did not conduct, or at least did not submit, a price analysis in support of the recommended price. As a minimum (the shipyard) should have compared the proposed price with historical prices of similar fittings such as those procured for use on SN (deleted) with price per pound

information on prior orders or some other rough yardstick, and with an independent engineering estimate;

(2) (The shipyard) does not justify why the recommended price includes (deleted) more for special tooling than the other supplier's quote. Moreover, (the shipyard) does not explain the impact of this difference on the extent of competition obtained;

(3) (The shipyard) stated that the price of a (deleted) sole-source sub-contract with (a sub-tier supplier) for copper nickel material was based on (the sub-tier supplier's) published price listing. However, reference (a) gives no indication that (the shipyard) has verified that the copper nickel material used for this application is in fact a commercial item sold in substantial quantities to the general public.

3. In view of the deficiencies noted in this procurement, the (shipyard) procurement recommendation contained in reference (a) is disapproved. SUPSHIPS should request (the shipyard) to reopen negotiations with both bidders to obtain the lowest price for the work required.

4. Reference (a) indicates a number of deficiencies in (the shipyards) procurement practices. Most of these deficiencies were previously pointed out in reference (b) and apparently have not yet been corrected. Therefore SUPSHIPS is requested to call this procurement to the attention of the General Manager, (shipyard A). The General Manager should be requested to correct the deficiencies identified in paragraph 2 of this letter in subsequent (shipyard) procurements as well as the procurement in question.

5. NAVSHIPS should be advised no later than 10 January 1970 of what action has been taken to ensure that subsequent (shipyard) procurements are conducted in accordance with sound procurement practices and to ensure that subsequent (shipyard) procurement recommendations are adequately supported.

(Name deleted),
Contracting Officer,
Naval Ship Systems Command.

/9480,
SER. 400-4C,
8 January 1970.

FIRST ENDORSEMENT ON (SHIPYARD A) ltr signed by (name deleted) on 6 Jan 1970.

From: Supervisor of Shipbuilding, Conversion and Repair, USN (deleted).

To: Commander, Naval Ship Systems Command

Attn: (Name deleted).

Subj: Request to Award Purchase Order E-701-350 for Procurement of CuNi Butt Weld Fittings for Main Sea Water System to (supplier X) in the Amount of (deleted).

1. Readdressed and forwarded for NAVSHIPS action since Contract (deleted), Modification P007, Clause 24 states in part that "Subcontracts exceeding \$100,000 which are under NAVSHIPS Code 08 technical cognizance shall require the consent of the Contracting Officer, NAVSHIPS Code 022."

2. SUPSHIP, (deleted) is monitoring the Contractor's procurement system and the Contractor's efforts to make improvements based on preliminary recommendations of the Contractor Procurement System Review Team Captain. The final report of the CPSR team has not been received. One of the preliminary recommendations was that the Contractor's bid control and opening procedure be improved. The Contractor is actively studying this recommendation, trying to prepare an improved procedure.

(Name deleted).

JANUARY 6, 1970.

Subject: Request to Award Purchase Order E-701-350 for Procurement of CuNi Butt Weld Fittings for Main Sea Water System to (supplier X) in the Amount of (deleted)

Reference:

(a) Contract (deleted) SSN (deleted).

(b) (Shipyard A) letter to NAVSHIPS, dated 25 November 1969, same subject.

(c) NAVSHIPS letter 08H-6402, dated 19 December 1969 (NOTAL).

(d) Supervisor of Shipbuilding, Conversion and Repair, USN, (deleted) letter, dated 29 December 1969. Ser.: 400-3034C, same subject.

SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN, CODE 400 (Deleted)

SIR: Reference (d) advises that Reference (b) consent request was denied by Reference (c) NAVSHIPS letter. Reference (d) also quoted the reasons for the denial as set forth in Reference (c) and requests (shipyard A) to advise your office of its intended actions to correct the deficiencies noted therein.

(Shipyard A's) response to the comments contained in Paragraphs 2.a, b, and 3 of Reference (d) are listed below in that order.

Paragraph 2.a

This paragraph states that bid procedures followed by (shipyard A) "do not appear adequate to support a competitive award" and lists the following specifics as the basis for the statement:

"A. It appears (the shipyard) did not follow formal bid opening procedures.

B. All bids were received after the revised bid due date.

C. There is no indication that all bidders were informed of an extension to the revised bid due date.

D. It is not clear that (the shipyard) opened all bids concurrently or that adequate safeguards were taken to preclude unauthorized release of bid information prior to the time all bids were received."

(Shipyard A's) Comments

A. We interpret this statement to mean that (the shipyard) did not utilize procurement by formal advertising as provided for in Section II of Armed Services Procurement Regulations (ASPR) and therefore did not have a formal bid opening as prescribed in Part 4 of Section II. (The shipyard's) procurement system does not normally require the use of a sealed bid procedure nor does it require formal bid openings associated with such procedures. Moreover, we are not aware of any requirement that a prime contractor's specific detailed procedures for competitive awards must be the same as those set forth in ASPR for direct Government procurement by formal advertising. In our judgment, the receipt, handling and evaluation of the bids associated with the subject requirement were accomplished in accordance with established (shipyard) procedures which fairly and effectively achieve the objectives of the competitive process.

B&C. Reference (d) is correct in its statement that all bids were in fact received after the revised bid due date and that bidders were not informed of any extension in that date.

As a factual matter, the first responsive bid received (supplier x) was dated 3 October 1969, but was not actually received in the Procurement Department until 7 October 1969. The other responsive bidder (supplier y) had previously advised that their bid would be submitted on 8 October 1969 (actually received 9 October 1969). The two (2) other bidders (other component suppliers) had already declined to bid. We agree that, as a procedural matter, the bid due date of 1 October 1969 should have been officially extended prior to that time for an additional period of ten days and the bidders notified. However, this procedural oversight has no effect on the substantive merits of the case, since the competitive bids of (supplier x) and (supplier y) received on 7 October 1969 and 9 October 1969 respectively, were both considered. We cannot regard (supplier y's) second bid as a minor procedural shortcoming in a competitive bid situation when it was unsolicited and was received 28 days after its first bid and after (supplier y) had been verbally advised by (the shipyard) that it was not the low bidder.

D. As stated in A. above, (the shipyard's) procurement system does not require formal bid openings and therefore, the bids were not opened concurrently but rather as they were received. Regarding unauthorized release of bid information prior to the time all bids were received, each buyer is specifically charged with the responsibility for safeguarding bid information on procurements under his cognizance, and we find no evidence in this procurement that would indicate the unauthorized release of any information by (the shipyard) prior to receipt of all bids.

In summary, we consider that the bid procedures followed by (the shipyard) in this procurement, while not the rigid procedures required by Section II of ASPR for direct Government procurement by formal advertising, are consistent with prudent business practice and assure full and fair competition. Moreover, we have reviewed, in light of the comments of Reference (d), the guidelines set forth in ASPR Section 3-807.1(b)(1) for determining whether "adequate price competition" exists, and we are convinced that adequate price competition was in

fact obtained by (the shipyard) on the subject procurement. With regard to the procedural matters mentioned earlier, we are considering the preliminary recommendations resulting from the recently conducted Contractor Procurement System Survey which were discussed with us on 16 December 1969, including those recommendations pertaining to bid handling procedures.

Paragraph 2.b

Reference (d) states that (the shipyard's) original request for consent, Reference (b), does not support award through a negotiated procurement either. As stated in comments under 2.a above, (the shipyard's) original consent request was made on the basis of award to the low competitive bidder and was not intended to support award on any other basis. The following are (the shipyard's) comments with respect to the specific statements of Reference (d) :

We again assume that Reference (d) alludes to the Government's own practices regarding negotiated procurement as set forth in Section 3-805.1 of ASPR which requires negotiation with all responsible offerors who submit proposals within a competitive range, price and other factors considered. (The shipyard's) procurement system does not contain this requirement. Our practice does, however, provide that even in competitive procurements, where the qualified low bidder has been selected and will receive the award, negotiations with the qualified low bidder, *and only with him*, may be appropriate under certain factual circumstances in an effort to further reduce his price. Such was the case here. It should be emphasized that the award to the low competitive bidder under these circumstances is still a competitive award based on adequate price competition, regardless of whether negotiation *with the low bidder only* is considered appropriate and takes place and regardless of whether the award to the low bidder is made at his bid price or a lower price.

Paragraph 2.o

Reference (d) states that (the shipyard's) original consent request did not provide sufficient information to establish that the recommended price is reasonable. Our consent request, Reference (b), was submitted on the basis that a competitive award to the low bidder after adequate price competition sufficiently demonstrated the reasonableness of the price, especially when the award price was less than the low bidder's successful bid price. The following additional comments are related to the species listed in Reference (d) :

Subparagraph 2.c.1. As stated in Reference (b), the items being procured are of a developmental nature due to their size, configuration and material. Although the proposed cost per pound of these fittings compares favorably with the price per pound paid SSN (deleted) 14" fittings, we do not consider the comparison to be valid price analysis for the following reasons.

A. The SSN (deleted) 14" CuNi fitting program was also developmental; therefore, we have no way of determining the price/cost relationship.

B. SSN (deleted) fittings had some welded tangents; SSN (deleted) are all formed tangents.

C. The SSN (deleted) orders were placed in 1965.

D. The (supplier X) price is based on a different production process than that quoted by (supplier Y) and used by them (supplier Y) on SSN (deleted).

These make a meaningful comparison of the quoted prices for SSN (deleted) with prices paid for SSN (deleted) fittings impractical. An independent engineering estimate by (the shipyard's) personnel would have been of relatively limited value, since we do not have personnel knowledgeable in the specific manufacturing processes and techniques, and related costs, associated with large diameter, long tangent fittings.

Subparagraph 2.c.2. The difference between the tooling cost quoted by (supplier X) and that quoted by (supplier Y) appears to be the result of differences in the manufacturing processes employed by the two (2) bidders. (Supplier Y's) exact process is not known to us, since they consider this to be proprietary information. We must understand, however, that in the case of elbows, the starting tube is filled with a material and then the forming is accomplished through use of an external die. (Supplier X's) process involves the use of both internal and external dies of adjustable diameters. We do not see that this difference in tooling cost has any impact on the extent of competition obtained. The bidders competed for a contract to supply fittings meeting certain specifications and each was free to select any manufacturing process which produced the required end result.

Subparagraph 2.c.3. Since Reference (b) request for consent was based on award to the low bidder on a competitive basis, no attempt was made to justify that particular element of the vendor's bid. In fact, however, (the sub-tier supplier) does sell this material to (the shipyard), the Government and other firms on the basis of a published price list. This particular alloy is produced by (the sub-tier supplier) for Government end use only and is therefore not sold commercially. The cost included by (supplier X) for this material in their proposal is consistent with prices quoted to (the shipyard) and other of its suppliers for this material for other applications.

Paragraph 3.

This paragraph of Reference (d) as quoted from Reference (c) states that SUPSHIPS should request (the shipyard) to "reopen negotiations with both bidders to obtain the lowest price for the work required." (The shipyard) is strongly of the opinion that a reopening of negotiations with both bidders at this time and under the circumstances of this procurement would be tantamount to an improper auction technique and would compromise the integrity and effectiveness of (the shipyard's) competitive bid system. The recommended award to (supplier X) is also considered to be clearly in the best interest of the Government, as well as (the shipyard) for the following reasons:

1. It is an award to the low bidder on a competitive basis.
2. It provides for substantially earlier delivery of the fittings—i.e., 8 to 10 months versus 14 months—with delivery becoming increasingly critical.
3. It results in a second qualified and competitive source for future requirements for large-diameter CuNi pipe fittings.
4. It involves a lower recurring product cost since (supplier X's) non-recurring tooling cost was significantly higher, even though its total bid price was lower.

(The shipyard) therefore renews its request for consent to award the subject procurement to (supplier X) and urges that the Navy promptly grant the requested consent, since further delay in awarding this order will jeopardize construction schedules for SSN (deleted). If, notwithstanding our strong recommendation to the contrary, (the shipyard) is directed in writing by the Contracting Officer to reopen negotiations with (supplier X) and (supplier Y) we will of course comply with such directive.

As indicated in the final paragraph of Reference (d), a number of preliminary recommendations resulting from the recently conducted Contractor Procurement System Survey were communicated to us on 16 December 1969. We are presently studying those recommendations and intend to take positive action, where indicated, to strengthen our procurement system and render it more cost effective. We recognize that any procurement system, no matter how good it may be, always has room for improvement and we welcome constructive comments and recommendations directed toward such improvement.

Very truly yours,

(Name deleted),
General Manager.

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

[In reply refer to SHIPS 02B :JF :epm (contract No. deleted) Ser 1, Jan. 29, 1970]

From: Commander, Naval Ship Systems Command.

To: Supervisor of Shipbuilding, Conversion and Repair (deleted).

Subj: (Shipyard A's) Recommendation to Procure Main Sea Water System Fittings for SSN (deleted) NAVSHIPS disapproval of, with comments

Ref:

- (a) (Contract No. deleted) SSN (deleted) (Shipyard A) letter to NAV SHIPS dated 25 November 1969, request to award purchase order B-701-350
 - (b) NAVSHIPS letter 08H-6402 dated 19 December 1969
 - (c) NAVSHIPS ltr 0763 :JF :dsr Sar 278 of September 1969
 - (d) (Shipyard A) letter to SUPSHIPS dated 6 January 1970, same subject
 - (e) Supervisor of Shipbuilding, Conversion and Repair, USN, (deleted) letter dated 8 January 1970; Sec: 400-4C
1. Reference (a) requested NAVSHIPS consent to procure SSN (deleted) main sea water system fittings from (supplier X) at a price of (deleted)
 2. Reference (b) disapproved the (Shipyard A's) request and identified a number of deficiencies in the (shipyard) procurement recommendation. Bid

procedures were not adequate to support a competitive award, negotiations were not conducted with all suppliers in a competitive range, and (the shipyard) did not perform a price analysis to establish the reasonableness of the recommended price. Similar deficiencies on other (shipyard) procurements were previously identified in reference (e). In view of the noted deficiencies, reference (b) requested that (the shipyard) reopen negotiations with both bidders to obtain the lowest price for the work required and to correct the deficiencies noted. In addition, SUPSHIPS was requested to call this procurement to the attention of the General Manager, (Shipyard A) for corrective action in subsequent (shipyard) procurements as well as the procurement in question.

3. In reference (d), which was forwarded by reference (e), (the shipyard) requested NAVSHIPS approval to proceed with award of the main sea water fitting order as originally recommended and without reopening negotiations. (The shipyard) stated the reasonableness of the price was demonstrated by the adequate price competition obtained. (The shipyard) also stated that a comparison of the recommended price with past fitting prices or with (a shipyard independent engineering estimate would be of limited value in determining the reasonableness of the price.

4. NAVSHIPS withholds consent to placement of the proposed order as a competitive procurement for the following reasons:

a. All bids were received at various intervals after the bid due date.

b. (The shipyard) implies that the lowest bid received does not meet the shipyard's required dates. If so, there is only one responsive bidder.

c. (The shipyard) has not submitted a complete cost or price analysis of the recommended price. Such analyses are required for both competitive or non-competitive procurements under the "Subcontracts" article of the Government's prime contract with

In order to resolve this matter as quickly as possible, (the shipyard) should be requested to reopen negotiations with both (supplier X) and (supplier Y) to see if responsive bids can be obtained from both firms with respect to delivery and to obtain the lowest price for the required work.

5. With respect to the correcting of similar deficiencies on subsequent (shipyard) procurements, reference (e) states that both SUPSHIPS and (the shipyard) are acting on the preliminary recommendation of the Contractor Procurement System Review Team. Reference (e) further states that the Contractor Procurement System Review Team has also pointed out the need for improvement in (the shipyard's) bidding procedures. Therefore, it is requested that SUPSHIPS corrective action on the deficiencies identified in reference (b) and in paragraph 4, above be coordinated with the results of the Contractor Procurement System Review effort.

(Name deleted),
Contracting Officer,
Naval Ship Systems Command.

Copy to 02B, 022D, 08H.

SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN

[Ser : 400-23C, 4 February 1970]

From : Supervisor of Shipbuilding, Conversion and Repair, USN (deleted).

To : (Shipyard A). Attn : (name deleted) General Manager.

Subj : Procurement of Main Sea Water Fittings for SSN (deleted) under Contract (deleted) NAVSHIPS disapproval of (deleted).

Encl :

(1) Copy of NAVSHIPS ltr SHIPS 02B:JF:epm (contract No. deleted) Ser 1 of 29 Jan 1970.

(2) Copy of selected ASPR paragraphs.

1. Enclosure (1), which was received in this office on 2 February 1970, is forwarded for appropriate action.

2. Your attention is invited particularly to the request contained in paragraph 4 of the basic letter.

3. The necessity for revised bid procedures and cost and price analyses were noted during the exit briefing by the Contractor Procurement System Review team. Enclosure (2) forwards paragraphs 2-401, 3-505, 3-506, 3-508.2, 3-508.3, 3-804, 3-805, 3-806, 3-807.1 and 3-807.2 for your information and guidance in developing revised procedures which should be utilized for subsequent procurements.

(Name deleted).

Copy to NAVSHIPS (PMS381) (02B) (022D) (076) (08).

[Ser : 400-31C, 12 February 1970]

FIRST ENDORSEMENT on (Shipyard A) ltr signed by (name deleted) dtd 10 Feb 1970

From: Supervisor of Shipbuilding, Conversion and Repair, USN, (deleted).
To: Commander, Naval Ship Systems Command (022).

Subj: Procurement of Main Sea Water System Fittings for SSN (deleted).

1. Forwarded for action by the Contracting Officer, NAVSHIPS Code 022, as a matter under his cognizance under the provisions of Clause 24, Modification P007, Contract (deleted).

(Name deleted).

FEB. 10, 1970.

Subject: Procurement of Main Sea Water System Fittings For SSN (deleted).
Reference:

- (a) (Contract No. deleted) SSN (deleted) (Shipyard A) letter to NAVSHIPS dated 25 November 1969, request to award purchase order E-701-350.
- (b) NAVSHIPS letter 08H-6402 dated 19 December 1969.
- (c) (Shipyard A) letter to SUPSHIPS dated 6 January 1970.
- (d) NAVSHIPS letter 02B:JF:epm Ser 1 of 29 January 1970.
- (e) SUPSHIPS letter Ser: 400-23C of 4 February 1970. --

SUPERVISOR OF SHIPBUILDING,
Conversion and Repair, USN,
 (Deleted).

Sir: 1. Reference (a) requested NAVSHIPS consent to procure SSN (deleted) main sea water system fittings from (supplier x) at a price of (deleted). Reference (b) disapproved (Shipyard A's) request, setting forth certain reasons for the disapproval and requesting that (the shipyard) reopen negotiations with both bidders. In reference (c), (the shipyard) renewed its request, strongly recommending that award be made to (supplier x) and giving its reasons therefor. Reference (d), forwarded by reference (e), again refused consent.

2. Since NAVSHIPS continues to decline to consent to placement of the proposed order in accordance with (the shipyard's) recommendation, and since further delay in procurement of subject fittings will further jeopardize the delivery schedule for SSN (deleted) (the shipyard) has no alternative but to comply with NAVSHIPS instructions to reopen the procurement with both bidders.

3. In view of all the circumstances surrounding this procurement, (the shipyard's) proposed approach is to issue a new invitation to bid to the two interested bidders, (supplier x) and (supplier y). The invitation would require the submission of sealed bids on or before a specified date and would set forth the technical requirements, contract terms and mandatory delivery dates. The invitation would expressly provide that late bids would not be considered, that bids which were not fully responsive would be rejected, and that award would be made to the low responsive bidder at his bid price and without further negotiation. Before (the shipyard) proceeds in this manner, NAVSHIPS is requested to advise of its concurrence, for this specific procurement, in the use of the foregoing procedure, which we regard as essentially comparable to Government procurement by formal advertising.

4. As noted in reference (c), we are studying the recommendations resulting from the recently conducted Contractor Procurement System Survey and intend to take positive action, where indicated, to strengthen our procurement system and render it more cost-effective. However, we are not aware that either NAVSHIPS or DOD has adopted a new policy of requiring prime contractors to procure in accordance with the same rules and procedures which apply to direct Government procurement. Consequently, we consider the subject procurement to be an individual, isolated case and we view the NAVSHIPS action on this specific case in that light.

Very truly yours,

(Name deleted).

DEPARTMENT OF THE NAVY,
 NAVAL SHIP SYSTEM COMMAND,
 Washington, D.C. 20360.

[In reply refer to SHIPS 022C:JF:epm Ser 2, 18 Feb. 1970]

From: Commander, Naval Ship Systems Command

To: Supervisor of Shipbuilding, Conversion and Repair (deleted).

Subj: (Shipyard A) Procurement of Main Sea Water Fittings for SSN (deleted)

NAVSHIPS Comments Concerning

Ref: (a) (Contract No. deleted) SSN (deleted) (Shipyard A) letter to NAVSHIPS dated 25 November 1969, request to award purchase order B-701-350

- (b) NAVSHIPS letter O8H-6402 dated 19 December 1969
- (c) (Shipyard A) letter to SUPSHIPS dated 6 January 1970, same subject
- (d) Supervisor of Shipbuilding, Conversion and Repair, USN, (deleted) letter dated 8 January 1970; Ser; 400-40
- (e) NAVSHIPS letter O2B:JF:cps dated 29 January 1970
- (f) (Shipyard A) letter to SUPSHIPS dated 10 February 1970, procurement of main sea water systems fittings for (deleted)
- (g) Supervisor of Shipbuilding, Conversion and Repair, USN, (deleted) letter dated 12 February 1970; Ser 400-320

1. Reference (a) requested NAVSHIPS consent to procure SSN (deleted) main sea water system fittings from (Supplier X) at a price of (deleted). Reference (b) disapproved the (Shipyard A) request noting bid procedures were not adequate to support a competitive award, negotiations were not conducted with all suppliers in a competitive range, and (the shipyard) did not perform a price analysis to establish the reasonableness of the recommended price. Reference (b) requested that (the shipyard) reopen negotiations with both bidders to obtain the lowest price for the work required and to correct the deficiencies noted.

2. In reference (c), which was forwarded by reference (d), (the shipyard) requested NAVSHIPS approval to award the main sea water fittings order as originally recommended and without reopening negotiations. Reference (e) again disapproved (the shipyard's) request. (The shipyard) was requested to reopen negotiations with both (supplier X) and (supplier Y) to see if responsive bids could be obtained from both firms with respect to delivery and to obtain the lowest price for the required work. Reference (e) pointed out that a complete cost or price analysis of the recommended price is required in accordance with the "subcontracts" article of the Government's prime contract (with the shipyard).

3. Reference (f), which was forwarded by reference (g) states that (the shipyard) intends to issue a new invitation to bid to (supplier X) and (supplier Y). The invitation would require sealed bids on or before a specified date and would define the technical requirements, contract terms, and mandatory delivery dates. Late bids would not be considered, all bids not fully responsive would be rejected, and award would be made to the low responsive bidder at the bid price without further negotiation.

4. NAVSHIPS has no objection to the proposed (shipyard) procedure for handling this procurement providing the solicitation reserves the right to negotiate if necessary. Further, as was pointed out by references (b) and (c), the subsequent (shipyard) recommendation on this procurement must include a complete cost or price analysis to establish the reasonableness of the proposed price. Accordingly, SUPSHIP should advise (the shipyard) that the approach recommended in reference (f) is approved subject to the comments above.

5. Reference (f) states (the shipyard) is "not aware that either NAVSHIPS or DOD has adopted a new policy of requiring prime contractors to procure in accordance with the same rules and procedures which apply to direct Government procurement." The action taken by NAVSHIPS on this proposed (deleted) procurement has been to ensure that it is handled in a business-like manner, that the lowest price has been obtained for the Government, and that the price obtained is reasonable.

6. Reference (f) indicates further delay in procurement of these main sea water system fittings will jeopardize the delivery schedule for SSN (deleted). In this regard, SUPSHIP should request (the shipyard) to expedite the proposed action to meet the SSN (deleted) need dates.

(Name deleted).
Contracting Officer,
Naval Ship Systems Command.

Copy to O2B, O22D, O8H.

[Enclosure. (2)]

VADM RICKOVER'S COMMENTS ON NAVSHIPS REVIEW OF (SHIPYARD A)
COST CONTROL

1. *Problem & Recommendations, as Stated in VADM Rickover's Report Dated 23 September 1969:* Labor and material costs are being mischarged on Government contracts.

Specifically:

a. Under the present labor charging system supervisors have a strong incentive to charge labor costs to the labor budget account that can best absorb the cost and not necessarily to the budget account for the work actually performed.

b. A comprehensive review of (the shipyards) labor charging practices has not been conducted. However, there are indications that labor costs are being mischarged. There are no effective controls to preclude such mischarging.

c. (The shipyard's) material control system contains serious deficiencies such that the validity of material costs charged to Government contracts cannot be determined.

The Navy should withdraw approval of (the shipyard's) accounting system until effective controls are established to preclude mischarging of labor and material costs on Government contracts.

2. *COMNAVSHIPS Response & Proposed Action:*

COMNAVSHIPS states: "The Resident DCAA Auditor in his report . . . states that the accounting system was never approved; therefore, withdrawal is not appropriate. Also the Auditor reports the reviews that DCAA has conducted of the company's labor charging practices, system, and controls, and has concluded that:

"We disagree with the Code 08 conclusions that the contractor's system for the accounting and controls of labor costs is inadequate and that the Government's review of the contractor's labor charging practices has been inadequate."

"... While we (NAVSHIPS) agree with the Resident DCAA position quoted above, we do consider that, if the company's financial audit staff were to be augmented permanently to perform additional labor charging floor checks and material reviews, it could relieve DCAA of some of its surveillance function in this area to permit other utilization of Government auditors."

Proposed Action:

<i>Item</i>	<i>Target date</i>
a. Contractor to review direct labor budget workflow-----	Continuing Action.
b. Contractor to review physical progress estimating workflow.	Continuing Action.
c. Contractor to revise the cost account structure-----	Continuing Action.
d. Contractor to identify overhaul work by specification item.	Continuing Action.
e. Contractor to revise manhour level of direct labor budgeting.	Continuing Action.
f. Contractor to relate physical progress to cost-to-complete and the budgeting/cost control work authorization system.	Continuing Action.
g. Contractor to develop a top management report on vessel status.	Continuing Action.
h. Contractor to develop a user-oriented manual for direct labor budgeting and cost control.	Continuing Action.
i. Contractor to review requirements for data processing programs.	Continuing Action.
j. Contractor to increase internal review staffing for labor material checks and consider establishing a separate Internal Review organization.	Continuing Action.

3. *Comments on COMNAVSHIPS Response and Proposed Action:* It is not surprising that the auditor and NAVSHIPS have not found mischarging of costs. The issue is that neither the Navy nor the contractor has established adequate procedures to check on labor and material charges. Thus when my representative checked into this matter, he readily found the situation described in reference (a).

As long as the Navy depends on "continuing action" with the contractor to deal with these problems, they will not be identified or solved. If the Government auditor would make a careful review of this situation, he would find it to be as bad as or worse than stated in my report.

While I agree that (the shipyard) should have an effective internal audit staff, the NAVSHIPS suggestion that additional (shipyard) auditors can relieve this burden from the DCAA represents a fundamental misunderstanding of the relationship between the Government and (the shipyard). As I have reported time and again, (the shipyard) has practically no incentive to hold down costs on its Government contracts. Indeed, increased costs can be profitable for the company. Since this is true, it is naive to assume that we can rely on company auditors to hold down costs.

If the Resident Auditor does not have the time or manpower to make a comprehensive study of cost charging practices at (the shipyard), then the Navy should send a special team to study the situation—as was done at (shipyard B).

[Enclosure (3)]

VADM RICKOVER COMMENTS ON NAVSHIPS REVIEW OF (SHIPYARD A) PROGRESS PAYMENTS

1. *Problem and Recommendation as Stated in VADM Rickover's Report Dated 23 September 1969:* (Shipyard A) is receiving interest-free progress payments for material before the material has been used, and sometimes before the yard itself has paid for the material.

The Navy should revise progress payment procedures so that (the parent corporation) no longer gets interest-free use of Government funds.

2. *COMNAVSHIPS Response and Proposed Action: COMNAVSHIPS states:* "Enclosure (1) of reference (b), the report of the Resident Auditor, provides an explanation of material charging and material progress payment practices of (shipyard A). Such practices are acceptable to DCAA and to NAVSHIPS. On other than cost type contracts, progress payments are not based on costs incurred but on physical progress; they are limited to no more than 105% of costs. For such contracts, SUPSHIPS, with the assistance of DCAA, verifies monthly the material physical progress and quarterly, the certification that the progress payment requested does not exceed 105% of costs. The SUPSHIPS Quality Assurance Department, by a sampling technique, verifies the percent of labor physical progress claimed and makes its own progress calculations."

Proposed Action: No corrective actions are necessary.

3. *Comments on COMNAVSHIPS Response and Proposed Action:* I do not believe NAVSHIPS has adequately looked into the issue I raised. The implication in references (b) and (c) is that (shipyard) charges for material costs has no impact on shipbuilding contract payments.

The contractor certainly considers that advance charging of material costs has a significant effect on shipbuilding contracts. For example, (the shipyard) recently paid one of its employees an incentive award of \$1,231 for suggesting that certain miscellaneous inventories of stock be charged off to the Government before it is used so that a progress payment could be collected. He stated in his suggestion:

"Presently the Government cannot be billed until the material is actually used. By adopting an allocated type inventory for this material the Government can be billed when the material is paid for because it is bought for use on a specific contract. Then, in effect, the Government finances this inventory for (the shipyard). . . . [This suggestion] generates funds for (the shipyard)."

Thus in this case the Government will not only be paying higher progress payments, it will also have to pay 98% of the incentive award which led to the higher payments.

The impression one gets in reading the NAVSHIPS and DCAA comments is that the present method of charging costs for progress payments is acceptable because such actions are not prohibited by ASPR. In this regard, the Navy arranged through the ASPR committee some years ago to use a special progress payments clause for shipbuilding contracts. It appears that the shipbuilding clause as it is presently being administered is more liberal than is the standard ASPR progress payments clause used in other contracts, and results in an unwarranted subsidy to shipbuilders.

I believe the Navy is subject to severe criticism if it allows this situation to persist. Prompt action is needed to correct this situation.

[Enclosure (4)]

VADM RICKOVER'S COMMENTS ON NAVSHIPS REVIEW OF PRINCIPLES AND PROCEDURES AND SETTLING SHIPBUILDER CLAIMS

1. *Problem & Recommendations as Stated in VADM Rickover's Report dated 23 September 1969:*

a. Under the present system, there is no way to insure that the Government is not being overcharged in the adjudication of changes or in the settlement of claims.

b. Present procedures for handling claims against the Government for changed work seem to be heavily weighted in favor of the contractor. The Navy should establish principles, procedures, and means to place the Government on equal footing with the contractor in settling change orders and claims.

c. (The shipyard) normally does not account separately for the cost of changed work. Thus, settlement can only be made on the basis of judgment and rough estimates.

d. (The shipyard) has a "claim team" of 75 full-time employees to identify and prepare any potential claim on work in the yard. This team prepares voluminous claims which the Government—lacking both time and manpower—cannot possibly refute *in toto*. Since the cost of this team is charged to each claim, the Government actually pays for most of this effort, even though it benefits the contractor, not the Navy.

2. *COMNAVSHIPS Response and Proposed Action*: COMNAVSHIPS states: "... reference (a) recommends the establishment of principles, procedures and means to place the Government on an equal footing with the Contractor in settling change orders and claims. NAVSHIPS concurs with this recommendation and considers that such principles, procedures and means do now exist as detailed in enclosure (4). . . ."

Proposed Action: NAVSHIPS to carry out its decision to assign counsel to certain SUPSHIPS offices.

3. *Comments on COMNAVSHIPS Response and Proposed Action*: The NAVSHIPS detailed response enumerates twelve actions NAVSHIPS has taken over the years to help the Government deal with contractors more effectively with regard to claims and changes. Many of these actions are procedural items, others involve improved contract clauses, revised organizations, and increases in civilian personnel staffing at SUPSHIPS since 1965. No doubt the Government is better off today because of these actions. However, I am discussing conditions I see today.

Because (the shipyard) normally does not account separately for the cost of changed work, there is no factual record from which either (the shipyard) or the Government can determine the actual cost of work that is the basis for the claim. Those charged with the responsibility for settling claims must rely mostly on "judgment" and independent estimates in arriving at a proper settlement. This is true even though the work is often accomplished long before the claim is settled.

Under these circumstances, the Government must depend primarily on the contractor's estimates and his representation of the circumstances in settling claims. To refute the contractor's claim, or to challenge with any authority his cost estimate requires considerable time and effort. Historically there is a large backlog of claims and unadjudicated changes. These outstanding claims are sometimes grouped together with an overall settlement reached. Consequently, the Government cannot tell on a job-by-job basis how much (the shipyard) really spends for the extra work claimed or what the Government paid for it.

On the average, change orders increase the price of a submarine by 15 percent or more. As long as shipbuilders can commingle the cost of these changes with other work, they can overcharge the Government and make it impossible to know whether or not the price is too high. Further, effective cost controls for either the changed work or the basic work are impossible under this arrangement. As pointed out in my memorandum dated 16 February 1970 (reference (d)), I believe this issue should be taken up with the Defense Contract Audit Agency and with the General Accounting Office to determine what rules should be established with regard to accounting for changes.

The basic issue I raised was that the Government was not on equal footing with the contractor in settling claims. The assignment of one lawyer in the SUPSHIPS office will not resolve this issue. The Government cannot possibly compete in this manner with the 75 full-time employees the contractor has to prepare and prosecute its claims.

I recommend that a special task group be formed to review how shipbuilders' claims are being prepared, prosecuted, and settled and what changes should be made to protect effectively the Government's interest.

[Enclosure (5)]

VADM RICKOVER'S COMMENTS ON NAVSHIPS REVIEW OF GOVERNMENT
SURVEILLANCE OF OPERATIONS AT (SHIPYARD A)

1. *Problem & Recommendations as Stated in VADM Rickover's Report on (Shipyard B) Dated 13 September 1969:* My report pointed out that the Navy must establish appropriate controls at (shipyard A) and at other shipyards. It stated:

a. "Although Government business accounts for 98 percent of the work at (the shipyard) Government auditors do not have access to certain (shipyard) financial reports that are essential in determining the reasonableness of charges to Government contracts.

b. "Government representatives do not review the company's "Make or Buy" decisions and there are indications that such decisions are not always made with the interests of the Government foremost.

c. "The Supervisor of Shipbuilding does not review (the shipyard's) procurements from divisions of (the parent corporation). The contractor does not justify the cost of these procurements or indicate whether or not these items are being obtained at less cost than would be possible from other companies.

d. "A number of former (shipyard) employees are working in the offices of the Supervisor of Shipbuilding and the Government Auditor. This situation is not conducive to proper business relationships between the Government and (the shipyard).

The Navy should issue policy instructions to preclude employment of former contractor personnel in positions where they are responsible for reviewing contractor operations in the activity where they were formerly employed.

2. *COMNAVSHIPS Response & Proposed Action:* The DCAA Auditor states: "Presently we do have access to all accounting and financial records which we consider necessary to the performance of our audit responsibilities."

COMNAVSHIPS states: "Consideration will be given to including a make-or-buy clause in the contract when the solicitation contains make-or-buy requirements. For contracts which have already been awarded to (the shipyard), NAVSHIPS will explore the feasibility of including a make-or-buy clause, providing that most of the high cost items have not already been procured."

* * *

"As to that portion of the recommendations of reference (a) which concerns the decision to assign work to other (divisions of the parent corporation), ASPR treats such intra-company matters as "make" items. Accordingly, when a make-or-buy program requirement is included in a solicitation, the contractor will have to provide information on "make" items and the contract will be negotiated on the basis of the acceptability of such a "make" item. After contract award, changes in the "make" decision will require approval by the Contracting Officer only if the contract contains the make-or-buy clause."

* * *

"Both the Resident DCAA and the SUPSHIP disagree with the implication that proper business relationships between the Government office and (the shipyard) have been impaired because of the employment of former (shipyard) employees. A parallel situation exists in NAVSHIPS Headquarters, which employs former contractor personnel in positions having engineering surveillance responsibilities over the activities where they were formerly employed, and we consider that proper objective relationships exist in these cases. It would appear that the employment of former contractor employees at the levels found in a SUPSHIP office actually works to the disadvantage of the contractor rather than the Government in that such personnel are usually well trained and are aware of the weaknesses of the contractor which require closer surveillance by the Government. NAVSHIPS knows of no law or Civil Service regulation which would authorize the issuance of a blanket prohibition against employing former contractor personnel in such circumstances."

3. *Comments on COMNAVSHIPS Response and Proposed Action:* On 31 December 1969, the DCAA Auditor wrote (Shipyard A) as follows:

"Subject to various verifications pending the resolution of the access to records problem regarding the "Quarterly Contract Analysis" and "Contract Profit Forecast Data" reports, we have concluded a review of (the shipyard's) financial management practices for compliance with ASPR Section VII, Part 2, limitation of cost and/or funds clauses under cost-reimbursement type contracts, and

management's practices affecting costs under cost-type and fixed-priced contracts. The review concluded that a system exists to generate timely data for financial management and the reporting of the financial status of individual contracts. *However, disclosures of significant cost overruns or underruns are not being made to the Contracting officer on a timely basis. Also, until we are provided access to the above mentioned reports, we cannot render an opinion on the adequacy of the system.*" (Emphasis Added.)

* * * * *

"Since we have been denied access to certain contractor reports, we cannot report on the accuracy of the estimates to complete. Due to the critical nature of Government funds and because of the deficiencies noted in our review, this office is particularly concerned with the projected cost to complete contracts by element of cost. This information is available only on the "Contract Profit Forecast Data" report. Access to this report and the "Quarterly Contract Analysis" report is considered essential for us to conclude that the contractor's financial management system is adequate and responsive to Government procuring agency needs."

I do not know whether the Auditor yet has the reports he requires. Obviously he did not have them at the time he wrote enclosure (1) to reference (b).

With regard to make-or-buy decisions, I consider that each significant order to be placed with other divisions of (the parent corporation) should be reviewed by the Government to ensure that the business arrangements are proper and that the lowest price to the Government is obtained for the work required. I do not think this will be the case under the procedures set forth in reference (c). Therefore I consider additional procedures should be established requiring the Supervisor of Shipbuilding review and approval of intra-company orders over \$25,000 on any contract in which the Government bears the risk of cost overruns or underruns.

I do not agree that it is right to employ former contractor personnel in surveillance of the contractor's operations. I am aware that NAVSHIPS employs former contractor personnel in positions having engineering surveillance responsibilities over the activities where they were formerly employed. There are also a number of cases where former contractor personnel are working in the NAVSHIPS contracts division and where former NAVSHIPS contracting people work for shipbuilders. However, I do not consider such practice to be in the best interests of the Government. It may be that SUPSHIPS has violated no law or regulation in hiring more than 100 former employees of the contractor; it still seems to me a violation of common sense to place these employees in a position where they are expected to critically review the performance of their friends and former colleagues. The Navy must put a stop to this practice, particularly when the position being filled is directly concerned with the negotiation or administration of contract matters.

ATTACHMENT 1(A)

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

[In reply refer to 08H-767, 15 July 1970]

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS & LOGISTICS)

Via:

- (1) Commander, Naval Ship Systems Command.
- (2) Chief of Naval Material.

Subj: Review of Overhead Costs on Navy Contracts at (shipyard A).

Ref: (a) NAVSHIPS ltr OON:FCJ:LT Serial 124-OON dtd 30 April 1970.

Encl: (1) Report on Overhead Costs on Navy Contracts at (shipyard A).

1. On several occasions during the past two years, I have written to you regarding contractor procurement and cost control deficiencies which are resulting in unnecessary costs to the government at our major private shipyards.

2. Enclosure (1) is a report concerning the administration and charging of overhead costs on Navy contracts with (shipyard A). As in the case of procurement and cost control, it appears that the government is paying far more than it should in overhead costs at (shipyard A), and that the government is not effectively administering its contracts with (shipyard A). In total, from reviews conducted to date, I believe the government could reduce its shipbuilding costs by 5 to 10 percent—\$10 million or more per year at (shipyard A) alone—by improved administration of its contracts and by improved contractor management practices.

3. Enclosure (1) points out that the flexibility in (shipyard A's) accounting system precludes either (shipyard A) or the government from ensuring that costs are charged fairly between cost-type and fixed-price-type contracts. It appears that this accounting flexibility results in overcharges to government cost-type contracts.

4. Enclosure (1) indicates that (the parent corporations) corporate policies with respect to corporate investment, lease versus purchase, and proprietary purchases may also be resulting in higher than necessary overhead costs at (shipyard A). The company seems to follow a policy of minimizing corporate investment in the shipyard even though this leads to higher operating costs. Corporate investment in plant and facilities at (shipyard A): in each of the past three years has declined about 8 to 10 percent a year. Moreover, the use of obsolescent shipyard facilities leads to higher labor costs and other inefficiencies. The company, however, is able to pass on the higher operating costs directly to the government because nearly all recent government contracts have been placed on a noncompetitive basis.

5. The specific examples cited in enclosure (1) are not meant to be exhaustive. Rather, they are illustrative of a general problem concerning overhead costs at (shipyard A) and other private shipyards.

6. Enclosure (1) provides additional evidence that the Navy is not administering its shipbuilding contracts properly. In this regard, I hope that those responsible for administering our shipbuilding contracts will respond to this report by developing more effective controls. Such action would be considerably more constructive than the pattern of responses to my previous reports. In the past, the response has been that my facts are wrong, my conclusions in error, and that there is no substance to the issues I have raised. When further investigation confirms the deficiencies, those in charge then claim the deficiencies are minor, that corrective action was underway before I raised the issue, and that there is no need for further concern. The result, intentional or otherwise, is to obfuscate important issues.

7. In March, 1970, you asked the Chief of Naval Material to establish a special review team to look into the procurement and cost control issues I raised. The review team's report, reference (a), replaces my term, "major deficiencies", with the phrase: "significant areas for improvement". Then, at great length, the report comments on the details of my examples, often to the exclusion of the basic issues themselves. At one point, the review team devotes eight pages of comments to a single sentence in my report; their conclusion is that I was right, but that the particular problem "is not representative of a general condition".

How much more germane and valuable it would have been if all that time and effort had been devoted to reducing government costs as (shipyard A).

8. In response to my reports, your special review team and NAVSHIPS have attributed the lack of effective contract administration at our major shipyards to a Department of Defense policy of "disengagement". The team asked you to "set forth" the applicability of the so-called DOD disengagement policy to Navy contractors such as (shipyard A). I have never been able to find any policy directives on "disengagement". However, the references to this policy in NAVSHIPS' correspondence indicate that the government is relying totally on the contractor to spend government funds prudently.

9. My years of experience in dealing with defense contractors have proved time and again that the government cannot afford to delegate its responsibility to contractors. Government officials have an unassignable responsibility to the taxpaying public to ensure that, when public funds are involved, contractors procure materials economically, maintain effective controls over production and overhead costs, charge costs fairly, and so on. The shipyard conditions which I have been pointing out for nearly two years are further evidence that defense contractors cannot and should not be expected to act in the public interest. Thus, I strongly urge that you plainly and forthrightly state there is no such policy as "disengagement" at other shipyards or anywhere else where government funds are being spent.

10. The situation facing the Navy today is that we cannot get Congress to give us the money for the ships we need because of their high cost. Yet at the same time loose Navy contracting practices are contributing to the high cost. We ourselves are much to blame. The Navy prefers to emphasize what is right with shipbuilding, but what is right will not last if we do not correct what is wrong. We must face up to the real situation, painful or not, and quickly. We must take drastic action to improve our administration of shipbuilding contracts, require our contractors to operate their shipyards more efficiently, and begin to regain credibility with Congress and with the public.

H. G. RICKOVER,

Deputy Commander for Nuclear Propulsion.

Copy to:

Assistant Secretary of the Navy (Installations & Logistics).
Chief of Naval Material.

REPORT ON OVERHEAD COSTS AT (SHIPYARD A), JULY 9, 1970

I. SUMMARY AND CONCLUSIONS

My September 13, 1969, report identified a number of practices that could be unnecessarily increasing the cost of labor and materials used in the construction of nuclear-powered submarines at the (Shipyard A Division of Parent Corporation). You subsequently asked me to review overhead costs on Naval Ship Systems Command (NAVSHIPS) contracts involving nuclear work at (Shipyard A).

As was the case with labor and materials, my review of overhead charges indicates that the government is paying far more than it should on its contracts with (Shipyard A). Moreover, there are serious deficiencies in the way the government is administering (Shipyard A) contracts. From my reviews to date, I believe the government could achieve economies of 5 to 10 percent—\$10 million per year or more—on the contracts at (Shipyard A) through improved government administration of contracts and improved contractor management practices.

The following is a summary of my principal findings and conclusions from reviewing overhead costs on NAVSHIPS contracts with (Shipyard A):

A. Accounting System

1. (Shipyard A's) accounting system is extremely flexible.
2. Under (Shipyard A's) accounting system, a wide variety of costs may be charged sometimes as direct costs and sometimes as overhead.
3. The accounting system permits charging a given job either as a direct cost or as an overhead cost, the decision being left to the judgment of the contractor.
4. The lack of firm standards or criteria for charging costs has made it virtually impossible for (Shipyard A) or the government to ensure that costs have been charged fairly between cost-type and fixed-price contracts.
5. After I began looking into overhead costs, the local government auditor, and later (Shipyard A) seemed to take a greater interest. The government auditor

has initiated a study of overhead charging practices. Effective June 29, 1970, (Shipyard A) issued guidelines regarding direct and indirect charging of labor, material, and travel costs. The guidelines are in general terms and still leave wide discretion for individual decisions. They were not approved in advance by the government. It is not clear that they are adequate to ensure proper costing of government contracts. Nonetheless, it shows that progress can be made just by the company's finding out that its customer is interested in how his money is being spent.

B. Excessive Overhead Charges

1. There are indications that (Shipyard A) has taken advantage of its accounting flexibility to overcharge cost-type contracts. (Shipyard A) appears to "load" cost-type contracts wherever possible with charges for items such as warehouse expense, bid and proposal expense, salvage labor, dry dock expense, and so forth.

2. It appears that, at least until very recently, (shipyard A) has felt no need to keep overhead costs at a minimum. For example, it appears (shipyard A) did not obtain competitive quotes in leasing computers or in obtaining group insurance. Also, until recently (shipyard A) was not taking advantage of lowest cost travel arrangements in cases where this was possible. Moreover, it appears that (shipyard A) is incurring higher than necessary operating and maintenance costs by leasing rather than purchasing facilities and by operating with obsolescent and inefficient facilities.

3. The company appears to be following the policy of minimizing its capital investment at the shipyard even when this results in higher operating costs. These higher operating costs can be passed on to government cost-type contracts. Where it is necessary to compete for fixed-price work, (shipyard A) can assign its low cost facilities to the fixed-price work and otherwise minimize charges through its accounting practices so as to enable it to compete effectively.

C. Inadequate Government Surveillance of Overhead Functions

1. I can find no one in government who seems to be responsible for assuring that overhead functions at (shipyard A) are carried out efficiently and economically. (Shipyard A's) overhead costs are audited by the local Defense Contract Audit Agency representatives. These audits, however, generally appear to be directed toward checking the accuracy of the *amounts* reported, the method of *allocating* the costs, and the *allowability* of each classification of cost in accordance with the cost principles outlined in the *Armed Services Procurement Regulation*. Government auditors do not seem to be appraising the efficiency or economy of the contractor's overhead operations. At the least, there is no formalized system of regular review and appraisal of the efficiency and effectiveness of each overhead function and no formal report of findings and of corrective actions taken.

Nor does the Supervisor of Shipbuilding concern himself with such matters. Since overhead constitutes about one-third of all costs incurred at (shipyard A), since 99 percent of these costs are charged to government contracts, and since (shipyard A) has little competitive pressure to keep these costs down, it appears that someone in government should be charged with and responsible for identifying and eliminating waste in overhead.

2. It appears that substantial savings in overhead costs could be realized at (shipyard A) if the company and the government set up a formal program for regular review and appraisal of each overhead function. Moreover, it appears that the government should insist that (shipyard A) accounting practices are adequate to ensure proper charges on government contracts.

II. BACKGROUND

The government has a substantial economic interest in (shipyard A's) overhead charging practices. Overhead costs at (shipyard A) total about \$76 million a year—roughly one-third of the shipyard's total annual operating costs. As about 99 percent of (shipyard A) business is with the government, the government ends up supporting virtually the entire overhead account.

Except for the fiscal year (deleted) submarine contract, which is nearly complete, all major contracts being performed by (shipyard A) for the Navy have been awarded on a sole-source or noncompetitive basis. The fiscal year (deleted) submarine contract is firm-fixed-priced. All major government contracts subsequently awarded to (shipyard A) have been cost-type or fixed-price-incentive-

type contracts in which the government shares substantially in cost overruns or cost underruns. The resident government auditor has estimated that cost-type or fixed-price-incentive-type contracts now constitute about 90 percent of the work at (shipyard A). At present, over half of (shipyard A's) work is under cost-type contracts.

Because (shipyard A) operates primarily under noncompetitive prime contracts in which the government reimburses incurred costs or shares substantially in cost overruns or cost underruns, the company has little incentive to price contracts closely or to keep costs at a minimum. In fact, since the government negotiates profit as a percentage of estimated costs, higher costs tend to result in higher profits for (shipyard A) in the long run. In these circumstances, the government's stake in overhead costs as well as in direct labor and material costs at (shipyard A) is apparent.

III. DISCUSSION

A. Flexibility in Charging Overhead Costs

There are two ways to charge costs to government contracts, as direct costs or as overhead. Overhead represents costs incurred for the benefit of all or some of the contracts in the shipyard, e.g., shipyard maintenance, managerial salaries, etc. Such costs are totaled and prorated by (shipyard A) to contracts.

Direct costs represent work performed specifically for the benefit of a particular contract, e.g., hull welding, installation of shipboard equipment, etc. Direct costs are charged to the specific contract which benefited from the work.

(Shipyard A's) criteria for charging costs permit great flexibility in deciding how costs are to be charged. (Shipyard A's) basic guideline is to charge work as a direct cost when the work can be related to a particular contract. Otherwise, it charges the work to overhead.

Under this guideline, (shipyard A) personnel have the option of charging off a wide variety of work either as a direct cost to a single contract or as overhead to be spread over a number of contracts. Frequently a rationale can be developed to support charging a given cost either way on a case by case basis. For example, some (shipyard A) secretaries are charged to overhead on the basis that their work is for the general benefit of the company. Other secretaries are charged as a direct cost to the particular job on which they are working. Sometimes part of a workday is charged to overhead and the remainder as a direct cost. As an example of this, one government auditor found that a secretary was being charged to overhead for her normal workday, but her overtime, at premium rates, was charged as a direct cost. The rationale was that the secretary's overtime work was related to a particular contract.

Each day thousands of charges are made to government contracts at (shipyard A). The large numbers of individual charging decisions and the lack of more definitive criteria make it nearly impossible to evaluate whether costs are being charged properly. Almost any cost charging decision can be defended under (shipyard A's) guideline. The validity of the cost charging system depends on the judgment and decisions of the hundreds of individual persons making the charges.

In allocating or assigning costs among contracts, (shipyard A) therefore has considerable incentive to charge costs wherever it can to cost-type contracts in preference to fixed-price-type contracts. This results in greater profits and less cost risk for (shipyard A).

My review indicates that frequently costs are charged in a manner most advantageous to (shipyard A). The following are examples:

1. Labor Costs

Recently I found that a general foreman with broad supervisory authority over work on a number of cost-type and fixed-price contracts was charging his time directly to a cost-type contract, not to overhead. On the other hand, some of his foreman were working on fixed-price contracts and charging their time to overhead.

In another case, the supervisor in charge of constructing a new facility for nuclear work was charging his time as an item of overhead expense. However, (shipyard A) generally capitalizes labor costs involved in building new facilities. Such costs are then financed with (the parent Corporation)—not government—funds, and written off over a period of years. By charging these costs to overhead as an item of expense, (shipyard A) can help finance capital improvements with government rather than with corporate funds.

(Shipyard A) has also been charging new computer programming costs as an overhead expense. However, the local government auditor considers such charges should be capitalized and then paid out of corporate—not government—funds.

These examples are but a few of the thousands of decisions being made as to how labor costs are to be charged. They show why it is important that proper standards and criteria be established for charging costs under government contracts. But the government has not required (shipyard A) to establish and implement the necessary standards and criteria.

2. *Warehouse Rental Expense*

Generally (shipyard A) allocates warehouse rental costs at its (local) yard to all contracts through overhead. However, (shipyard A) has rented warehousing facilities at (a nearby location) which it charges differently. (Shipyard A) uses this warehouse for general purpose storage and for storing long lead time materials for submarine overhauls and conversions which are performed under cost-type contracts. (Shipyard A) charges warehouse space used for long lead time material storage and the space used for passageways as a direct cost to the cost-type long lead time material contracts. The warehouse space used for storage on other contracts, however, is charged to overhead and allocated to all contracts, including the cost-type long lead time material contracts which have been charged direct for storage space in the same building. This arrangement appears to result in cost-type contracts being charged a disproportionate share of warehouse rental expense.

3. *Overhead on Bid and Proposal Expense*

The resident government auditor recently found that (shipyard A), was not charging overhead on bid and proposal costs. According to the auditor, this practice may have resulted in government cost-type contracts being overcharged about \$291,000 in 1969. Cost-type contracts were being charged 78 percent of overhead costs related to bid and proposal expenses, although these contracts accounted for but half the work performed at the shipyard in 1969.

4. *Dry Dock Rental Expense*

(Shipyard A) owns two graving docks. Rent for use of the graving docks is charged as a direct cost based on ship weight and time in the dock. About 92 percent of the rental charge is for depreciation and taxes. It is not at all clear that heavy ships cost much more than light ships to dry dock or that they depreciate the dock any faster or that they result in higher taxes. However, the effect is that, because of a difference in weight (deleted) submarines undergoing overhaul and conversion work under cost-type contracts are on a daily basis charged twice as much as new construction (deleted) submarines are charged under fixed-price-type contracts.

5. *Salvage Labor*

(Shipyard A) has a special group of employees who handle its salvage operations. Under present contracting arrangements, (Shipyard A) owns any material left over from fixed-price-type contracts and may dispose of it however it wishes, and the government owns any material left over from cost-type contracts. At the time of my review, the salvage group consisted of 31 men. Of these, 10 were assigned to work on the government-owned salvage. Their time was charged as a direct cost to cost-type contracts. The remaining 21 men were assigned to process (Shipyard A)-owned salvage. Their time was charged to overhead, where a large portion of the costs were also being charged indirectly to cost-type contracts.

6. *(Commercial Ship)*

As pointed out in my September 13, 1969 report, (Shipyard A) was charging a million dollar development program for a commercial (ship) to overhead by labeling the cost "bid and proposal expense". In that manner, 99 percent of the development cost could be charged off to the government contracts. Development work for government projects, however, is charged as a direct cost. Since you raised this particular item with the Assistant Secretary of the Navy, I understand that arrangements are being made to delete the (commercial ship)—program from overhead costs allowed on government contracts.

Under (Shipyard A's) accounting system, it is nearly impossible to ensure that costs are being charged fairly. Since the criteria leave much to the judgment of

the person making the charge, effective auditing is difficult. There are innumerable areas where an individual can develop a rationale for charging a cost one way or the other. Where government auditors find costs to be charged improperly, the contractor simply corrects the particular charge in question. The resident government auditors can only make spot checks. The number of judgments made each day precludes an effective review.

(Shipyards A) has established charging practices that appear clearly to favor fixed-price-type contracts over cost-type contracts. It appears that (Shipyards A) should substantially reduce the categories of expenses that can be charged both as direct cost as overhead and that steps should be taken to establish definitive cost-charging criteria for any remaining "borderline" areas.

B. Cost Control of Overhead Function

The previous section of this report discussed the need for more stringent criteria at (Shipyards A) for charging costs directly or to overhead, so that the government can have some reasonable assurance that incurred costs are being charged fairly.

A second important consideration when the government pays nearly all of a contractor's overhead costs is to ensure that incurred costs are reasonable and necessary and that overhead functions are being carried out in an efficient and economical manner. Again, based on a limited review, it appears that no one in government is clearly responsible for this area.

(Shipyards A's) overhead costs are audited by the local Defense Contract Audit Agency representatives. These audits, however, appear to be directed primarily toward checking the accuracy of the amounts reported, the method of allocating the costs, and the allowability of each classification of cost in accordance with the cost principles outlined in the *Armed Services Procurement Regulation*. It appears that government auditors are not appraising the efficiency or economy of the contractor's overhead operations. At least, there is no formalized system of regular review and appraisal of the efficiency and effectiveness of each overhead function and no formal report of findings and corrective actions required. Nor does the Supervisor of Shipbuilding get into such areas. Since overhead constitutes about one-third of all costs incurred at (shipyards A), since about 99 percent of these costs are charged to government contracts, and since (shipyards A) has little competitive pressure to keep costs down, it appears that someone in government should be responsible for identifying and eliminating any waste in overhead.

The following examples illustrate the potential for savings in overhead and the need for more effective government surveillance:

1. Indirect Labor

Indirect Labor costs were \$36 million in 1969. This was the largest item of overhead expense. It includes all or a portion of the salaries of managers, staff personnel, supervisors and others. It appears that no one in government has checked to see whether all this effort was necessary. (shipyards A) recently announced and implemented a 500-man reduction, primarily in overhead and support functions. Although there has been a cutback in the design area, the production workload in the shipyard has remained about constant. (Shipyards A) is still hiring some production personnel. To the best of my knowledge the government never raised the issue of excess overhead or support personnel with (shipyards A) management even though the government pays the cost of these people. Government personnel apparently do not know or cannot tell whether or not the contractor's staffing is appropriate in relation to the workload being performed.

2. Maintenance and Plant Improvements

(Shipyards A) spent \$3.7 million in 1969 for plant maintenance. As plant maintenance costs are incurred they are charged to overhead and written off in current contracts. The \$3.7 million charged for plant maintenance in 1969 is about 22 percent higher than similar costs in 1968, which, in turn, were 23 percent higher than the same costs in 1967. On the other hand, plant improvements, such as new buildings, new production equipment, or other plant modifications that are of long range benefit to the shipyard must be paid for with corporate rather than government funds. (Shipyards A's) investment in plant and equipment decreased from \$28 million in 1967 to \$23.4 million in 1969, a decline of about 16 percent. Since the corporate test of profitability at (Shipyards A) is how much profit is earned in relation to corporate funds invested, it is often to (Shipyards A's) advantage to spend maintenance funds on old facilities rather than invest corporate funds in more efficient facilities, particularly when the added maintenance costs can be passed on to the government. In fact, since the

government negotiates profit as a percentage of estimated costs, higher costs on cost-type contracts usually result in higher profits to (Shipyard A). Thus (Shipyard A) has a strong incentive to continue operating with obsolete or inefficient facilities; the investment of corporate funds in the business is held to a minimum and the higher costs may result in substantially higher profits in the long run. There are several areas where it appears that (Shipyard A) may be sacrificing efficiency and increasing cost to the government in order to hold down investment of corporate funds. For example:

a. Temporary Storage Facilities.—Much of the in-yard storage and work space is on 11 old barges and ferryboats tied up to piers. Although the barges and ferryboats were undoubtedly less expensive to buy than a new building, their total cost in terms of inefficiencies and maintenance costs are undoubtedly higher. The insurance rate alone is 23 times higher for the floating warehouses than for equivalent building space. The inefficiencies and maintenance expense, however, can be charged off to government contracts. New facilities would require investment of corporate funds.

b. Storage Facilities for Salvage Operation.—(Shipyard A) also rents warehouses in the (local) area for its salvage and excess operation. The (Shipyard A) employee in charge of this operation stated that consolidation of salvage facilities in the shipyard would save enough in operating costs in just 3½ months to pay for the cost of the necessary building modifications. (Shipyard A) did not include this item (\$86,000) in its capital equipment budget until 1970. It appears as the last item on the priority list along with several other items labeled "cost reduction".

c. Leasing of Research Ships.—(Shipyard A) formerly owned a research ship it used in connection with submarine trials. Last year, the ship sank at sea. Since it was insured for replacement value, the company received about \$500,000 more from the insurance company than the ship originally cost. (Shipyard A) treated the gain as profit.

Instead of reinvesting corporate capital in another research ship, (shipyard A) rented a replacement ship. The annual rental and maintenance costs of this vessel are now charged off to government contracts and the company enjoys the use of the funds it formerly had tied up in the research ship.

3. Group Insurance

(Shipyard A) pays about \$3 million a year to (name deleted) Life Assurance Society for employee group insurance. This cost is charged to overhead and spread to government contracts. It appears that no one has checked to see whether this was the most economical method of obtaining insurance. According to the director of (shipyard A's) insurance program, (the parent corporation's) corporate headquarters has directed the (shipyard A) Division to buy insurance from (name deleted). The government auditor could not say whether (the parent corporation) has obtained competitive bids from other insurance companies to obtain the best available price for group coverage.

A recent (parent corporation) annual report lists an outstanding debt of \$66 million owed to an insurance company. This turned out to be the (name deleted) Life Assurance Society. Thus it is possible that the selection of (name deleted) as insurer may not have been made on the basis of lowest cost. In any event, it appears that the matter requires investigation.

4. Data Processing Costs

(Shipyard A) spends more than \$2 million per year for computer rental. Some of the costs are charged to overhead; some are charged as direct costs. (Shipyard A) had been obtaining computer services from IBM. Recently (shipyard A) switched some units to UNIVAC. I found no evidence that (shipyard A) solicited bids for this service from other firms. Similarly, (shipyard A) rents data viewers for about \$65,000 a year from (a viewer supplier), a wholly-owned subsidiary of (the parent corporation), without seeking competitive bids from other firms.

5. Other Costs

I found several other areas where it appears to me that (shipyard A) overhead costs are higher than necessary. For example, each year (shipyard A) spends about \$1.5 million for travel, of which about \$500,000 was charged to overhead. Sometimes the costs are charged to overhead; sometimes they are charged as direct costs. It appears that no one has been checking to ensure that travel charged to overhead is necessary or is being performed economically.

(A shipyard A) travel clerk discovered a few months ago that (shipyard A) employees were not taking advantage of the lower round trip excursion fares that are available to them—and that have long been required for government

employees. Company auditors verified that over \$127,000 per year had been wasted because no one had taken advantage of the lower fares.

(Shipyard A) pays employees cash and savings bond awards up to \$5,000 each for suggestions that help reduce costs and increase company profits. Last year, (Shipyard A) paid its 14,000 employees \$193,640 in such awards. This is more than the government pays annually to the 700,000 members of the U.S. Navy under a similar program. (Shipyard A) charges employee suggestion program costs to overhead. With the shift to more noncompetitive and cost-type contracts at (Shipyard A), payments under this program increased sharply. Last year such payments increased by 50 percent over previous years. (Shipyard A's) policy is that suggestions must be outside the scope of an employees' job to be eligible for an award. However, an inventory control clerk was awarded a \$5,000 bond for suggesting that items in the stationery inventory be catalogued to identify and standardize similar items. A buyer was awarded \$1,850 for suggesting that pump motors be bought directly from the motor manufacturer rather than through the pump manufacturer. The travel clerk mentioned earlier received a \$5,000 bond for recommending that (Shipyard A) personnel take advantage of excursion rates on travel when possible. Other substantial awards have been paid to employees for suggesting ways to accelerate progress payments from the government.

Recently there have been a major reorganization and signs of substantial improvement in this area. These improvements are coming about, however, principally because you pointed out this situation to the General Manager, (Shipyard A), as an example of the kind of things going on unchecked at (Shipyard A). Nonetheless, it is obvious that the employee suggestion program has not been properly reviewed by the government.

IV. CONCLUSIONS AND RECOMMENDATIONS

Obviously I have not exhaustively analyzed each overhead account. However, it is clear that the government is paying more than it should for overhead at (Shipyard A). It is also clear that the government's procedures and practices in administering work performed by (Shipyard A) under Navy contracts are inadequate and contribute to higher cost.

My recommendations are as follows:

A. The Navy should require (Shipyard A) to establish definitive standards and criteria for charging costs directly to contracts or to overhead.

B. The Navy should insist that (shipyard A's) accounting system be adequate to ensure that costs are charged fairly between cost-type and fixed price contracts.

C. The Navy should establish a formal program for regular review and appraisal of the efficiency and effectiveness of each overhead function.

D. The Navy should require a "lease versus purchase" analysis of any facilities items which will be charged directly or indirectly to Government contracts.

E. The Navy should establish procedures for the review and analysis of (shipyard A) manpower requirements in order to ensure that (shipyard A) does not carry excessive personnel at government expense.

F. The Navy should require (shipyard A) to obtain the maximum possible competition for overhead purchases, including purchases of insurance and other service costs. Government approval of sole source procurements should be required for purchases of \$25,000 or more.

ATTACHMENT 1(b)

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C., August 26, 1970.

In reply refer to 08H-772.

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND LOGISTICS)

Subj: Deficiencies in Procurement and Cost Control Practices of the (Shipyard A) Division (Parent) Corporation; comments on NAVSHIPS Investigation of.

Ref:

(a) NAVSHIPS ltr OON:FOJ:LT serial 124-OON dtd 30 April 1970

(b) NAVSHIPS endorsement 07B:JRN:NO serial 14-07B dtd 10 June 1970

on Deputy Commander for Nuclear Propulsion memo 08H-718 of 19 February 1970

- (c) Deputy Commander for Nuclear Propulsion Memorandum to the Assistant Secretary of the Navy (Installations & Logistics) serial 08H-718 of 19 February 1970

Encl: (1) Comments on Navy Department Review Team Report dated 30 April 1970 on (shipyard A) Procurement and Cost Control Practices and on COMNAVSHIPS endorsement dtd 10 June 1970

1. Reference (a) is the report of the special Navy Department Review Team that was established at your request to investigate procurement and cost control practices in March 1970 (at shipyard A). This special review was initiated as a result of my reports which pointed out many serious deficiencies in (shipyard A's) cost control and procurement practices under Navy ship design, construction and overhaul contracts. I also stressed the need for significant improvements in administration of Navy shipbuilding contracts at (shipyard A). Reference (b) is a COMNAVSHIPS endorsement which forwards the Team Report and comments both on the Team Report and on my memorandum to you of 19 February 1970, reference (c).

2. The Team Report substantiates many of my conclusions concerning the need for improvement in procurement and cost control practices at (shipyard A). However, the Team Report states:

"* * * while there are significant areas for improvement in (shipyard A's) procurement and cost control practices, as shown in the body of this report (and to this extent NAVSHIPS 08 is supported in its overall conclusion concerning (shipyard A) many of the examples cited and the findings made are not supported by a thorough evaluation of the facts. In a number of instances it is apparent that only a superficial investigation by NAVSHIPS 08 was made, resulting in conclusions which the facts do not warrant."

In reference (b) by COMNAVSHIPS expresses agreement with the above statement.

3. I have carefully reviewed each example or finding which the Team contends is not supported by a "thorough evaluation of the facts". My review shows exactly the opposite: The examples and findings cited in my reports appear well supported by the facts: In addition:

(a) The Naval Material Command Contractor Procurement Review Team Report issued January 1970 confirms the existence of serious deficiencies in (shipyard A) procurement practices.

(b) The Defense Contract Audit Agency Report issued August 1970 confirms the existence of a major problem with respect to (shipyard A's) mischarging of labor costs, thus refuting the same auditor's denial of several months ago that any problem existed.

(c) The internal Defense Contract Audit Agency memoranda and the Navy Review Team's Report, reference (a) confirm that there is a major deficiency in the contractor's system for controlling costs of materials charged to Government contracts.

(d) COMNAVSHIPS and the Navy Review Team Report confirm that (shipyard A) is obtaining progress payments from the Government on its inventories before the material is issued for use and even before the contractor has paid for it. However, COMNAVSHIPS and the Navy Review Team consider this practice acceptable.

(e) Defense Contract Audit Agency correspondence with the contractor subsequent to my report confirms that the Government was not being given access to certain records required for adequate administration of its contracts at (shipyard A).

(f) COMNAVSHIPS confirms that there is no segregation and accounting for the cost of change orders, and a Defense Contract Audit Agency Report issued in July 1970 concluded that the contractor's estimating system, upon which the Government is forced to rely, is not adequate for Government contracts.

4. Despite this record, which clearly supports the findings in my reports to you, the Navy Department Review Team devoted considerable effort to discrediting my statements. The Team report contains 98 pages of comment on my findings and examples. These comments generally defend (shipyard A) actions and refer to my statements in terms such as the following:

"* * * do not completely portray the total situation".

"* * * does not tell the full story".

"* * * is not factually correct".

"* * * the complete story is less simple".

"* * * is not representative of a general condition".

I find a strong bias in the Team comments, a bias defensive of NAVSHIPS and of the contractor.

5. The Team Report frequently does not discuss the *issues* I raised. Rather, it focuses on details of the *examples* I cited to illustrate the issues. In some cases the Team appears to have missed the point illustrated by the example. In others, the Team Report omits mention of significant facts derogatory to shipyard A or to Government performance, but cites at length justifications for shipyard A or Government actions. In at least one case the Team comment appears to have been prepared by the contractor. The Team's comments frequently obfuscate the issue through a lengthy discussion which emphasizes the adequacy of shipyard A practices and procedures. For example, the Team devotes a full chapter—17 pages—to refuting my comments concerning mischarging of labor costs. Only in the third appendix to the report can the reader learn that a recent floor check by the Government auditor showed a 32% error rate and a potential mischarging of 20 percent.

6. Enclosure (1) contains my detailed comments on the Review Team Report.

7. It has been more than a year since I first brought these basic issues to the attention of senior Navy officials. I am deeply disappointed in the Navy's actions to date. Navy officials have *written* hundreds of pages evading the issues and defending their inaction; they have *done* almost nothing to improve the situation. Their reaction is typical of a bureaucracy. When the functioning of any part is criticized, its constituency feels compelled to rise in defense of all its practices.

8. It would seem to me that if there were but one meritorious criticism in my reports, those responsible for administering our shipbuilding contracts should have asked themselves: "Why has this situation obtained for so long and why did I not know about it? Why did someone else have to point it out to me?" Instead, they have adopted the well known tactic of shifting the blame to the critic; to place him on the defensive. It reminds me of the Persian kings who were wont to cut off the head of messengers bearing bad news.

9. In its conclusions, the Navy Review Team Report paints an encouraging picture; there are some problems, but the contractor is cooperative; the problems that do exist are being addressed and will soon be resolved; the contractor has progressed substantially in implementing the Naval Material Command procurement system review recommendations.

10. I, on the other hand, am not encouraged by these reports. Outside of some "paper changes", i.e., organizational reshuffling, procedure rewriting, etc., little has been done to improve procurement and cost control practices at shipyard A. *Nothing* appears to have been done to improve the Navy's administration of its contracts.

11. Particularly disturbing to me is the NAVSHIPS suggestion in reference (b) that we have no right to efficient performance or proper charging under our contracts:

"I agree with the overall conclusion of the Review Team, contained in Appendix III page A-III-I and quoted below, *provided it is recognized that the improvements recommended are beyond the requirements of existing contracts.*" [Emphasis added.]

It seems to me that any customer—including the Government—has a right to expect economical and efficient performance—and proper charges—from his contractors. It is also true that most contractors will give their customers less than they contracted for if the customer will accept less.

12. From the NAVSHIPS responses to date, I see no hope of ever improving administration of our shipbuilding contracts through existing organizations. Therefore, I recommend that you take action with the Chief of Naval Material to institute whatever new organizational relationships are necessary to obtain proper administration of these contracts.

13. The Navy must make a choice: it can take firm steps *now* to demand and obtain acceptable performance by its contractors and to provide for proper administration of our shipbuilding contracts. or it can allow these problems to drag on until the General Accounting Office or Congress requires the Navy to take action. I am sure you understand the importance to the Navy of setting its own house in order without being forced to do so by an outside agency or by Congress.

14. I am more than disturbed at the constant effort by the *very people who have been responsible for the faults* I discovered to talk them away. It is dis-

couraging that so many officials in the field and at headquarters will not face up to facts; apparently they will have to be hit by a sledge-hammer. At the slightest sign of "improvement" they become euphoric and say: "See, it wasn't that bad at all, and even if it was bad, the company has now reformed itself." They then go about "business as usual", which means going back to doing little or nothing about the basic issues.

15 Further, they seem to be incapable of taking actions based on *principles*; they tend rather to cure only the *examples* which illustrate the principles. Or else they are always seeking for precise rules to solve imprecise situations—in other words they act as clerks, not as officials. Example: The suggestion by the Navy Review Team that the Armed Services Procurement Regulations be modified to specify the desired level of accuracy for labor charges on Government contracts.

16. I have entered into this series of criticisms because the way the Navy is doing business is wasteful of Government funds and therefore does not permit us to build as many ships as we otherwise could. My object is *not* the vain effort to make contractors live up to their contracts with proper accounting, procurement and cost control practices, or to make Government officials do the jobs they are paid to do. It is to obtain the maximum defense possible for the United States.

H. G. RICKOVER.

Copy to:
CNM.
COMNAVSHIPS.

NAVSHIPS 08 COMMENTS ON NAVY DEPARTMENT REVIEW TEAM REPORT DATED
30 APRIL 1970 ON (SHIPYARD A) PROCUREMENT AND COST CONTROL PRACTICES

(SHIPYARD A) PROCUREMENT PRACTICES

1. Problem and Recommendations, as stated in NAVSHIPS 08 Report Dated 13 September 1969

"* * * there are widespread weaknesses and deficiencies in procurement practices."

* * * * *
"Subcontracted work accounts for about one-third of the construction costs of a nuclear submarine. In 1968 the (shipyard A) procurement department awarded subcontracts in the amount of \$53 million. So far in 1969, (shipyard A) is subcontracting at an annual rate of about \$86 million. A review of about 40 procurement files revealed numerous deficiencies and fundamental weaknesses in (shipyard A's) procurement procedures and practices. The deficiencies in procurement practices were common and widespread. The Government could save substantial sums by simply requiring (shipyard A) to improve its procurement practices."

* * * * *
"[The Navy should] withdraw approval of the procurement system. The company should be required to submit all proposed subcontracts in excess of \$25,000 for Government review and approval prior to placement."

2. Contractor Procurement System Review Team Report (CPSR)

A Contractor Procurement System Review Team (CPSR) in October 1969 (report issued January 1970) confirmed existence of the basic deficiencies in (shipyard A) procurement practices outlined in NAVSHIPS 08 report of 13 September 1969. The CPSR Report stated:

"This initial review disclosed that the contractor's procurement system is inadequate, fails to afford maximum protection of the Government interest and does not assure procurement of materials at the lowest price consistent with quality and required delivery schedules."

The CPSR Report was included as Appendix 2 to the Navy Department Review Team Report.

3. Navy Department Review Team Report

The Navy Department Review Team Report stated:

"Review of the Purchasing Department's files and interviews with (shipyard A) personnel disclosed areas of improvement since the CPSR. These areas included (i) the percentage of cases in which negotiations were considered to have been performed effectively (31 percent in the October CPSR vs. 36 percent observed during this review) and (ii) the percentage of cases in which (shipyard

A's) own resources were used effectively for price/cost analysis (77 percent in the October CPSR vs. 83 percent observed during this review). In addition, the current Review Team considered the purchase orders reviewed to be satisfactory overall for 83 percent of the cases as opposed to 74 percent observed during the October 1969 review. Moreover, (shipyard A) has instituted action (e.g., controlled bid procedures and establishment of a cost/price analysis group) to implement all of the CPSR recommendations addressed to them. Due to the nature of some of the recommendations and the relatively short time which has had in which to implement them, it is still too early to test the total effectiveness of the actions taken to implement the CPSR recommendations. However, if (shipyard A) continues with the vigorous approach currently being utilized, it should be in a position by no later than October 1970 for a complete reevaluation of its procurement system. (Shipyard A) does not have a standard index (Table of Contents) for its purchase order files, nor does it have an established Procurement Review Board to review sole/single source procurement."

4. NAVSHIPS 08 Comment on Navy Review Team Report

While acknowledging existence of basic procurement deficiencies at (shipyard A) and the need for corrective action, the Navy Department Team Report proceeds to criticize the statements of findings in the NAVSHIPS 08 13 September 1969 report.

NAVSHIPS 08 comments on each item in the Navy Review Team Report concerning NAVSHIPS 08 findings are contained in the following pages.

NAVSHIPS 08 FINDING—1

1. NAVSHIPS 08 13 September 1969 Report

Procurement files do not adequately justify prices being paid by (shipyard A) : "Of the 40 procurement files reviewed, there was no evidence of actual return cost information from prior orders being used to justify prepared costs. (Shipyard A) is not using pre-award audits or detailed independent estimates to evaluate, negotiate and justify prices in sole-source and other non-competitive procurements as required by the *Armed Services Procurement Regulation*."

2. Contractor Procurement System Review Team Report (CPSR)

The January 1970 CPSR Report confirmed the NAVSHIPS 08 statement that (shipyard A) procurement files do not adequately justify prices being paid. The CPSR Report stated :

"In addition to the foregoing, the review also disclosed that for the total of 148 purchase orders reviewed 45 were inadequately documented. These inadequacies included incomplete data supporting the Certificate or Current Cost or Pricing Data, no way to determine estimated portion from factual data, lack of audit, no cost breakdown for inter-divisional transactions (DD Form 633 or other), lack of written record of negotiations and lack of record of previous buys. All of the above plus other documentation discrepancies are in direct violation of (shipyard A's).

"Procurement Management Directive No. 61 which requires each file to be self-explanatory. It was also noted that some files contained incomplete records of cost analysis and records of negotiations."

3. Navy Department Review Team Report

The Navy Department Review Team Report does not comment on the NAVSHIPS 08 finding, but only on the examples cited in support of the finding. The Team Report stated :

"The specific examples cited [by NAVSHIPS 08] to illustrate this deficiency do not completely portray the total situation nor identify by purchase order number the procurements reviewed. In-depth reviews during the October 1969 CPSR and this current review of procurement of shaft seals and pumps disclosed the following :"

* * * * *

The Team Report then proceeds to comment at length on the details of the examples citing justification to defend (shipyard A) actions in the procurements.

4. NAVSHIPS 08 Comment

Despite the extensive comments and discussion in the Review Team Report in justification of (shipyard A) actions, the examples cited by NAVSHIPS 08 show :

(a) (Shipyard A) placed sole source orders for shaft seals for several years without obtaining and reviewing actual costs on prior orders to insure reasonable prices to the Government. When the Government auditor finally checked one order, he questioned 30% of the price. Clearly (shipyard A) should have been obtaining and reviewing supplier cost and pricing data instead of relying on price justifications based on its original 1964 procurement.

(b) (Shipyard A) proposed to place a sole source order totaling over \$500,000 with one of its principal suppliers but without obtaining cost and pricing data required by the Truth-in-Negotiations Act and the *Armed Services Procurement Regulation*. In checking this procurement the auditor questioned more than \$230,000 out of \$500,000 price. The NAVSHIPS 08 September 1969 Report noted this matter was still pending; it has not yet been settled.

The Team Report notes that (shipyard A) has since reached agreement with its supplier to obtain certified cost and pricing data where required in future procurements. However, in neither of the above cases did (shipyard A) files contain documentation to support the reasonableness of the prices paid by (shipyard A).

NAVSHIPS 08 FINDING—2

1. NAVSHIPS 08 13 September 1969 Report

"There seems to be an excessive and unwarranted amount of sole source procurement. It appears that many of these sole source procurements have been overpriced."

2. Contractor Procurement System Review Team Report (CPSR)

"The CPSR team's evaluation of contractor files shows that 66.9% of the subcontracts examined have been awarded to single/sole source (i.e. 99 subcontracts, so awarded, divided by the 148 subcontracts sample equals 66.9%). Further, this evaluation shows that 79.9% of the dollar volume (i.e. \$12,819,172 divided by \$16,047,687 equals 79.9%) has been involved in awards to single/sole sources. In comparison and according to a monthly report by the Purchase Department, approximately 66.5% of the total procurement dollars cumulative through June 1969 have been placed on other than a competitive basis."

3. Navy Department Review Team Report

The Team report comments that subsequent to the October 1969 CPSR, (shipyard A) has prepared an interim instruction setting forth criteria to be used, justifications to be required, and approvals to be obtained for sole source procurements.

With regard to NAVSHIPS 08 statement "it appears that many of these sole source procurements have been overpriced", the Team comments at length on three examples from the NAVSHIPS 08 September 1969 report, citing (shipyard A's) justification of its continuing sole source procurement of shipboard furniture from a "middleman", its continuing sole source procurement of valve actuators despite lower bids and quotations from other firms, and its "add-on" procurement of steel without obtaining competitive quotations. These Team comments are summarized briefly below:

a. Shipboard furniture

The Team Report states that in 1966 and 1967 (Shipyard A) attempted without success to obtain competition for shipboard furniture. Because of the sole source situation (Shipyard A) required DCAA to make a pre-award government audit in connection with this procurement. The Report states:

"Although sole source situations are never desirable, and by their nature are risky, from a cost standpoint, there is no demonstrated basis for arriving at the conclusion 'it appears that many of these sole source procurements have been overpriced', with respect to the procurement of furniture from (a subcontractor). The (parent corporation) audit scheduled for June 1970 will provide (Shipyard A) with a valid basis for assuring that final prices paid are reasonable.

"With respect to the DCAA Audit report mentioned in connections with the allegation, use of the report is misleading in that it is incomplete and therefore could not be used for its intended purpose of assisting in the establishment of reasonableness of quoted prices. (Shipyard A) obtained from SUPSHIP (deleted) consent for award to (subcontractor) on 19 November 1969 (deleted)."

NAVSHIPS 08 Comment

The Navy Review Team comment is misleading:

1. (Shipyard A) has been procuring shipboard furniture sole source for many years. The first government "pre-award" audit was requested in April 1969, four months after the firm fixed price order discussed in the Team Report was placed. The purchase order in (Shipyard A) files did not contain a written provision for a downward price adjustment based on a government audit.

2. There are other sources for shipyard furniture. (Shipyard B) and (Shipyard C) have obtained lower prices through competitive bidding. In a recent shipyard solicitation (not Shipyard A), another furniture supplier quoted prices 30 percent lower than the prices quoted by (Shipyard A's) sole source supplier.

b. Valve Actuators

The Team Report cites (Shipyard A) justification for selection of (a subcontractor) on the basis of their technically superior design, proven performance, and more reliable delivery. The report concludes:

"(Shipyard A) is aware of several sources interested in becoming qualified suppliers but there are the ever present constraints of time, quality and funding in the development of additional sources. Nevertheless, such constraints always exist; and unless action is pushed to obtain another source, one will never be obtained, and the sole source situation will be with us forever."

NAVSHIPS 08 Comment

In defending (Shipyard A's) repetitive sole source procurement of valve actuators from (a subcontractor), the Navy Review Team does not bring out several relevant facts:

1. Some of the items (Shipyard A) procured sole source from (a subcontractor) were formerly procured sole source from another firm which still manufactures these items.

2. NAVSHIPS 08 was informed that several employees of (Shipyard A's) valve actuator design group left (Shipyard A) in 1968 and went to work for (the subcontractor).

3. (Shipyard A) included in its sole source bid packages items for which competition could be obtained.

4. In one procurement, another firm submitted a bid to supply valve actuators. (The subcontractor) subsequently dropped its price, but the other firm remained low. (Shipyard A) proceeded to award to (the subcontractor) on the basis that the competitor would not comply with data requirements. However, (shipyard A) files indicate that the competitor made it clear that it would comply with contract data requirements.

c. Procurement of Steel as an "add-on"

The team report states:

"Thus, it is supportable by the purchase order file documentation, even though an urgent situation existed, that (shipyard A) Procurement Department did obtain competitive quotes and used the information in placement of the "add-on" orders which were awarded within a reasonable time period of the receipt of competitive quotes.

"Nevertheless, (shipyard A) and the SUPSHIPS must scrupulously refrain from frequent use of the "urgent situation" (sometimes rationalized) to avoid fullest possible use of competition. It could well be concluded that the 13 plate buy in September, two months after the modest 6 plate buy, and for a separate, fourth shipset, was not so urgent as to preclude a competitive procurement."

NAVSHIPS 08 Comment

With regard to (shipyard A's) procurement of steel, NAVSHIPS 08 agrees with the statement in the Navy Review Team Report. "It could well be concluded that the 13 plate buy in September, two months after the modest 6 plate buy, and for a separate, fourth shipset, was not so urgent as to preclude a competitive procurement." Obviously, the use of sole procurement in situations where competition can be obtained results in higher than necessary prices to the Government.

NAVSHIPS 08 FINDING—3

1. NAVSHIPS 08 13 September 1969 Report

"(Shipyard A) is not making effective use of the Truth-in-Negotiations Act to obtain the lowest possible prices for the Government."

2. Contractor Procurement System Review Report (CPSR)

"Price and Cost Analysis Methods.—Review of purchase order files reveals that the contractor is definitely weak in the area of price and cost analysis. There are no formally established pricing histories for repetitive buy type items, nor have data banks been established for cost or pricing data for use in future procurements. Furthermore, no evidence was found in the purchase order files, for 15 cases over \$100,000 each, of the contractor making effective use of vendor furnished data in the analysis of vendor proposals.

"Weaknesses in the cost/price analysis operations, coupled with a high percentage (in excess of 60%) of non-competitive procurements makes questionable the effectiveness of the contractor's purchasing operations to adequately protect the Government's interests."

3. Navy Department Review Team Report

"Results of the October 1969 CPSR and this current review indicate concurrence with the generalized finding."

However, the Team Report goes on to discuss at length the examples cited in the NAVSHIPS 08 Report involving the procurement of steel flasks and procurement of main sea water pumps. The Team report concludes:

"(A subcontractor) refused to furnish cost or pricing data to (shipyard A) but did furnish the data to the Administrative Contracting Office SUPSHIP (deleted). (Shipyard A) contacted the Defense Contract Audit Agency (DCAA) requesting their assistance in obtaining cost and pricing data and having it forwarded to SUPSHIPS (deleted)."

* * * * *

"The files available in SUPSHIP (deleted) and the (shipyard A) Procurement Department also disclose that prior to granting consent to placement of this purchase order the Administrative Contracting Officer, SUPSHIP (deleted) used all of the tools and information available to him in determining the reasonableness of the proposed price."

* * * * *

". . . it appears as though the [NAVSHIPS 08] statement with respect to the main sea water pump is not factually correct."

4. NAVSHIPS 08 Comment

a. Procurement of Steel Flasks

The Navy Department Review Team Report concludes that this procurement was handled properly by SUPSHIPS and by (shipyard A). It does not mention the fact that the cost breakdown showed a 20 percent profit which is higher than can be justified under the DOD profit guidelines, and that this issue was never raised with the steel supplier by SUPSHIPS or by (shipyard A).

b. Procurement of Main Sea Water Pumps

The team makes it appear that (shipyard A), on its own initiative, obtained cost and pricing data and negotiated a lower price for these pumps. The facts are that during April and May of 1968 NAVSIPS 08 and NAVSHIPS Division of Contracts personnel advised (shipyard A) that the government would not consent to the placement of a subcontract for main sea water pumps until cost and pricing data had been obtained and used to negotiate the lowest possible price. This fact was documented in (shipyard A) files which were available to the Review Team. It was at NAVSHIPS insistence that the cost and pricing data were finally obtained. This action resulted in a negotiated reduction of 18% in the proposed price from \$216,000 to \$176,800 which still provided the supplier a 20 percent profit in addition to a provision for substantial additional contingencies which NAVSHIPS considered unwarranted.

The CPSR Report described (shipyard A's) normal practice in such cases. It said:

"(3) Lack of Effective Use of Cost or Pricing Data.—In the 15 cases cited above, no evidence was found in the purchase order files of effective use of the data to analyze a vendor's proposal. . . . Discussion with personnel. . . failed to show that any use was being made of data obtained under the Truth-in-Negotiations Act."

* * * * *

"Where [Government] audits are made . . . it is Defense Contract Audit Agency policy to mark the audit reports 'For Official Use Only' and to respect

vendor requests that particular information not be disclosed to the prime contractor. As a result, little information of values obtained through the audit finds its way back to the prime contractor for use in price negotiation."

* * * * *

"In those cases in which information from the assist audit is not made available to (shipyard A), the audit request is fruitless and compliance with Public Law 87-653 is a sham."

NAVSHIPS 08 review of this matter does show one inaccuracy in its September 1969 report. The report states:

"* * * For example, (shipyard A) submitted a recommendation to the Naval Ship Systems Command (NAVSHIPS) to buy main sea water pumps from a sole-source supplier at \$216,000 without obtaining cost and pricing data. On the recommendation of Naval Reactors, the NAVSHIPS Contracting Officer rejected this proposal and requested that cost and pricing data be obtained from the supplier and a revised procurement recommendation be submitted based on the reasonableness of the vendor's costs. . . ."

The initial recommendation from (shipyard A) was for \$195,000 not \$216,000; subsequent changes in scope increased the supplier's price to \$218,000, which was further revised to \$216,332.

NAVSHIP 08 FINDING—4

1. NAVSHIPS 08 13 September 1969 Report

"Insufficient effort is being expended to reduce the cost of supplies and materials charged to Government contracts."

2. Navy Department Review Team Report

The Team does not comment on the basic issue. Comments are only made on the examples NAVSHIPS 08 cited with regard to (shipyard A) procurement of repair parts, use of GSA supplies, and procurement of chemicals. These are discussed below:

a. Repair Parts

NAVSHIPS 08 Report.—"(Shipyard A) generally procures repair parts through the original equipment supplier without first checking whether they could be procured more economically by soliciting competitive bids from other suppliers. Procurement files indicate (shipyard A) placed spare part procurements of \$208,440 for common valve actuator parts, \$27,000 for shaft seal spare parts, \$17,030 for furniture spare fixtures, and numerous other spare part orders with the original equipment supplier with no justification indicated as to the need to procure these spare parts on a sole source basis.

" . . . prior experience at another prime contractor activity was that many repair parts can be bought competitively at substantially lower prices than can be obtained from the equipment supplier. In many cases, repair parts could be bought competitively for about half of what an equipment supplier would charge for the same part."

Navy Department Review Team Report.—The Team Report describes the procedure whereby the (shipyard A) Engineering Department personnel specify which items are to be secured proprietarily from original equipment manufacturers and which are standard items. The Team Report concludes that (shipyard A) does segregate by records those items that are of a proprietary nature and are to be purchased from the original vendor and those items which can be supplied from other sources.

NAVSHIPS 08 Comment.—The Review Team comments do not speak to the issue. The issue is: Is (shipyard A) making a diligent effort to obtain the lowest prices for supplies and materials charged to Government contracts? Does (shipyard A) obtain competitive quotes in all cases where it could? The answer as evidenced by the examples cited is no. These examples show that (shipyard A) is continuing to procure common items proprietarily from equipment suppliers rather than through competitive quotations.

b. GSA Supplies

NAVSHIPS 08 Report.—"The General Services Administration (GSA) office in the (deleted) Region stated that (Shipyard A), as a predominantly Government prime contractor, is authorized to procure supplies through the GSA, thereby taking advantage of quantity and other discounts available to the Govern-

ment. Last year (Shipyard A) bought commercially about \$2.7 million of general purpose supplies, none of which were procured through GSA. At another prime contractor location, prices obtained through GSA were substantially, in some cases 50% or more, below the normal commercial market prices."

Navy Department Review Team Report.—"The above quote implies that merely being a predominately Government prime contractor authorizes (Shipyard A) to procure supplies through GSA, and that (Shipyard A) has made the effort to take advantage of this potential cost savings. The complete story is less simple."

* * * * *

"It is obvious from the information obtained from (Shipyard A) files, and review of the ASPR requirements that (i) there are many aspects to utilization of GSA supply sources and pricing other than just being a predominately Government prime contractor, (ii) (Shipyard A) has conducted a study related to the economic impact of utilizing GSA supply sources and pricing under the regulations imposed by the Government, and (iii) (Shipyard A) has requested the Government to furnish copies of the Federal Supply Schedules and General Services Administration Stores Stock Catalogs for future use."

NAVSHIPS 08 Comment.—The Review Team conclusion in this matter is not clear. What is clear is that the use of GSA supplies would save money for the Government. The Navy should take steps to see that (Shipyard A) utilizes the most economic sources of supply.

c. Chemicals

NAVSHIPS 08 Report.—"Another Naval Reactors representative at (Shipyard A) found that the price (Shipyard A) was paying for certain chemicals used extensively in the construction and overhaul of nuclear ships was twice that listed in the Navy Stock Catalog for the identical items."

Navy Department Review Team Report.—"The information obtained from the (Shipyard A) files reveals that the statement regarding procurement of chemicals, based on hearsay, is addressed to selected items and is not representative of a general condition in the procurement of chemicals (note the study disclosed only a \$678.26 difference in total price paid during 1969 for those chemicals that could be compared with Navy catalog prices.)"

NAVSHIPS 08 Comment.—The team report devotes eight pages to the historical background of chemical procurements. The team's comment—obviously written by the contractor—deals mainly with the contractor's difficulty in securing a copy of Ships Parts Control Center instruction 4440.310 G concerning ordering of chemicals and various other requirements for their use in nuclear reactor plants. None of the comments seem relevant to the issue of whether (Shipyard A) is making sufficient effort to obtain supplies and materials for government contracts at the lowest possible cost. The specific example is discussed in detail but not the issue.

NAVSHIPS 08 considers that the above examples and others cited in this report clearly show the need for greater effort by the contractor to reduce the cost of supplies and materials charged to government contracts at (Shipyard A).

NAVSHIPS 08 FINDING—5

1. NAVSHIPS 08 13 September 1969 Report

"'Competitive' procurements are not handled properly. As a result, there is no assurance that all qualified firms have an equal opportunity in the bidding process or that reasonable prices are being obtained."

2. Navy Department Review Team Report

"Results of the October 1969 CPSR indicate general concurrence with the above statement. Recommendation No. 10 of the CPSR report states that 'That for the awards where competition is obtainable (Shipyard A) should make the awards as a result of a controlled bid procedure.'"

3. NAVSHIPS 08 Comments

None required.

NAVSHIPS 08 FINDING—6

1. NAVSHIPS 08 13 September 1969 Report

"The lax procedures and practices employed in the procurement of equipment and material for government contracts are in sharp contrast with the close attention paid by (shipyard A) and (the parent corporation) Management in procurements involving corporate funds."

2. Navy Department Review Team Report

"Based on the findings of the CPSR and this follow-up review there is insufficient finding of fact to support the statement that the contractor does not give comparable attention to procurements involving Government funds as he does to those involving Corporate funds of the same magnitude."

3. NAVSHIPS 08 Comments

The NAVSHIPS 08 September 1969 Report points out that procurements involving corporate funds were reviewed and approved at a very high level within the company for procurements as low as \$300. Moreover, when corporate funds were involved (shipyard A) conducted audits and extensive negotiations among all competing bidders to establish the lowest possible price. In contrast, when government funds were involved, corporate management was not involved to a comparable extent. The Review Team report avoids the main issue with a lengthy discussion of who has authority to approve what within the company.

The Review Team cited an example where (shipyard A) sent its own auditors to investigate a supplier's proposal under a government procurement. However, this audit involved an item under NAVSHIPS 08 cognizance and was initiated as a result of NAVSHIPS 08's discussion with (shipyard A) management over the company's poor purchasing performance.

For procurement actions where (shipyard A) is free of any government supervision under the "Approved Procurement System" or "disengagement policy", similar efforts are not made. The Review Team itself noted that no budgets were set up for cost-type contracts. Yet, tight budgets are set up for corporate-funded procurements. (Shipyard A) does not fly in a team of corporate auditors to audit a \$50,000 government-funded subcontract. Nor do they get eight "no bids" to verify that a sole source procurement is necessary for a government-funded \$73,900 purchase order. As shown in the NAVSHIPS 08 Report, they have taken such actions for corporate-funded procurements of the same amount.

It is inconceivable that a group of procurement experts could look into the situation at (shipyard A) and conclude that there are insufficient facts to support the statement that the contractor does not give comparable attention to procurements involving government funds as it does to those involving corporate funds of the same magnitude. All one has to do is look at the records.

NAVSHIPS 08 FINDING 7

1. NAVSHIPS 08 13 September 1969 Report

a. Material Costs

"(Shipyard A's) material control system contains serious deficiencies such that the validity of material costs charged to Government contracts cannot be determined."

* * * * *

"In summary (shipyard A) has not taken effective action to correct the deficiencies in the material control system even after the Government pointed out the seriousness of this problem. The Government has not taken action to require (shipyard A) to provide effective control over material costs."

* * * * *

"[The Navy should] withdraw approval of (shipyard A's) accounting system until effective controls are established to preclude mischarging of labor and material costs on Government contracts."

2. Navy Department Review Team Report

"The Review Team has found that the above statement and supporting comments present an incomplete portrayal of the contractor's material costing procedures and are not supportable in light of the considerations discussed below."

* * * * *

"In May 1968, the contractor, in accordance with a request from the Resident Auditor, furnished a status report on the material accounting adjustments. That status report indicated that a detailed analysis had been made on approximately 1000 adjustments and disposition had been made on about 850 of these adjustments.

"In light of the above, the Review Team cannot agree with the statement that (shipyard A) had not taken effective action to correct the deficiencies or

that the Government did not follow-up promptly to insure that (shipyard A's) corrective action was adequate.

"The second area pertains to the (Parent Corporation) Corporate Headquarters Audit Report issued in June 1969. This audit pertains to a review of the Cost Accounting Materials Section or more specifically, Code Stock Inventory Activity.

"The Code 08 report states, " * * * they (Corporate Auditors) found serious quantity and pricing errors in inventory charges."

"The Review Team discussed this audit with the Corporate Internal Auditor who performed the review and wrote the report. In a memorandum confirming this discussion, the Corporate Auditor stated that, 'Nowhere in our report did we state that the system contained any "serious" deficiencies, nor did we consider any "serious" deficiencies to exist.' Accordingly, we are unaware of the basis for the Code 08 statement that, " * * * they found serious quantity and pricing errors in the inventory charges.'"

* * * * *

"While the above comments are based on only a brief review of selected transactions entering into the Inventory Adjustment Account during the first quarter of 1969, it does portray a significantly different condition from that implied by the Code 08 report which labels the \$2 million as corrections resulting from deficiencies. To the contrary, the existence of the account and its accounting function is evidence of the contractor's effort to control inventory, related material pricing and costing to contracts rather than the absence of such control."

NAVSHIPS 08 Comments

The NAVSHIPS 08 September 1969 Report concluded that the deficiencies in (shipyard A) material control procedures were "serious." The Navy Department Review Team apparently considers (shipyard A's) material control deficiencies are not serious. This view conflicts with the opinion of the resident government auditor given in an internal memorandum to the Assistant Regional Manager, DCCA, (deleted) on 5 May 1969, at the time of the (parent corporation) headquarters material audit at (shipyard A). In that memorandum, the auditor said:

"Although a major system revision for control and accounting of material stores was implemented in October 1968, we have no evidence that the condition disclosed by audit in 1967 has appreciably changed . . . In May 1967, we wrote to the contractor that *based on our audit of inventory adjustments, we concluded the material stores practices inadequate for accumulating costs under cost-type and fixed-price incentive contracts.* [Emphasis added]. However, this was not included in forward pricing or any other reports to the contracting officers. In September 1967, the contractor replied that he understood DCAA's concern about the system and he would take immediate action to correct the 1966 records. In January 1969, when this was subsequently followed up, the contractor replied that 1966 would be fully corrected by March 1969. Our lack of personnel staff and higher priority work on overhead has precluded more timely followup. However, since the system was considered inadequate in May 1967, I believe we have some urgency to review the present systems and inform the contracting officer if we are not satisfied. We are not optimistic about our results as we noted that in the first quarter CY-1969 over \$2 million in inventory adjustments were recorded on a \$10 million inventory. However, we are moving in the direction of making firm conclusions."

The resident government auditor has not issued a report on the adequacy of (shipyard A's) material control system since the above was written. In view of the deficiencies cited in other sections of the Navy Department Review Team Report and the recommendations for changes in the contractor's system (discussed below), it appears obvious that serious material cost control deficiencies have existed for some time and that government corrective action has been inadequate.

3. Navy Department Review Team Report

"The contractor's systems for receiving, handling, storing, and issuing materials is considered to be adequate in all respects for the purpose of supporting the yard's production effort. However, the physical separation of warehouse facilities and the poor maintenance condition of some of these facilities must be a significant factor in the overall cost of the Materials Department."

* * * * *

"Extensive use is made of computer based systems to control all materials from the time procurements are initiated or shop manufacture is authorized until the time the material is issued to Production Control. These computer systems enable material managers to maintain excellent control and accountability and to relate material support directly to production needs."

NAVSHIPS 08 Comments

The team's statements concerning the "excellent control and accountability" of (shipyard A's) material cost control system seem inconsistent with the following statement on page XI-14 of their report :

"The actual quantities of material on hand under Material Management control is known at all time, but lacking line item prices, the computer run does not show the total dollar value of material in stores by group, weight account, hull or even by total stores account. Similarly, the dollar value of materials issued to Production Control is not known for those materials which are awaiting manufacture or when manufactured are awaiting installation in a ship. Also, the dollar value of materials actually installed in each ship is not known. All of these dollar values are lumped together as 'work-in-progress' (WIP) and are included in the WIP as a running cumulative figure by weight account for each hull. This is considered to be a major deficiency in the contractor's system for controlling the cost of materials." [Emphasis added.]

As a result of these and other shortcomings, the review team found that (shipyard A) management did not have the following information readily available "to facilitate effective cost control" :

- (a) The actual cost of residual manufactured materials resulting from either contract changes or poor planning.
- (b) The actual value of material diversions from one contract to another.
- (c) The actual cost of damaged materials or shop re-work.
- (d) An immediate tabulation by dollar value of any loss by destruction or fire.
- (e) The actual realized loss or gain by sale of materials either as surplus or as new items.
- (f) The actual value being purged from stock as obsolete.

The team also found that there is no control system to ensure that turned-in reusable excess material is being credited to the contract to which it was originally charged. Thus, the team's own findings would appear to support the finding that there are serious deficiencies in (shipyard A's) material control system.

NAVSHIPS 08 FINDING—8

1. NAVSHIPS 08 13 September 1969 Report

"Through questionable material charging practices, (Shipyard A) is charging the government for material that remains in inventory and for material that (Shipyard A) itself has not paid for."

* * * * *

"[The Navy should] review progress payment procedures so that (the parent corporation) no longer gets interest-free use of Government funds."

2. Navy Department Review Team Report

"This finding is in reference to (Shipyard A) procedures for allocating or distributing coded stock inventory among its major Navy contracts for the purpose of supporting requests for progress payments on each of these contracts." * * * *

"The progress payments here however, are based not on 'costs paid,' as implied by the finding. For shipbuilders they are based upon the physical progress achieved. In the materials category progress is represented by the fact that ship construction materials are on hand. The dollar amount of this physical progress is considered to be equal to the value or cost of the materials concerned, and the Government obtains a lien on the materials to the extent of progress payments made."

NAVSHIPS 08 Comment

The team comment is double-talk. What it says is that for the purpose of progress payments, materials costs are "progress".

3. Navy Department Review Team Report

"(Shipyard A) carries in inventory approximately \$12-13 million worth of materials at all times. This inventory is made up of approximately \$8 million of allocated coded stock (pipe fittings, bar stock etc.) and \$3 million of open coded stock (low valve wire, cable, nuts, bolts, washers, fastners, etc.) with the remaining portion consisting of various special shop supplies. It seems an entirely appropriate and equitable approach to acknowledge that a portion of this inventory is on hand for the purpose of ship construction and does in fact represent physical progress. * * *"

* * * * *

"The ASPR B-303 (e) provides means whereby the Government can properly finance commingled inventory allocated to Government contracts provided it is in the best interest of the Government to do so. The question then reduces to what is the most efficient and economical manner to finance material purchased in advance of needs for ship construction contracts. First, consider two likely alternatives if the Government were to refuse to make progress payments on materials in inventory which have been placed there to carry out actual Navy Shipbuilding contracts.

"(a) The contractor could purchase all materials as direct materials * * *."
 "(b) (Shipyard A) could finance its own inventory with corporate funds. The cost to (Shipyard A) to finance a \$10 million inventory would be at least \$1 million a year (\$10 million at 10% interest per annum). Thus this additional cost of approximately \$1 million would be reflected in its shipbuilding contracts through overhead. The Government on the other hand could finance that same inventory at a cost (to the Treasury) of approximately \$500,000 a year (\$10 million @ 5% annum) but reflect no additional cost to the Navy."

"If these or any other alternative means for maintaining an advance materials inventory are not as economical as Government financing (when proper and appropriate for Government contracts only), then it would appear to be in the best interests of the Government to encourage the contractor to utilize an allocated materials inventory system financed by Government funds (the cheapest money on the market)."

* * * * *

"It is the recommendation of the Review Team, based in part on the discussion above that the Navy policy on shipbuilder progress payments continue to be 'progress payments for physical progress' (with a limitation, as now used, of 105% of actual costs incurred). Any action by the government to discourage the shipbuilder's early obtaining, and having ready at hand, materials required for construction could be expected to lead only to construction delays and ultimate increased building costs."

NAVSHIPS 08 Comment

ASPR B-303 discusses the records required for control of Government property in the possession of contractors—it does not provide for government financing of contractor inventories. Moreover, ASPR B-303 (e) (ii) and (iii) state:

"(ii) Authorization. The Head of the Procuring Activity responsible for contract administration at the contractor's plant involved or his designee may authorize a contractor who is performing or will perform more than one Government contract to use the multicontract cost and material control system in accordance with this paragraph. The property administrator will, for each system authorized, approve detailed operating procedures as are necessary for that particular system.

"(iii) Criteria. A multicontract cost and material control system may be authorized if:

(a) the contractor demonstrates that savings or improved operations will result from adoption of the system or that it will otherwise be in the interest of the Government;

(b) the contractor's accounting system is adequate to satisfy the requirements set out in B-312; and

(c) the system is applied to existing Government contracts only and excludes materials acquired or costs incurred for non-Government work or in anticipation of future Government work."

Thus even assuming the Government were willing to allow (shipyard A) to obtain progress payments on its inventories, it does not appear that the Government determination required by ASPR B-303 (e) has been made, nor that (shipyard A's) accounting for materials is adequate to comply with the conditions cited in ASPR B-312.

The Resident Government auditor described questionable aspects of (shipyard A) practices in a memorandum dated 5 May 1969 to the (deleted) Regional Office, DCAA. He said:

"(Shipyard A) (Contractor) has claimed and obtained reimbursement for the costs of material purchased in quantities which are not supported by its recorded material requirements for the specific contracts to which the costs were charged. Determination of the extent of these practices and of the reasonableness of significant other material costs estimated at \$80 million for period 1966 through March 31, 1969, is hampered by material control and accounting procedures which are unnecessarily burdensome and complex.

"The material costs charged to cost-type contracts represents either (1) an arbitrary allocation of material inventory at month-end, thus obviating the necessity for contractor inventory financing, or (2) quantities which have been delivered but not invoiced by the suppliers, thus permitting the contractor to obtain reimbursement from the Government prior to making payments to its suppliers. In the latter situation, the approval of more frequent than monthly billings is tantamount to advanced fundings . . . Under the contractor's system of billing materials on evidence of delivery, the contractor is reimbursed within four days and it appears that even with monthly billings this is quicker than payments to suppliers."

In a letter to (Shipyard A) dated 31 December 1969 (4 months after the NAVSHIPS 08 Report) the Resident Auditor stated:

"3. Monthly Allocations of Inventories

"A. ASPR B-303 (e) permits the allocation of comingled inventories subject to approval of the Administrative Contracting Officer. This office is not aware of such an approval and recommends that the ACO be requested to approve the system. If the ACO asks this office for an opinion prior to approving or disapproving the system, this office would be reluctant to recommend approval of the system. Our position is based on the deficiencies set forth in 3B through 3E below.

"B. The allocation of indirect materials to burden centers on a monthly basis is unnecessary since indirect costs are recovered on the basis of provisional rates throughout the year. We recommend that this practice be discontinued.

"C. The allocation of unassigned allocated stocks is based on a 1966 analysis which has been destroyed. We recommend that a current analysis be performed and periodically reviewed so that the allocation of unassigned allocated stock will be based on current experience.

"D. The allocation of the total amount of open stock inventory to contracts gives no consideration for withdrawals for miscellaneous industrial sales, commercial contracts, and burden center costs. We recommend that the procedure for allocating open stock inventory be revised to consider the above omissions.

"E. In both the allocated and open stock inventory allocations, there were a number of errors. Errors noted consisted of transpositions, omissions and allocations to contracts under which the vessels constructed had already been delivered."

The Navy Department Review Team did not concern itself with the issue of whether (shipyard A) is properly entitled to claim inventory costs as "progress" for the purpose of obtaining progress payments, nor with the questionable aspects of (shipyard A) practices such as whether or not (shipyard A) procedures for allocating its inventories to Government contracts each month are proper and in accordance with Government requirements. Nor did it attempt to ascertain how much "float" (the parent corporation) enjoys under its shipbuilding contracts at (shipyard A) as a result of the Government paying (shipyard A) for supplies and materials before (shipyard A) pays its suppliers; or as a result of the special expedited billing and payment procedures (shipyard A) has arranged. The Review Team apparently considers it entirely proper to have the Government borrow money to give to (the parent corporation) before (the parent corporation) spends its own money—and to finance (the parent corporations) inventories—simply because the Government pays a lower rate of interest. These conclusions are at odds with the general policies expressed in the *Armed Services Procurement Regulation* differ from the policies applicable to

fixed price supply contracts which limit progress payments to 80% of costs incurred. The Team Report does not point out that in accordance with its recommendation would have almost no investment in inventory and thus no incentive to control inventory costs. In fact higher inventory might actually improve the cash flow enjoyed by (the parent corporation) on Navy shipbuilding contracts.

NAVSHIPS 08 again recommends the Navy revise its progress payment procedures so that (the parent corporations) no longer gets interest-free use of Government funds.

NAVSHIPS 08 FINDING—9

1. NAVSHIPS 08 13 September 1969 Report

a. Labor Costs

"Under the present labor charging system supervisors have a strong incentive to charge labor costs to the labor budget account that can best absorb the cost and not necessarily to the budget account for the work actually performed."

2. Navy Department Review Team Report

"* * * That it is possible for a foreman to charge to the wrong account in some instances is certainly correct, based upon the Team's review, and that matter is discussed under the next finding. The concern here is with the contention that the labor charging 'system' creates a 'strong incentive' for foremen to mischarge. On this precise point, the Team disagrees with finding quoted above. On the basic principle that safeguards should exist against mischarging, the Team agrees fully."

* * * * *

"In summary, the Review Team sought evidence supporting, but was not convinced of, the contention that (shipyard A) foremen have a strong incentive to mischarge their labor costs in order to stay within all their budgets. However, the possibility of mischarging of labor costs still exists, for a variety of reasons including those mentioned above, and steps to control such mischarging are discussed under the next finding."

NAVSHIPS 08 Comment

The following excerpts from the minutes of a (a shipyard A) meeting in February 1969 indicate that company personnel are very much aware of the tie in between labor budgets and profitability:

"(Name) Budget Control, presented a stimulating picture of the BUDGET LEDGER function in the Budget Control Department. Highlights of (Name) presentation were:

"1. The Budget Ledger is really an up-to-date official statement of the amount of REVENUE that the Government is expected to pay (shipyard A) for any given contract * * *

"3. In order for the company to make a PROFIT on any contract, the ACTUAL returned COSTS must be BELOW or under the COST levels pegged in the BUDGET REVENUE LEDGER * * *

"5. The HOURS locked into the Contract Budget Ledger are furnished to (Name), Management of Direct Labor Control. (Name), in issuing DIRECT LABOR BUDGETS to the Shipyard, is, therefore, always cognizant of the PROFIT and LOSS impact of the budgets he issues. As the ACTUAL incurred Direct Labor Hours are returned against the B/M and Groups, (Name) is in a position to recommend remedial actions * * *."

The pressure on a supervisor to "charge to the budget" is illustrated by the following statement which was printed on a "Budgeted Man Hour Allocation" form given to supervisors:

"NOTE: Man hours should be kept within this budget. If you have any questions call the following telephone number (deleted)." (The telephone number is for "Direct Labor Control".)

The above, plus a requirement that supervisors must review variances from budget with their general foreman, would appear to give supervisors a strong incentive to charge to their budget level, regardless of actual costs.

NAVSHIPS 08 FINDING—10

1. NAVSHIPS 08 13 September 1969 Report

"A comprehensive review (shipyard A's) labor charging practices has not been conducted. However, there are indications that labor costs are being mischarged. There are no effective controls to preclude such mischarging."

2. Navy Department Review Team Report

"Review of (shipyard A's) labor charging procedures indicated to the Review Team that it is possible for shipyard foremen to mischarge incurred hours. This possibility exists in every industrial organization. Safeguards against it should exist. The Review Team therefore focused its attention on what procedures presently exist at (shipyard A) to minimize mischarging and to provide management with an indicator of the level of confidence which it may have in its cost charging."

The Review Team then describes in detail the deterrents to mischarging of labor costs at (shipyard A). However, it concedes that possibilities exist for mischarging and recommends that the company should institute a meaningful floor check program. The Report states:

"Discussions with DCAA personnel disclosed that a recent floor check indicated a 32 percent error rate, which was extrapolated into a potential mischarging rate of 20 percent (on 2700 employees) where time was charged erroneously on the day of the floor check. Prior audits also detected errors, but the number of errors were not considered significant. The results of their latest review, however, indicated a substantial deterioration in the contractor's internal controls.

"Summary of discrepancies found:

"1. There are no written labor checking procedures to ensure the adequacy and consistency of review from prior to period.

"2. There is no advance schedule of areas to be labor checked to ensure uniform coverage.

"3. Overhead employees are seldom checked, employees working on ships are never checked, and there is no evidence that employees working on night shift, overtime, or employees on leave are ever checked.

"4. Charges below the contract level are not verified. Therefore the accuracy of labor charges to weight accounts and tasks is not determined.

"5. A statistically-valid method is not being used to select an employee to be checked within a test area which will result in each employee within the area having an equal chance of being selected.

"6. Because of the insufficiency of (shipyard A's) labor check program, DCAA has had to schedule additional audits in this area.

"Based on the above discrepancies, (shipyard A's) labor check program cannot adequately provide management with an index of labor accuracy."

NAVSHIPS 08 Comment

DCAA report 221-99-1-0011 dated 7 August 1970 comments further on this problem. It states:

"This report summarizes the results of reviews of labor distribution and related timekeeping practices of (shipyard A) (city, state) during the period January-June 1970. The deficiencies noted herein are considered to be of *major concern* and are summarized for the information of the Government representatives presently sharing a responsibility in the management of Government funds being expended at [Emphasis added]

* * * * *

"The contractor's established procedures governing labor charging should have produced reasonably accurate accounting for labor time by contract and work assignment. However, we noted a lack of complete adherence to the prescribed methods by various departments which contributed to an *observed 10 percent error rate* in recording of employee time to the proper contract. A *continual error rate of 10 percent is unacceptable as it generates inaccurate labor costing and billings under cost-type contracts* and negates the value of incurred costs used for pricing purposes. In late July, the contractor revised its written procedures relative to labor time recording. The effectiveness of this revision will be evaluated in future labor checks." [Emphasis added.]

* * * * *

"The prescribed labor accounting practices and procedures required strengthening. Also needed were improved and reliable methods of monitoring the system to assure that accurate labor costs were generated for billing the Government under cost-type contracts and for developing reliable historical data for use in pricing contract work. Lack of internal reviews in this area of operation by (shipyard) permitted the weaknesses to go undetected and accordingly, uncorrected."

NAVSHIPS 08 FINDINGS—11 AND 12

1. NAVSHIPS 08 13 September 1969 Report

"(a) Under the present system, there is no way to insure that the government is not being overcharged in the adjudication of changes or in the settlement of claims.

"(b) Present procedures for handling claims against the Government for changed work seem to be heavily weighted in favor of the contractor. [The Navy should] establish principles, procedures, and the means to place the Government on an equal footing with the contractor in settling change orders and claims."

2. Navy Department Review Team Report

"It is the conclusion of the review team that the establishment of the Change Control Department in (Shipyards A) along with the formation of a Proposal Evaluation Division of the SUPSHIP organization has enhanced immeasurably the ability of the SUPSHIP to cope with the substantial 'change' material. Recommendations to improve the system now have been registered.

* * * * *

"As addressed in CHAPTER XIII of the Report, substantial improvement has been registered by both (Shipyards A) and the SUPSHIPS in their organization and procedures for handling CHANGES and claims. Further improvements can be made by action on the recommendations cited."

* * * * *

"Recommendation: That NAVSHIPS investigate the feasibility of authorizing SUPSHIPS to definitize letter contracts for overhaul and conversion and that SUPSHIPS authority be increased to allow implementation of the disputes procedure when the situation warrants that action and to issue Contracting Officer decisions where appropriate."

3. NAVSHIPS 08 Comment

The fact remains that (Shipyards A) has not been required to account separately for the cost of changed work so that there is no way to determine whether or not the government is being overcharged on claim settlements.

Under current procedures the Navy places great reliance on (Shipyards A's) price estimating system to ensure that the government does not pay more than it should on claims, change orders, and other proposals. However, in a report dated July 10, 1970, the resident government auditor pointed out a number of deficiencies in the company's estimating system. Citing a substantial dollar volume of contractor overestimates, the auditor concluded that: "... the contractor's bidding procedures were not considered adequate with respect to government contract proposals." The above emphasizes the need to keep accurate records of the actual costs of changed work.

NAVSHIPS 08 FINDING—13

1. NAVSHIPS 08 13 September 1969 Report

"Government representatives place undue reliance on (Shipyards A's) procurement system to obtain reasonable prices for the Government."

* * * * *

"Under the terms of Navy cost-type and incentive contracts with (Shipyards A), the Government has the right to review and approve major subcontracts (generally those over \$25,000 in value) prior to placement to determine if pricing is reasonable. However, the Supervisor of Shipbuilding has waived this right [based on a NAVSHIPS Procurement System Review Team recommendation of June 1968.]"

2. Navy Department Review Team Report

"During October 1968 the SUPSHIP, (deleted) approved (shipyards A's) procurement system for a period of one year * * *"

"During the early part of calendar 1969, certain conditions unsatisfactory to the SUPSHIP (deleted) caused that office to request NAVSHIPS' assistance in conducting a contractor purchasing system review (CPSR). Further, the

SUPSHIP deliberately permitted approval of the (shipyard A) procurement system to lapse as of 1 October 1969 until the planned CPSR could be conducted and (shipyard A's) procurement system reevaluated. The overall recommendation of the CPSR, conducted through October 1969, was to withhold approval of the (shipyard A) procurement system."

3. NAVSHIPS 08 Comments

The Review Team Report implies that SUPSHIPS uncovered deficiencies in contractors' procurement practices as a result of its own surveillance of the contractors' operations, withdrew government approval of the contractors' procurement system, and initiated a Special Contractor Purchasing System Review to identify deficiencies. It reports that corrective action has been initiated and is nearly completed. In other words, SUPSHIPS and others in charge have been doing a fine job.

It is possible that the SUPSHIPS became concerned in early 1969 as a result of NAVSHIPS 08 reports which indicated serious deficiencies in procurement operations at (shipyard A) and (shipyard B). The first of these reports dates back to November, 1968—about one month after SUPSHIPS commended (shipyard A) for its purchasing system, reporting that the system "... affords maximum protection of the Government's interests and assures procurement of materials at the lowest price consistent with quality and required delivery schedules." One of the items cited in the NAVSHIPS 08 November 1968 Report involved a (shipyard A) procurement dating back to April 1968 when NAVSHIPS 08 first learned that (shipyard A) was not complying with the Truth-in-Negotiations Act in its sole source or limited source procurements. As a result of this finding, NAVSHIPS began including and implementing in contracts with (shipyard A) and (shipyard B) a clause requiring NAVSHIPS' consent for procurements over \$25,000 under NAVSHIPS 08 technical cognizance.

NAVSHIPS 08 FINDING—14

1. NAVSHIPS 08 13 September 1969 Report

"Although Government business accounts for 98 percent of the work at (shipyard A) Government auditors do not have access to certain (shipyard A) financial reports that are essential in determining the reasonableness of charges to Government contracts."

2. Navy Department Review Team Report

The team cites two Defense Contract Audit Agency responses. The first in October 1969 stated the Defense Audit Agency did have access to all accounting and financial records necessary to the performance of their audit responsibilities. Later the Defense Contract Audit Agency found that it was not getting copies of contractor reports concerning estimates to complete contracts and contract profit forecasts. The Defense Contract Audit Agency stated this problem was subsequently resolved. The review team stated: "(Shipyard A) has been cooperative and very responsive to inquires by the review team."

3. NAVSHIPS 08 Comment

This Defense Contract Audit Agency reaction to this issue is typical of the reaction to the issues raised concerning shipyard problems. The NAVSHIPS 08 Report of September 1969 pointed out that the resident government auditor at (shipyard A) did not have access to labor budget reports and other financial records and reports relevant to government contracts. The auditor's response was to claim NAVSHIPS 08 didn't know what he was talking about. He stated: "Presently we do have access to all accounting and financial records which we consider necessary to the performance of our audit responsibilities."

But a NAVSHIPS 08 representative found that the auditor was not aware of several other reports (shipyard A) was preparing at government expense. When the auditor became aware of some of these reports, he wrote the company, in December 1969:

"Since we have been denied access to certain contractor reports, we cannot report on the accuracy of the estimates to complete. Due to the critical nature of Government funds and because of the deficiencies noted in our review, this office is particularly concerned with the projected cost to complete contracts by element of cost. This information is available only on the 'Contract Profit Forecast Data' report. Access to this report and the 'Quarterly Contract Analysis' re-

port is considered essential for us to conclude that the contractor's financial management system is adequate and responsive to Government procuring agency needs."

Now he again states that:

"Presently we do not have any access to records problems in the performance of our audit responsibilities."

NAVSHIPS 08 questions whether either the Defense Contract Audit Agency auditor or the Supervisor of Shipbuilding yet has a comprehensive listing of financial information and cost reports that are being prepared by (shipyard A) at Government expense. In addition:

(a) The review team, elsewhere in their report, noted there is a large volume of detailed historical data and other information that is not being made available to the government to support (shipyard A) contract price proposals.

(b) In May, 1970, the government auditor asked (shipyard A) for information on royalties received for patents developed under government contracts. To date the company has not provided the government auditor this information.

NAVSHIPS 08 FINDING—15

1. NAVSHIPS 08 13 September 1969 Report

"Government representatives do not review the company's 'Make or Buy' decisions and there are indications that such decisions are not always made with the interests of the Government foremost."

2. Navy Department Review Team Report

"The NAVSHIPS 08 finding quoted above is supported by a single example of (a shipyard A) 'Buy' decision which allegedly was not in the best interests of the Government."

"Of course, other persons faced with the decision in this case might reasonably have reached the opposite result and had the value overhauling done at (shipyard B). But on the basis of the information available to it, the Review Team finds that even if one disagrees with it, the decision to subcontract with (a subcontractor) was a reasonable exercise of business judgment, not an abuse of it. Furthermore, since (shipyard A) performs its submarine overhaul work under CPIF prime contracts and since the Government pays 99 percent of (shipyard A's) overhead, *the total cost approach taken by the Committee* (in its consideration of the additional material management and inventory costs of the 'Make' decision) was the approach considered as being the one that would best protect the Government's interests in this case. Thus the NAVSHIPS 08 finding quoted above is not concurred in." [Emphasis added.]

3. NAVSHIPS 08 Comment

This is another case where the Review Team agrees with the overall NAVSHIPS 08 conclusion, but disagrees with the example. However, the Review Team comments miss the point of the example. The Make or Buy committee report shows that the (shipyard A) decision was based not on the potential saving in total cost, but on the amount of additional fee to (shipyard A). (Shipyard A) decided that it was not worthwhile to try to save the Government \$23,000 when it would only keep \$4,000 of the saving as additional fee. Thus, NAVSHIPS 08 recommended that the Government ought also to be reviewing (shipyard A's) Make or Buy decisions.

The Review Team comment cited punctuation errors in NAVSHIPS 08 quotation from the (shipyard A) Make or Buy committee report. In this respect, the Team was correct.

NAVSHIPS 08 FINDING—16

1. NAVSHIPS 08 13 September 1969

"The Supervisor of Shipbuilding does not review (shipyard A) procurements from other divisions of (the parent corporation). The contractor does not justify the cost of these procurements or indicate whether or not these items are being obtained at less cost than would be possible from other companies."

* * * * *

"... For example, in March, 1969, (shipyard A) placed cost-type procurements for ball valves valued at \$2.5 million with (another subsidiary) of (the parent corporation) in (location). No justification for the estimated costs was given

and the files indicate that no effort was made to verify the reasonableness of estimated costs for this work. After being questioned about this, the local Government auditor has taken steps to have (the other subsidiary's) costs audited by (deleted) Government auditors."

2. Navy Department Review Team Report

"Ball valves for new construction submarines have historically been 'make' items produced either by (shipyard A) or (the other) subsidiary (name deleted). The transfer of work referred to above for (deleted) was processed in accordance with and met all requirements of Armed Services Procurement Regulation (ASPR) and corporate directives."

3. NAVSHIPS 08 Comments

The Team Report did not address the issue raised by NAVSHIPS 08. It also neglected to address several important facts relating to the example cited by NAVSHIPS 08 in its report:

1. Ball valve procurements through (the other subsidiary) of (the parent corporation) involve substantial dollar amounts—\$2.5 million in 1969. The government has recognized costs reported by (the other subsidiary) without benefit of audit verification.

2. If a prime contract of the size or if a subcontract of this size were awarded following normal government procedures, the government would review the pricing and the terms of the procurement.

3. There are indications that the Government is paying more than it should for ball valves from (the other subsidiary). The following is quoted from the October 1969 CPSR Report:

"In two prime contracts recently the Navy has affirmatively required (shipyard A) to solicit and accept the results of open competition in the procurement of ball valves. The prime contracts involved are CPFF contracts to procure long leadtime materials for certain submarine overhauls and conversions (contract numbers deleted).

"As a result of this requirement in contract (deleted), (shipyard A) obtained competitive quotations on three different ball valve purchase orders. The low bidder on all three orders was (another supplier) and it received the awards. (The other subsidiary) was second low bidder on the two orders for which it bid. Two other bidders were substantially higher in price overall.

"Although this instance appeared to be a case of competition working to the benefit of both the Navy and (shipyard A), (shipyard A) personnel have insisted that (the other subsidiary) is by far the most reliable manufacturer of ball valves, and that (shipyard A) has experienced substantial difficulties in negotiating changes and obtaining delivery as scheduled from other vendors such as (the other supplier). On the purchase orders under the CPFF prime contract described above, however, (shipyard A) expediting personnel conceded that (the other supplier) was delivering on time."

NAVSHIPS 08 FINDING—17

1. NAVSHIPS 08 13 September 1969 Report

"The Supervisor of Shipbuilding does not adequately review major areas of cost at (shipyard A) considering that the government ultimately pays at least 98 percent of these costs."

2. Navy Department Review Team Report

"Under the above finding NAVSHIPS 08 stated that SUPSHIPS had included in approved overhead rates costs of development of (a commercial vessel) amounting to one million dollars, despite the determination by the Defense Contract Audit Agency that these costs are unreasonable."

* * * * *

"1. *Conclusions:* SUPSHIPS maintains that (commercial vessel) costs have been excluded from the projected overhead rates negotiated between (shipyard A) and SUPSHIPS. In support of their arguments SUPSHIPS claims the Defense Contract Audit Agency representative (name deleted) was present at the negotiations and is aware of this fact. In addition, SUPSHIPS workpapers indicate that the costs were excluded. This was also confirmed by Mr. (name deleted) Manager of Financial Analysis at (shipyard A) who stated that the

(commercial vessel) costs have been definitely excluded from the negotiated overhead rate package. However, as late as March 1970, the Defense Contract Audit Agency in a Summary History of Audit Results states that, 'while we have taken the position that a \$1.5 million bid and proposal cost in overhead is unreasonable in our forward pricing rate, the results of the negotiations do not indicate whether the cost of this bid and proposal was negotiated out or not. The ACO (SUPSHIPS) tells us it was, and the contractor persists as to its allowability. Accordingly, during the review of 1970 bid and proposal costs, we anticipate some problems.'

"2. Our review indicated that the (commercial vessel) costs have been excluded from the projected overhead rates approved by SUPSHIPS. In addition, it is the Defense Contract Audit Agency's intention to make appropriate adjustments on any payments to (shipyard A) in the event such costs are included in Government contracts."

3. NAVSHIPS 08 Comments

Again, the Review Team addressed only the example cited rather than the issue raised by NAVSHIPS 08. The (commercial vessel) was only one example to illustrate the general point that the government does not look carefully enough at contractor costs, particularly in the overhead account. NAVSHIPS 08 has looked further into this matter and made it the subject of a separate NAVSHIPS report dated 15 July 1970. That report points out specific examples of inadequate government surveillance of (shipyard A) overhead expenses.

NAVSHIPS 08 FINDINGS—18

1. NAVSHIPS 08 13 September 1969 Report

"A number of former (shipyard A) employees are working in the offices of the Supervisor of Shipbuilding and the Government Auditor. This situation is not conducive to proper business relationships between the government and (shipyard A)."

2. Navy Department Review Team Report

"As of the period of the cost control review at (shipyard A) the Supervisor of Shipbuilding (SUPSHIPS), (deleted) had 110 employees out of 332 onboard who were former employees of (shipyard A). At the same time the resident auditor, Defense Contract Audit Agency, (deleted) had two former (shipyard A) employees out of 15 auditors and their supporting staff."

* * * * *

"* * * the review team found that the risk was relatively small that any former (shipyard A) employee might influence government policies significantly. This conclusion is based, in part, upon the fact that all of the SUPSHIPS departments have military officers from outside the local area as department heads, none of whom are former (shipyard A) employees. It is also based in part on the fact that those former (shipyard A) employees who have risen to a relatively high position within the SUPSHIP have been employed with the government for many years and held on only ministerial responsibilities at (shipyard A)."

* * * * *

"* * * the review team considers that a blanket prohibition on the employment of former (shipyard A) employees by the resident government activities at (deleted) would be impractical."

3. NAVSHIPS 08 Comments

As stated in NAVSHIPS 08 Memorandum of 19 February 1970:

"I do not agree that it is right to employ former contractor personnel in surveillance of the contractor's operations. I am aware that NAVSHIPS employs former contractor personnel in positions having engineering surveillance responsibilities over the activities where they were formerly employed. There are also a number of cases where former contractor personnel are working in the NAVSHIPS contracts division and where former NAVSHIPS contracting people work for shipbuilders. However, I do not consider such practice to be in the best interests of the Government. It may be that SUPSHIPS has violated no law or regulation in hiring more than 100 former employees of the contractor; it still seems to me a violation of commonsense to place these employees in a position where they are expected to critically review the performance of their

friends and former colleagues. The Navy must put a stop to this practice, particularly when the position being filled is directly concerned with the negotiation or administration of contract matters."

NAVSHIPS 08 FINDING—19

1. *NAVSHIPS 08 13 September 1969 Report*

"There are indications of some recent improvement in Government surveillance of (shipyard A). However, the Government must take much stronger action to correct the fundamental deficiencies at (shipyard A)."

2. *Navy Department Review Team Report*

"The purpose of the Review Team's assignment to (shipyard A) was to review this contractor's procurement and cost control systems. These systems have been reviewed; they are addressed in the parent report. The Review Team found that the contractor had taken action to implement all of the recommendations of the October 1969 CPSR. Further, he has acted to adopt several additional modifications informally suggested as a result of this review. With continued effort in the procurement area, (shipyard A) should be ready for a procurement system certification examination by October 1970.

"Basically the contractor's cost control systems were determined to be sound; however, modification and extension is needed to provide work package control information for industry and change order costing. Several extensions of an excellent materials system are needed to provide dollar value, continued accountability, and improved progressing. Additionally, the review of methods and practices in the production area with view to institute engineered standards should improve efficiency in both work and the associated estimating/budgeting. Systems are a necessary structure of an organization to maintain direction, continuity, and control in the area of data collection/reporting; however, the best systems serve little purpose if they are not properly monitored, and the data utilized. Especially this is true with cost control systems. (shipyard A) has these systems, but they are not being utilized to the extent feasible. The Report speaks to this.

"The SUPSHIPS as the government's on site representative with responsibility to administer the various (shipyard A) contracts, has recently moved in several areas of endeavor to improve their surveillance operation; namely, contracts and inspection/QC. It is difficult to alter the philosophy and practices of an engineering orientated organization to those with a manager with hands-off surveillance. In order to accent the importance of and the necessity for SUPSHIPS surveillance of the contractor's procurement and cost control system, it is suggested that pertinent NAVSHIPS instructions in this regard should be issued and the implementation supervised. Some additions to the supervisor's staff may be necessary."

3. *NAVSHIPS 08 Comment*

The review team report paints a very encouraging picture: there are minor deficiencies at (shipyard A), but these are being quickly corrected by the contractor and by NAVSHIPS. NAVSHIPS 08's conclusion is not encouraging. Some "paper changes" have been made at (shipyard A), but there is little or no real improvement in actual practice. The Navy continues to find poor procurement practices, improper labor and material charges, higher than necessary operating costs, inadequate accounting for costs and inadequate government administration of contracts at (shipyard A). Despite impressive milestones, action plans, and reassuring words, the fact is that little has been done to correct the fundamental deficiencies pointed out in the NAVSHIPS 08 September 1969 report.

FINAL COMMENT

Navy Department Review Team Report

"Although NAVSHIPS 08 was invited to assign personnel to participate in this review, it declined to do so. Further, efforts by the review team to discuss the NAVSHIPS 08 findings with NAVSHIPS 08 representatives were unsuccessful."

NAVSHIPS 08 Comment

NAVSHIPS 08's memorandum of 20 February 1970 recommended that experienced specialists investigate (shipyard A) to "establish the full facts." While NAVSHIPS 08 did not have personnel available for full time assignment to the

team, NAVSHIPS 08 representatives met with the review team director in Washington on 24 March 1970 and pledged full cooperation. It was made clear to the review team director that NAVSHIPS 08 would provide answers to any specific questions or requests for information. It was agreed that these questions would be channeled through the team director to NAVSHIPS 08 for reply. Because of this agreement, team members at (deleted) making inquiries to local NAVSHIPS 08 representatives at (deleted) were referred to the team director in accordance with the prearranged procedure. NAVSHIPS 08 received no requests for information or assistance from the team director or his staff.

ATTACHMENT 1(c)

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

[In reply refer to 08H-786, 30 Oct 1970]

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS & LOGISTICS)

Subj: Excessive Shipbuilder Profits on Nuclear Submarine Overhaul and Conversion Contracts.

Ref:

- (a) Memorandum for ASN (I&L) from Deputy Commander for Nuclear Propulsion, NAVSHIPS, dated 13 September 1969.
- (b) Commander, NAVSHIPS letter 0763:JF:dsr, Ser: 2 dated 20 January 1970.
- (c) NAVSHIPS ltr 022:CMK:epm, 4280, Ser: 19 dated 3 September 1970 (NOTAL).

1. I have sent you several memoranda over the past two years concerning serious deficiencies in shipbuilder procurement and cost control practices under Navy ship design, construction and overhaul contracts at our major private shipyards. I pointed out that these deficiencies are resulting in unnecessary costs to the Government and urged that Government administration of these contracts be improved.

2. One issue I raised in reference (a) was the amount of profit being paid to shipbuilders under sole and selected source contracts for Navy ship construction and repair work. I pointed out:

(a) Under present policies, profits, on these contracts are negotiated as a percentage of estimated costs. Since higher costs in the long run result in higher profits, the shipbuilder has little or no incentive to keep costs down.

(b) The most common measure of profitability is return on investment. However, under present Navy profit policies, a shipbuilder has no incentive to invest capital in order to improve efficiency and thereby reduce costs. If he increases investment and profit stays the same, the return on investment is lowered. If the increased investment results in lowered costs, profit may go down and the return on investment is again lowered. Thus shipbuilders have an overriding incentive to minimize their investment and maintain the highest practicable cost basis for profit.

(c) Since 1963 the Navy has substantially increased the rate of profit negotiated in its shipbuilding contracts—from about 7% in 1963 for cost type contracts to about 10% in 1969.

(d) With respect to (Shipyard A), a 19 percent profit on Navy contracts would result in a return on invested capital of 30 to 35 percent annually. This rate of return is far higher than industry averages shown by Fortune Magazine's surveys of the 500 largest U.S. companies.

I recommended that the Navy revise its policies to make return on investment the primary basis for establishing profit for ship construction and overhaul contracts and to give shipbuilders a positive incentive to reduce their costs.

3. In reference (b) COMNAVSHIPS responded to reference (a) that:

(a) Profits on shipbuilding contracts are based on the Weighted Guidelines method of profit calculation set forth in the Armed Services Procurement Regulation. NAVSHIPS did not consider shipbuilding contracts represented a situation requiring an exception to the use of the Weighted Guidelines profit calculations.

(b) (Shipyard A) had not realized the rates of profit allowed by the Navy in its contracts. Actual profits were far lower than negotiated profits. Some contracts resulted in losses.

(c) NAVSHIPS considered no action was required on my recommendation regarding profit policies.

4. As was the case with other issues I have raised in memoranda to you, it appears that COMNAVSHIPS simply referred my recommendation to the very same people who were responsible for shipbuilding contracts. As could be expected, their response was that no action was required. The facts, however, do not support the NAVSHIPS position. SSBN submarine overhaul and conversion contracts at (Shipyard A) and (Shipyard B) provide a glaring specific example. Below is a comparison of costs and profits on six recent SSBN overhaul and conversion contracts—three with (Shipyard A) and three comparable contracts with (Shipyard B):

NEGOTIATED COST AND PROFIT (FEE)

[Dollar amounts in millions]

	Target cost	Target fee	Fee rate (percent)
Shipyard A:			
SSBN (deleted).....	\$29.0	\$2.8	9.5
SSBN (deleted).....	27.6	2.6	9.5
SSBN (deleted).....	30.0	2.9	9.5
Total	86.6	8.3	9.5
Shipyard B:			
SSBN (deleted).....	19.9	1.8	9.0
SSBN (deleted).....	21.1	1.9	9.0
SSBN (deleted).....	22.2	2.2	10.0
Total	63.2	5.9	9.4

ACTUAL COST AND PROFIT (FEE)

[Dollar amounts in millions]

	Cost	Profit (fee)	Fee rate (percent)
Shipyard A:			
SSBN (deleted).....	\$28.0	\$3.0	10.8
SSBN (deleted).....	25.3	3.4	13.2
SSBN (deleted).....	31.0	2.8	9.2
Total	84.3	9.2	10.9
Shipyard B:			
SSBN (deleted).....	18.9	2.5	13.0
SSBN (deleted).....	17.2	3.1	18.2
SSBN (deleted).....	21.9	2.2	10.0
Total	58.0	7.8	13.4

5. The above comparison shows:

(a) (Shipyard B's) cost to perform three SSBN overhauls was about \$58 million. For that work (shipyard B) received a fee of \$7.8 million. (Shipyard A's) cost to perform three comparable overhauls was about \$84 million—\$26 million more than (shipyard B). For this work, (shipyard A) received a fee of \$9.2 million. The Navy thus paid \$1.4 million more profit—about 18% more—to the shipyard doing the work at the *higher* cost.

(b) Navy profit policies on these contracts resulted in actual profits for both shipbuilders significantly higher than the 10 percent maximum limitation established by the Armed Services Procurement Regulation for cost-type contracts.

(c) In all but one case, these contracts resulted in higher actual profits to the shipbuilder than the negotiated target profit.

6. This comparison raises several questions about the Navy's present procurement and profit policies:

(1) Why are (shipyard A's) costs about 45 percent greater than (shipyard B's) for comparable work?

(2) Why does the Navy pay more profit to the more costly shipbuilder?

(3) Why should the Navy be contracting on a basis which permits 10 to 13 percent profit on cost reimbursement type contracts on which the shipbuilders have *no risk* of financial loss?

7. In awarding these contracts, NAVSHIPS requested and obtained approval from the Chief of Naval Material to exceed the ASPR 10% maximum fee limitation for cost plus incentive fee contracts. Moreover, in reference (c) NAVSHIPS requested a blanket approval to continue negotiating overhaul and conversion contracts which provide for profits higher than prescribed by ASPR. This seems inconsistent with the NAVSHIPS position in reference (b)—that ship construction and overhaul work does not represent an unusual pricing situation requiring an exception to ASPR guidelines. I see no logical, legal, or other reason why the Navy should continue to pay such high fees on negotiated, sole source, cost reimbursement type contracts. I consider these fees excessive.

8. Navy ship construction and overhaul contracts contain many provisions peculiar to the ship construction and overhaul work; these represent *exceptions* to the general policies which apply to other suppliers of military equipment. Examples are:

(a) Special progress payment provisions permitting payments higher than those for fixed price supply contracts.

(b) Special provisions limiting shipbuilder liability.

(c) Special provisions with respect to guarantee and correction of defects.

(d) Special provisions for Government self-insurance.

(e) Special provisions eliminating responsibility for design.

These provisions severely limit shipbuilder risk under Navy ship construction and overhaul contracts; they must be taken into account in establishing profits for Navy contracts.

9. From the above, I believe it is clear that Navy profit policies for ship construction and overhaul contracts need immediate and substantial revision. In view of the special considerations pertaining to shipbuilding work, i.e., a high percentage of sole and limited source contracts, widely varying costs of performance, and special contract provisions limiting shipbuilder risk, NAVSHIPS cannot rely on the weighted guidelines method of profit computation to establish proper profit levels on ship construction and overhaul contracts. These special considerations, together with shipbuilder capability, efficiency, and investment must be taken into account in establishing appropriate profit policies for shipbuilding work.

10. The Navy cannot avoid its rightful responsibility to insure that only reasonable profits are made on ship construction and overhaul contracts. In 1951, our major private shipbuilders were all independent companies, having their own managements and devoted chiefly to shipbuilding. At that time Renegotiation provided some protection against excessive profits on ship construction and overhaul work. Today all our major private shipbuilders are divisions or subsidiaries of large conglomerates. Shipbuilder profits are averaged in the parent corporation's overall profit on defense business. This is wrong. The Navy must find out exactly what profits its shipbuilders are making—particularly when 90 to 99 percent of their business is with the Government. I am sure that Congress is under the mistaken impression that the Navy does know what profits its shipbuilders actually make.

11. I believe the Navy should take action to:

(a) Establish policies to insure that negotiated profits for ship construction and overhaul contracts are reasonable in light of the shipbuilder's *capability, efficiency, and investment*, and are not based principally on his *costs*.

(b) Require shipbuilders to provide annual reports of costs and profit from Navy ship construction and overhaul work along with all necessary data required to measure shipbuilder investment and efficiency.

12. In addition to the above, which can be done at once, I recommend that the Navy initiate action with Congress to amend the Renegotiation Act so that ship construction and overhaul contracts will be renegotiated on an individual basis, rather than in the aggregate with other defense contracts as the Act presently provides.

13. By taking these actions we would be doing the job we are paid to do—seeing to it that the taxpayers' dollar is spent more prudently than is now the case.

14. I urge that you give this matter your personal attention and direction. Only in this way will action be taken in a timely manner. Otherwise we will have to go through the usual delaying actions and indignant excuses of those responsible for the sorry situation.

H. G. RICKOVER.

Copy to:

CNM.
COMNAVSHIPS.
SHIPS 02.

ATTACHMENT 1(d)

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

In reply refer to 08H-799, 2 Dec. 1970

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT).

Subj: Contractor Cost Performance Measurement for Commercial Shipbuilders.

Ref:

- (a) Report of the Special Review Group of (Shipyard 8) dtd 11 September 1970
- (b) ASN(FM) Memorandum for the VCNO dtd 17 November 1970, Subj: Contractor Cost Performance Measurement for Commercial Shipbuilders

1. Reference (a) is the report of the Special Review Group you established at the request of the Vice Chief of Naval Operations to determine the causes and the extent of cost accounting problems at commercial shipyards as described in various reports I have submitted over the past two years. Reference (b) requested my comments on this report.

2. My comments are:

(a) The report confirms that the (shipyard 8) cost control system is not adequate to control costs under Navy shipbuilding contracts. No doubt a similar problem exists at other shipyards.

(b) In any report of this scope, there are always minor points with which one could take issue. But the overall conclusion of the Special Review Group is correct: there is no effective cost control at (shipyard B), and the Navy must take steps to establish such control at (shipyard B) and at all shipyards.

(c) The report recommends that Department of Defense Instruction 7000.2 be implemented for shipbuilding contracts. While this instruction provides a reasonable basis for developing uniform cost control criteria, some modifications may be needed to make the cost control requirements compatible with shipyard production processes.

(d) I believe that NAVCOMP, as the Navy's financial management expert, should and must take the initiative in developing and implementing effective cost controls. The organizations supposedly responsible for cost control have been unable to recognize or cope with the problem, despite the fact that the situation has been brought to their notice. The following, from my memo of 26 August 1970 to the Assistant Secretary of the Navy (Installations and Logistics) regarding the NAVMAT review team's report on procurement and cost control deficiencies, is apropos:

"I see no hope of ever improving administration of our shipbuilding contracts through existing organizations. Therefore, I recommend that you take action with the Chief of Naval Material to institute whatever new organizational relationships are necessary to obtain proper administration of these contracts.

"The Navy must make a choice: it can take firm steps *now* to demand and obtain acceptable performance by its contractors and to provide for proper administration of our shipbuilding contracts, or it can allow these problems to drag on until the General Accounting Office or Congress requires the Navy to take action. I am sure you understand the importance to the

Navy of setting its own house in order without being forced to do so by an outside agency or by Congress.

"I am more than disturbed at the constant effort *by the very people who have been responsible for the faults* I discovered to talk them away. It is discouraging that so many officials in the field and at headquarters will not face up to facts; apparently they will have to be hit by a sledgehammer. At the slightest sign of 'improvement' they become euphoric and say: 'See, it wasn't that bad at all, and even if it was bad, the company has now reformed itself.' They then go about 'business as usual', which means going back to doing little or nothing about the basic issues.

"Further, they seem to be incapable of taking actions based on *principles*; they tend rather to cure only the *examples* which illustrate the principles. Or else they are always seeking for precise rules to solve imprecise situations—in other words, they act as clerks, not as officials. Example: the suggestion by the Navy Review Team that the Armed Services Procurement Regulations be modified to specify the desired level of accuracy for labor charges on Government contracts.

"I have entered into this series of criticisms because the way the Navy is doing business is wasteful of Government funds and therefore does not permit us to build as many ships as we otherwise could. My object is *not* the vain effort to make contractors live up to their contracts with proper accounting, procurement and cost control practices, or to make Government officials do the jobs they are paid to do. It is to obtain the maximum defense possible for the United States."

3. For the above reasons I recommend that you assign to a separate individual in NAVCOMPT the overall responsibility for developing and implementing effective cost controls under Navy shipbuilding contracts. This individual should seek whatever assistance he needs from other organizations, within and without the Navy.

4. It is plain that much effort has gone into the NAVCOMPT Special Review Team report. But the fact nevertheless remains that it has been over a year since the Vice Chief of Naval Operations requested NAVCOMPT to look into this matter, and over 18 months since I first reported the problem. Ahead are further potential and probable delays: NAVCOMPT review of comments by the Naval Ship Systems Command and the Chief of Naval Material; submission of the report and accompanying comments to the Chief of Naval Operations; establishment of a group to write cost control system criteria; studying practices at other shipyards; obtaining comments on that team report; and so on. Meanwhile the Navy is doing practically nothing to establish and enforce effective cost controls.

5. If the Navy is to realize any good from this effort, a sense of propriety and urgency is needed. The nagging question is whether the people who like to talk about cost control can think of anything to do but talk about it. They want to talk about issues for years on end. To decide an issue quickly would deprive them of anything to keep on talking about, and there would be no job for them or for their numerous assistants. This situation results in a distorted picture of official responsibility, damaging not only to the officials concerned but to the Navy itself.

6. Unless this issue is handled in the business-like way required under the circumstances, you will get nothing but more studies and excuses. If Congress then, as it no doubt will, "takes off" at the Navy, we will have demonstrated that we are incompetent to do our own job. If supervision of Navy contracts is, in consequence, turned over to an outside agency, we ourselves will have been responsible.

7. The time has come to stop fruitless studying of what our job is and start doing it. A man should learn what his job is, either prior to assuming it or shortly thereafter. If it takes him his entire working life to learn what his job is, it would be better to assign him duties having no responsibility and to pay him accordingly.

I am sure we do not want said of us what Czar Nicholas I said of his government: "Not I but 10,000 clerks rule Russia."

N. G. RICKOVER.

Copy to:

Vice Chief of Naval Operations.
 Assistant Secretary of the Navy (Installations & Logistics).
 Chief of Naval Material.
 Commander, Naval Ship Systems Command.

ATTACHMENT 1(e)

DEPARTMENT OF THE NAVY,
NAVAL SHIP SYSTEMS COMMAND,
Washington, D.C.

[In reply refer to 08H-1438, 14 April 1971]

MEMORANDUM FOR THE COMMANDER, NAVAL SHIP SYSTEMS COMMAND

Subj: Deficiencies in the Procurement of Nickel Alloy Materials by (shipyard B)

Ref:

- (a) Deputy Commander for Nuclear Propulsion Memorandum to the Assistant Secretary of the Navy (Installations & Logistics) Ser 08H-1337 of 30 April 1969.
- (b) Deputy Commander for Nuclear Propulsion Memorandum to Commander, Naval Ship Systems Command, Ser 08H-01354 of 23 September 1969.
- (c) Deputy Commander for Nuclear Propulsion Memorandum to Commander, Naval Ship Systems Command, Ser 08H-1394 of 23 October 1969.
- (d) Deputy Commander for Nuclear Propulsion Memorandum to Commander, Naval Ship Systems Command, Ser 08H-6403 of 23 December 1969.
- (e) Deputy Commander for Nuclear Propulsion Memorandum to Commander, Naval Ship Systems Command, Ser 08H-780 of 13 October 1970.

Encl: (1) Report of Practices Used by (shipyard B) to Procure Nickel Alloy Material for Construction of (deleted and deleted)

1. In references (a) through (d), I identified major deficiencies in procurement practices and cost controls at (shipyard B).

I pointed out that these deficiencies were responsible for wasting millions of dollars each year, and were impairing the Navy's ability to obtain the ships it vitally needs. Also, I urged the Navy to take prompt and adequate corrective actions. In reference (e), I pointed out the lack of progress being made in establishing an effective form of cost control for (shipyard B's) work on government contracts and the Navy's failure to require (shipyard B) to enforce the Truth-in-Negotiations Act in its material procurements for Navy contracts.

2. Enclosure (1) is a report concerning the deficiencies in (shipyard B's) procurement of nickel alloy material used in the construction of (two Navy ships). The report shows:

(a) (Shipyard B) is buying substantial quantities of nickel alloy materials through area distributors and paying the distributors' markups even in cases where the distributors provide no service and the shipyard deals directly with product manufacturers to resolve pricing, delivery and technical matters.

(b) (Shipyard B) is not obtaining and evaluating cost and pricing data from nickel alloy material vendors as required by the Truth-in-Negotiations Act. (Shipyard B) is evading the requirements of the Truth-in-Negotiations Act by determining that "adequate price competition" exists in procurements which are in fact sole source procurements from a single manufacturer.

(a) (Shipyard B) is buying substantial quantities of nickel alloy materials through area distributors and paying the distributors' markups even in cases where the distributors provide no service and the shipyard deals directly with product manufacturers to resolve pricing, delivery and technical matters.

(b) (Shipyard B) is not obtaining and evaluating cost and pricing data from nickel alloy material vendors as required by the Truth-in-Negotiations Act. (Shipyard B) is evading the requirements of the Truth-in-Negotiations Act by determining that "adequate price competition" exists in procurements which are in fact sole source procurements from a single manufacturer.

(Shipyard B) purchase orders with area distributors for nickel alloy materials required for Navy contracts currently amount to nearly a million dollars. The total of (shipyard B's) purchase orders with area distributors for all types of materials required for Navy contracts is approximately \$3.5 million. It appears from the attached report that a savings of 5 to 15 percent could be realized by buying these materials directly from manufacturers and eliminating the markup to distributors. While the potential savings is not large in comparison to overall material procurement costs at (shipyard B), the deficiencies indicate that (shipyard B) has not taken effective action to identify and correct defective procurement practices and is not complying with the Truth-in-Negotiations Act.

3. I am bringing this matter to your attention so that appropriate corrective actions may be taken at (shipyard B). Specifically, I recommend that:

(a) (Shipyard B) establish procurement policies that ensure that all materials and equipment are obtained from the least cost source.

(b) (Shipyard B) require cost and pricing data in procurements where all vendors are dependent upon a single manufacturer for the basic product.

(c) Shipyard B negotiate with manufacturers to obtain materials at the same prices manufacturers offer to area distributors.

(d) SUPSHIPS at (deleted) devote more attention to (shipyard B) cost control and procurement practices.

(e) NAVSHIPS take steps to require (shipyard B) to enforce the Truth-in-Negotiations Act.

(f) NAVSHIPS request the Defense Contract Audit Agency or if necessary the General Accounting Office to audit the actual cost records of the (nickel alloy supplier) Company to determine the costs and profits on nickel alloy materials sold to the Navy and its shipbuilders.

H. G. RICKOVER.

Copy to:
Assistant Secretary of the Navy
(Installations and Logistics).
Chief of Naval Material.

REPORT OF PRACTICES USED BY SHIPYARD B TO PROCURE NICKEL ALLOY
MATERIAL FOR CONSTRUCTION OF TWO NAVY SHIPS

SUMMARY

A review conducted in 1969 disclosed several major deficiencies in the practices employed by (shipyard B) in purchasing hull steel required in naval ship construction programs. This review also disclosed that (shipyard B) was not obtaining and evaluating cost and pricing data from steel suppliers as required by the Truth-in-Negotiations Act. A recent review of shipyard nickel alloy material procurements disclosed what also appear to be major deficiencies in the shipyard's procurement practices for materials used in construction of (two Navy ships). The review covered about 50 shipyard nickel alloy material procurements and identified the following deficiencies:

(a) (Shipyard B) is buying substantial quantities of nickel alloy materials through area distributors and paying the distributors' markups even in cases where the distributors provide no service and the shipyard deals directly with product manufacturers to resolve pricing, delivery and technical matters.

(b) (Shipyard B) is not obtaining and evaluating cost and pricing data from nickel alloy material vendors as required by the Truth-in-Negotiations Act. (Shipyard B) is evading the requirements of the Truth-in-Negotiations Act by determining that "adequate price competition" exists in procurements which are in fact sole source procurements from a single manufacturer.

PROCUREMENT OF NICKEL ALLOY AND OTHER MATERIALS THROUGH DISTRIBUTORS

The following is a description of the manner in which most nickel alloy pipe and fitting products are purchased by (shipyard B). It was developed from a review of (shipyard B) purchase orders and Navy purchasing files. There is only limited competition among the suppliers of nickel alloy materials. (Shipyard B) buys these materials, many of which are unique to nuclear ship construction, from distributors rather than directly from manufacturers. This practice is a factor contributing to higher costs on Navy shipbuilding contracts.

Over 90% of the shipyard's requirements for nickel are supplied by one producer, (the nickel alloy producer). The principal buyer of this raw material from (the nickel alloy producer) is (Division X), a division of (the nickel alloy producer) (Division X) markets nickel alloy products in three ways:

1. It sells finished nickel alloy products directly to the shipyard;
2. It sells finished products through distributors to the shipyard;
3. It sells semi-finished products to specific pipe and fitting manufacturers—principally (company Y) and (company Z)—who in turn sell the finished product, usually through area distributors, to the shipyard.

A principal finding of the review is that area distributors do not provide marketing services that would justify the shipyard in paying prices for nickel alloy products that include a distributor's markup. Specifically:

1. In 35 purchase orders reviewed, material was not provided from the area distributor's inventory. Instead the material was manufactured and shipped directly from the firm represented by the area distributor.

2. Questions regarding pricing, delivery, and technical ordering data were in most cases resolved by the shipyard directly with the manufacturer, not the distributor.

3. Two or three area distributors often represent the same manufacturer and at times quote identical prices.

4. Discrepant material received by the shipyard was returned directly to the manufacturer, not the distributor.

5. Manufacturers did not underbid their distributors. Whenever both the manufacturer and his distributors quoted on a (shipyard B) purchase order, the manufacturer's price was either identical to or higher than the prices quoted by the distributors. There are no indications that (shipyard B) has attempted to obtain materials at the same prices manufacturers offer to area distributors. Moreover, manufacturers on occasion requested that (shipyard B) purchase materials from an area distributor in order that the distributor could receive the manufacturer's discount.

A brief check of purchase orders for other types of material indicates that the above circumstances are not unique to the procurement of nickel alloy material. (Shipyard B) purchase orders with area distributors for materials required for Navy contracts currently totals approximately \$3.5 million and include purchase orders of nearly a million dollars for nickel alloy products. The products furnished by these distributors extended from specialty steels to such commonly used items as hoists and plumbing fixtures. (Shipyard B) buys these products in such large quantities that it could exert significant bargaining power in direct dealings with the manufacturers.

It was not possible to determine the premium that shipyard pays as a result of purchasing through distributors instead of directly from manufacturers. However, it is reasonable to assume that savings of from 5 to 15 percent (the normal range of distributors' markups) could be saved by buying directly and avoiding the distributor's markup.

FAILURE TO OBTAIN SUPPLIER COST AND PRICING DATA

No record could be found that (shipyard B) has obtained and evaluated cost and pricing data from nickel alloy material vendors as required by the Truth-in-Negotiations Act, PL 87-653. The purchase order files indicate the following:

1. For purchase orders over \$100,000, raw material suppliers such as (the nickel alloy producer) have apparently not been requested to furnish cost and pricing data.

2. (Shipyard B) has avoided the requirement to obtain cost and pricing data by determining that "adequate price competition" is obtained by purchasing from distributors, even though all are dependent on the same manufacturer. The determination is clearly erroneous in these circumstances. Regardless of which supplier is awarded the order, the result is a sole source procurement to one manufacturer.

3. On the one occasion (Shipyard B) requested the (nickel alloy supplier) to provide cost data. (the nickel alloy supplier) refused. (The nickel alloy supplier's) reply, dated 20 September 1969, states:

"We are unable to comply. We consider our cost and pricing data to be proprietary information which, as a matter of company policy, we do not disclose to customers or competitors. We certify that the prices and terms set forth in this quotation are as low as any accorded by us to our most favored customers for like materials and services under comparable conditions. We further certify that our pricing procedures for similar products have been audited by GAO and found acceptable."

Despite certifications such as this, (the nickel alloy supplier's) prices to (Shipyard B) are not as low as those offered to distributors. Even if (the nickel alloy supplier) did sell material to (Shipyard B) at the same price offered to distributors, that would not eliminate the requirement to provide cost and pricing data in compliance with the Truth-in-Negotiations Act.

CONCLUSIONS

(Shipyard B's) practice of buying material through area distributors instead of purchasing directly from manufacturers may be unnecessarily increasing material costs under Navy contracts by 5 to 15 percent. (Shipyard B) is not taking maximum advantage of its potential bargaining power to obtain the lowest possible prices for material by buying directly from manufacturers. Furthermore, (Shipyard B) has, in circumstances where competition is clearly lacking or limited, classified procurements as "competitive", thereby avoiding the requirement to obtain and evaluate cost and pricing data. (Shipyard B) has not diligently sought to make suppliers comply with the requirements of the Truth-in-Negotiations Act.

To correct these procurement deficiencies I recommend that:

1. (Shipyard B) establish procurement policies that ensure that all materials and equipment are obtained directly from manufacturers unless distributors provide services that would justify a markup to the distributors.

2. In judging the adequacy of competition, (Shipyard B) look beyond the mere number of suppliers to the basic nature of the procurement. If, in fact a procurement is non-competitive, it should be so classified. Prices received from two or more distributors, all of whom are dependent on a single source, should not be treated as competitive prices.

3. (Shipyard B) obtain appropriate vendor cost and pricing data as required by the Truth-in-Negotiations Act.

4. (Shipyard) negotiate with manufacturers to obtain materials at the same prices manufacturers offer to area distributors.

5. The Supervisor of Shipbuilding take immediate action to require (Shipyard B) to obtain and use supplier's cost and pricing data for materials and equipment procured under circumstances of limited competition.

6. NAVSHIPS arrange with the Defense Contract Audit Agency or if necessary the General Accounting Office to audit the actual cost records of (Division X) of (nickel alloy producer) to determine what costs are being incurred and what profits are being made on nickel alloy materials sold to the Navy and its shipbuilders.

ATTACHMENT 2(a)

OCTOBER 23, 1969.

MEMORANDUM FOR THE SECRETARY OF DEFENSE

(Installations and Logistics)

Subject: Refusal to submit cost or pricing data by companies in the forging industry.

1. The Navy has entered into a contract [number deleted] with [Contractor A] to design and furnish the nuclear components for the [deleted] lead ship of a planned class of [deleted] attack submarines [deleted]. In performance of that contract, the [Contractor A] entered into a subcontract with [Subcontractor A] for the 18" and 14" main coolant system piping and fittings for the reactor plant. Also, in performance of that contract, as well as of contract [number deleted], [Contractor A] entered into a subcontract with [Subcontractor B] for closure heads. [Subcontractor A] in turn undertook to buy forgings from [Forging Company A] of [deleted], and [Subcontractor B] undertook to buy forgings of a different type from [Forging Company B].

2. [Forging Companies A and B] both refused to provide cost or pricing data. After much effort we have been able to persuade [Forging Company B] to submit cost or pricing data. However, [Forging Company B] has insisted on submitting it only to the Government and not to either [Subcontractor B] or [Contractor A] since [Forging Company B] considers that either of these companies could be a competitor for similar products.

3. On the other hand, we have been unable to convince [Forging Company A] and, in order to meet the delivery schedule and preclude a substantially increased proposed price of material, I signed a secretarial waiver. I have, however, sent a letter to [Forging Company A] expressing my displeasure with its position. A copy of this letter is forwarded herewith.

4. I bring this matter to your attention since there is an apparent attempt by companies in the forging industry, as in some other industries, to resist compliance with Public Law 87-653. I recommend that specific instructions be issued in connection with the Department of Defense Contractor Performance Evaluation Program of ASPR 1-908 to emphasize the inclusion, in all relevant records, of statements regarding contractor refusals to comply with Public Law 87-653. It is considered that the inclusion of such statements in permanent records of the Department of Defense could motivate even some sole source contractors to reconsider their adamancy; and, in any event, would stimulate Government personnel to the development of additional sources where such a course is feasible and practicable.

5. In addition, it is recommended that the ASPR Committee be requested to consider the feasibility of requiring such refusals to be made a specific evaluation factor when selection is to be made from the recalcitrant source and one or more other sources under solicitations for subsequent procurements. It is recognized that care would have to be exercised that such evaluations not be self-defeating from the standpoint of carrying out the overall purpose of the law to assure reasonable pricing. This possibility, of course, would be particularly true where it is anticipated that adequate competition will be present. However, it is considered that, even in such instances, there is room for the exercise of a chastening measure of leverage in close cases and, certainly, with respect to proposals which are otherwise evaluated on an equal basis. See, for example, ASPR 9-107.3(d). Thus, loss of a close competitive procurement might well lead to a more enlightened view of the public policy implications of the law when the unsuccessful offeror is subsequently negotiating a sole source contract or one which, in other respects, does not qualify for an exception to the requirement for cost or pricing data.

6. Copies of background correspondence relative to the [Forging Companies A and B] cases are forwarded for your information.

(s) FRANK SANDERS,
Assistant Secretary of the Navy (Installations and Logistics).

ATTACHMENT 2(b)

NOVEMBER 19, 1969.

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY

(Installations and Logistics)

Subject: Refusal to submit cost or pricing data by companies in the forging industry.

Reference your memorandum of 23 October 1969, above subject, wherein you present the problem of securing cost and pricing data from second tier subcontractors who are part of the forging industry. You suggest that the Defense Contractor Performance Evaluation Program be used to record refusals to provide cost and pricing data and become a factor in source selection. You also point out that in two recent cases it required considerable effort to obtain the data from one firm and that a waiver was issued for the other firm.

We agree with your conclusion that something should be done. However, the Contractor Performance Evaluation Program would probably not achieve any tangible improvement in the basic problem. As you are aware, this program is generally confined to the prime contractor level and to an assessment of his compliance with contractual requirements. The submission of cost and pricing data is a pre-contract award event as regards a prime contract. Forging contractors would seldom if ever be prime contractors under the program. If a prime contractor failed to obtain the required data from a subcontractor and in so doing neglected his responsibilities, under the law, this would be a reason for causing a notation on the CPE form. This is provided for now by an appropriate remark in block 10 of DD Form 1661. However, in the cited cases the prime contractor as well as his first tier subcontractors appeared to do all that was expected of them. This series of events suggests that there may be unusual problems of the forging industry, with which we are unaware, that makes their compliance with PL 87-653 as now implemented, difficult for them. It is requested that you set up and host a meeting of representatives of the forging industry, at which time we may be able to surface these problems and determine if a reasonable solution is possible.

I would suggest that members of the special ASPR Subcommittee who have developed most of the present policy matters related to implementation of PL

87-653 be present at this meeting. I would appreciate being informed of your plans for this meeting and its outcome.

In regard to your last point that providing cost or pricing data be made a specific evaluation factor when selection is to be made from a recalcitrant source and one or more other sources under solicitations for subsequent procurements, we are somewhat in doubt how this would work. In the ASPR 9-107.3(b), to which you refer there is a condition whereby the Government would receive something of tangible benefit which can be used as a plus factor in deciding a competition. In the situation of cost or pricing data, the need for such data would not exist if competition was present. In addition, there are possible legal complications in making cost and pricing data a rating factor when no need for the data exists. On the other hand, under other than competitive conditions, the obtaining of cost and pricing data is now a condition to be considered by the contracting officer. We are reluctant to refer this point to the ASPR Committees without better understanding how you visualize the workings of the procedure.

(S) Barry J. Shillito
BARRY J. SHILLITO,

Assistant Secretary of Defense (Installations and Logistics).

ATTACHMENT 2(c)

DECEMBER 19, 1969.

MEMORANDUM FOR THE ASSISTANT SECRETARY OF DEFENSE

(Installations and Logistics)

Subject: Refusal to submit cost or pricing data by companies in the forging industry.

1. Your memorandum of 19 November 1969 in reply to our memorandum of 23 October 1969 concerning the subject problem requested that we arrange a meeting with representatives of the forging industry. This request was premised on the view that our problem suggested that there may be unusual problems in the forging industry that makes their compliance with P.L. 87-653 difficult. The source involved in this particular incident refused to provide cost or pricing data on the basis that non-competitive status of the procurements was not of their doing and that there were other sources that could produce the forgings. This position is not unique to the forging industry. Sources in the computer, electronic tube, ball bearing and tire industries have confronted us with this same identical position in refusing to provide cost or pricing data in non-competitive procurements for military versions of their products. In all of these cases the non-competitive condition was created because only one source submitted a proposal, though others were solicited, and the threat of competition did not exist because the sole offeror knew or should have known that it was the only source that had previously produced a product that met government specifications or requirements.

2. We do not think that a meeting with any particular type of industry will achieve any meaningful resolution. This problem is extensive and requires a coordinated in-depth study by the services and DSA. Accordingly, it is requested that such a study be initiated by a committee composed of a representative from each of the services and DSA and chaired by a member of your staff. It is requested that such a group concentrate on developing some techniques or procedures that will motivate recalcitrant contractors to reconsider their refusal.

3. It is recognized that any technique or procedure cannot guarantee results but must achieve contractor compliance through persuasion or implication. We believe this can be of benefit since [Forging Company A] recently expressed concern over our referral to DOD of their refusal.

FRANK SANDERS,

Assistant Secretary of the Navy (Installations and Logistics).

ASSISTANT SECRETARY OF DEFENSE,
Washington, D.C., April 21, 1970.

HON. WILLIAM PROXMIRE,
*Chairman, Subcommittee on Economy in Government,
Joint Economic Committee,
U.S. Senate, Washington, D.C.*

DEAR SENATOR PROXMIRE: Further reference is made to your letter of March 17, 1970, with regard to industry compliance with PL 87-653 which requested replies to specific questions relating to that statute. The letter states that your sub-

committee has heard testimony from several sources to the effect that all major computer firms, steel mills, nickel producers, and forging suppliers have refused to provide cost or pricing data as required by the law. Such testimony has apparently left the impression that entire industries are not complying with the Truth-in-Negotiations Act, PL 87-653.

I want to assure your subcommittee that we will always seek improved methods of administering this law. I have recently created a special task group to carefully study the problem of alleged contractor resistance to supplying cost or pricing data in specific instances. Should our investigations at any time reveal the desirability of more resources or additional regulations to further improve our implementation of this law, you may be assured that we will take action to accomplish these measures. Replies to the questions, as requested, are set forth in the attachment to this letter.

Sincerely,

(S) Barry J. Shillito,
BARRY J. SHILLITO,

Assistant Secretary of Defense (Installations and Logistics).

ANSWERS TO QUESTIONS IN LETTER FROM HON. WILLIAM PROXMIRE,

MARCH 17, 1970

Question 1 (a). What specific action did the Department of Defense take which resulted in establishing effective competition in steel procured by the Department, by its contractors, and subcontractors?

Answer. The question asked by the subcommittee apparently stems from an interpretation of an answer given by Mr. Frank Sanders, ASN (I&L), in response to a question posed by Chairman Proxmire during hearings in December last year. Mr. Sanders was referring to the only specific transaction relating to certain forgings which, prior to the above hearings, had come to his attention during his tenure as ASN (I&L). He did not mean to imply that he had instituted any new competitive procedures in any particular industry as the forging or steel industry. The procurement activities within the department responsible for the purchase of steel advise us that these products are purchased following competitive procedures. Hence, no change has been made in these purchasing methods.

Question 1 (b). Are specialty steels developed by the military now being procured competitively?

Answer. DOD does not purchase large amounts of steel directly, but as nearly as we can determine, specialty steels which are procured directly by DOD are procured competitively. Specialty steel is more often a subcontracted material item. As nearly as we can ascertain, there is competition at the subcontract level too, although not all subcontracts require the consent of the Contracting Officer.

Question 1 (c). Are there any types of steel on which the Department of Defense does not have adequate competition?

Answer. The Defense Industrial Supply Center in Philadelphia is the principal purchaser of steel products for the DOD. Adequate competition is considered to be present in all its steel purchases.

Question 2 (a). Do all steel suppliers, forging suppliers, computer manufacturers, and other material suppliers now provide cost and pricing data in cases where this is required by the Truth-in-Negotiations Act?

Answer. Generally speaking, Defense contractors and subcontractors have provided cost or pricing data when it is required by PL 87-653. As you know, there have been selected cases where the heads of the Departments, in accordance with the provisions of the law, have waived the requirement. However, in these selected cases appropriate administrative procedures were properly followed, including high-level review of the proposed course of action. The waivers of PL 87-653 granted from the passage of the law through June 1969 were previously identified to the Subcommittee and have been published on Page 596 of the Subcommittee Hearings.

Question 2 (b). Are there any other industries or companies that refuse to provide cost and pricing data on defense contracts or subcontracts?

Answer. Except for the one company (Martin-Baker) identified in the answer to 5(a) below, and the Modine Manufacturing Company (with whom we have ceased doing business), we do not know of any industries or companies that

refuse, across-the-board, to provide cost and pricing data. Several firms have been granted proper waivers on individual contract transactions.

Question 3. Does Mr. Sanders' statement mean that since enactment of the Truth-in-Negotiations Act the Department of Defense has no cost or pricing data from large steel mills, nickel producers, and forging suppliers?

Answer. Mr. Sanders referred solely to a disagreement regarding the competitive nature of a second tier subcontract for some forgings incident to a specific program. He referred to the fact that after waiving the requirement for the first buy, the Navy was able to achieve competition on the subsequent buy wherein the delivery requirements were not so critical.

Question 4 (a). What sanctions does the Department of Defense take with firms that do not comply with the Act?

Answer. We have not found it necessary to apply sanctions to firms that have not initially provided us all of the pricing data to which we believe we are entitled. We have found that the government's interest may be safeguarded in working with these problems administratively on a case-by-case basis.

Question 4 (b). Do these firms remain eligible to bid on and receive government contracts and subcontracts?

Answer. Firms remain eligible to bid on and receive government contracts and subcontracts unless debarred or under suspension. The disagreements we have thus far encountered, do not justify debarment. Each case must be judged on an individual basis. We would not like to have created a situation wherein a disagreement on one transaction would bar us from taking advantage of a low price on another transaction or prevent us from buying from the only known source of an item.

Question 5 (a). A listing by industry of companies that have refused to provide cost and pricing data in cases where such data is required by the Truth-in-Negotiations Act.

Answer. In the past seven years, since the passage of PL 87-653, DOD has entered into well over 100 thousand transactions which were subject to the Act. In that same period of time there have been issued only a *minuscule number of waivers* as provided for in the law whenever the head of a procurement agency determines this action necessary. We show below a listing of the waivers and a brief explanation. As you will note, many of the waivers were issued following a disagreement as to the applicability of the law, generally because of an alleged commercial item. Some waivers are technical in nature and were granted to assure compliance with the law rather than to reflect an action related to a need for cost or pricing data in order to negotiate a reasonable price. In every case a detailed review of the circumstances and justification was made by an official at a level above the contracting officer before the individual waivers were granted.

Generally the waivers can be categorized as follows:

- (1) Cost reimburseable, no fee contracts with non-profit institutions.
- (2) Procurements from certain foreign sources.
- (3) Procurements for certain foreign governments pursuant to international agreement.
- (4) Procurements from certain firms that have claimed that urgently needed items are subject to an exemption or urgent delivery requirements did not permit our obtaining all the certified data specifically required, prior to awarding the contract.

The waivers follow :

I. APPLICABLE TO ALL DEPARTMENTS AND AGENCIES

1. Blanket waivers cover contracts for reimbursement of cost under cost-no fee contracts with non-profit institutions. All incurred costs are audited before reimbursement and no profit is involved. This includes Armed Forces Medicare contracts.

2. Blanket waivers cover contracts placed with the Canadian Commercial Corp. Proposals on prospective awards are examined by Canadian Department of Defense Production and an assurance given by them as to the fairness and reasonableness of price. The procedures followed by the Canadian instrumentality are clearly in consonance with PL 87-653.

3. Blanket waivers cover procurements from Western Electric Company for standard Bell System items. The contractor maintains that these are commercial items, sold in substantial quantities to non-government purchasers. Most of the sales of such items are to affiliated utility companies whose charges

for communication services are subject to review and regulation by public commissions. The statutory requirement is waived when an official at a level above the contracting officer determines that the requirement cannot otherwise be satisfied at a lower price.

II. ARMY

1. International Business Machine Corporation—This waiver is applicable to the purchase of 2 Photo-Digital Systems, IBM 1360 and related expansion capability. The contractor claimed the price was based on similar commercial items but the Army found limited commercial use. The urgency of the delivery requirement necessitated awarding the contract and therefore the PL 87-653 requirements were waived.

2. Overseas commands have granted waivers in connection with procurements from foreign governments or their agencies. Specific details can be furnished upon request.

III. NAVY

1. Martin-Baker Aircraft Co., Ltd. of Higher Denham Middlesex, England—Waivers have been granted for specific prime and subcontract purchases of aircraft ejection seats. The contractor does not provide cost or pricing data even to the British Government, yet the seats are considered technically superior for certain aircraft and the prices are less than similar American-made seats.

2. New York Shipbuilding Corp.—This waiver was granted for the final pricing action of a specific contract where negotiations started prior to passage of the Act but did not conclude until March 1963, after a passage of PL 87-653.

3. Bugsier-Reederei UND, Burgunge of Hamburg, Germany—This waiver was granted for the procurement of two amphibious heavy lift cranes from the sole producer based on a domestic and foreign market survey in 1966. Although the contractor submitted cost or pricing data upon which a successful negotiation could be conducted, it would not accept the contract clauses regarding a reduction in price in connection with possible defective subcontract data. Extended negotiations did not alter its position and therefore that portion of the law was waived to assure timely delivery.

4. Nicholas E. Vernicos Shipping Co. Lt of Piraeus, Greece—This waiver was related to the purchase of salvage operations on a grounded naval ship in Greece. International relations demanded removal of the ship and the only contractor in the area capable of performing, was unwilling to certify the data submitted.

5. General Electric Company—This waiver relates to the subcontract between Newport News Shipbuilding and Drydock Company and General Electric for the propulsion plant for the CVAN 68. Competition was sought and two bids were received. Additional data was requested from the low bidder General Electric. The subcontractor took the position that the procurement was competitive and therefore did not believe the law required it to submit all the data requested. However, there was negotiated a provision for an incentive pricing adjustment with a limited profit based on certified cost or pricing data after completion of performance.

6. Jamestown Metal Division of A. V. M. Corp.—The government procured the design and data rights for shipboard furniture developed at private expense, at a price below that available from any other source. The contractor provided access by the Government to his records but considered that its reconstruction of past records directly related to the cost incurred for the design as too costly to do for the price it was charging. The requirement was waived.

7. International Business Machines Corporation—This waiver was related to a subcontract under a John Hopkins University prime contract for an IBM system 360/91. The contractor claimed the item to be related to his family of computing systems designed, offered for sale and sold as commercial products. Extended negotiations did not alter its position and faced with a substantial price rise the requirement for cost or pricing data was waived.

8. Cameron Iron Works—This waiver relates to a second tier subcontract for forgings under the Crane Company subcontract with General Electric Co., the prime contractor. Although several sources were solicited only Cameron Iron Works submitted a bid. It was unwilling to submit cost or pricing data on the grounds that it had bid competitively. The price was determined to be within the range paid for other similar forgings. On subsequent procurements, when delivery schedules were not so critical, it was possible to establish effective competition and another source won the award.

IV. AIR FORCE

1. D. B. Milliken Co.—This waiver was for a specific 1966 procurement of a sole source item urgently needed in Southeast Asia and the contractor was unwilling to provide cost or pricing data.

2. Pittsburgh Plate Glass Co.—This waiver was for a specific 1966 procurement of a sole source, urgently needed spare part for equipment in Southeast Asia and the contractor would not provide cost or pricing data.

3. (a) General Electric Co. (b) Lockheed Aircraft Corp. (c) North American Rockwell Corp. (d) C. G. Hokanson Co. (e) Lear Siegler, Inc.

This series of waivers were for specific procurements of aircraft, engines and parts, which by international agreement were required to be placed on U.S. Government contract. The Italian Government negotiated firm fixed prices, financed the contracts and then affirmed to the Air Force that they considered the price fair and reasonable.

4. Cameron Iron Works—This waiver relates to a subcontract under an Allison Division GMC prime contract. Because of technical requirements this was a sole source item but the subcontractor would not provide cost or pricing data. The parts are critical to the prime contractor's production schedule.

5. (a) Lockheed-Georgia Co. (b) General Electric Co.

This waiver relates to the interchange of work between the C-5A aircraft manufacturer and the engine manufacturer. Certified cost or pricing data is submitted and used to determine the amount to be added to the receiving contract with an equal price reduction in the other contract. The price being reduced is not based on cost or pricing data of that contractor and therefore the technical requirements of the law have been waived in that regard.

V. DEFENSE SUPPLY AGENCY

1. Holly Corporation—These waivers relate to the reduction of contract option prices for fuel storage initially obtained on the basis of competition. Cost or pricing data was not needed to determine the lower price obtained.

2. ESSO International—This waiver is applicable to that portion of the prime contractor's cost which is related to an Icelandic subcontractor which would not provide cost or pricing data. The subcontractor prices were comparable with other prices being paid for like services.

3. Eastman-Kodak Co.—This waiver relates to specific procurement of aerial film during a 60 day period during which DOD was evaluating the contractor's claim that its price was based on established catalog or market prices of items sold in substantial quantities to the general public, hence qualified for exemption. It was later determined that this claim was correct.

4. Mobil Oil Co.—This waiver relates to a single procurement of fuel storage in Philippine Islands. The price was far less than any other method available for supplying the need. However, since the construction of some new commercial facilities were involved the contractor would not provide cost or pricing data on the basis that the administrative costs and time required to obtain and process such data would be excessive. Other procurements from this company have been on the basis of certified cost or pricing data.

5. Thermo-King Corporation—This waiver relates to a subcontractor, Onan Division of Studebaker Corporation, who claimed exemption under the law because of an established catalog price of items sold in substantial quantities to the general public. The sale to the general public could not be verified. Thermo-King Corporation provided certified cost or pricing data except for this single subcontract.

6. Sheridan-Gray, Inc.—This waiver relates to a single transaction wherein 15 sources were solicited but only one responded. Certified cost or pricing data was provided by the contractor but additional data considered necessary was not provided. The waiver is applicable to the additional requested data.

7. Iceland Prime Contractor—This is a series of waivers for procurement of fuel storage with the only company approved by the Iceland Government. It stated its accounting records would not provide a detailed breakdown of costs elements or the required source identification. The Icelandic Defense Force Staff and other data available was used to determine that the prices were fair and reasonable.

8. (a) Asiatic Petroleum. (b) Esso International.

This relates to three waivers for procurement of fuel storage in Southeast Asia that was urgently required. The contractors did not refuse to provide data but

the time delay that would have resulted before award of the contract for the urgently needed requirements was prohibitive. Data was obtained on subsequent procurements.

9. Southland Oil Corporation—This waiver relates to a domestic fuel storage contract wherein the contractor claimed exemption from the law on the basis that its rates did not exceed the prevailing commercial rates it was charging. Although it certified to this fact it would not furnish the names of commercial customers claiming that was privileged information. By other means we determined the prices were fair and reasonable.

10. Lear Siegler, Inc.—This waiver relates to a single sole source procurement. The contractor submitted cost or pricing data but in one cost element area it was not considered complete. Additional data was provided but it still was not considered adequate. Further extended negotiation did not result in obtaining the additional data before the waiver was granted as relates to that single cost area.

11. Gentex Corporation—This waiver relates to a single procurement of an independently developed sole source item critically required. The company had previously provided data but would not on this procurement. From partial data submitted and from data on other procurements the price was determined to be fair and reasonable; therefore the waiver was granted to assure timely delivery.

Question 5(b). The total amount of Department of Defense business (both prime contract and subcontract) awarded to each such firm since enactment of the Truth-in-Negotiations Act in 1962.

Answer. We do not maintain records of the kind requested.

DEPARTMENT OF THE NAVY,
OFFICE OF THE GENERAL COUNSEL,
Washington, D.C., March 12, 1971.

Re American Iron & Steel Institute et al, Docket 5508; Navy purchase of HY-80 and other special treatment steel plates.

MR. ALAN WARD,
*Director, Bureau of Competition,
Federal Trade Commission, Washington, D.C.*

DEAR MR. WARD: Between 1961 and 1964, we had occasion to correspond with your Commission with respect to the above subject, about which Mr. Henderson, then General Counsel, and Mr. Gercke, Mr. Upshaw and, perhaps, others had varying degrees of knowledge.

Apprehensive that identical bids received over a period of time in the Navy purchase of HY-80 steel indicated the possibility of collusive practice between suppliers, we sent detailed reports of such identical bids to your Commission. Previously, we had communicated our concern to the Antitrust Division of the Department of Justice. Our recollection is that we made accessible to FTC personnel, numerous files which showed bids for this steel plate submitted by U.S. Steel Corporation and Lukens Steel Company for a considerable time span, beginning with 1950.

The common interest of the Navy and the Commission may be said to stem from the Order in August 1951, entered in conjunction with a Consent settlement in the American Iron and Steel Institute case (FTC Docket 5508). The Consent Order provided that the American Iron and Steel Institute, U.S. Steel Corporation, and other leading steel producers, should cease and desist from collusively adopting, fixing or maintaining prices, including, but not limited to, base prices or the extras from which there shall be added to or the deductions which shall be made from any base price, and from quoting or selling products at prices calculated pursuant to any formula which produces identical price quotations or delivered costs, or which establishes a fixed relationship among price quotations or prevents purchasers from securing any advantage in price in dealing with one company as against another.

We had thought that the Commission was confronted with a need to determine whether the suppliers to the Navy of HY-80 steel had colluded in violation of the 1951 Consent Order but we have not heard from the Commission and have not had the benefits of any analysis or report.

By letter dated January 28, 1965, the Comptroller General of the U.S. sent a report (B-148772) to the Congress of its examination into the purchase by this Department and our prime shipbuilding contractors of over \$100 million worth

of HY-80 almost entirely from U.S. Steel and Lukens. The critical inquiry by the General Accounting Office was in association with P.L. 87-653, a 1962 amendment to the Armed Forces Procurement Act of 1947. The overall objective of the statute was, and is, to promote three principles which would protect the Government's interest: (1) maximum competition must be obtained in awarding contracts; (2) there should be clear justification prior to the award of negotiated contracts; and (3) for negotiated contracts expected to exceed \$100,000, cost or price data, certified by contractors as complete, accurate and current, should be required by Government procurement officials. As you may know, the third requirement need not be applied to contracts or subcontracts where the price negotiated is based on adequate price competition, or is the established catalogue or market price of a commercial item sold in substantial quantities to the general public, or is set by law or regulation, or, in exceptional cases, where the agency head determines that the requirements may be waived.

The Navy no longer makes direct purchases of this type of steel in that the cognizance for so doing, in the Department of Defense, has been assigned to the Defense Supply Agency, whose recent purchases, by the way, have not been in large amounts. However, our prime contractors continue to buy it. For example, Newport News Shipbuilding and Drydock Company has purchased HY-80 and HY-100 steel plate, in significant amounts, for the construction of carriers and submarines. Its procurement after 1967 of this high tensile plate in the instance of the CVAN 68 (U.S.S. *Chester W. Nimitz*) totaled nearly \$9 million, of which \$3,650,000 went to Lukens, \$5,250,000 to U.S. Steel Corporation and \$5,000 to ARMCO. For each of the purchase orders reviewed, bids were solicited from both Lukens and U.S. Steel and, in each case, Lukens' bid was slightly higher than that of U.S. Steel. However, it is our understanding that these bids were adjusted by adding the freight costs from each mill to destination and that made the bids identical. In several of the procurements reviewed, Lukens advised Newport News that it was raising its prices whereupon, within 30 days, U.S. Steel increased its prices by an identical amount. So far as we have been able to learn, the suppliers did not feel themselves required to submit evidence of cost or price data pursuant to the statute hereinbefore cited. A third manufacturer, Bethlehem Steel Corporation, has also declined to furnish cost and price data.

The General Accounting Office has once again been making inquiries in this Department and the undersigned has given information with respect to our correspondence between 1961 and 1964 to and from your Commission. Asked whether the Federal Trade Commission has ever culminated its study of this subject, we have pleaded want of knowledge. We have had to say, moreover, that we have not yet had the benefit of your advice nor have we been made aware of any pertinent amendatory orders pertaining to the above-captioned Federal Trade Commission case.

The purpose of this letter is, to bring to the attention of present Commission personnel the data we have summarized above and to ask for an expression of your views as to whether you will be in a position to assist us. We will be glad to discuss any phase of this matter.

Thank you.

Sincerely yours,

ALBERT C. KORNBLOM,
Assistant to the General Counsel.

SUBCOMMITTEE ON PRIORITIES AND ECONOMY IN GOVERNMENT,
November 16, 1971.

HON. MILES W. KIRKPATRICK,
Chairman, Federal Trade Commission,
Washington, D.C.

DEAR MR. CHAIRMAN: The Joint Economic Committee held hearings this past spring in which the subject of possible collusive bidding with respect to high grade steel purchases by government contractors was discussed.

It was brought out in these hearings that the Department of the Navy had written to the Federal Trade Commission about this matter between 1961 and 1964, but that no action had been taken by the Commission, and that apparently, the Commission had failed to respond to the Navy's last request for assistance in 1964.

On March 12, 1971, the Navy revived the subject in a letter to the Federal Trade Commission and once again asked for assistance.

I would like to verify the facts about the Navy's efforts to obtain help on this matter from the Federal Trade Commission and would also like to have a status report indicating what action the Commission has taken up to now to investigate the possible collusive bidding practices in the steel industry.

Any assistance you can give me will be greatly appreciated.

Sincerely,

WILLIAM PROXMIRE, *Chairman.*

FEDERAL TRADE COMMISSION,
Washington, D.C., December 8, 1971.

Re American Iron & Steel Institute, et al., Docket No. 5508; Armco Steel Corporation, et al., file No. 711 0107.

HON. WILLIAM PROXMIRE,
U.S. Senate,
Washington, D.C.

DEAR SENATOR PROXMIRE: The Chairman has asked me to reply to your letter of November 16, 1971, in regard to the subject of possible collusive bidding with respect to high grade steel purchases by government contractors.

Your letter states that the Joint Economic Committee held hearings this past spring, during which it was brought out that the Department of the Navy had written to the Federal Trade Commission about this matter between 1961 and 1964, but that no action had been taken by the Commission. It is true that the Commission received letters dated February 23, 1961, and January 30, 1964, from Albert C. Kornblum, Esquire, Assistant to the General Counsel, Office of the General Counsel, Department of the Navy, on the subject of non-competitive bidding by United States Steel Corporation and Lukens Steel Company on HY-80 and other special treatment steel plates supplied to the Navy. However, it is not true that no action was taken thereon by the Commission.

By letter dated June 2, 1961, from James McI. Henderson, General Counsel, Federal Trade Commission, Mr. Kornblum was advised that this agency has undertaken an extensive investigation of identical bidding by United States Steel Corporation and Lukens Steel Company on HY-80 and Special Treatment armor plate supplied to the Department of the Navy; that, for the present, this investigation has been confined to purchases by the General Stores Supply Office, Philadelphia, Pennsylvania, and the Navy Purchasing Office, Washington, D.C., and that the investigation is still being carried forward by the Bureau of Investigation of this agency.

Following receipt of Mr. Kornblum's letter of January 30, 1964, forwarding to the Commission information in regard to identical bids received by the Navy Purchasing Office, Washington, D.C., a thorough investigation was conducted in relation to all aspects of possible violation of the case and desist order in Docket No. 5508, American Iron & Steel Institute, et al., issued by the Commission on August 10, 1951. After completion of the investigation, it was the opinion of the staff that the investigation did not elicit evidence sufficient to prove a conspiracy in the submission of bids on the products in question. It is noted that this Commission order proscribes only conspiratorial conduct.

The results of the investigations of the 1961 and 1964 charges alleged by Mr. Kornblum were presented to the Commission, which by Minute of June 28, 1966, directed that no further action be taken at this time. However, before such action was taken, a conference had been held at specific Commission direction with representatives of the General Accounting Office. At this conference, it was learned that the actual procurement of HY-80 had already been changed from the Navy to the Defense Industrial Supply Center (DISC), Philadelphia, Pennsylvania. It was also reported that there appeared to have been some break in pricing among the three producers (in addition to U.S. Steel and Lukens, Armco Steel Corporation was now producing the product). U.S. Steel was no longer using its catalogue prices, but rather quoting uniformly on a price per pound, f.o.b. destination basis. Lukens and Armco, however, were still pricing from their catalogues. In a particular HY-80 bid for 1,497 tons made in February 1966, the prices bid by U.S. Steel and Armco had varied considerably. The Navy's requirements had been met by a split award at a total price less than it would have paid had the entire award gone to either U.S. Steel or Armco.

By letter dated March 12, 1971, Mr. Kornblum again wrote to the Commission on the subject of Navy purchase of HY-80 and other Special Treatment Steel Plates. This is no doubt the letter dated March 12, 1971, you refer to in your recent letter. By letter dated April 26, 1971, Mr. Kornblum was advised that, to insure compliance with the Commission's order in Docket No. 5508, we "will at least make a preliminary examination of the Newport News situation." He was also requested to furnish specific information in regard to the Newport News situation mentioned in his letter.

Meanwhile, the matter was submitted by the staff to the Commission, which by Minute of April 30, 1971, instructed the staff to *expedite* the investigation of the Newport News situation to determine whether there has been any violation of Commission orders or statutes enforced by the Commission. In accordance therewith, File No. 711 0107, Armco Steel Corporation, et al., has been established for the conduct of the investigation. The other respondents are Bethlehem Steel, Lukens Steel, and U.S. Steel.

Mr. Kornblum's reply to our letter of April 26, 1971, was received in a letter dated August 27, 1971, in which he enclosed the documents requested. Subsequently, a staff attorney and a staff accountant made a trip to the office of the Supervisor of Shipbuilding, Conversion and Repair, United States Navy, Newport News, Virginia, where discussions were held in regard to the methods of computation of the bid prices on the bids, which appear to be identical when freight costs are added on. Thereafter, the staff again submitted the matter to the Commission, which by Minute of November 18, 1971, approved, adopted, and entered of record a resolution, directing the use of compulsory process in a non-public investigation to determine whether respondents Armco Steel Corporation, Bethlehem Steel Corporation, Lukens Steel Company, United States Steel Corporation, and others, are in compliance with the order in Docket No. 5508 or are engaged in further acts and practices in violation of Section 5 of the Federal Trade Commission Act.

In your letter of November 16, 1971, you ask for a status report indicating what action the Commission has taken to investigate the possible collusive bidding practices in the steel industry. Please be advised that each of the four respondent steel companies has been served with a subpoena duces tecum requiring it to produce certain books, papers, and documents at hearings to be held in the Commission's building on January 10 and 11, 1972. The specifications attached to the subpoenas were designed to elicit information from which it may be determined whether the four companies subpoenaed have been engaged in conspiratorial price fixing in connection with the bidding on HY-80 and HY-100 steel plates and how they have been able to arrive at identical bid prices.

You are assured that the Commission's staff has been constantly aware of the possibly collusive bidding practices in the steel industry. I hope the above information completely answers your inquiry. In the event that any other information is needed please contact me.

With kindest regards, I am,

Sincerely,

ALAN S. WARD,
Director, Bureau of Competition.

THE ACQUISITION OF WEAPONS SYSTEMS

THURSDAY, APRIL 29, 1971

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON PRIORITIES AND
ECONOMY IN GOVERNMENT OF THE
JOINT ECONOMIC COMMITTEE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 5302, New Senate Office Building, Hon. William Proxmire (chairman of the subcommittee) presiding.

Present: Senators Proxmire and Pearson; and Representative Conable.

Also present: John R. Stark, executive director; James W. Knowles, director of research; Loughlin F. McHugh, senior economist; Richard F. Kaufman, Ross F. Hamachek, and Courtenay M. Slater, economists; George D. Krumbhaar, Jr., minority counsel, Walter B. Laessig and Leslie J. Barr, economists for the minority; and A. Ernest Fitzgerald, consultant.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

Chairman PROXMIRE. The subcommittee will come to order.

Yesterday we received convincing and well-documented testimony from two different sources indicating widespread noncompliance with the Truth-in-Negotiations Act, excessive profits on defense contracts, frequent misuse of government-owned equipment in the hands of contractors, and other breakdowns in the military procurement system.

One of the most serious problems discussed by Admiral Rickover is the improper settlement of claims against the Government. The Admiral testified that the Navy tends to settle its claims by bargaining rather than making a careful legal analysis and a final determination based on the merits of each case.

In one case, the Navy settled a multimillion-dollar claim at nearly the full amount demanded by the contractor without completing a legal analysis of the case, or even consulting the Navy counsel.

Although the Admiral would not disclose any other details about this case, I am informed that the contractor in question is Todd Shipyards, and that the program on which the claim was made is the DE-1052 destroyer escort program.

In December of 1969, this subcommittee held hearings on the DE-1052 and heard testimony on the matter of the claims that had been filed against the Navy. Following the close of the testimony, I wrote a letter to the Secretary of the Navy raising questions about the claim against this program as well as other Navy shipbuilding programs.

At the time, approximately \$800 million in claims were pending or about to be filed with the Navy.

During the hearings, I learned that the Navy had set up a special claims review group to examine and settle those claims. In my letter dated February 13, 1970, to Secretary Chaffee, I wrote the following:

I am of course delighted that the Navy has set up a special group to deal with the enormous pending claims. However, I am concerned over whether the Navy will follow through by taking steps to insure that any settlements are made within the terms of the written contracts involved, the facts and legal merits, rather than by the let's-cut-it-down-the-middle kind of horsetrading that goes on around the bargaining table. I urge you to have each claim carefully reviewed by your legal and procurement experts to avoid this possibility. Frankly, on the basis of the claims settlement made in the Todd DE-1052 case, I am somewhat skeptical about the Navy's willingness to insist on full performance under the contract.

In addition to warning the Navy of the tendency to horsetrade over a claim rather than settling it on the merits, I wrote to Comptroller General Elmer Staats, who will be the second witness this morning, urging the General Accounting Office to actively review the disposition of the major shipbuilding claims, and to give particular attention to the effect the settlements might have on future Government contracting.

Yesterday I was given a copy of GAO's final report on the shipbuilders' claims. Sad to say, my worst fears of over a year ago have now been confirmed.

GAO examined the settlement of claims by three different contractors. The largest one concerned the DE-1052 program. On that program, a claim of \$114.3 million was made by the contractor. It was settled for \$96.5 million.

Of this claim, as well as the two others, GAO concluded that the contractors did not provide tangible evidence by which the amounts claimed could be related to the additional costs due to interruptions caused by the Government's actions. The Navy, in the opinion of GAO, could not adequately evaluate the validity of the amounts claimed.

Here we have concrete proof of a virtual giveaway by the Navy to its contractors of well over \$114 million.

I hope to discuss this problem further with the Comptroller General in the hearings this morning, and I plan to formally request that the GAO take whatever steps are necessary to halt payment of funds that have been improperly awarded for the settlement of claims, and to recapture, if possible, funds that have already been improperly spent.

Our first witness is Mr. Walter W. Jacobs. Mr. Jacobs received his Ph. D. in mathematical statistics from the George Washington University in 1951. He has held professional executive positions in statistical, mathematical, and other technical work for the Department of Defense, the Department of the Air Force, and the Department of Commerce. He has been associated with the department of mathematics and statistics at the American University for many years, as adjunct professor and recently as full-time professor of mathematics and statistics, and department chairman. He has been awarded the Legion of Merit, the Air Force Medal for exceptional civilian service, and the NSA award for exceptional civilian service. He is the author of numerous publications.

Mr. Jacobs, you may proceed in any way that you wish.

**STATEMENT OF WALTER W. JACOBS, CHAIRMAN, DEPARTMENT
OF MATHEMATICS AND STATISTICS, AMERICAN UNIVERSITY**

ANALYSIS OF GAO PROFIT STUDY

Mr. JACOBS. I have submitted a prepared statement commenting on the relations between the principal conclusions highlighted in the study of the GAO Defense Industry Profit Study and the figures reported in that study. What I would like to do is summarize briefly what I consider the essence of my conclusions.

The principal statement, on the very first page of the report, emphasizes the conclusion that profits in defense work are lower than profits in commercial work for contractors engaged in defense business. These conclusions are based on the profit figures obtained from responses to questionnaires submitted by the defense contractors.

In addition, the report gives figures on profits obtained by a review of a sample of actual contracts, made by the GAO, and it shows very substantial differences between those two sets of figures. The differences are so large that the principal conclusion I mentioned would not stand unless the sample figures were discredited. And the report on page 2 offers reasons for rejecting these figures.

It is these reasons that I want to comment on.

The first reason given was that the sample was very small. Only 146 contracts were examined and that number was too small to yield inferences about a total number of contracts that is in the hundred thousands. My comment is that the sample is too small to derive inferences appropriate to all contractors, but not necessarily so, if you limit its application to the large contractors. The consideration here is not the number of contracts covered, but whether a reasonable selection of large contractors was made and whether the total amount of defense business covered in these contracts was a substantial part of the total business done.

This in fact is the case. Half of the large firms were represented in the sample. The total amount of defense business covered in the sample was about 6 percent of the total defense business done by these firms. While such a sample is not necessarily comprehensive enough to give an accurate estimate of what the total profit ratios would have been on all defense business of these firms, it is certainly enough to raise questions about the differences, of the order of more than 2 to 1, between the profits shown in the sample study and the profits indicated in the contractors' reports.

The second point raised against accepting the simple results was that the GAO sample measured profits that were different from the profits measured in the contractor's response to the questionnaire. And this is true. In one case you had an estimate or analysis of profits directly measured on particular contracts, using overall standard procedures set down by the GAO for treatment of indirect and direct costs. In the other case, figures are based on the contractor's books. It is a well-known fact that profits as shown in financial statements can be altered by accounting treatment. This is particularly the case when you are involved in cost accounting, when you are allocating receipts and charges against different categories of business.

Thus, it is true that one would normally expect a difference between results obtained from individual contracts and the results obtained

from financial statements. I would expect the company's annual financial statements to show profit ratios on defense business that were lower than those based on individual contracts.

But the important question, as shown in the study, is the size of the difference. The overall results from individual contracts, based on the sample, show profit ratios about two and a half times those of the audited figures. Such differences are big enough, I repeat, to raise questions about the study's principal conclusion, unless in fact the sample is unreliable.

The third point made in the study was that this was a judgment sample, and it may well, by the very way it was picked, have produced some biases toward larger profits than would have been shown had all contracts been examined.

On the basis of the data in the study itself, there seems to be no evidence of serious bias. Certainly the possibility of bias exists in any sample, but I see no evidence that the bias can be severe enough to account for the very large differences between the profits based on sampling figures and profits based on the contractors' reports.

To summarize, the figures as shown in the *Defense Industry Profit Study* do not seem to me to justify the conclusion highlighted on page 1, which is that the profit ratios as reported by contractors show bigger profits in commercial business than in defense business.

(The prepared statement of Mr. Jacobs follows:)

PREPARED STATEMENT OF WALTER W. JACOBS

As a professional statistician, I offer the following remarks, directed at two aspects of the *Defense Industry Profit Study B-159896*. The first aspect is the divergence between two sets of profit figures discussed in the Study: those obtained from questionnaire responses submitted by large DOD contractors, and those obtained from a sample of 146 contracts involving some of these same contractors. The other aspect is the suggested explanation for the differences, given on page 2 of the Study.

The difference in profit ratios obtained from questionnaires and from the sample is illustrated by the figures on profit as percent of equity capital investment (ECI) for DOD contracts:

	Percent
Obtained from responses by 74 large DOD contractors.....	21.1
Obtained from sample of 146 contracts, of 37 large DOD contractors.....	56.1
Obtained from responses by 34 large DOD contractors included in individual contract reviews.....	25.0

(The final figure was not included in the published Study, but was contained in a tabulation supplied separately.) The other profit ratios show comparable discrepancies.

Such differences raise a question about the principal conclusion of the Study: that rates of return on defense work were lower, or at least no higher, than those on comparable commercial work. For the sample data suggest that had all contracts on defense work in the four-year period been examined by the GAO and profit ratios obtained on that basis, the resulting figures would have shown much higher returns on defense business.

Further, it is only to be expected that contractors would keep their books in such a fashion as to keep down their indicated returns on defense contracts. The treatment of such items as depreciation, inventory valuation, and contingency reserves, makes it possible to show smaller profits on such work, and it is simply prudent practice to take advantage of such techniques, because of the risk of review and renegotiation of defense contracts. It would be surprising, therefore, if total profits figures based on individual contracts came out no higher than those based on the firms' financial statements.

Thus it is the size, rather than the direction, of the indicated differences that is at issue. The profit ratios obtained in the sample are more than twice as large as those obtained from the contractors' figures, and a discrepancy of this size

would throw out the stated conclusions of the Study. This is why the Study rejects the sample as a basis for estimating overall profits on defense work.

My remaining comments deal with the three reasons offered in the Study for this rejection. The first reason was the smallness of the sample. But the sample was small only in number. It covered half of the large firms, and the contracts it included accounted for 6 percent of the total defense work done by the 37 firms during the period of the Study. Certainly this is not too small to provide reliable estimates of the profit ratios that would have been obtained had all contracts of the large firms been reviewed.

The second point made about the sample data was that one should not expect profit estimates based on individual contracts to agree with those obtained from overall figures on defense work. But as already emphasized, it is the size of the difference that is important, since the sample figures were more than twice as large as those based on the financial statements.

The third objection was that the sample could have overstated profit ratios because only completed contracts were reviewed. But the Study's own data make it unlikely that bias of this type could account for more than a minor part of the large discrepancy observed. On page 37 it appears that loss contracts accounted for about 8 percent of the sales covered in the sample. This is in line with what is shown on page 61, where it can be calculated that large DOD contractors experiencing losses during a year represented about 7 percent of their total DOD sales.

In summary, it is my opinion that the large differences in profit ratio between the sample data and the contractors' reports cast serious doubts on the conclusion stated in the *Defense Industry Profit Study*, that profit rates on defense business were no higher than on commercial work.

Chairman PROXMIRE. What conclusion would you come to, based on your analysis of the figures and these large discrepancies?

Mr. JACOBS. Well, I am in no position to draw a positive conclusion. The conclusion that I note is that it is possible for defense contractors to keep books in such a way as to show large differences between their profits on defense business as obtained from their financial statements and those that would be obtained from a GAO analysis of individual contracts. These differences are much larger than I would have thought possible.

Chairman PROXMIRE. Mr. Jacobs, it would be helpful if you could state for the record something about your background and training and describe for us the kind of work you have done in your recent and current positions, to evaluate your qualifications.

Mr. JACOBS. Well, my last position before I left the Government was as Commandant of the National Cryptographic School. Before that I was Deputy Chief of the Office of Research in the National Security Agency, and there I had some responsibility for dealing with our contract matters, to oversee the awarding of contracts and review of contracts dealing with research and development.

Before I worked there, I was at the Air Force Headquarters in the office of the Deputy Chief of Staff, Comptroller. There I worked on computer procedures for preparing budget and programming documents for the Air Force.

Before that I was with the Department of Commerce. I was Chief of the Production and Market Section in the Office of Business Economics.

I have had various other positions before that, but this is a sampling.

PROFIT DATA FOR 34 LARGE CONTRACTORS INCLUDED IN INDIVIDUAL
REVIEWS

Chairman PROXMIRE. Part of your statement is based on a breakdown of the questionnaire data for 34 of the large contractors included in the individual contract reviews. The table is called "Sum-

mary of Questionnaire Data for Federal Income Taxes for 34 of 74 Large DOD Contractors Included in Individual Contract Reviews." Is that correct?

Mr. JACOBS. That is correct, sir.

Chairman PROXMIRE. Without objection, the table will be included in the record at this point.

(The table referred to follows:)

SUMMARY OF QUESTIONNAIRE DATA BEFORE FEDERAL INCOME TAXES FOR 34 OF 74 LARGE DOD CONTRACTORS INCLUDED IN INDIVIDUAL CONTRACT REVIEWS

Line No.	1966	1967	1968	1969	Average
Sales (in billions):					
DOD	13.5	17.0	17.8	17.9	16.5
Other defense agencies	2.4	1.7	1.7	1.4	1.8
Commercial	31.1	33.1	38.1	39.0	35.3
Total	47.0	51.8	57.6	58.3	53.6
Profit as percent of sales:					
DOD	4.7	4.8	4.4	2.9	4.1
Other defense agencies	4.5	5.1	5.4	4.1	4.8
Commercial	8.6	7.1	7.9	6.4	7.5
Profit as percent of T.C.I.:					
DOD	12.7	14.1	13.5	9.5	12.4
Other defense agencies	16.3	17.3	17.5	12.9	16.1
Commercial	13.1	10.8	12.3	9.5	11.3
Profit as percent of E.C.I.:					
DOD	25.8	28.6	26.9	18.6	25.0
Other defense agencies	33.7	35.2	34.9	24.4	32.3
Commercial	23.3	18.5	21.3	16.5	19.7
T.C.I. turnover (sales/T.C.I.):					
DOD	2.5	2.7	2.8	2.7	2.7
Other defense agencies	3.4	3.1	3.0	2.7	3.1
Commercial	1.4	1.4	1.4	1.3	1.4
E.C.I. turnover (sales/E.C.I.):					
DOD	5.5	6.0	6.2	6.4	6.0
Other defense agencies	7.5	6.9	6.5	5.9	6.8
Commercial	2.7	2.6	2.7	2.6	2.6

Chairman PROXMIRE. Would you explain again why this table is significant and what its relationship is to both the questionnaire and the onsite inspections of the 146 contracts? Why do you place so much reliance on it?

Mr. JACOBS. The meaning of this particular tabulation is that the firms whose contracts were included in the sample constituted a part of the large defense contractors who are in the questionnaire study. They represented about half of these firms.

Furthermore, the total business covered in the sample represented more than half of the total business of the 74 large firms in the defense industry profit study. And the profit ratios shown for this group, whose contracts were studied, showed essentially the same magnitude of profit ratios, whether based on sales, on total capital investment, or on equity capital investment, as did the 74 large firms in the Defense Industry Profit Study. Therefore, there wasn't anything particularly nonrepresentative about this half of the large firms covered in the sample.

Also, the tabulation gave an opportunity to estimate the percentage of total business covered in the sample of 146 contracts. And as I mentioned before, the sample included about 6 percent of the total defense business of these firms, not necessarily enough to assure that you could use the profit ratios as an accurate estimate, but certainly large enough

to raise serious question about the difference between the figures obtained from the contractors' reports and the figures obtained from the investigation of the actual contracts.

ON-SITE INSPECTIONS COMPARED WITH QUESTIONNAIRE DATA

Chairman PROXMIRE. GAO concluded that the examination of the 146 contracts was not based on a representative sample and that less weight should be given to it than to the questionnaire returns. On what do you base your disagreement with GAO's conclusion?

Mr. JACOBS. I don't know that I would disagree with the conclusion that it is not a representative sample. Without going into the sampling procedures—

Chairman PROXMIRE. Would you or would you not disagree with the notion less weight should be given to the audited returns?

Mr. JACOBS. Well, again, one is a sample of GAO analysis of contract profits. The other is a much more comprehensive statement of profits as based on the contractors' own financial statements.

These are two different things that are being measured. They give different evidence on what profits actually are, and so you have a question of how much weight to give to each. You are measuring profits in two different ways, and the sample study gives evidence that the contractors' own figures, based on the allocation of indirect costs, treatment of reserves, and other accounting procedures can be changed substantially as a result.

In other words, if you can so treat your financial statements as to reduce profits on the order of 50 percent, as shown by GAO audit, to profits on the order of 20 to 25 percent, as shown by your financial statement, then I must question what such profit figures mean. They seem to be too easily adjusted.

Chairman PROXMIRE. Well, that may very well be the case, but could it also be the case that it was just the audited part of the survey that was not representative? Was it a different kind of measure, that you had more, very high profit components that were examined in this particular sample?

Mr. JACOBS. Well—

Chairman PROXMIRE. Or as a statistician, do you say that is unlikely when you have as large a sample of 146 contracts?

Mr. JACOBS. It is not the size of the sample. When you are measuring 6 percent of the firm's total business, unless there was some specific attempt—and nothing that I read in the records supports that—to pick those contracts that were likely to show the very highest profits, then I would say that even if the sample is not a representative sample, it gives significant indications as to what might have been found in all contracts which were analyzed by the GAO method.

This point must be emphasized. We are talking about what would happen, given the GAO way of measuring profits on contracts. The sample can only indicate what would have been found had that been applied to all contracts of these large firms. And if you believe the sample at all, that analysis would have shown profits much larger than those that appear in the final financial statements.

Chairman PROXMIRE. Is it also possible, and would it be a reasonable interpretation to make, that the onsite inspection of the 146 contracts revealed profits that are representative of contracts covering major areas where defense dollars are spent by larger contractors?

Mr. JACOBS. Well, this is clearly what was involved, that these firms were the larger contractors, that in spite of the small number of contracts, the sample covered a significant proportion of the total dollars of the business done.

UNDERSTATING PROFITS IS ACCEPTED BUSINESS PRACTICE

Chairman PROXMIRE. You state that it is simply prudent practice for the contractor to take advantage of such techniques as depreciation of overhead, inventory valuation, and contingency reserves when reporting costs and profits because of the risks of review and renegotiation of defense contracts. Aren't you really saying that the tendency is to overstate cost and understate profits on defense contracts?

Mr. JACOBS. I think I would stand by my original statement. If I were a businessman, I would certainly do the same thing.

Chairman PROXMIRE. You mean that is a proper as well as a prudent use of cost account techniques?

Mr. JACOBS. I do not want to comment on the propriety. I think this is accepted business practice.

Chairman PROXMIRE. According to the GAO the selection of the 146 contracts was based on a "judgement sample" rather than on a representative sample. The factors considered in selecting the contracts and sites for review were: (1) Contractors with the largest volume of DOD awards during 1968. (2) Products covering the major areas where defense dollars are being spent such as aircraft, missiles, weapons, etc. (3) Availability of qualified personnel and workload of GAO's regional office.

Did these factors in GAO's judgement sample alter in any way your conclusions?

Mr. JACOBS. No.

Chairman PROXMIRE. They would not? Would it have been feasible, in your opinion, to base a study of defense profits such as was done with the 146 contracts on a representative sample?

Mr. JACOBS. I do not think I am qualified to comment on that.

RELIABILITY OF QUESTIONNAIRE APPROACH

Chairman PROXMIRE. As a statistician, how reliable is the questionnaire approach to a study of profitability in defense contracting? What would be the best way to conduct a study of defense profits?

Mr. JACOBS. Well, I would assume that contractors are reporting accurately what appears in their financial statements. Or where there is opportunity to estimate, I have no reason to believe that they would make estimates that are at odds with their normal way of estimating profits.

I think what shows up in this study is that there is considerable flexibility when you are dealing with various categories of work, to have the profits show what you want them to show. If in fact it is possible to produce differences of the order of magnitude indicated

here, then one questions what profit figures of financial statements really mean.

Chairman PROXMIRE. Senator Pearson.

Senator PEARSON. Mr. Jacobs, you have some experience in Government and a great deal of professional qualifications. In view of your criticism of the GAO report, let me just ask you in a very general way, is there any agency in the Government, the Executive, or in your opinion does Congress have the capacity for oversight and evaluation and constant monitoring of defense contracts as the procurement goes forth today, considering the kind of weapon systems we have?

Mr. JACOBS. I certainly agree that there are legislative responsibilities to try to—

Senator PEARSON. Well, it is my view we do not perform them very well. And that self-criticism is based upon the fact that everyone has too much to do.

Mr. JACOBS. I think that is so.

Senator PEARSON. But I think Congress does a very good job on the oversight procedures. Perhaps the chairman has put a greater amount of time on this than anyone else and deserves the greatest amount of praise.

But if it is not the GAO, who is in the Government structure that can do this?

Mr. JACOBS. Certainly, in my own experience, where I was involved in any sort of review of Government contracts, I took very seriously the effort to try to see that the Government was getting proper value for its money and that costs were reasonable, that if there were cost overruns these were not just automatically granted.

But all I can say is that the Government carries on a tremendous volume of business, and that with this volume it is certainly inordinately difficult to make sure that everything is done as carefully and as economically as one would ideally like to see it done. Beyond that, I do not know what is the proper way to do it better, except to keep checking up on every one involved in this job.

I think this is certainly appropriate for congressional oversight.

Senator PEARSON. Thank you.

Chairman PROXMIRE. Thank you very much, Mr. Jacobs. We very much appreciate your testimony and particularly your willingness to come this morning, when you had to leave your busy academic schedule in order to be here. Thank you very much.

Our next witness is our good friend and distinguished Comptroller General, Mr. Elmer B. Staats. Mr. Staats, come forward. I want to commend you on having undertaken a study which was bound to have all kinds of repercussions among both defense contractors and critics of defense contracts, and the press, and so forth. There is no way, but no way, this could have been done without a lot of controversy. But I think if there is anybody in Government who has the confidence of everyone concerned, it is you. You have done an excellent job right down the middle, in my view.

We are delighted to have you. You have a very detailed prepared statement, 54 pages, which you can handle anyway you wish. Any part you do not read will be placed in the record, so that the entire statement will be put in the record in full.

We would like to have you introduce the distinguished experts who are with you.

STATEMENT OF HON. ELMER B. STAATS, COMPTROLLER GENERAL OF THE UNITED STATES, ACCOMPANIED BY ROBERT F. KELLER, ASSISTANT COMPTROLLER GENERAL; RICHARD W. GUTMANN, DEPUTY DIRECTOR OF DEFENSE DIVISION; HASSELL BELL AND JAMES HAMMOND, ASSOCIATE DIRECTORS, DEFENSE DIVISION; AND JOHN FLYNN, DEPUTY ASSOCIATE DIRECTOR, DEFENSE DIVISION

Mr. STAATS. Thank you, Mr. Chairman.

We have several people here this morning because we have quite a number of subjects relating to defense and defense procurements on which you and your staff have indicated interest in having our views.

The statement I have, Mr. Chairman, which I plan to read, will take about 20 or 25 minutes. I could abbreviate that.

Chairman PROXMIRE. No; that is fine.

Mr. STAATS. This formidable statement you have before you is partly in the nature of appendices, which is supplied by way of information and up-dating on previous testimony from our Office before this committee.

I would like particularly to talk this morning in my statement about three areas.

Chairman PROXMIRE. Would you introduce the gentleman at the table?

Mr. STAATS. Yes; to my right, Mr. Robert F. Keller, Assistant Comptroller General. To his right, Mr. James Hammond, who is with the Defense Division, in charge of our procurement activities. Mr. Gutmann, to my immediate left here, is Deputy Director of our Defense Division. Mr. Hassell Bell, is in charge of work in the Major Weapons Field. And Mr. John Flynn, who has been in charge of the study on defense profits.

The three topics I would like to deal with particularly in my opening statement have to do with the studies we have done in the acquisition of major weapons systems, the studies we have done on the feasibility of "should cost" type reviews, involving the auditing and pricing of negotiated contracts, and then third, the congressionally directed study of profits earned on defense contracts. Related to that, of course, is the study which we made with respect to return on capital of a selected group of individual contractors. This latter study, as you know, was designed to determine the feasibility of allocating capital to individual contracts and to determine the range of return on capital employed in individual contracts.

Then we have also included two rather detailed appendixes, one dealing with the work we have done in the truth-in-negotiation area, about which Admiral Rickover testified before your committee yesterday; and the second relating to the use of Government-furnished equipment, also referred to by Admiral Rickover in his testimony yesterday.

MAJOR ACQUISITION REVIEWS

First, with respect to major acquisitions and reviews (attachment I to my statement). We delivered our second annual report—we plan

an annual report, as you know, in this area—to the Congress on March 18, 1971.¹

We concluded from our study that although there have been substantial improvements in the processes followed by the Department of Defense in buying major weapon systems, cost growth is still a formidable problem.

We found that on 61 weapon systems where complete cost data were available, estimates to develop and produce the weapon systems had increased some \$33.4 billion from initial estimates. About one-third of this increase, or \$9.5 billion, represented the difference between the estimates prepared when the systems were first approved for development (the planning estimate) and updated estimates prepared when the systems were about to be placed under a development contract. The remaining \$23.9 billion increase was due to changes in quantities to be acquired and to a combination of such things as engineering changes, revisions to estimates, and provisions for increased cost due to economic inflation. The complete digest of our March 18, 1971, report is attached to this statement.

AUDIT OF PROGRAM ESTIMATES

I would now like to discuss a question you have raised in the past on the DOD cost estimates contained in the selected acquisition reports; that is, to what extent are the selected acquisition reports audited, certified, or verified by the GAO? Initially, I would like to emphasize that our audit is of the weapon system program, not the selected acquisition report itself. In other words, we are not auditing their report. We are auditing the acquisition program. Our detailed examination is focused on the data that support the summary information shown on the selected acquisition report (attachment II to my statement).

The cost information shown in the selected acquisition reports are estimates of projected costs, not costs which have actually occurred. I believe this point is often misunderstood. One cannot apply the same verification techniques to estimates as can be applied to actual costs. For example, this initial planning estimate for a new fighter plane often starts with a planned cost figure estimated from a cost to weight relationship derived from earlier fighters that are considered to be roughly equal. There are many assumptions implicit in that calculation. We are able to trace planning estimates back to supporting data and attempt to determine that all pertinent known factors that may affect the estimates are considered. But the estimates are not precise, cannot really be verified, and usually prove to be overly optimistic.

The next estimate shown on the selected acquisition report is the Government's "development estimate." These estimates cannot be reconciled with the planning estimates. We can, however, compare them to estimates made by at least two contractors. As you know, the contractor's estimates are subject to a review by the Defense Contract Audit Agency as to the currency, completeness, and accuracy of the contractor's cost data supporting his price proposals. In addition, the contractor's technical proposal is given an extensive review by various Government technical personnel.

In connection with our continuing review of contract pricing, we examine the work of these groups and make intensive independent ex-

¹ The GAO report is reprinted beginning on p. 732.

aminations of these data. The factual parts we can, and do, verify. Not all of the assumptions inherent in cost projections can be precisely verified. But we can determine whether the successful contractor's final price proposal is incorporated into the Government's development estimate.

Finally, each quarterly selected acquisition report contains an estimate providing as accurate an indication as possible of current program potential costs. In practice, this estimate is the development estimate just described, adjusted for changes in quantities; for engineering changes required to upgrade a system performance or to correct system deficiencies; for current estimates of the anticipated effect of economic inflation; for estimating errors discovered after the development estimate has been established; and for several other considerations. We can, to some degree, review the basis for these various changes to the development estimate.

And we can, of course, report that to the Congress in our annual report.

For the future, we are seeking to improve the validity of the data included in the selected acquisition report with respect to potential costs of major weapon systems. We intend to do this through our study of the use of "should cost" concepts and through the work of the congressionally directed activity of the Cost Accounting Standards Board, of which I have been designated chairman, established to promulgate cost-accounting standards designed for use by prime contractors and subcontractors in the pricing, administration, and settlement of negotiated defense contracts in excess of \$100,000. It is my hope and belief that we will be successful in this effort.

NO ORGANIZED METHOD TO MEASURE WEAPONS PROPOSALS AGAINST TOTAL DOD NEEDS

The identification of need for a weapon system and the relative priority to be assigned its development is a fundamental problem in acquisition of weapon systems. Initial decisions as to which weapon system will be developed and the priority of its development is made by any one of the military services, but DOD has no organized method by which such proposals can be measured against its total needs.

Seemingly, the entire structure of the military service and the Office of the Secretary of Defense is involved in this process, in one way or another, and the long and imprecise process of defining and justifying and of redefining and rejustifying a weapon system, through many layers of involvement, invariably has delayed decisions and has extended stated availability dates by years.

The cumulative effect of the involvement of many different organizational units in the decision to justify and then to proceed with development is the root cause of long delays in development decisions. Almost every weapon system we studied showed some substantial degree of uncertainty as to whether, when, or in what form the weapon should be developed.

It occurs to us that ideally there should be a direct relationship between the missions for which weapon systems requirements are determined; for example, strategic deterrent, land warfare, ocean control, et cetera, and the organizational structure needed to acquire them. The

Office of the Secretary of Defense has recently implemented a new approach along these lines. Although still in its infancy such an arrangement should facilitate grouping related weapon systems in packages of common mission and would permit putting together an acquisition organization of appropriate size and stature to handle these matters. Eventually, we believe program management and organization will evolve along mission lines.

FEASIBILITY OF A MILITARY PRICE INDEX

I would like to touch on one other important point with respect to cost estimating, one in which you have expressed interest in the past. I refer to the problem of estimating the effect of economic inflation on the cost of weapon systems. In testimony before this committee on May 20, 1970, we told you we planned to do additional work on this problem. Our review is not yet completed, but we can make some observations which we think will be useful.

As the first step in our work we reviewed all of the studies we could find which had been done by or for the Department of Defense to develop specialized price indexes for particular weapon systems or components. We found that in no case had original research been performed on the actual cost of such items. Rather, average hourly earnings and components of the Wholesale Price Index available from the Bureau of Labor Statistics (BLS) were combined into an index for the particular military item. The selected component indexes were weighted in proportion to the portion of cost to which each such index was judged to pertain. Since we could not find that any tests had been performed to determine the validity of this method, and since in many cases the content of the selected BLS indexes appeared to be quite different than the content of the military item involved, we had no basis for establishing a level of confidence in these indexes.

In the next phase of our work we conducted pilot tests in contractors' plants and in some cases we were able to compute indexes reflecting the actual price movements in those contractors' plants. The indexes we developed relate to relatively standard items. We are comparing the movements in the indexes we developed with the general price movement in the economy as indicated by the BLS indexes. We are still analyzing the results of this work. We concentrate a good deal of this in our Los Angeles office.

With regard to nonstandard items it appears that it would require very difficult and costly analysis to separate the effects of specification change from price change for a large number of items. Our research suggests, however, that where large amounts of unusual material and highly specialized labor such as titanium, and the labor associated in its fabrication, are present in a system, the records at contractors' and vendors' plants would allow a determination of the price movements in that particular portion of production.

We have recently discussed the results of our studies with a group of some nine consultants, the best people we could find anywhere in the country, who were given draft papers containing the results of the research to which I have referred. The initial consensus of this group is that it would be impossible to compute an accurate price index for military hardware. This group suggested that estimates of inflationary

effect on costs of military items should start with the use of generally available indicators such as the Wholesale Price Index or major components of that index. The group suggested that tests such as we have conducted should continue to be performed to test whether or not in specific instances a really significant inequity might exist.

We are encouraged by the fact that the BLS is expanding the coverage of indexes such as the Wholesale Price Index to include items more representative of the aerospace industry. For example, we are advised that executive jet aircraft are being incorporated into the Wholesale Price Index. We are still evaluating the use of improved BLS indexes tested by work such as we have performed as a feasible alternative to the maintenance of a fully representative military price index containing a large number of different series of military items.

We will be reporting on all of our work on this, Mr. Chairman, to the Congress. We are going to be careful about it, because frankly, the consensus of this group of experts we have put together is very dubious about whether one could develop anything that could be applied across the board.

Chairman PROXMIRE. Would you give us the names of the consultants, for the record?

Mr. STAATS. Yes; I can do that now or for the record.

Chairman PROXMIRE. The record will be fine.

Mr. STAATS. Yes.

(The list referred to follows:)

Dr. Irma Adelman, Center for Advanced Study in the Behavioral Science
 Dr. Jules Backman, New York University
 Dr. Daniel Creamer, The Conference Board
 Dr. Edward F. Denison, The Brookings Institution
 Dr. Gene H. Fisher, The RAND Corporation
 Dr. Zvi Griliches, Harvard University
 Dr. Irving H. Siegel, Consulting Economist
 Dr. Jack E. Triplett, Jr., Washington University

Mr. STAATS. I would like to turn next to the work we have done in the "should cost" area.

FEASIBILITY OF USING "SHOULD COST" CONCEPTS

In May 1969 this subcommittee recommended that GAO study the feasibility of incorporating into its reviews of contractor performance the "should cost" method of estimating contractor costs. This approach attempts to determine the amount that weapons systems or products ought to cost, given attainable efficiency and economy of operations on the part of contractors. In addition to the traditional methods of price analysis, using historical data, these reviews incorporate examinations into possible improvements in methods of production and other areas of potential cost reductions.

In May 1970, we reported to the Congress that it appeared to be feasible for us to apply "should cost" concepts in our postaward reviews and that we would perform a number of trial applications. The results of our trial reviews at four contractors' plants were reported to the Congress on February 26, 1971. A digest of this report is attached. We found a number of areas at each of the plants where we believe action could have been taken by the contractor to lower costs to the Government. At one location for example, a one-time investment

of about \$580,000 in an improved production control system could result in annual savings estimated at over \$3 million.

Our review also identified areas where Government contracting or administration practices adversely affected contracts costs. For instance, at one contractor's plant, the Government was requiring that spare parts be packed for indeterminate storage or overseas shipment although the parts were being used for overhaul purposes in the United States. In this case, potential savings could range between \$200,000 and \$600,000 a year, depending on quantities procured.

The total of the savings which could accrue to the Government as a result of our reviews at these four plants could not be readily determined. In those instances, however, where we could measure the effect of suggested improvements in contractor and Government management practices, the annual savings amounted to almost \$6 million.

We brought our findings to the attention of the procuring agencies and are monitoring the actions being taken to effect savings. We were recently advised, in one instance, that our findings would be useful in the negotiation of the follow-on production contracts, and that many of the points raised during our review have already been included in the initial discussion with contractor representatives.

We are planning additional reviews. However, our statutory authority to examine contractors' records is not broad enough to cover all the matters which should be considered. In addition to access to plant, supervisory, and management personnel we should have access to: Budgetary information; production control records; internal studies; profit forecasts; management information systems; and labor standards, their development and application. Under our current access-to-records authority, certain of this information would usually be available, as it related to a specific contract, but not on a plantwide basis.

Without broader authority, we will have to depend on the voluntary cooperation of contractors for access to their plants and records. In this regard, along with our February report to the Congress, we submitted proposed draft legislation to your Subcommittee on Economy in Government. We also submitted this draft legislation to the House and Senate Committees on Armed Services and the House and Senate Committees on Government Operations. We have had no indication to date that any legislation has been or will be introduced on our proposal.

"Should cost" efforts by Department of Defense components

We believe that the greatest benefits will accrue to the Government when should-cost concepts are applied by the procurement authorities as part of their preaward analyses of contractor's proposals. At that time, the results of should-cost reviews would be of maximum effectiveness in assisting Government negotiators in arriving at fair and reasonable prices. Even more importantly, potential Government contractors will be more likely to accept should-cost findings and to implement any needed corrective procedures prior to the award of a major contract.

One of the primary objectives of GAO's effort will therefore be to encourage the military services to apply should-cost techniques in their preparation for negotiation of selected noncompetitive-type procurements. We plan to examine into the reviews performed by the

military services to (1) determine their adequacy and (2) evaluate the responsiveness of the contractors and the Government to recommendations of the review teams. Further, it is our intention to periodically analyze all of the findings of the various reviews to determine commonality of deficiencies and to develop recommendations for corrective action to minimize such problems in future contracts.

At the present time, the Department of the Army is utilizing should-cost review techniques to a greater extent than the other services.

The Army has completed four reviews, has three underway, and is planning 10 more within the next year. The Navy has completed one review, has one underway, and has no others planned. The Air Force has completed one, and has one additional planned at this time.

We recently completed an evaluation of the first major review effort by the Army, and it appears that the study was adequately conducted by a very capable staff and that significant savings will be realized.

METHOD FOR DETERMINING PROFIT OBJECTIVES FOR NEGOTIATED PROCUREMENT

During the hearings in November 1968 and in January 1969, the Subcommittee on Economy in Government of this committee developed in considerable detail the need for a comprehensive study of profits realized by defense contractors. Subsequently, the Armed Forces Appropriation Authorization Act for fiscal year 1970, Public Law 91-121, approved November 19, 1969, directed GAO to study profits earned on negotiated contracts and subcontracts entered into by the Department of Defense, National Aeronautics and Space Administration, and the Coast Guard. Contracts of the Atomic Energy Commission awarded to meet requirements of the Department of Defense were also included.

Witnesses in the hearings mentioned above expressed the view that profit objectives for negotiated contracts should give greater weight to capital investment. The GAO, from an earlier study for the House Appropriations Committee, and from other contract audit work, had also developed some thoughts as to the need for consideration of invested capital in negotiating defense contract profits. We therefore decided to make a concurrent study to determine the feasibility of relating capital employed to individual contracts and to ascertain the range of return on capital among individual contracts.

The procedures we followed and our findings are included in our report dated March 17, 1971, and in attachments to this statement. I will discuss here only our recommendation.

We believe that of the various ratios available for evaluating profits earned by contractors, the percentage of profit earned on total capital investment—the total investment in all assets used in the business, exclusive of any Government-owned items or leased items—is the most meaningful for evaluating defense profits. The rate of return on total capital investment relates earnings to total capital employed, regardless of whether it was provided by the owners of a business, its creditors, or its suppliers. Further, interest is not an allowable cost under Government contracts and must be paid out of profits. The recurring controversy over this matter can be eliminated by considering total capital in determining profit objectives. By basing profits on total

capital, these contractors that employ debt capital will have the funds to pay interest; and those that employ equity capital will have the funds to pay dividends.

GREAT RANGE IN RATES OF RETURN ON CAPITAL

In conducting our study we found that there was a great range in rates of return on total contractor capital committed to defense production. This was true both for contractors' overall annual rates of return that we obtained through use of a questionnaire, and for rates of return for individual contracts that we reviewed. We believe that at least part of the range in rate of return on defense work is due to the fact that under current defense contract negotiation procedures, little consideration is given to the amount of capital investment required from the contractor for contract performance. Instead, profit objectives are developed as a percentage of the anticipated costs of material, labor, and overhead. As a result, inequities can and do arise among contractors providing differing proportions of the capital required for contract performance where the risk, complexity, and management problems are similar. Also, by relating profits to costs, contractors in noncompetitive situations have little incentive to make investments in equipment which would increase efficiency. Such investments tend to lower rather than increase profits in the long run. Of course, other factors, such as whether or not the program involved will be continued, could be an overriding consideration in bringing about contractor investments to reduce costs.

We believe that it is essential to change the present system in order to motivate contractors to reduce costs under Government noncompetitive negotiated contracts. Where the acquisition of more efficient facilities by contractors will result in savings to the Government in the form of lower contract costs, contractors should be encouraged to make such investments. Proper consideration of contractor-provided capital can cause a greater reliance on private capital to support defense production. To accomplish this, it is essential that capital investment supersede or supplement, as conditions warrant, estimated costs as a basis for negotiating profit rates. We realize that other factors are also important, such as life expectancy of a Government program, and that contractors will not and should not invest in facilities simply because the investment will be in the base upon which profits are figured. Such investments will have to be economically attractive over the lives of the assets involved. Most important, however, the present strong incentive for contractors to minimize their investment for Government work should be eliminated.

In our opinion, a system providing for consideration of capital requirements in negotiating profit rates would be fairer than the present system to both contractors and the Government. It should help greatly in identifying situations involving a high rate of return on capital and will provide information to the contracting officer that we believe now is available in many cases to the contractor.

We believe also that the system adopted should be used where applicable by all Government agencies since many contractors do work for more than one agency.

In our March 17, 1971, report to the Congress we recommended that the Office of Management and Budget take the lead in interagency de-

velopment of uniform Government-wide guidelines for determining profit objectives for negotiating Government contracts—guidelines for determining profit objectives for negotiating Government contracts—guidelines that will emphasize consideration of the total amount of contractor capital required where effective price competition is lacking.

Procedures for consideration of invested capital

We have not attempted to develop detailed changes in the Armed Services Procurement Regulation (ASPR) required for consideration invested capital in establishing negotiated defense contract profit objectives. However, we have some thoughts on this and related matters that may be of interest to the committee.

And I might add here we would be very happy to work with the executive branch in formulating such a statement of guidelines. For example, the rate of return on investment in a business may be said to be made up of two major elements, (1) a portion relating to return on the actual funds invested in the business, (2) a portion to compensate for the business risks and degree of management capability required due to the complexity of the products produced.

Where a business provides all of the capital required in contract performance, it would be fairly easy to establish a profit objective for a particular contract. An overall rate of return on investment required in contract performance could be established based upon consideration of the rate of return currently being realized (1) by the industry involved, and (2) by the specific company involved on other than defense sales.

Where a portion of the capital is provided by the Government through progress payments and/or facilities and equipment, a more complicated situation results. In such cases where the Government capital is relatively minor, it might be desirable to develop an overall profit objective based upon the total contractor and Government capital required and then reduce the profit objective to reflect the interest factor on Government-furnished capital. This would leave a net profit objective representing a return on the contractors' capital and a return for the management effort involved.

In cases where the Government capital contribution is fairly substantial, it would probably be desirable to compute separately (1) a rate of return on the contractors' financial investment, and (2) the profit or fee warranted based on the management effort required.

In contracts such as for operation of Government-owned plants and for services, the capital required is furnished by the Government to a very large extent. In these cases the profit or fee has been and will continue to be based primarily on the management effort required.

Section 3-808 of ASPR and chapter 12 of ASPR Manual for Contract Pricing set out guidelines used by DOD procurement officials to develop profit objectives for negotiated contracts where analysis of a contractor's proposed costs is required. These sections will require revision to reflect consideration of invested capital. We also believe that it should be made clear in ASPR that where investment data is submitted by contractors and used in pricing, it comes under the certification requirements established for compliance with Public Law 87-653 (Truth-in-Negotiations Act).

Who should develop the system?

We believe that the development of a system for considering contractor-invested capital in negotiating Government contracts is properly a responsibility of the executive branch of the Government. Since several agencies are involved, we recommended that the Office of Management and Budget take the lead in development of the system.

There are numerous articles on the use of return on investment data and the concept is frequently used by industry for such purposes as determining whether to make plant investments, for pricing contracts or product lines, and for evaluating performance. Further, as discussed in our report, a considerable amount of work has been done by (1) NASA in developing and testing a contract negotiation procedure that provides for consideration of contractor invested capital, and (2) by DOD in developing a somewhat different system, but with the same objective. We think, as a starting point, OMB should evaluate the work done to date by NASA and DOD, proceed with any further development or testing work considered necessary, and prescribe a system for use by all Government agencies. We do not believe the problems involved are insurmountable.

The procedures we followed in performing our studies are described in attachment III and IV to my statement.

To repeat, we would be very happy to work with the executive branch in light of the experience we have had in this review.

I would like also to mention briefly two other items that are covered more fully in the appendix.

GOVERNMENT-OWNED EQUIPMENT AND REAL PROPERTY FURNISHED TO
CONTRACTORS

Since hearings on the subject before the Subcommittee on Economy in Government in November and December 1967, the Department of Defense has taken a number of actions designed to improve management of its property in the possession of contractors. The Department has adopted a very restrictive policy with respect to providing additional facilities to contractors, but there has been little actual progress in reducing the amount of Government-owned equipment and real property in the custody of contractors.

The adequacy of reimbursement to the Government for use of such equipment for commercial production continues to be a problem. We are currently examining into this matter and other aspects of the management of industrial plant equipment at 28 contractors' plants. Our preliminary observations are that there continue to be deficiencies in contractors' records of machine utilization and a lack of uniformity in computing rent due for commercial use of Government-owned equipment.

Further information on this subject Mr. Chairman, is attached (attachment V) to our statement for the committee's use. Also, in respect to the Truth-in-Negotiations Act, we have included a rather detailed attachment (attachment VI) to our statement. I will not take the time to read them unless you wish, but will answer any questions you may have on these subjects.

Chairman PROXMIRE. Without objection, the attachments to your formal statement will be included in the record.

(The attachments to Mr. Staats' statement follow:)

Attachment I

ACQUISITION OF MAJOR WEAPON SYSTEMS, DEPARTMENT OF DEFENSE, B-163058

WHY THE REVIEW WAS MADE

The large investment required in recent years for acquisition of major weapons has impacted heavily on the resources available for other national goals and priorities.

Acquiring these major weapons involves substantial long-range commitment of future expenditures. Because of deep concern in the Congress on these matters and because of evidence that the weapon systems acquisition process has serious weaknesses, the General Accounting Office (GAO) has undertaken to provide the Congress and the Department of Defense (DOD) with a continuing series of appraisals of those factors most closely related to effective performance in procuring major weapons. This report represents GAO's first such appraisal.

FINDINGS AND CONCLUSIONS

1. Concurrent with GAO's studies, over the last several months the Office of the Secretary of Defense (OSD) and the military services have been engaged in a substantial effort to identify and solve problems that have adversely affected the acquisition of major weapon systems in terms of compromised performance, delayed availability, and increased costs. GAO has found that generally the newer weapon procurements are following a slower development pace and procurement practices are more conservative than those of earlier periods. Because many of the current programs are in early states of acquisition, evidence of the results of the changed concepts is not yet available to adequately assess them, but the outlook is brighter.

2. The identification of need for a weapon system and the relative priority to be assigned its development is a fundamental problem in acquisition of weapon systems.

Initial decisions as to which weapon system will be developed and the priority of its development is made by any one of the military services, but DOD has no organized method by which such proposals can be measured against its total needs. Such a method is now under development but it is in its infancy.

3. In recent months, the Office of the Secretary of Defense and the military services have paid extensive attention to the persistent problems of defining performance characteristics of weapon systems and of determining the technical feasibility of achieving that performance. There are many encouraging signs that these problems are being abated.

Extensive efforts are being applied—early in the weapon development process—to identifying areas with high design risks and to constructing and testing the hardware itself to demonstrate the feasibility of high-risk components before proceeding with further development.

4. In the preparation of and attention given to cost-effectiveness determinations, there was a wide range of quality. This variation has lessened the value of these studies to the entire acquisition process.

5. One of the most important unresolved problems in the management of major acquisitions is the problem of organization. The essence of the problem appears to be attempts to combine the specialized roles of major weapon systems acquisition management into more or less traditional military command structures. Because of this, there usually are a large number of organizations not directly involved which can only negatively influence the project.

It occurs to GAO that ideally there should be a direct relationship between the missions for which weapon systems requirements are determined; e.g., strategic deterrent, land warfare, ocean control, etc., and the organizational structure needed to acquire them. Such an arrangement would facilitate grouping related weapon systems in packages of common mission and would permit putting together an acquisition organization of appropriate size and stature to handle these matters. Eventually, GAO believes, program management and organization will evolve along mission lines.

There are other alternatives involved, but whichever is chosen must clearly provide for someone to be in charge, to have authority to make decisions and to have full responsibility for the results. The Deputy Secretary of Defense has recognized that the correction of this problem is fundamental to any real improvement and has stated that he plans to pursue it aggressively.

6. GAO found that, on 61 weapon systems where complete cost data were available, estimates to develop and produce the weapon system had increased some \$33.4 billion. About one third of this increase, or \$9.5 billion, represented the difference between the estimate prepared when the system was first approved for development (the planning estimate) and an updated estimate prepared when the system was about to be placed under a development contract. The remaining \$23.9 billion increase was due to changes in quantities to be acquired and to a combination of such things as engineering changes, revisions to estimates, and provisions for increased cost due to economic inflation. (See p. 58.)

RECOMMENDATIONS OR SUGGESTIONS

The Secretary of Defense should:

1. Make every effort to develop and perfect a Department-wide method—now in its early stages of development—to be followed by all military services for determining two things: first, what weapon systems are needed in relation to the Department's missions; second, what the priority of each should be in relation to other systems and their missions.

2. Establish guidelines and standards for the preparation and utilization of cost-effectiveness studies. These guidelines should require that studies be updated and reviewed as part of the decision process when major changes in cost and/or performance require revised schedules for funding commitments.

3. Place greater decisionmaking authority for each major acquisition in a single organization within the service concerned, with more direct control over the operations of weapon systems programs and with sufficient status to overcome organizational conflict between weapon system managers and the traditional functional organization.

4. Ensure that each selected acquisition report (a) contain a summary statement regarding the overall acceptability of the weapon for its mission, (b) recognize the relationships of other weapon systems complementary to the subject systems, and (c) reflect the current status of program accomplishment.

AGENCY ACTIONS AND UNRESOLVED ISSUES

DOD has been actively pursuing a program to improve the management of the acquisition of major weapons. The Deputy Secretary of Defense has assumed a significant role in this improvement program. It is too early to say how effective many of these actions will be; but, if effectively pursued, they should result in better management. As GAO has noted previously, beneficial results of some of these actions have become apparent.

The comments by DOD on this report express only a general reaction due to the limited amount of time GAO was able to allow for DOD review. Because of the nature and importance of this subject, DOD wants to examine the final report further.

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report provides the Congress with an independent appraisal of the complex problems associated with weapon systems development and procurement by DOD—a matter of serious concern in the Congress.



REPORT TO THE CONGRESS

Acquisition Of Major Weapon Systems B-163058

Department of Defense

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

MARCH 18, 1971



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-163058

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on the acquisition of major weapon systems by the Department of Defense. Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

In addition, you will receive a classified supplement containing summaries of our evaluations of the individual weapon systems covered by our study. More detailed classified studies have been prepared on each weapon system. Copies of these studies will be provided on request.

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of Defense; and the Secretaries of the Army, Navy, and Air Force.

Comptroller General
of the United States

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ABBREVIATIONS

AMC	Army Materiel Command
CDC	Combat Development Command
CONARC	Continental Army Command
DA	Department of the Army
DOD	Department of Defense
GAO	General Accounting Office
OSD	Office of the Secretary of Defense
SAR	Selected Acquisition Reporting
SOR	Specific Operational Requirement

D I G E S TWHY THE REVIEW WAS MADE

The large investment required in recent years for acquisition of major weapons has impacted heavily on the resources available for other national goals and priorities.

Acquiring these major weapons involves substantial long-range commitment of future expenditures. Because of deep concern in the Congress on these matters and because of evidence that the weapon systems acquisition process has serious weaknesses, the General Accounting Office (GAO) has undertaken to provide the Congress and the Department of Defense (DOD) with a continuing series of appraisals of those factors most closely related to effective performance in procuring major weapons. This report represents GAO's first such appraisal.

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1. Concurrent with GAO's studies, over the last several months the Office of the Secretary of Defense (OSD) and the military services have been engaged in a substantial effort to identify and solve problems that have adversely affected the acquisition of major weapon systems in terms of compromised performance, delayed availability, and increased costs. GAO has found that generally the newer weapon procurements are following a slower development pace and procurement practices are more conservative than those of earlier periods. Because many of the current programs are in early states of acquisition, evidence of the results of the changed concepts is not yet available to adequately assess them, but the outlook is brighter.
2. The identification of need for a weapon system and the relative priority to be assigned its development is a fundamental problem in acquisition of weapon systems.

Initial decisions as to which weapon system will be developed and the priority of its development is made by any one of the military services, but DOD has no organized method by which such proposals can be measured against its total needs. Such a method is now under development but it is in its infancy.

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of determining the technical feasibility of achieving that performance. There are many encouraging signs that these problems are being abated.

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DOD has been actively pursuing a program to improve the management of the acquisition of major weapons. The Deputy Secretary of Defense has assumed a significant role in this improvement program. It is too early to say how effective many of these actions will be; but, if effectively pursued, they should result in better management. As GAO has noted previously, beneficial results of some of these actions have become apparent.

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MATTERS FOR CONSIDERATION BY THE CONGRESS

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CHAPTER 1INTRODUCTION

The investment to acquire major Department of Defense (DOD) weapons impacts heavily on allocation of the Nation's resources. Acquiring these major weapons involves substantial long-range commitment of future expenditures. Because of this and because evidence exists that the weapon systems acquisition process has not been conducted in an efficient manner, there has been considerable congressional and public attention focused upon improving the process for acquiring major weapon systems.

In the past year, several studies of the acquisition process for major weapon systems have been completed. These include studies by the Department of Defense Blue Ribbon Panel, the National Security Industrial Association, and the Defense Science Board Task Force on Research and Development Management. All these studies were critical of the systems acquisition process to some degree. More recently the Government Operations Committee, House of Representatives, held hearings on policy changes in weapon systems acquisition. The Committee report on this subject, dated December 10, 1970, contained recommendations for several improvements and the Commission on Government Procurement is including major acquisitions as one of the subjects in its study.

Recently, the Congress has called upon GAO to report periodically on the progress of various acquisition programs and to provide other forms of assistance that would make available to its committees and members more reliable information on which to base judgments concerning issues that involve its oversight, as well as its legislative function.

In order to effectively respond to the interest and needs of the Congress to obtain more timely and comprehensive data on which to base an evaluation of the management of ongoing procurements, the General Accounting Office has initiated a long-term program which will help provide data for continuing appraisal.

This report presents the basic format which GAO intends to use in its long-term evaluation. The GAO program is an effort to establish an approach conducive to nurturing greater agreement among the Congress, GAO, and DOD which will clarify facts and issues and result in improved management of the acquisition process. Our intent is to develop an orderly process which will lead to a constantly improving body of basic data to assist all participants in the making of critical weapon systems decisions.

Another objective of this GAO program is to provide a recurring series of evaluations of the weapon systems acquisition process. In these reiterations, GAO will (1) re-examine overall acquisition process efficiency and (2) make detailed and comprehensive examinations of the process followed in most, if not all, of the individual major acquisition programs. The consistency of format and the recurring nature of the evaluation program should aid in the annual review of these acquisitions by the Congress, as well as provide DOD with an independent assessment of the weapon acquisition process.

Finally, the GAO program is structured for recognition and appraisal of any improvement programs that DOD initiates for its acquisition process.

It is not the intention of GAO to judge the propriety of technical decisions made by DOD but rather to evaluate the efficiency of the management and decisionmaking processes applied.

THE DEVELOPMENT PROCESS FOR A MAJOR WEAPON SYSTEM

Developing major weapon systems is a primary function of DOD. The development process is highly structured and complex. The combined process involves close interactions between needs of the user and the ability of the developer to fulfill them.

A substantial portion of personnel of OSD and the military services are involved in the acquisition process. Costs of weapon development consume a large portion of the military budget each year. Large segments of industry are engaged in producing the needed weapons. More than

\$150 billion is estimated to be necessary to acquire the weapon systems currently under development. Some \$95 billion of that amount is yet to be appropriated by the Congress. An oversimplified representation of the manner in which weapon systems evolve from an idea to production is shown in the following chart. (See figure I.)

Conceptual phase--This is the initial phase in weapon acquisition. In this phase, need for new military capabilities is established, concepts are developed for a weapon system which will provide those capabilities, and technical feasibility is explored and determined. The objective of this phase is to provide the technical, economic, and military bases for initiating full-scale development of the weapon system. Advancement to the next phase, validation, is dependent upon satisfying criteria designed to measure achievement of the conceptual phase's objective.

There are six objectives which should be accomplished in the conceptual phase. First, mission and performance envelopes should be defined. Second, a thorough trade-off analysis must be made among the elements of cost, schedule, and performance to ensure that the most effective product is obtained when it is needed and at the most reasonable cost. Third, a military service must ensure that the best technical approaches have been selected for the new weapon system. Fourth, the service must provide assurance that engineering rather than experimental effort remains uppermost in the program and that the needed technology is available. Fifth, that the cost effectiveness of the proposed weapon must have been determined to be favorable in relation to the cost effectiveness of competing systems on a DOD-wide basis. Sixth and last, the service must ensure that, insofar as it can, the cost and schedule estimates are both credible and acceptable. When these prerequisite criteria have been fulfilled, the weapon program is ready to go into the validation phase. Secretary of Defense approval is required to authorize the program to move into the validation phase.

Validation phase--In this phase, the preliminary designs and engineering for the weapon system are verified or accomplished; management plans are made; proposals for engineering development are solicited and evaluated; and the

**THE DEVELOPMENT PROCESS FOR A
MAJOR WEAPON SYSTEM**

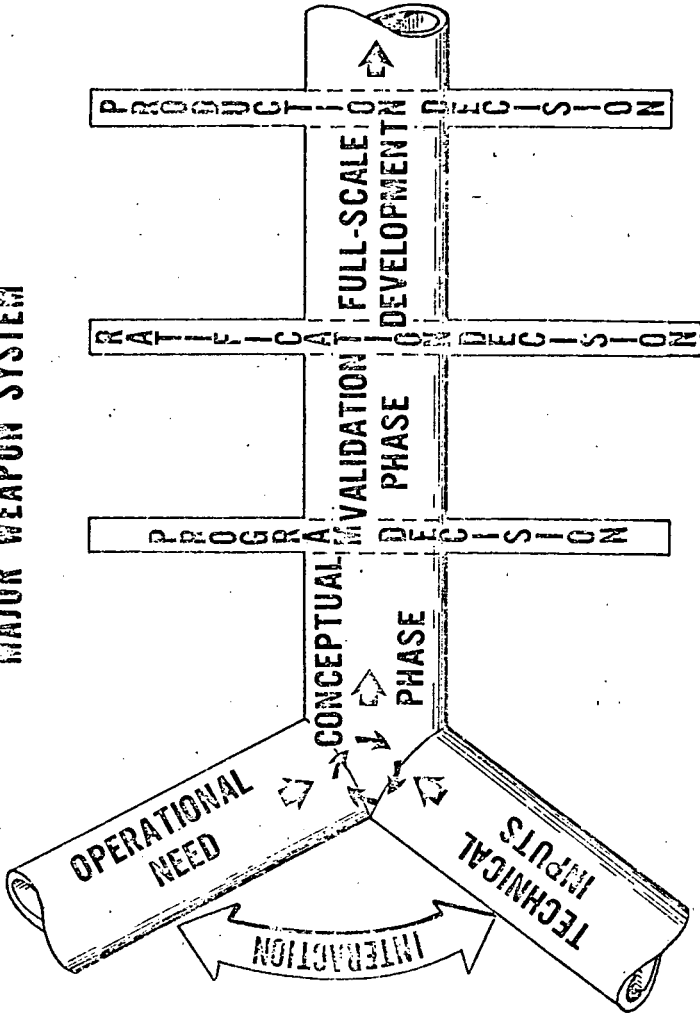


FIGURE I

development contractor selected. The objective of this phase is to verify that the technical and economic bases for initiating full-scale development of the weapon system are valid. Advancement to the next phase, full-scale development, depends upon establishment of achievable performance specifications for the weapon system that are supported by an acceptable proposal from the development contractor selected. Secretary of Defense approval is required for the program to move into the development phase.

Full-scale development--In this phase, the design and engineering of the weapon system is accomplished. The development contract is negotiated and awarded; the prototype of the weapon system is developed, produced, and tested; and the detailed specifications for manufacturing the weapon system are prepared. The objective of this phase is to develop a weapon system acceptable for production. Advancement to the production phase must be authorized by the Secretary of Defense.

The development phase overlaps the production phase since development is not considered complete until adequacy of the production model of the weapon system has been validated by a series of production acceptance tests.

Production--In this phase, the weapon system is produced in quantity for deployment. It begins when the production contract is negotiated and awarded. Production acceptance tests are conducted to validate the adequacy of the production model of the weapon system. Quantity production is initiated and the first operational unit is equipped with the weapon system and trained in its use. Advancement to the operational phase occurs when the first operational unit equipped with the weapon system is deployed. Production continues, however, until all required quantities of the weapon system are produced. The production phase includes production tests, service acceptance tests, and user acceptance tests.

Many potential weapon systems never progress beyond the early stages of consideration, e.g., conceptual phase. There are many reasons for this: unavailability of necessary technology, realization that a potential system may

become too costly for its intended purpose, anticipated obsolescence in terms of threat that the system is intended to counter, or another system concept subsequently may compete more effectively. As a system passes through validation, however, the Government's commitment to it becomes firmer. By the time the system reaches full-scale development, the Government's commitment has become so great and the structure of the program so definite that major adjustments to the program are difficult because they almost always delay critical delivery dates and are costly. Few really acceptable options are available to the Government once the design is approved and a decision is made to begin production.

The pattern of deeper involvement and decreasing options is shown in the following chart (figure II). The greatest opportunity for broad decisions occurs during the early stages of acquisition.

ACQUISITION CYCLE

CONCEPT FORMULATION	VALIDATION PHASE	FULL-SCALE DEVELOPMENT	PRODUCTION
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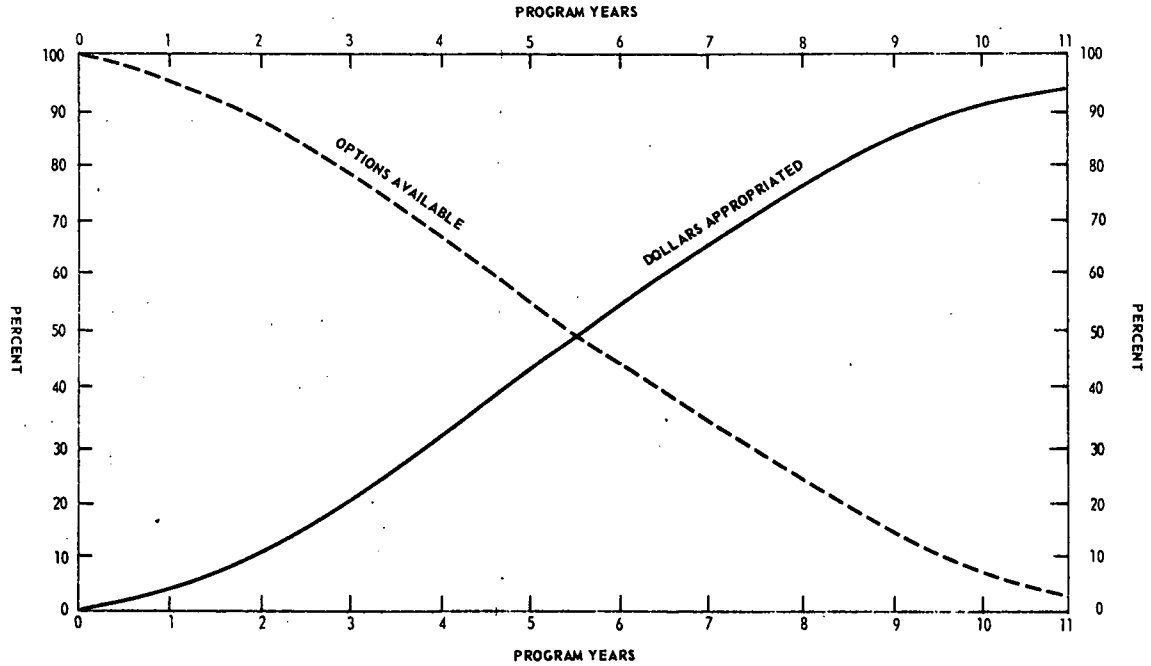


FIGURE II

CONCEPTS OF THIS STUDY

It was clear to GAO, when this study began, that the underlying management difficulties, as well as the problems of actually executing sound day-to-day actions at all levels, were probably deep seated and could best be evaluated by a systematic review of the entire process by using specific systems and phases as a basis for case studies.

At the outset, critical major weapon acquisition management actions and decisions, which would occur in every acquisition, were outlined. In determining these critical actions, DOD's own criteria and objectives were used. The critical management activities examined pertain to

- requirements for systems,
- assessment of technical progress, and
- organization and procedures.

We selected specific weapon systems now being acquired on which to conduct reviews on the basis of the criteria which had been developed. Several factors influenced our selection of specific weapon systems. First, we selected some of the systems where the Congress or DOD would have future options regarding a further course of action. Second, we selected a number of weapon systems which recently proceeded into the early phase of the acquisition process. This factor is most important, because problems occurring in the earlier phases may plague the system for years and adversely affect the cost, schedule, and performance of the system at a point when adjustments are difficult to make. As was noted earlier, it is also the point in time when the greatest number of options are available to both DOD and the Congress. Relatively small sums of money are committed at this stage, and therefore it is easier to change the direction of a program. As the program progresses, however, choices will decrease and the responsible officials will tend to become committed to a particular course of action, until no options are left. Although there is little to be gained by dwelling on problems which have occurred in weapon systems where options were low, we have included a few such systems in our study since they provide the best means of assessing the full import of sound as well as unsound past actions.

To fulfill our task, 45 systems (14 Air Force, 14 Navy, 17 Army) were reviewed. In addition, we reviewed cost and schedule data from a number of other systems. Still other systems have been reviewed at the request of congressional committees. In all, the data in this report are distilled from studies of some aspect of 70 weapon systems.

In chapter 2, several of the management actions critical to weapon systems acquisition are described in some detail and are followed by examples of good and poor performance.

In chapters 3 and 4, information collected in this study on the costs and schedules of programs studied is presented in summary form to provide a useful basis for further analysis.

Chapter 5 contains our observations, conclusions, and recommendations.

Scope

In order to review current policies and practices, we examined weapon systems which were in various phases of acquisition--conceptual, validation, full-scale development, or production.

Information on these programs was obtained by reviewing plans, reports, correspondence, and other records and by interviewing officials at the system program office, intermediate and higher commands throughout the military departments, and the Office of the Secretary of Defense. We evaluated management policies and the procedures and controls related to the decisionmaking process, but we did not make detailed analyses or audits of the basic data supporting program documents. We made no attempts to (1) assess the military threat or the technology, (2) develop technological approaches, or (3) involve ourselves in decisions while they were being made.

CHAPTER 2ASSESSMENT OF CRITICAL MANAGEMENT ACTIONS

In this chapter, several of the management actions critical to weapon systems acquisition are described and are followed by examples of adequate and inadequate application of criteria. Although each example is based on an evaluation of the management of the particular weapon system procurement which is cited, these examples are mainly illustrative. It is not the purpose of this report to focus on any particular acquisition.

REQUIREMENTS

Establishing requirements for weapon systems is an involved process. It is the basis for getting the system off on the right track and for controlling the development process. The process begins with identification of need for a specific capability and proceeds through such steps as defining performance characteristics, assessing the feasibility of achieving them, establishing some relative priority of need, and selecting the system that promises to be most cost effective. Once requirements have been firmly established, a basis for important actions during the development process exists. Such actions are controlling changes, continually making trade-offs between performance and cost, and controlling system phasing and interfaces. Requirements provide a yardstick against which action can be measured.

The following section outlines our understanding of general criteria to be followed in principal acquisition process steps and some illustrative examples where the performance in meeting the criteria has been both good and bad.

Identification of need for a system

The first step in weapon system acquisition includes (1) evaluating the products of documented military department threat studies, (2) projected enemy force structures, and (3) operating command statements of requirements and translating them into specific mission requirements and technology assessments.

The justification for selecting a particular major weapon system to fulfill the need includes analysis of concepts of existing and alternate capabilities, as well as the establishment of a relative priority of need. The clear identification of new mission requirements establishes a firm basis for initial and subsequent weapon systems and production.

Key considerations for establishing needs are:

Threat studies--Prepare future military risk positions and provide a justification of future needs.

Mission requirements--Define system capabilities in terms of specific objectives and tasks required of the potential system or systems, including operational and logistics concepts.

Current capabilities--Review abilities of existing systems or modifications to them in relation to defined mission requirements, and identify areas of required technological advances.

Technological advances required--Analyze alternate technical approaches and generally identify technical risk areas in relation to mission objectives.

Tactical concept of employment--Construct a detailed plan for the use of the weapon which sets the operational limits.

We have not attempted to pass judgment on military threat assessment; but we have examined methods that military services have followed to estimate current capability, to assess the potential for technological advancement, and to apply priority to a program relative to other weapon acquisitions.

Following are some examples of instances where criteria were adequately applied and some where they were not adequately applied in determining the need for the system.

The success which some of the weapon programs achieve in meeting their objectives for performance, schedule, and

cost confirms the usefulness of DOD's own criteria for selecting the specific weapon system to be acquired.

A. Adequate application of criteria

S-3A

The S-3A need was identified and the decision to develop this weapon was made by a comprehensive analysis of future military requirements for carrier-based airborne antisubmarine warfare capability. In the analysis, the Navy and DOD considered mission requirements, technological advancements required to develop the S-3A, and possible alternative ways of satisfying the need. For example, the system that the S-3A is to replace was examined to determine whether it could meet the military requirement and whether it could possibly be modified to meet the requirement. Also considered was the feasibility of achieving technological advances needed to meet the performance planned for the S-3A program. (In addition to this early attention to ensure technical success, actual commencement of the development cycle of the S-3A aircraft was slowed considerably because of continuing reassessment of program priority with the land-based antisubmarine weapon system.)

B. Inadequate application of criteria

1. LAMPS

As early as 1957, the Navy stated a need to extend the weapon delivery range of destroyers to take advantage of improved submarine detection capability. The Drone Anti-Submarine Helicopter program was first developed to fill this need. (This program was canceled later due to limited capability and unreliability.)

The Navy then considered filling the need for an antisubmarine warfare (ASW) capability on destroyers with a manned helicopter, the Light Airborne ASW Vehicle (LAAV). Shortly after LAAV entered the conceptual phase, however, it was canceled, and effort

was directed to development of the Light Airborne Multi-Purpose System (LAMPS).

This was done because it was felt within the Navy that OSD support for a strictly ASW system would be withheld. In order to "sell" the system, the mission profile was expanded to include an Anti-Ship Missile Defense (ASMD) capability. At this point ASMD was added to the LAMPS capabilities and was given priority over the ASW mission.

Thus, although need for an ASW helicopter had been clearly demonstrated for a number of years, the Navy decided to develop a multipurpose helicopter. This decision led to 2-1/2 years of debate on how these mission requirements were to be met within the weight restrictions that had been imposed on the helicopter because of anticipated interface problems with the ship.

2. Mechanized Infantry Combat Vehicle (MICV)

The MICV project began because of forecasts of threat to U.S. Forces and, in 1964, a change in Army mechanized infantry doctrine. From 1964 to 1966, the Army began a program to acquire an MICV for the 1960's--on an urgent basis. This effort was discontinued because the vehicles were too heavy, were not mobile enough, and were not cost effective. In the meantime, the Army embarked upon a second program, to acquire an MICV for the 1970's. This program had high priority, since the vehicle was scheduled for early deployment.

The schedule has not been met. The vehicle is still in the conceptual phase, and deployment is expected to be 5 years later than originally scheduled. The program has been drawn out for various reasons, including the priority for available funds.

The first major delay came in defining the vehicle's mission and characteristics. Approval of the definition was scheduled for March 1967 but was not made until October 1968. The delay occurred, in

part, because certain studies were considered inadequate and additional work was required. An important factor was the complexity and resultant slowness of the Army's decisionmaking process.

The October 1968 vehicle definition assigned the MICV "Priority I" and called for development on an "urgent basis." In mid-1969, the project manager and higher commands sought, without success, Department of the Army (DA) approval to move the MICV out of the concept formulation phase. DA reviewed the program in the light of several factors including anticipated budget cuts, an increase in the MICV's estimated cost, and possible use of alternative vehicles which did not exist at the time of earlier studies. It considered several program alternatives, including (1) deferring the program a year, (2) deferring it a year and testing additional alternative vehicles, and (3) terminating the program and developing one of the alternative vehicles. DA decided to authorize a review of all feasible competing vehicle systems before deciding to move the MICV out of concept formulation.

During the new review, completed in April 1970, the project manager established the concept of an "austere" MICV, which would have a lower cost because of deletion of features that the Army earlier had termed "essential." In July 1970, he and higher commands recommended its adoption. At the time of our review, the DA decision was still pending.

3. SAM-D

Development of the SAM-D system began although there was uncertainty over the utility of the system, the character of the threat which was to be countered, and the capabilities of companion weapons with which the system would operate. Because of these uncertainties, in May 1967 the Secretary of Defense delayed the system's entry into full-scale development. Instead, the system was placed in an advanced development program to be conducted over a 3-year period. After 2-years in the advanced

development phase, the system was studied in March 1969 to determine whether it should enter full-scale development. The Deputy Secretary of Defense directed that the system be continued in the advanced development phase through fiscal year 1970 and that the decision to place the system into full-scale development be deferred until fiscal year 1971. His position was that the system would not be needed until sometime later, the number of batteries needed and how the system would be deployed in the field was unknown, and the system was neither fully defined nor justified.

In March 1970, the Army subjected the system to review by the Air Defense Evaluation Board. The Board was directed to again analyze the threat that the system had to meet, to identify the air defense capabilities required to defend against this threat, and to identify existing air defense capabilities and deficiencies to meet the threat. The Board's report was approved by the Chief of Staff on November 19, 1970, and, in essence, confirmed the Army's position on the need for the SAM-D. As of December 1970, no action had been taken by OSD.

Definition of performance characteristics

Determination of weapon system operational requirements and performance characteristics (speed, range, accuracy, etc.) depends on well-defined mission statements. Performance characteristics are used to determine parameters of trade-off studies, performance feasibility studies, and phased system acquisition projection. Performance specifications prepared from these characteristics are the basis for initial design feasibility studies and validation efforts.

System design studies and development test programs derive from performance specifications. Absence of well-defined system specifications can cause underdesign or overdesign. Completion of the entire development process, without actual satisfaction of system mission requirements can result from this absence. Conversely, it is more likely that an explicit definition of system performance characteristics will result in an improved product. This is not to say, however, that system performance characteristics, once defined, must never be changed. This is an iterative process which becomes more firm as one approaches final design for production. Program management, to be effective, should allow for trade-offs as system development progresses and for unanticipated technical unknowns which are surfaced by detailed engineering design.

Following are some examples of instances where criteria for defining performance characteristics were adequately applied and some where they were not.

A. Adequate application of criteria

1. A-X

The definition of performance characteristics for the A-X weapon system flows from a clear, precise statement of the mission this weapon system is intended to perform in support of the Army mission.

The A-X mission is defined as close supporting fire for ground forces, armed escort, and armed reconnaissance in battle areas. It was determined, by contractor studies, that an aircraft with twin

engines, capable of takeoff and landing at forward operating bases, surviving hits by light anti-aircraft artillery projectiles, having a rapid-fire gun and carrying bombs or rockets; having high subsonic speeds and a range sufficient for effective close air support, is required.

A minimum of avionics for visual control is to be included initially with the weapon delivery. The aircraft, however, is to be designed with extra space and power so that more sophisticated avionics could bring its capability up to all-weather use, which the Army considers essential.

The Air Force awarded competitive prototype development contracts for the A-X close air support aircraft on December 30, 1970. This will give the Air Force actual hardware upon which to base a decision for further full-scale development and should provide a sound basis upon which to establish firm performance specifications.

2. Heavy Lift Helicopter (HLH)

The basic military mission for HLH was articulated by representatives of the operating command. Some objectives of the mission were revised, however, during early attempts to gain approval. One revision changed the mission emphasis from tactical to logistical. Another revision resulted from an Army/Navy compromise initiated by congressional interest in developing an HLH that would satisfy both the Army and Navy.

Basic mission requirements established by the representatives of operational commands were in clear and concise terms. The change in mission emphasis caused appropriate changes in the mission statements and subsequently in performance characteristics.

Performance characteristics, as well as all changes for the first two, were developed by study groups from various Army organizations. These study

groups included representatives from the field, the project office, and engineers with various functional capabilities. The characteristics finally selected were considered the most desirable to achieve the established mission. Our review was completed before the Army/Navy compromise was approved, but preliminary studies were conducted individually by Army and Navy engineers who examined the compromise position. Their results indicated that a compromise on performance characteristics would limit some of the mission requirements of both the Army and Navy.

In September 1970, the Secretary of Defense approved a program to develop high-risk critical components for the HLH before full-scale development is approved, on the basis of performance requirements agreed to by the Army and Navy.

This approach assumes that advanced technological development of the critical components is necessary to (1) determine whether technology is available to build such an aircraft system and to identify the best technical approach offered by the helicopter industry and (2) establish realistic cost estimates. Related studies concerning further refinement of the mission, technology, and economy of the HLH will be made but will be subject to even further refinement on the basis of results of the component development program. If the critical component development is a success, this should permit a decision to be made whether or not to proceed with full-scale development.

3. HARPOON

The HARPOON missile is a good example of the Navy's thoroughness in defining the performance characteristics required of a system. The potential enemy threat and the mission profile of a new missile to meet this threat were defined by the Chief of Naval Operations in June 1969. He specified certain restricting design characteristics. For example, the missile range required and the range desired were

specified. The maximum weight of the missile to be launched from a ship and from an aircraft was given. The requirement also specified that the missile have an all-weather capability, i.e., be able to hit a target under specified adverse weather conditions.

For a year, the Navy conducted numerous studies to determine how best to meet the requirement. The aerodynamic qualities of various missile designs combined with different kinds of propulsion systems were studied to ascertain whether the desired range could be obtained. Additionally, the reasonableness of the weight limitations was verified and studies were conducted of subsystems to find out if an effective missile could be made within the limitation. The adequacy of the size of the warhead, which is one of the factors having a direct bearing on the weight, was tested by blowing up a number of obsolete ships.

Problems in selection of a seeker with all-weather capability were anticipated. Different kinds of seekers were tested in flight before the kind of seeker desired was identified. These studies and tests provide reasonable assurance that the requirements can be met before proposals are solicited from contractors.

B. Inadequate application of criteria

LAMPS

Although performance characteristics of the LAMPS have been under study since early in its development, the Navy has had difficulty in agreeing on the gross takeoff weight of the helicopter.

The significant factor contributing to this difficulty is the fact that the program has been managed by various committees within the Office of the Chief of Naval Operations and had no consistent sponsor to guide and control it. Naval committee representatives have varying vested interests in

the program and, as a result, agreement has been delayed on major questions such as the gross take-off weight of the LAMPS helicopter.

Committee representatives from one organization within the Navy were pressing for a heavier helicopter. In their opinion, a light aircraft would not have the desired mission capability. Representatives from another organization wanted a light helicopter because it would fit on the DE-1052 class ship and would be available to the fleet sooner. Controversy centered around the question of whether the deck of the DE-1052 was strong enough to support the helicopter.

Although the Deputy Chief of Naval Operations (Air) requested data on the maximum deck strength of the DE-1052 early in the LAMPS program, testing of the deck for maximum allowable landing weight was not accomplished until 2½ years after the LAMPS program was started. The tests occurred in November 1970, shortly after the Deputy Chief of Naval Operations (Fleet Operations and Readiness) succeeded the Deputy Chief of Naval Operations (Air) as the official primarily responsible for the LAMPS.

The Navy's long delay in specifying the weight of the helicopter will result in a significant delay in delivery of the LAMPS to the fleet.

Obtaining assurance of feasibility of performance requirements

The probability of a technically successful development depends upon an assessment of the availability of proven technical knowledge required to build the item(s), by identifying design risk areas and assessing the likelihood of resolving them early in the development process. Feasibility of performance requirements is usually assessed as a part of conceptual studies and confirmed during the validation phase. Entering into full-scale development without establishing design feasibility can result in attempts to achieve unrealistic technical progress within a specific test and schedule plan. Positive identification of these design risk areas will permit the program manager to facilitate the system development process by bringing his resources of men and money to bear upon critical elements and streamline the development schedule.

Following are some examples of instances where criteria for obtaining assurance of feasibility of performance requirements were adequately applied and some where they were not.

A. Adequate application of criteria

1. AEGIS missile system

In the cases of the AEGIS missile system, a group of highly qualified people from the Navy and industry performed a risk analysis as part of a comprehensive missile system study. In evaluating results, the Navy directed a laboratory model to be constructed and tested to demonstrate the feasibility of high-risk components before proceeding further with development. Added assurance that the system was technically feasible was obtained through an independent evaluation.

The successful demonstration of the highest technical risk component has been established as the first critical milestone in the current engineering development contract.

2. Heavy Lift Helicopter (HLH)

The HLH is planned to lift heavy loads over short distances in support of combat missions and peacetime operations. The HLH is planned as an improvement in lift capability over present transport and flying crane aircraft, and has no counterpart in the current Department of Defense inventory.

The development approach for the HLH differs from many major system acquisitions in that the early phase of the acquisition process includes development of critical hardware in contrast to paper studies.

The Army has identified high-risk components for immediate development effort. If the critical component development is a success, full-scale development can proceed.

3. F-14 Aircraft

The F-14 aircraft is composed of three basic subsystems; namely, avionics, propulsion, and airframe. The potential risks in developing each subsystem were studied and analyzed by the Navy before proposals were received from interested bidders. The Navy analysis indicated that the risks associated with the avionics and propulsion subsystems were low because these subsystems had been developed for use on another aircraft. For example, the engine to be used on the F-14 was available and was tested on the ground in a simulated F-14.

The airframe was considered a normal development risk although various potential problems were identified. Plans were developed to resolve potential problems including identification of possible backup items which could be used to provide an interim capability, if required.

The Navy also used risk analysis in considering the reasonableness of the contractors' proposals. Therefore, when the Navy entered the

development and production contract, risk had been minimized. Identification of program risk also enabled the project manager to more adequately monitor development of the airframe.

4. Airborne Warning and Control System (AWACS)

In the AWACS, the high-risk area was identified as the overland radar, the extent of which will be determined by building and testing actual hardware. Actual demonstration that the AWACS, including the overland radar subsystem, will work as intended is stipulated as a condition of continuing development.

Two competing overland radar systems will be developed, and a fly-off competition with AWACS configured aircraft held, to demonstrate their respective merits and detect shortcomings. If a successful system is demonstrated, the AWACS program will be allowed to begin the remainder of the full-scale development program.

B. Inadequate application of criteria

1. DRAGON

The DRAGON weapon system was approved for full-scale development before essential technology was available to correct major system limitations. At that time, the development of a required night sight was not believed to be within the state of the art. Other technical risks (i.e., friendly electronic interference and enemy countermeasures) had not been assessed as thoroughly as was possible.

Several DOD review groups, while acknowledging major system difficulties and performance limitations, recommended an accelerated development schedule for limited production of the system. Operational need was stated as a basis for these recommendations.

Demonstrated DRAGON performance has not met requirements contained in the Army's Qualitative Materiel Requirement. This problem comes from failure to properly assess high technical risks, and from granting approval to proceed prior to the resolution of risks. This is contrary to DOD rules.

2. Short Range Attack Missile (SRAM)

The feasibility of developing the motor required for SRAM was not adequately considered before commencement of full-scale development. The missile motor represented a high-risk area that neither the Air Force nor its contractors adequately evaluated during the contract definition phase.

After award of the full-scale development contract, the contractors concluded that the rocket motor required to meet design and performance contract specifications was beyond the state of the art. The Air Force now estimates that the rocket motor planned for production will have a total impulse less than expected at the time of the development contract award. Performance was thus compromised. Development of the rocket motor delayed completion of system development several years and raised costs as well.

3. C-5A aircraft

Similar to the SRAM program experience, the C-5A program encountered technical difficulties which were appraised but which may not have been adequately recognized at higher levels during the validation process. These technical problems proved difficult and costly to resolve and caused cost growth and schedule slippages.

In the case of the C-5A, the development schedule also was unrealistic. At the outset it was overly optimistic with no allowance for setbacks in the development program.

Cost-effectiveness determinations

Cost-effectiveness studies are one accepted means of selecting a system. They are particularly useful during concept formulation of a weapon program. Systems selected for consideration should include equipment already in inventory and should specify the degree to which such systems provide needed mission capability.

A cost-effectiveness study considers the need that a system is supposed to fill, the alternative technical solutions that are available to meet that need, technical performance characteristics of each alternative, cost associated with each possible solution, and criteria for choosing among alternatives. The overall study should emphasize significant issues to clarify merits of alternative systems. Also, the analysis should be updated when changes in basic assumptions occur. Updating ensures continuing cost effectiveness of the system selected by allowing for changes in threat, technological advancement, or desired level of defense.

GAO's examination was limited to the questions whether (1) the military service had fulfilled a requirement that cost-effectiveness studies be performed, (2) studies had been made of competing equipment systems, (3) each study was evaluated, used, and became part of the competing weapon program records, and (4) realistic equipment operating environments and personnel training levels were included as conditions for performance of the equipment end-item.

Cost-effectiveness studies provide a measure for evaluating changes as the program proceeds and for making continuing trade-offs between cost and performance. With such studies, we have a technique by which balance can be maintained between cost and performance. Without such studies, ill-advised program decisions affecting performance and schedules can seriously jeopardize program cost estimates.

Following are some examples of instances where criteria for performing cost-effectiveness studies were adequately applied and some where they were not.

A. Adequate application of criteria

1. DD-963

The program for development and production of new destroyers (DD-963) to replace World War II ships was initiated in August 1966. In September 1967, the Office of the Chief of Naval Operations completed a study comparing the cost and antisubmarine warfare effectiveness of the DD-963 class destroyer with alternatives. Formal approval to enter contract definition for the DD-963 was granted in February 1968.

The scope of the DD-963 cost-effectiveness study included a comparison of existing, modernized, and new design destroyers. Results of the DD-963 study showed that the DD-963 could provide antisubmarine warfare effectiveness with substantially fewer ships at a lower life-cycle cost, and at approximately the same total investment cost as any alternative ship.

The DD-963 study relied heavily upon previous studies for such things as postulation of threat and estimate of differences in effectiveness among the various antisubmarine warfare components used on the competing ships. Since our review did not encompass earlier studies, we did not determine reasonableness of the assumptions used in the DD-963 study regarding these or other significant aspects of the cost-effectiveness question. Nevertheless, our limited review has shown that the Navy (1) prepared the DD-963 cost-effectiveness study early in the acquisition process, (2) considered a number of alternative systems in DOD's inventory, and (3) apparently selected the most cost-effective alternative.

2. AEGIS

A cost-effectiveness study of the AEGIS Advanced Surface Missile System was made in early 1965. The principal characteristics of the missile system recommended for development at that time were es-

sentially the same as those currently approved for development of what is now called the AEGIS system. In that study, comparisons were made of the performance of various individual systems in a wide variety of tactical situations and of alternative combinations of systems providing for the defense of specific naval forces. Alternative systems evaluated included existing Navy missile systems, aircraft equipped with air-to-air missiles, and several versions of the AEGIS system.

Costs of alternatives considered included development, investment, and annual operating costs. The cost and effectiveness of alternatives were compared. The conclusion showed the AEGIS system to be superior in cost effectiveness to the alternatives. Although a formal updated cost-effectiveness study was not prepared, the Development Concept Paper submitted to the Defense Systems Acquisition Review Council following receipt and evaluation of contractors' proposals, compared the cost and effectiveness of alternate systems against various threats.

Although we did not question validity of basic assumptions, we believe methods used in this study conform to acceptable cost-effectiveness-study practices.

3. Armored Reconnaissance Scout Vehicle (SCOUT)

A cost-effectiveness determination was made by comparing threat, mission, and effectiveness analyses with schedule, cost, and feasibility studies. By providing seven different firms with such data as scope of work, description of the system, vehicle design, etc., various concept designs were submitted. These designs were consolidated with in-house effort, and the results were furnished to a research firm. In addition, Army research organizations supplied auxiliary data on threat analysis. In the assessment of design, cost, and combat effectiveness (parametric design/cost-effectiveness study), the research firm analyzed (1) effectiveness evaluations of nine concept vehicles and eight

reference vehicles in computer simulations of representative missions and (2) life-cycle costs of each of the 17 candidate systems. The comparisons of effectiveness required evaluation of the candidate vehicles in different threat and geographical environments as well as in the performance of two different types of mission--security and reconnaissance.

B. Inadequate application of criteria

1. A-X aircraft

The Air Force cost-effectiveness studies for the A-X aircraft considered only the A-1J, A-7D, A-37B, F-4C/D, and the improved OV-10. These are all Air Force fixed-wing type aircraft. Such possible candidates as the Army's AH-56 Cheyenne helicopter, the Marine's AH-1J Cobra helicopter, and the Marine's Harrier--a vertical/short takeoff and landing aircraft--were not covered in the studies. Also excluded is a more expensive version of the A-X which incorporates an all-weather capability.

2. A-7D aircraft

The Air Force recommended, on the basis of cost-effectiveness studies of existing DOD-wide competing systems, the procurement of a slightly modified version of the Navy's A-7 in-production aircraft to fulfill its need for close ground support missions and interdiction in future years.

Subsequent to these studies and DOD's approval of the procurement, major configuration changes in avionics invalidated initial plans and contributed to the Air Force procurement of a more sophisticated and expensive aircraft. The average unit weapon system cost increased about 110 percent between DOD's approval in November 1965 and June 30, 1970. These changes also contributed to delay in establishing firm detail specifications and attaining delivery schedules. We were informed by Air Force personnel that the cost effectiveness of the A-7D

was not revalidated to determine if the aircraft was still cost effective after these changes were made when compared with competing existing systems.

The principal management weakness in administering this program was failure to give formal recognition in the management process to the effect of these changes. Such recognition would have subjected the revised A-7D plan to the same basic decision-making process as the initial plan, including a valuable cost-effectiveness comparison of the changed A-7D configuration with other DOD systems.

3. A-7E aircraft

Similarly, the Navy A-7 aircraft program began with the Navy A-7A version, which was developed to fulfill the requirement for light attack aircraft with increased range and load carrying capability to replace the all-weather A-4E. This A-7A was subjected to the full-scale development cycle. The next Navy version, the A-7B, was basically the same as the A-7A except for a different engine which provided increased acceleration and decreased takeoff distance.

In developing the "E" version, the Navy started with its existing "B" version and developed a significantly improved light attack aircraft. The Specific Operational Requirement (SOR) for this aircraft has not been changed. However, the improved avionics system and engine of the A-7E represent significant advances in the military capabilities over the A-7B, one being increased bombing accuracy. Like the A-7D above, the cost effectiveness of the ultimate A-7E configuration was not validated.

Stability of the program and its relationship to other programs.

Effective pursuit of program objectives requires stability of priority and of allocation of all critical resources in combination with clarity and consistency of program direction.

The discipline imposed by OSD and the service secretaries upon the military services' weapon acquisition organizations has helped to bring about a more orderly management process. The rather long period of time required for acquisition has been broken down into logical stages. Comprehensive criteria have been established for an acceptable proposal for a program to advance from one stage such as the conceptual phase to the next. Detailed OSD direction has been given to the military services on all aspects of procurement, such as "make-or-buy," national priorities and defense materials systems, and small business set-aside.

The rigorous structuring and close management control mentioned above do not address the question of need for, and priority of, a specific weapon acquisition program relative to others. That process of determination and execution of the relative need/priority is accomplished principally through the formulation of budget and is reconsidered annually for each weapon program, in each appropriation involved, with consequent instability permeating all program direction.

The impact of instability is illustrated by the reduction in capability experienced by the Defense Satellite Communications System and its associated earth terminals. In another USAF mission area, the bomber air defense system, in which provision was made to systematically develop, procure, and deploy the system components in a preplanned, well-organized manner, the principal components are the OTH-B radar, AWACS, F-15 air superiority fighter, or an as yet undetermined interceptor fighter. For two system components (OTH-B & AWACS), the initial operational capability (IOC) dates do not coincide and the full operational capability dates bear no relation to one another. *An overall acquisition management plan, with provisions for integration and coordination of mutually interdependent weapons required for mission performance, and an interrelated air defense testing*

program to evaluate accomplishment of continental air defense would ameliorate this condition.

The establishment of a comprehensive priority system for weapon acquisition programs is an involved process. This is particularly true for weapon systems which fall outside the category of "Strategic IA" programs, (generally "super-systems" such as the ARM, POSEIDON, and MINUTEMAN for which high-level attention is readily available). Application of the ranking to other weapon acquisition programs is even less formal and specific.

At present, there is a DOD-wide priority system which allocates certain scarce resources among the competing needs of the individual ongoing acquisition programs. *This priority system is deficient in two respects; it is not uniformly applied within each of the services (although it is reasonably well applied to conflicting needs between programs which are in different services) and it tends to deal only with certain limited categories of resources (such as materials which are in short supply) and ignores the more critical resources such as overall funding and personnel.*

Within the military departments, some sort of priority ranking system does exist; its value has not yet been proven. *We believe that the development of a comprehensive DOD-wide priority system is a first step toward alleviating an important part of the difficulty we found in DOD's management procedures.* Of course, an indisputable priority is established weapon system by weapon system through the annual budget review cycle. These budget-derived priorities, however, are not converted into a DOD-wide comprehensive priority rating which would also determine each program's relative priority for all critical resources. Also, insofar as we can see, there is no effective connection between these budget decisions and some longer range view which contrasts each potential acquisition against a master plan of overall mission requirements and available or developing capabilities of all the services.

The Office of the Secretary of Defense has recently implemented a new approach to analyzing the plans for a weapon in terms of the relevant military mission category such as "land warfare." This analysis, which includes identification

of major issues, is to provide the Secretary of Defense with a broad overview of each mission category. It also is intended to provide guidance for weapon acquisition to military departments and agencies which develop the programs for equipment to improve military effectiveness. Additional objectives of the procedure are to eliminate competing systems, phase out obsolete equipment, identify deficiencies in capabilities of the forces, establish performance characteristics needed, and set schedules for carrying out guidance. It is expected that the analytical procedure will raise and resolve major issues inherent in and between mission categories. Although this procedure appears to satisfy many of the essentials of an overall priority system, it is still in its infancy.

Subsystem development phasing and interfacing

The constituent subsystems of a weapon system must be available and compatible or system development will not be successful.

When a weapon program includes development of a subsystem with high technical risk, the weapon program is susceptible to slippage. When the subsystem development is out of phase with the development of the overall system, that system may be compromised in either schedule or performance, or both.

The mismatch of subsystems with the parent system appears to occur most frequently when responsibility for development of parts of the system is divided among two or more project managers. The difficulty is compounded when a subsystem is common to more than one weapon system yet separately managed.

Specific provision must be made to ensure that development and acquisition of the subsystem will coincide with technical requirements of each of the weapon systems for which it is to be used. The same considerations of phasing and interfacing are applicable to a weapon system such as SRAM which must work in conjunction with systems such as the B-52, B-1, and FB-111 bomber aircraft.

The increasing complexity of weapon systems has necessitated increasingly detailed, close control over design, development, and production of the system by the program manager. He must give informed technical and administrative direction to ensure that proper provision is made for control of development phasing and interfacing. He must require performing organizations to (1) identify and document the functional and physical characteristics of the weapon system and its subsystems, (2) rigorously control changes to those characteristics, and (3) record and report all pertinent aspects of the progress of system components and any changes to them. This quality of direction and control by the program manager is necessary to achieve integrity and continuity of design for technical performance, producibility, operability, and supportability of the overall system.

To reiterate, developing subsystems must be kept in phase with one another to make sure they will work together and will be available when needed, or cost growth and schedule slippage will generally occur. Imbalance in development of subsystems can also cause shortfalls from performance objectives for the weapon system; that is, delay in the achievement of, or incompatibility among, constituent subsystems of the weapon, or related weapons, may impair performance of its mission.

Following are some examples of instances where criteria were adequately applied and some where they were not adequately applied in subsystem development phasing and interfacing.

A. Adequate application of criteria

F-15/B-1

The F-15 and B-1 programs incorporate management concepts intended to guard against or minimize the effects of pitfalls which have been encountered in other major acquisition programs, through use of *total system responsibility* and *demonstration milestone provisions*. A "total system performance responsibility" clause has been incorporated in the F-15 contract, which makes the airframe contractor responsible for integration of the complete weapon system as well as for all actions necessary to ensure that the total weapon system will meet performance requirements set forth in the system specification. In essence, the Government looks only to the airframe contractor for satisfactory performance of the aircraft and does not become involved in any problems concerning the engine or the subsystems. Contractor-to-contractor relationships necessary to fulfill interface plan commitments are set forth in associate contractor agreements between the prime contractor and his associate contractors. A similar approach has been incorporated into the B-1 program wherein the airframe and engine contractors are working on an associate contractor basis, but the airframe contractor has total system integration responsibility.

Under the demonstration milestone provision, planned dates for accomplishment of specified technical milestones are established. The Air Force will determine whether the contractor has satisfactorily accomplished the milestones. The accomplishment of the milestone is contractually tied in with Government allocation of production funds. Failure to meet a milestone may result in a delay in the funding of a production increment, a delay in exercise of the option to which the demonstration milestone relates, or a partial allotment to sustain minimum production at the Government's option. Any schedule adjustments due to delays will be made with no change in initial target cost or ceiling price. None of the milestones were scheduled to be accomplished at the time our review was completed.

B. Inadequate application of criteria

1. CHAPARRAL/VULCAN

The CHAPARRAL/VULCAN air defense system was produced and deployed without the Forward Area Alerting Radar System (FAARS) which, coupled with other significant performance limitations, resulted in the system's providing limited air defense capability.

When limited production of the CHAPARRAL and VULCAN systems was approved in November 1965 and March 1966, respectively, the Army had not designed or developed the military characteristics for the system's radar, even though it had determined in 1965 that existing systems could not be modified to fulfill the radar's mission. Production of the radar was authorized in 1968, though earlier testing indicated that it did not meet performance requirements. When technical difficulties arose, radar production was stopped in July 1969. This resulted in the deployment of the CHAPARRAL/VULCAN system without FAARS. The present system requires the operator's visual detection and identification of enemy aircraft and his judgment that they are within range.

2. AN/BQQ-2 integrated sonar system

The AN/BQQ-2 integrated sonar system is a complex system designed for installation and use aboard nuclear attack submarines. The accomplishment of the sonar and submarine projects is the responsibility of different project managers in the Naval Ships System Command. Successful accomplishment entails integrating the two systems at a predetermined point in time.

Performance and physical characteristics of the two systems had been identified, but development and production schedules for the two systems were out of balance. The sonar was acquired under an accelerated program to permit delivery at the predetermined time that a ship would be ready to accept it. This precluded an orderly design, development, and production of the sonar system and resulted in technical problems. Technical problems delayed delivery of the sonar system. The sonar delay resulted in a disruption of Navy shipbuilding schedules and in cost growth.

The problem experienced with the sonar system development phasing and its ultimate interfacing with submarines was magnified because each weapon system had its own project management.

The Navy has now established a ship project directive system which provides ship acquisition project managers with procedures for directing management actions of secondary managers to ensure proper integration of the total shipbuilding program. Thus, definitive tasking, scheduling, and funding for all support elements is effected. This policy should help significantly to prevent the situation described in the AN/BQQ-2 sonar example.

3. P-3C aircraft

Development interface and subsystem phasing problems were encountered in the P-3C program

because the technical feasibility of certain sub-systems planned for the program had not been fully proven when the development program was approved. For instance, a succession of three different versions of the acoustic signal processor has been attempted since program approval. The last of these, the one now included in the program, is known as DIFAR. The decision to incorporate the DIFAR processor gave additional capability to the P-3C, but it made the problem of interfacing and phasing of development more difficult because the processor was still under development and was not available until about a year after P-3C deliveries began. The result has been a stretch-out in P-3C testing and the delivery to the fleet of aircraft short of desired equipment. This equipment had to be backfitted as processor production caught up with need.

Continuous trade-off between
cost and performance

As early as preparation of a design is completed for the weapon system, the program manager should initiate the iterative process of examining each proposed change in capability for the weapon against its associated costs. His analysis should include estimates of technical feasibility of the design features of the proposed change, probable impact on the logistics and schedule, and cost of the capability in relation to military need.

A continuous trade-off between performance and cost during the acquisition process will keep all elements in balance.

Flexibility during development is important. The Deputy Secretary of Defense has stated that

"The cost of developing and acquiring new weapon systems is more dependent upon making practical trade-offs between the stated operating requirements and engineering design than upon any other factor."

He has stated further that

"trade-offs must be considered not only at the beginning of the program but continually throughout the development stage."

Budget constraints have forced trade-offs of the nature described and have ensured continuing implementation of this philosophy.

Following is an example of an instance where criteria for trade-offs between cost and performance were adequately applied.

A. Adequate application of criteria

F-15 aircraft

The Deputy Secretary of Defense advised the Air Force in September 1969 that production funds for the F-15 program would be limited and that acceptable performance cost trade-offs must be

determined so that F-15 costs would be within the approved program. The Air Force began a cost reduction study based on assumptions that the F-15 engine and airframe would be unchanged and that the development phase would begin as originally scheduled. The study produced savings which brought the program within funding constraints while retaining an acceptable operational and growth capability. The largest cost reductions were realized in avionics. Such changes as reducing range and ground map requirements for the radar, reducing redundancy in computation, reducing communications and navigation requirements and equipment, and a decrease in the amount of initial spares were effected. The estimated unit cost of production was reduced about \$1.5 million per aircraft. Provisions were retained in the aircraft to permit the reinstatement of some hardware items at a later date, if feasible.

Additional trade-off studies of the F-15 have been made to meet Air Force needs more economically since the award of the development contract. The Air Force plans to continue its review of the F-15 program throughout the development phase for possible reductions in cost, weight, and complexity.

TECHNICAL ASSESSMENT

One of the results we observed of DOD's efforts to improve its weapon system acquisition process was the increased use of test results to anticipate specific technical difficulties.

The conduct of specified tests and use of their results under current management concepts are incorporated into recent acquisitions programs, such as the F-15 and B-1 aircraft programs. Clarification of assessment of technical development is part of the implementation of total system responsibility; of milestone demonstration; and of thresholds for cost, schedule, and technical performance.

Technical feasibility studies pinpoint technical high-risk areas. Special emphasis is now being given to minimizing these risks, and special testing is used to monitor planned progress.

Tests are a valuable means of assessing subsystems and system design progress. Test results also provide a comparison of actual progress with the planned progress.

Test results provide management with information on which to base decisions such as to modify a design approach or to change basic system development plans. The results of successful tests also can be used to curtail design efforts when sufficient confidence is gained to support a decision to proceed with production or to accept hardware for operational use. With inadequate data from test results, judgments of this kind become more subjective and susceptible to a greater degree of error. Omission of tests can result in the production of hardware that does not meet requirements.

Following are some examples of instances where criteria for technical assessment were adequately applied and some where they were not.

A. Adequate application of criteria

1. DRAGON missile

The Army's technical development test plan for the DRAGON missile has demonstrated that DRAGON's performance has not met established requirements for reliability and single-shot kill probability. Additional technical problems were also revealed through testing.

Test results that the Army is using may influence plans to let a limited production contract prior to completion of all service tests.

2. Improved HAWK missile

High-risk areas in technical objectives of this missile, for which extraordinary management action was required, were identified in November 1968. At that time the Improved HAWK system entered an engineering test/service test program. The test program was scheduled to continue through 1971. Flight tests were halted in December 1969 because a component failed to function properly. This component was modified and additional test objectives were prescribed. An 18-month development program was instituted to develop another component as an alternative. In early 1970, flight testing was resumed but only limited success was obtained in meeting the objectives. Conclusive data have not been obtained on flights against low-altitude targets, maneuvering targets, high-speed targets, long-range targets, and electronic countermeasure environments.

To decide whether a production contract should be awarded for FY 1970 and FY 1971, the project manager had a risk analysis performed. Completed in April 1970, the analysis included an evaluation of technical, cost, and schedule data on the Improved HAWK system. A component was assessed as a high-risk item. To minimize this risk, modifications to the component were proposed. After

evaluation of these modifications, other performance risks, and increased costs that would be incurred by delaying procurement, the project manager recommended the immediate award of a production contract.

3. MAVERICK missile

Production options included in the contract for MAVERICK development were to be exercised before scheduled completion of tests conducted by the contractor. Additional provisions afforded the Air Force opportunity to delay exercising production options for 420 days, upon payment of stipulated standby costs. This option period extends through the scheduled completion of contractor testing and almost to the midpoint of military service testing. The Air Force decision to use this option period, and thereby delay commencement of production until a substantial portion of Air Force-controlled demonstration test results are known, indicates that it is moving toward the DOD position of "fly before you buy" and is gathering more test data before committing a weapon system to production.

B. Inadequate application of criteria

1. SRAM

Some degree of subjective evaluation must often be exercised in evaluating test results and that fact must be made clear to decisionmakers. This has not been the case in the SRAM program.

Major milestone decisions which involve advancing an acquisition program to its next phase must be based on broad information about actual accomplishments as compared with planned accomplishments. Test programs are devised to provide that information. The SRAM flight test program has fallen somewhat below the ideal in that extrapolations of test results have been used.

Extrapolations of the SRAM flight test results include adjustments for conditions, such as the interim rocket motor, atmosphere, winds, launch altitude, launch speed, and missile weight. Adjusted test data based on technical extrapolations, engineering assumptions, and various other adjustments for simulation and probability analysis do not conclusively demonstrate SRAM/carrier aircraft actual capabilities. *Such test results demonstrate only calculated capabilities.* Test data based on accomplishment more closely resembling actual mission conditions would provide a reliable gauge for top management to judge the performance and progress of a testing program.

2. AN/BQQ-2 sonar system

When planned test programs are abrogated, even for a good reason such as an overriding urgency to deploy, the effectiveness of the product is compromised. For example, the attack submarine program required that the AN/BQQ-2 sonar system components be installed at a specified time during a submarine shipbuilding schedule.

The current version of the AN/BQQ-2 sonar system was designed to provide a given improvement in reliability and a larger improvement in maintainability over a prior version of the sonar system. Reliability and maintainability demonstration tests were not conducted on the first few production systems. The Navy followed this course of action because it felt the chances for success to be good since the current system is a follow-on to previously designed and tested systems. The first production system was delivered before the production acceptance test was completed.

The schedule demands of the shipbuilding program for the nuclear attack submarines required delivery of the sonar systems before complete testing to preclude delaying the ship construction program. However, this should not be a justification for skipping the required testing.

The system delivered required changes to meet requirements. It is easy to see that program decisions which ignore test results are apt to escalate costs.

3. M60 tank

The M60A1E2 is a modified version of the M60A1 tank--currently the Army's standard battle tank. The E2 version was to have had a redesigned turret incorporating the SHILLELAGH weapon system. The SHILLELAGH was already under development; and, in this case, the objective was to adapt it for use on the M60A1 tank and to provide, at an early date, a tank having a missile-firing capability. Development of the M60A1E2 began in 1964; although early testing of prototypes had disclosed major deficiencies, the Army in 1966 authorized full-scale production of the tank before sufficient testing had been accomplished to validate the design, despite advice of qualified testing and user agencies.

Technical difficulties occurred during production which should have been detected in the testing program. The technical problem which caused the greatest concern and prevented deployment of the tank was the inability to stabilize the turret. This was a basic design fault that caused the tank's gun to move erratically, making it extremely difficult to deliver effective firepower. Premature decision to enter production brought delivery of 300 tanks and 243 turrets and components for which extensive modification is needed to satisfy the user's requirements.

ORGANIZATION FOR PROGRAM MANAGEMENT

Managing the acquisition of complex weapon systems has evolved into one of the principal activities of the military services. It is quite different from other procurement and receives special attention in the military services. Weapon system management is the process of planning, organizing, coordinating, evaluating, controlling, and directing contractors and participating organizations to accomplish system program objectives.

The program management approach to weapon acquisition is a distinct departure from the services' traditional method of establishing functionally oriented organizations to carry out well-defined, repetitive or continuous, long-term tasks. This approach requires the program manager to establish management arrangements among his organizations, other military organizations, and various contractors to efficiently coordinate their efforts to accomplish program objectives.

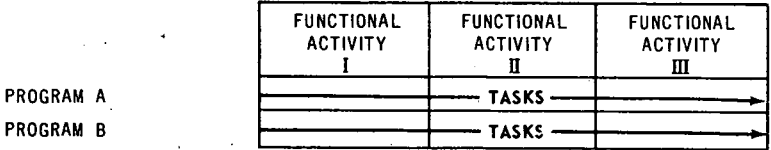
A variety of program management organizations have been established. They range from a large, self-sufficient office to an austere staffed focal point which operates on the matrix principle and which must draw all specialized support from the functional organization to which it is attached. These are illustrated in figure III.

The self-sufficient program office is organized and structured to operate by itself without having to rely on functional organizations for technical and administrative support. Conversely, the program office operating on the matrix principle relies on functional organizations to perform such tasks as research, development, logistics planning, procurement, inspection, and supply and maintenance.

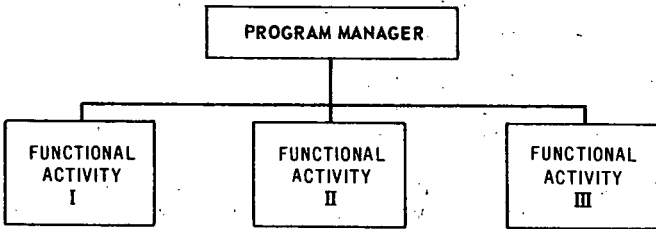
There are advantages and disadvantages associated with both the self-sufficient program office organization and the functionally oriented (matrix) organization. The advantages of one organizational structure tend to be the disadvantage of the other and vice versa; e.g., a matrix organization fosters greater specialization with less technical duplication but makes coordination and communication more difficult. A self-sufficient program structure fosters coordination and communication but makes specialization more difficult, and some technical duplication becomes inevitable.

FUNCTIONAL MANAGEMENT ORGANIZATION

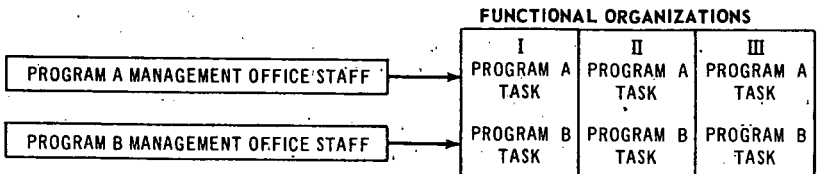
NO PROGRAM OFFICE ESTABLISHED
INCLUDES PERMANENT AND CONTINUING SPECIALIST STAFFS


PROGRAM MANAGEMENT ORGANIZATION

PROGRAM OFFICE ESTABLISHED
PROGRAM OFFICE STAFF ASSIGNED FOR THE DURATION OF THE ACQUISITION
INCLUDES SPECIALIST STAFFS REQUIRED FOR PROGRAM ACCOMPLISHMENT


MATRIX ORGANIZATION

INTERFACING OF PROGRAM AND FUNCTIONAL MANAGEMENT ORGANIZATION
MANAGEMENT OF CORRELATED ACTIVITIES OF FUNCTIONS AND PROGRAMS


FIGURE III

In large part, the Air Force acquisition programs are in self-sufficient organizations, while the Navy projects are matrix oriented; and Army projects are organized somewhere between the other two.

Under its matrix concept, the Navy has provided only 14 people for its F-14 project manager's organization. Another 92 people are assigned to the functional organizations within the Naval Air Systems Command. They are identified with the F-14 program but they do not work directly for the project manager. Under this arrangement, there is need for considerable coordination between the organizations. The functional personnel associated with the F-14 program may or may not work exclusively on this program. Conflicts for their time must be negotiated on a case-by-case basis. We are informed that priority of work assignments on the F-14 project has not been a problem, but the potential for trouble obviously exists.

In contrast, the Air Force F-15 program manager, with 243 staff members, essentially has a self-contained organization. All the functions necessary to manage the development program are manned by personnel directly responsible to the program manager, and work assignment priority can be handled by him.

Organizational "layering"

One of the most troublesome features of the present program management structure is difficulty in obtaining decisions. It seems to us that the most likely cause of this problem is that decisionmaking layering is not commensurate with organizational layering. In general, the military services have not deemed it wise to place the project manager high in the organization because of some practical considerations, such as the large number of project managers and the need for them to work directly at lower levels of the organizations. However, the effect has been to preserve levels of review authority which do not have clear roles in the process of formulating decisions.

Most of the decisions that the project manager does not make himself are made at the highest levels of the service or by OSD. Between the project manager and top management are a large group of organizational units whose commanders attempt to keep themselves informed about a particular weapon system and study and deliberate on pending programs to recommend some course of action. As a rule, they have no direct approval powers. They can delay or stop a project but cannot make decisions to proceed, change direction, provide money, or take other positive action.

Military service organizations for weapon system acquisition are shown in the simplified charts on pages 53, 54 and 55. These charts do not show the many subdivisions that become involved or the special ad hoc panels and committees which inevitably arise in the weapon system acquisition process. All these organizational units, panels, and committees impact heavily on the project manager. His program may be delayed or stopped while matters are being studied or while decisions are being made, or his program may proceed without timely decisions.

In the Army, for instance, any significant decision that the project manager cannot make usually is made at the highest levels of the Department or in OSD. With respect to these decisions, the primary role of the project manager is to make recommendations or to work with other groups that make recommendations. Recommendations go through the normal

chain of command; i.e., the Commanding General of the Commodity Command, to the Commanding General of AMC, to the Army staff. To formulate recommendations though, it is necessary to coordinate a number of functional groups. These include functional groups within the project managers' organizations (i.e., the Commodity Command) as well as organizations outside the Command, such as Conarc and CDC. *The essential task of these groups is to help formulate a recommendation, but their decisionmaking function is limited to agreeing or disagreeing with it. Once the recommendation is made, there are a number of functional groups at the AMC and DA staff levels (about a dozen at DA staff alone) who can influence the decision. The contribution of all these groups is much the same. They can either agree or disagree with the recommendation made.*

The inevitable result of this process is the scheduling of repetitive meetings, briefings, and studies in an attempt to reach agreement on the recommendation to be made. Supplying information to numerous groups can be almost a full-time job for the project manager. During 1969, one project manager spent about two thirds of his time conducting 166 briefings and from January to August 1970 participated in 62 additional briefings. From January 1969 through July 1970, another project manager participated in 124 briefings. Many of the briefings involved levels below the top headquarters' staff, but the most important function of those participating was to recommend.

In another instance of extensive layering, several reviews of a program were conducted between September 1969 and April 1970, including an in-depth review by several boards and committees at all levels. *Of particular importance was the requirement that briefings for decisionmaking groups be previewed as many as 20 to 30 times before presentation to an action-taking body. The project manager spent a large part of his time participating in these reviews.*

ARMY ORGANIZATION FOR ACQUISITION

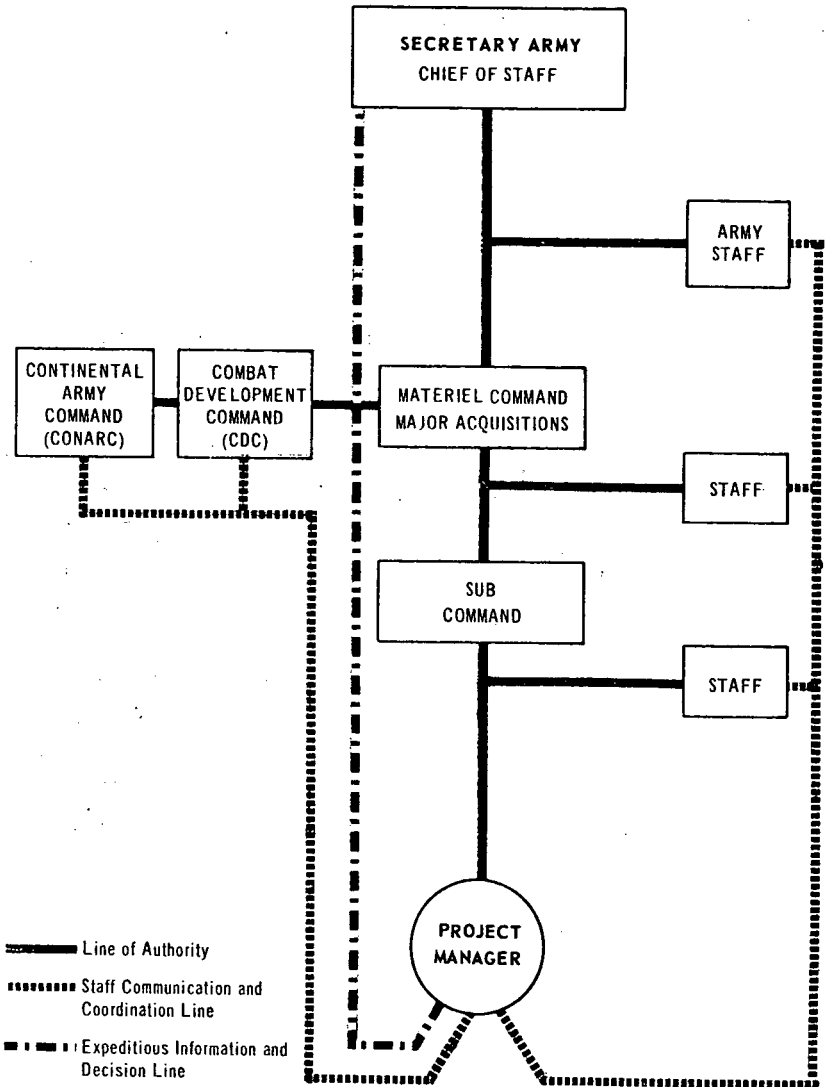


FIGURE IV

NAVY ORGANIZATION FOR ACQUISITION

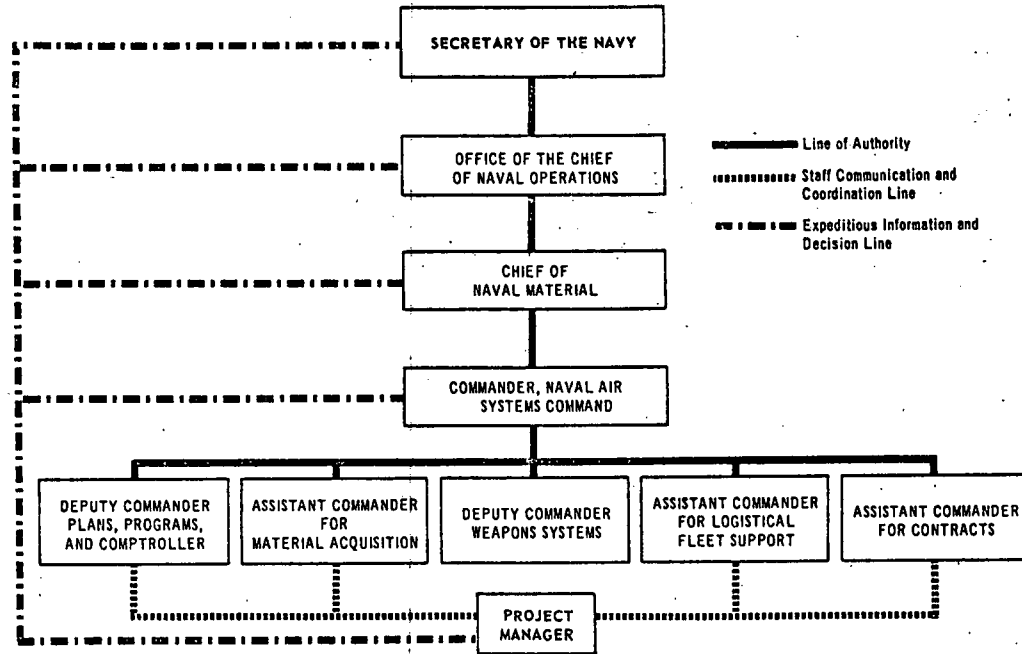


FIGURE V

AIR FORCE ORGANIZATION FOR ACQUISITION

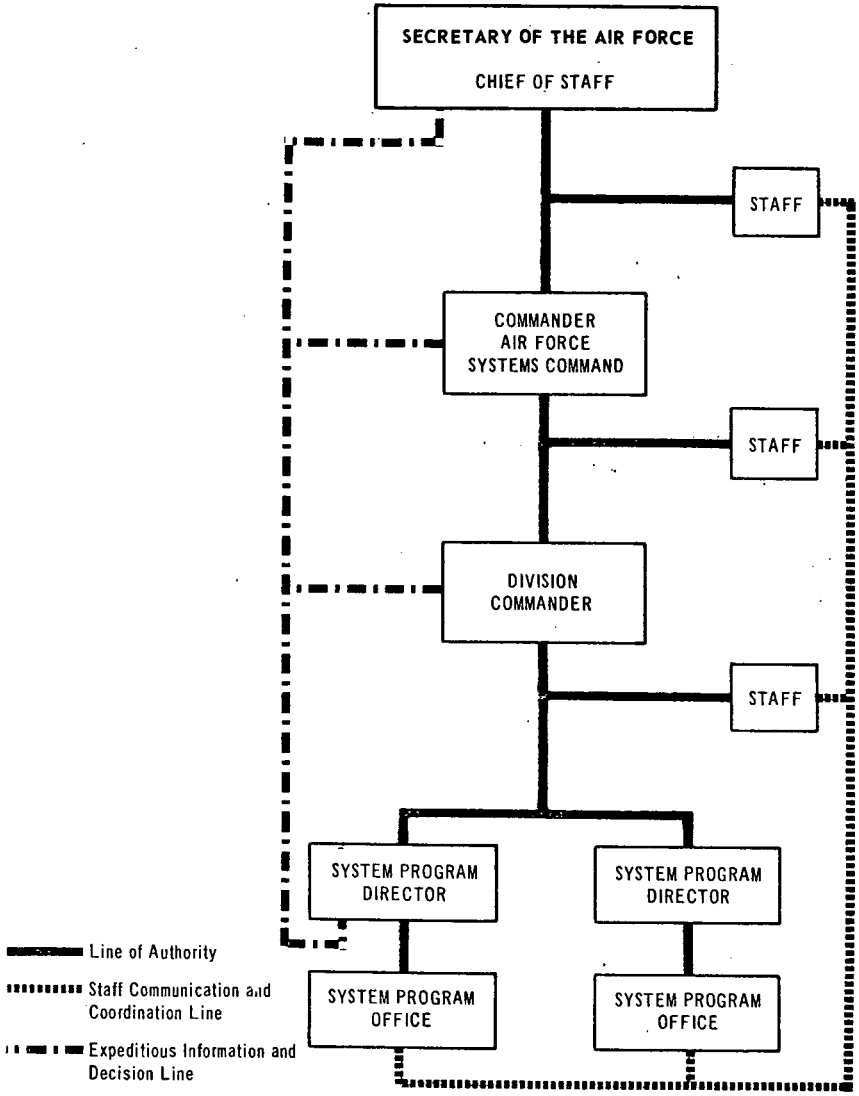


FIGURE VI

DOD-proposed action on
acquisition management problems

The Deputy Secretary of Defense frequently has cited many of the problems in the organization and procedures for managing weapon system programs. He has stated that:

1. Program managers must be given authority to make decisions on major questions relating to the program, both in the conceptual phase and in the full-scale development phase.
2. Program managers must be given more recognition opportunity for career advancement in all the services, and good managers must be rewarded just as good operational people are rewarded.
3. People in program management must be experts in that business and must be assigned to a given program long enough to become effective.
4. The overall structure of the program management function in all services needs to be appraised. Changes must be made to reduce the numerous layers of authority between the program manager and the service secretary.

CHAPTER 3SYSTEM COST EXPERIENCE

Estimates of probable cost to develop major weapon systems are required at various points in the development cycle.

The initial estimate against which all program costs are originally considered is the "planning estimate."

The planning estimate is a formal estimate of cost anticipated in acquiring a system in the quantities needed. It is prepared prior to the initiation of the formal acquisition cycle and usually serves as a basis for the first appropriation request. The planning estimate is prepared by a military department and is approved by the Secretary of Defense.

The planning estimate is followed by an estimate of the cost to develop the system. The "development estimate" is a refinement of the planning estimate and is established during the period in which preliminary design and engineering are verified or accomplished and contract and system management planning are performed. This period frequently extends over a period of one year.

A third estimate, the "total cost estimate," is intended to be a current objective statement of the cost to be incurred in acquiring the total approved program. This estimate is adjusted for increases or decreases in quantities, as well as for cost changes due to inflation, change in scope, capability increase, and program stretch-out.

An estimate also is prepared to disclose costs which are related to the maintenance, operation, or improvement of a weapon system rather than its acquisition cost. Examples are replenishment of spare parts, modifications, component improvement, and common ground equipment. Projected operating costs are not included in this latter kind of estimate.

Nine of the 70 systems we reviewed had just entered the development process. Their status precluded preparation of precise estimates. A summary of program cost estimates for the remaining 61 systems is shown in the table below.

The estimated cost for these 61 systems increased some \$33.4 billion from the cost anticipated by the planning estimate to the current estimate of cost through program completion.

About one third of this increase, or \$9.5 billion, represented the difference between the planning estimate and the development estimate. The remainder of the increase, \$23.9 billion, was due to changes in quantities to be acquired and to a combination of such things as engineering changes, revisions to correct estimates, and provisions for economic inflation.

Cost Estimates as of June 30, 1970

Number of systems	Planning estimate	Development estimate	Cost changes (note a)		Current estimate through program completion	Total cost (note b)
			Quantity	Other		
(millions)						
Army (14)	\$14,869.8	\$14,437.3	-\$1,420.3	\$ 3,308.4	\$ 16,325.4	\$ 17,197.6
Navy (32)	31,516.7	34,867.7	9,265.2	9,168.6	53,301.5	56,335.9
Air Force (15)	37,247.2	43,830.6	-4,632.4	8,220.2	47,418.4	51,896.8
Total (61)	\$83,633.7	\$93,135.6	\$3,212.5	\$20,697.2	\$117,045.3	\$125,430.3

^aThe cost changes shown represent the difference between the development estimates and the reported current estimate through program completion.

^bIncludes additional procurement costs.

GROWTH IN PROGRAM COST ESTIMATES ABOVE PLANNING ESTIMATES*

*Adjusted for Quantity Changes

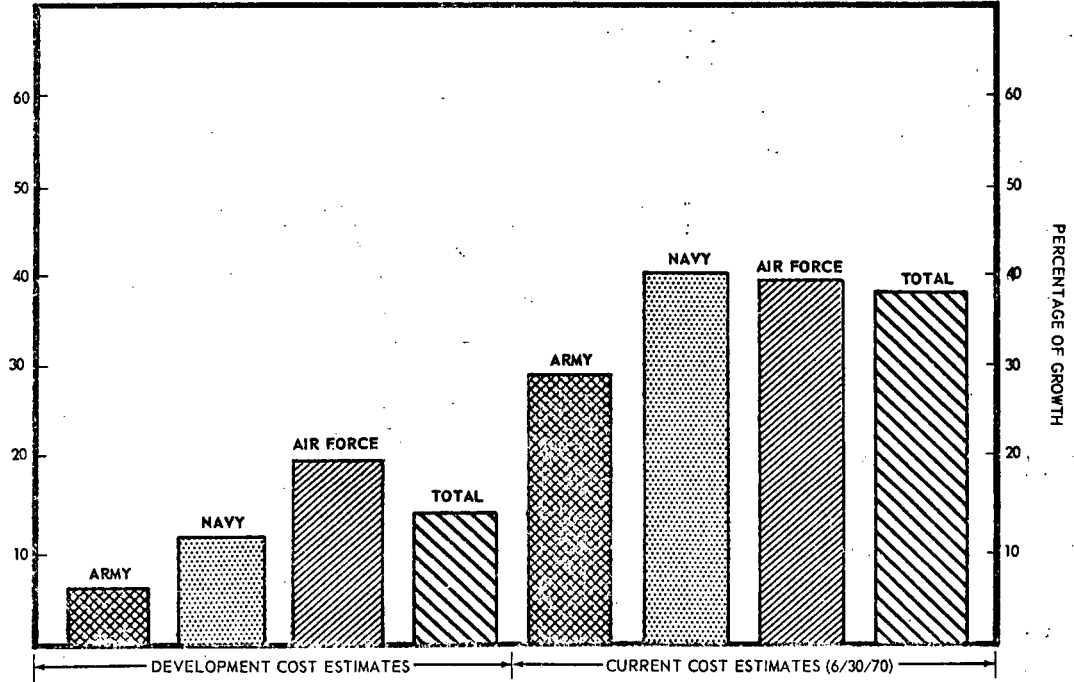


FIGURE VII

59

794

The foregoing chart (figure VII) shows that current estimates through program completion have grown 40 percent in comparison with planning cost estimates for these programs.

Cost growth may result from such things as unanticipated development difficulties, faulty planning, poor management, bad estimating, or deliberate underestimating. However, it is important to recognize, in any analysis or discussion of cost growth, that not all cost growth can reasonably be prevented and that some cost growth, even though preventable, may be desirable. For instance, unusual periods of inflation may result in cost growth. Changes in technology may make it possible to incorporate modifications that result in an overall increase in the effectiveness of the system. Such cost growth cannot always be anticipated, particularly where a weapon system is in development and production over long periods of time.

We stated in our February 6, 1970, report (B-163058) that data were unavailable from which to make any specific identification of program cost estimate variances.

We have suggested that DOD give increased attention to the problem of identifying:

1. Cost growth factors that are not entirely controllable by DOD, such as *inflation*, or those factors that may even be desirable and may be expected to continue, such as *upgrading system performance*.
2. Items that are basic causes for cost growth and could be *eliminated or reduced considerably by appropriate and effective DOD action*.

DOD has made a good start toward accomplishing the intent of our suggestion. Nine categories of cost variance have been established for use in the Selected Acquisition Reporting system (SAR), and program managers have attempted to quantify the impact of cost variances on their programs. Although the precision of these quantifications cannot be completely verified, segregations being made can now be used to focus attention upon areas where improvements can be made.

ANALYSIS OF COST CHANGES AS OF JUNE 30, 1970

The analysis of cost changes on the 52 weapon systems for which SAR data are available is shown in the table below. There has been a net increase in total cost of about \$23,980 million. Quantity increases have amounted to about \$12,600 million. Decreases in program quantities have amounted to about \$10,216 million. Other changes such as engineering, schedule, and economic changes in the 52 weapon programs have amounted to about \$21,597 million.

Analysis of Cost Changes as of June 30, 1970

<u>Type of cost change</u>	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>	<u>Total</u>
	(millions)			
Quantity change:				
Increase	\$1,371.1	\$11,105.5	\$ 122.3	\$12,598.9
Decrease	<u>-3,098.8</u>	<u>-1,760.5</u>	<u>-5,357.1</u>	<u>-10,216.4</u>
Net	<u>-1,727.7</u>	<u>9,345.0</u>	<u>-5,234.8</u>	<u>2,382.5</u>
Other changes:				
Engineering changes	489.3	463.8	3,119.4	4,072.5
Support "	155.2	-57.7	1,268.5	1,366.0
Schedule "	462.1	1,308.7	844.7	2,615.5
Economic "	550.5	1,156.0	2,307.9	4,014.4
Estimating "	1,312.8	3,356.9	1,509.5	6,179.2
Sundry "	-12.7	553.1	544.3	1,084.7
Unidentified "	-	<u>2,264.9</u>	-	<u>2,264.9</u>
Total	<u>2,957.2</u>	<u>9,045.7</u>	<u>9,594.3</u>	<u>21,597.2</u>
Total	<u>\$1,229.5</u>	<u>\$18,390.7</u>	<u>\$4,359.5</u>	<u>\$23,979.7</u>
Number of systems	12	29	11	52

QUANTITY CHANGES

The approval of phase II of the SAFEGUARD system accounts for \$1,365 million of the \$1,371.1 million quantity increase reported by the Army. Three of the Army programs did not reflect any change in the number of units to be acquired. However, seven systems reflected decreases in program costs totaling more than \$3 billion due to reductions in the number of units to be acquired. The largest of these decreases involved the SAM-D (\$1.8 billion) and the MBT-70 (\$600 million). We were informed that many of these reductions were the result of a review by the Department of the Army of its priorities for weapon systems, which was made because of impending budget reductions, and the establishment of the Army's eight highest priority systems.

Analysis of the 29 Navy systems for which data were available shows that 10 systems reported no change in quantities; nine systems reported increased costs totaling \$11.1 billion (due to an increase in planned procurements), and 10 systems reported decreases totaling \$1.8 billion. The largest part of the increase involves three ship programs totaling more than \$7 billion. Included in this amount is \$1.6 billion for 20⁽¹⁾ additional DD-963's, raising the total for this program from 30 ships to 50. Another large part of this increase comes from two aircraft programs totaling more than \$3 billion.

The Air Force reported only a relatively small increase in cost due to quantity, mostly related to the SRAM. Two systems, the F-15 and B-1, reported no change in quantity. Seven systems reported reduced costs due to quantity decreases, totaling \$5.4 billion. Of this amount, \$4.4 billion involved the F-111, the FB-111, and the C-5A and \$600 million involved the AWACS.

Instances of reductions in units acquired, in all services, were offset by increases in other costs for the weapon. Cost growth is obviously a significant reason for reducing the number of units to be acquired in all the services.

¹We were informed in August 1970 that these 20 ships were not considered a firm program.

ENGINEERING CHANGES

An alteration in the established physical or functional characteristics of a system is called an engineering change. Incomplete descriptions of initial performance specifications and changes required to bring system performance up to expected standards have resulted in substantial need for engineering changes. Of the \$4 billion dollars in engineering changes reported by the three services, about \$3.1 billion was accounted for by the Air Force for the F-111, the C-5A, and the MINUTEMAN programs. Engineering changes totaling \$1.8 billion were required to bring the F-111 and C-5A to expected standards, and \$730 million involved changes in the MINUTEMAN to upgrade the system to meet an increased threat.

SUPPORT CHANGES

Support changes involve such items as spare parts, ancillary equipment, warranty provisions, and Government-furnished property/equipment. Relatively small amounts of money were reported in this category for the Army and Navy systems. Support changes in the Air Force amounted to about \$1.3 billion and represented an increase in initial spares for the C-5A (\$230 million) and the F-111 (\$258 million).

SCHEDULE CHANGES

Schedule changes reflect adjustments in the delivery schedule, completion date, or some intermediate milestone of development or production. Cost increases of \$2,615 million were reported as being due to schedule changes. Of this amount, \$947 million involved three Navy aircraft programs (EA-6B, P-3C and A-7E); \$260 million involved the SPARROW missile; and \$747 million involved the F-111. The largest portion of the increase (\$460 million) in Army programs is accounted for by the SAFEGUARD, SAM-D, MBT-70 and the LANCE.

For reporting purposes, identifying such schedule adjustment is probably important. GAO findings indicate that such adjustments are only indicative of other fundamental problems. Schedule changes, as such, are not a primary cause of cost growth.

ECONOMIC CHANGES

Economic changes reflect the influence of one or more factors in the economy. Included are specific contract changes deriving from economic escalation as well as changes in quantity--changing program estimates to reflect a revised economic forecast or changing actual contract quantities.

We were informed by the Assistant Secretary of Defense (Comptroller) that the treatment of anticipated economic escalation in various reports was neither consistent nor uniform within or between services. To rectify these discrepancies, OSD stipulated on June 30, 1970, that the September 30, 1970, SAR reports forecasting future price levels were to be based on a table of percentages.

We have not evaluated this table, however, we believe that there are no reliable indexes on which to base estimates of inflation.

ESTIMATE CHANGES

Estimate changes in a program or project cost are due to corrections in the initial estimate.

The principal estimate change reported on Army systems was \$944 million for the SAM-D missile. The Army's justification for this change in estimate was:

***The total estimate is based on analysis of our previous programs, deriving cost estimating relationships based on the actual growth experience of cost estimates for earlier missile programs, at comparable stages of development.

Specifically, the estimating techniques anticipate unforeseen changes in requirements, performance characteristics, program slippages, funding availability, and quantities produced in specific years. The order of magnitude of those changes actually experienced on previous programs has been used to estimate the magnitude of these costs. While we have calculated the costs based on past

experience, we have also taken steps to seek to prevent the causes of cost growth from occurring on the SAM-D Program. As such, if our efforts are successful, the SAM-D will not require the total funds derived from extrapolating the actual experience of earlier programs. ***"

Two programs in the Navy account for most of its reported changes. The Mark 48 torpedo cost estimate was increased \$2,500 million to correct a series of underestimates which had been prepared from incomplete data. The new estimates projecting production costs were prepared by using the actual prototype costs incurred. The \$300 million estimating change on the Poseidon program corrected a series of overestimates and underestimates--an aggregate of smaller sums.

Three programs account for most of the reported estimating changes from the Air Force. The F-111 aircraft program reported price increases of about \$670 million over earlier estimates on the contracts of numerous contractors involved in the program.

The SRAM cost estimate was increased \$398 million due to underestimation of the costs of development tasks involved, while the C-5A aircraft cost estimate was increased \$301 million by the Air Force to rectify contractor underestimates for producing this aircraft.

UNIDENTIFIED CAUSES FOR COST CHANGE

Summary data showing a cumulative variance analysis and the variance analysis changes since the last reporting period were either not provided or were incomplete for 15 Navy systems. For this reason, cost changes in Navy systems totaling \$2,264.9 million could not be specifically allocated. We have been told by the Navy that cost changes will be allocated and shown in the December 31, 1970, SAR.

SAR SYSTEM

As we reported to the Congress in February 1970, the SAR system represents a valuable management tool for measuring and monitoring the progress of major acquisitions. DOD has tried to improve the format, content, and data in the SAR.

Although our review of the June 30, 1970, SAR confirmed that improvements were made during the last year, some improvements still were needed.

SAR does not (1) contain a summary statement regarding overall acceptability of the system for part or all of its mission, (2) show the status of major system components being separately developed, nor (3) reflect the current status of program accomplishment. Separate development could result in significant costs if the major system component encountered development problems that adversely affected the entire weapon system's performance.

Waivers of major milestone criteria, with an explanation of the attendant risk therefrom, are not highlighted or discussed in the summary section of SAR.

CHAPTER 4SYSTEM SCHEDULE EXPERIENCE

Our review of the efforts of the military departments to correctly estimate initial delivery dates for about 50 weapon systems indicates that, on the average, the weapon systems experienced 33 percent schedule slippage. Average cost growth of these systems was approximately 30 percent.

The following charts show the percentage of schedule slippage by commodity class of weapon systems (figure VIII) and the percentage of cost growth (figure IX).

The schedule percentages were determined by comparing the time originally estimated for reaching the initial operational capability date (initial delivery dates of the systems to the military departments) from the beginning of the acquisition cycle with the current estimate (as of June 30, 1970) of the same period.

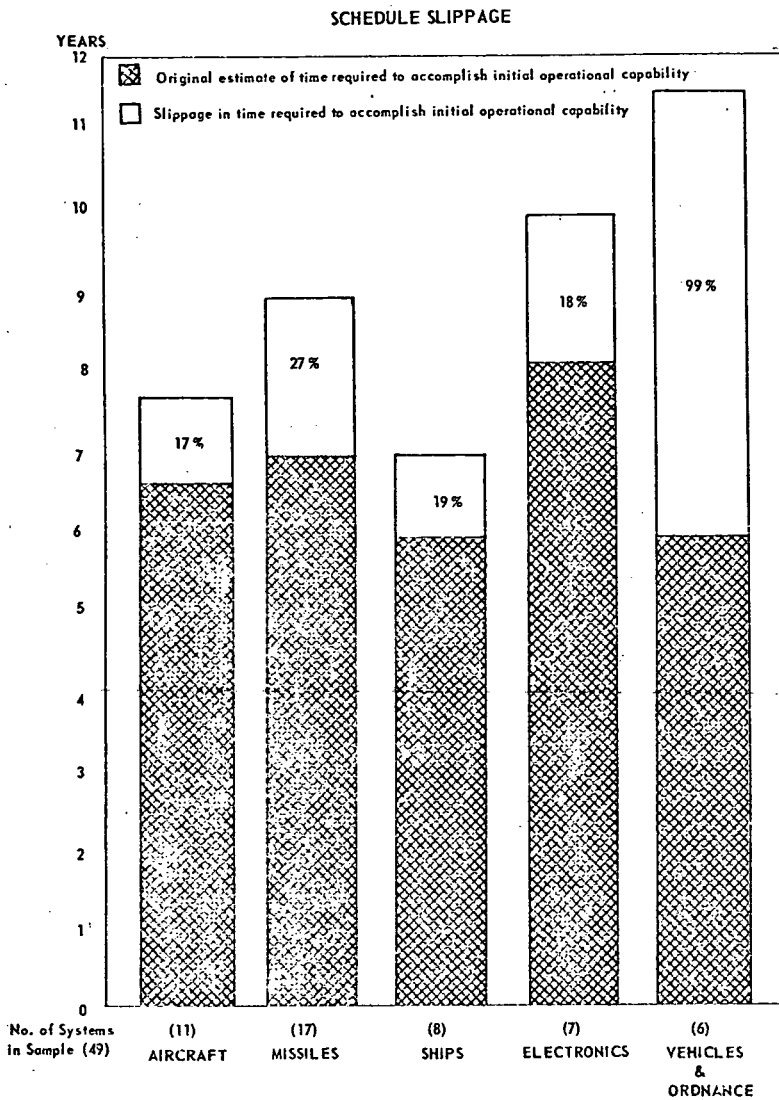


FIGURE VIII

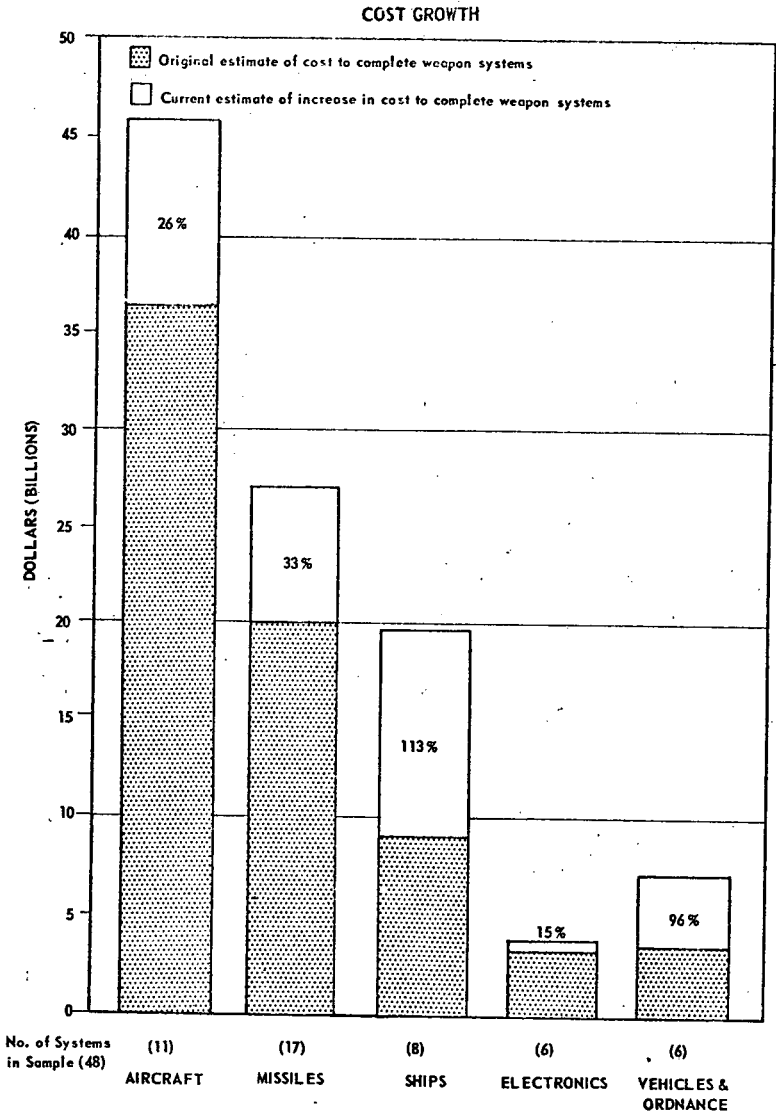


FIGURE IX

CHAPTER 5GENERAL OBSERVATIONS, CONCLUSIONSAND RECOMMENDATIONS

In the last several months, the Office of the Secretary of Defense and the military services have been engaged in a substantial effort to resolve problems identified as adversely affecting the acquisition of major weapon systems. These problems include compromised performance, delayed availability, and increased costs. Generally, the more recent weapon programs are characterized by a slower development pace and more conservative procurement practices than those of earlier periods. Because many of these programs are in early stages of acquisition, physical evidence of the success of changed concepts is not yet available for assessment; but the outlook is brighter. Troublesome problems remain to be solved, particularly in selection of and assignment of priorities to weapons for development and in organizational matters.

The statement of the Deputy Secretary of Defense in September 1970 before the Committee on Government Operations, House of Representatives, on organizational and other problems related to new weapon systems development and acquisition, leads us to conclude that he has accurately appraised the problems and the actions needed to resolve them. The actions he proposes are basic, but their implementation will not be easy because they involve changes in traditional concepts and management practices that are firmly implanted in DOD.

Programs are under way in the military departments to improve the acquisition process. For example, AMC started a comprehensive improvement program on October 1, 1969, called PROMAP-70. Among this program's 52 objectives are improved definition of requirements, analysis of technical risk, upgraded selection criteria, and stabilized tours for officers assigned to project management, as well as improved coordination and conduct of tests. The Army has informed us that results already obtained in this program have shown substantial progress in application of these improvements to current programs. An important consideration in our future

reviews will be an assessment of the success of these improvement programs.

General observations on the matters we have studied, conclusions we have drawn from that review, and our recommendations, follow.

A. Identification of need for
and relative priority of individual systems

The clear identification of a new weapon's mission is probably the single, most fundamental task that must be completed before the development process can begin. Our study of the history of a fairly large sample of weapon systems, however, leads us to conclude that the function of deciding which weapons will be developed is not yet being done with the degree of effectiveness that this important function warrants.

Seemingly, the entire structure of the military service and OSD are involved in this process, in one way or another, and the long and imprecise process of defining and justifying and of redefining and rejustifying a weapon system, through many layers of involvement, invariably has delayed decisions and has extended stated availability dates by years.

The cumulative effect of the involvement of many different organizational units in the decision to justify and then to proceed with development is the root cause of long delays in development decisions. Almost every weapon system we studied showed some substantial degree of uncertainty as to whether, when, or in what form the weapon should be developed.

In addition to clarifying and improving the initial decision process (which is now going on in the DOD), establishing a mechanism which defines the priority position of a weapon program in relation to its competitors is equally important. *We believe that the development of a comprehensive DOD-wide priority system is a first step toward alleviating a part of the difficulty we observed in obtaining weapon systems development decisions and toward incorporating stability into programs.*

Our study revealed an emerging effort, initiated within OSD during the summer of 1970, and termed "a new concept." It is intended to provide the Secretary of Defense with a broad overview of each mission category, including identification of major issues. Although this effort appears to embody many of the essentials of an overall priority system, it is still in its infancy.

Recommendation--The Secretary of Defense should make every effort to develop and perfect the DOD-wide method--now in its early stages of development--designed to be followed by all military services for determining two things: First, what weapon systems are needed in relation to the DOD missions. Second, what the priority of each should be in relation to other systems and their missions.

B. Definition of performance characteristics and assessment of technical risks

In the last several months, persistent problems in defining performance characteristics of weapon systems and in determining technical feasibility for achievement have been receiving extensive attention at both OSD and the military service levels. On the basis of our study of recent weapon systems procurement, we see many encouraging signs that these problems are being abated.

Extensive efforts are being applied, early in the process, to identifying high-risk design areas and to constructing and testing actual hardware to demonstrate feasibility of high-risk components before proceeding with further development. Similarly, current use of the demonstration milestone provisions in development contracts limits the Government's financial commitment pending a system's demonstrated performance.

C. Standards for and consistent use of cost-effectiveness studies

We saw wide variation in the quality of preparation and follow-through given to cost-effectiveness determinations supporting weapon systems acquisition decisions.

The variations in quality may be due to evolving methodology for, and use of, cost-effectiveness studies. There is no evidence that DOD criteria for judging the adequacy of cost-effectiveness studies are being applied.

We are convinced that the lack of clear guidelines for the preparation and application of cost-effectiveness studies has resulted in misunderstanding of their purpose, has contributed significantly to diversity in execution by the military services; and has lessened the value of cost-effectiveness studies to the entire acquisition process.

Recommendations--The Secretary of Defense should require that (1) cost-effectiveness studies meet certain standards (including the identification of which weapon system and which considerations should be included in such studies) and (2) cost-effectiveness studies be updated at each point where a major program alternative is considered.

With regard to the latter recommendation, we noted that instructions now require cost-effectiveness studies to be prepared at major decision points in the program. These decision points are validation, full-scale development, and production.

D. Subsystem development phasing and interfacing

A major problem recurring in the weapon systems acquisition process is the compromise of system performance that occurs when a principal element of the system follows a development cycle not compatible with that of the primary system. This incompatibility occurred most frequently when the responsibility for the development of the parts of a system was divided among two or more project managers. The results were imbalance in time-phasing of subsystems in some weapon programs and incompatibility of technical interfaces in others.

We believe that the program manager authority should cover all technical effort on all principal elements of the weapon. Whenever a principal element is common to more than one weapon system, specific steps must be taken to ensure its development and acquisition in order to meet the technical

specifications required by each of the major systems which will employ it. One way of handling that might be to give authority over the element to the manager of the more crucial major system.

E. Assessment of technical performance

In weapon programs we examined which were well along in the acquisition process, were finishing development, or were in production, we noted that assessment of progress against the development program was hampered by lack of early test results from technical high-risk areas. When technical problems are revealed by testing, there have frequently been aspects that had not been formally identified as technically risky early in the program and therefore had not been given the special attention needed during development. Some programs have encountered such serious technical problems that degradation from required performance has been accepted.

More sharply defined technical risk analysis with special emphasis applied to technical high-risk aspects of the new weapon system should give the military services a means of evaluating development progress earlier, and more accurately, than is presently possible.

In recently initiated weapon programs, we found that special care is being taken to identify the high-risk components and to fabricate them for testing in laboratory models before proceeding with development of the complete weapon system. We believe that this is a step in the right direction.

F. Organization and procedures

In our judgment, one of the most important unresolved problems in the management of major acquisitions is the problem of organization. The problems arising from establishment of need, for instance, are related to organizational deficiencies.

The essence of the problem appears to come from attempts to combine the specialized roles of major weapon systems acquisition management into more or less historical

military command structure organizations. Because of this, there usually are a large number of organizational units not directly involved in the project which can only negatively influence it. In the Army and the Navy and to a lesser extent in the Air Force, project managers are part of organizations, whose basic missions are considerably broader than the managers' missions, with which organizations they must compete for resources.

As a matter of fact, each military service alters traditional organization patterns when faced with managing major programs. Although not recognized as a super program, inherent organizational problems of the F-15 program were successfully overcome by the program's having been placed in the organization in such a way that the privileges of substantial military rank could be exercised as a means of bypassing organizational layers. The value of this reorganization is that the project manager has been given stature and authority so as to be unencumbered by normal frustrations produced by cooperation with the functional organizations.

Each of the services has begun to upgrade the rank of project managers. But military rank alone will not accomplish what OSD and the military services are trying to do.

In our opinion, lessons learned from organizational changes in structure for the super programs can aptly be applied to the whole subject of weapon systems acquisition. It may be impractical to treat each of the large number of projects now under way in the military departments in a similar manner. But, it occurs to us that, ideally, there should be a direct relationship between the way weapon systems requirements are categorized (strategic deterrent, land warfare, ocean control, etc.) and the organizational structure needed to acquire them. Such an arrangement would facilitate grouping related weapon systems in "packages" of common mission and would permit putting together an acquisition organization of appropriate size and stature to handle the expanded concept. We believe that eventually program management will evolve along mission lines.

There are other alternatives, but whichever is chosen must clearly provide for someone to be in charge, to have

clear authority to make decisions, and to have full responsibility for the results. The Deputy Secretary of Defense recognizes that correction of this problem is fundamental to any real improvement and has stated that he plans to pursue it aggressively.

Recommendations--The Secretary of Defense should place greater decisionmaking authority for each major acquisition in a single organization, within the service concerned, with more direct control over the operations of weapon system programs and with sufficient status to overcome organizational conflict between weapon system managers and the traditional functional organization.

G. System cost experience

Our analysis of the estimated costs to develop 61 major weapon systems which are prepared at various points in the development cycle shows that the current estimates through program completion have grown 40 percent in comparison to the planning cost estimates for these programs.

Cost growth may result from such things as unanticipated development difficulties, faulty planning, poor management, bad estimating, or deliberate underestimating. However, it should be realized that not all cost growth can be reasonably prevented, for instance, cost growth resulting from inflation. Further, some cost growth may even be desirable, for instance, incorporation of technological changes that improve the system effectiveness.

Regarding our observations made last year, we found that DOD had made a good start toward developing data that specifically identifies the variances in program cost estimates for systems reported under the SAR system. We observed, however, that on 15 Navy systems the causes for cost change were either not provided or were incomplete.

DOD also has acted to improve the format, content, and data in the SARs. Our review confirmed those improvements made during the last year. We found, however, that some improvements still are needed.

Recommendations--The Secretary of Defense should ensure that the SARs (1) contain a summary statement regarding the overall acceptability of the weapon for its mission, (2) recognize the relationship of other weapon systems complementary to the subject system, and (3) reflect the current status of program accomplishment.

SCHEDULE OF PROGRAM COST DATA
AS OF JUNE 30, 1970, AND ARRANGED BY
ACQUISITION PHASE AND MILITARY SERVICE

	Planning estimate	Development estimate	Cost change		Current estimate	Additional procurement costs	Total costs
			Quantity	Other			
(millions)							
CONCEPTUAL PHASE (9) (note a)							
VALIDATION/RATIFICATION (4):							
Army:							
None							
Navy:							
DLGN 38	769.2	769.2	3,210.8	1,510.3	5,490.3	-	5,490.3
SSN-688	1,658.0	1,658.0	2,376.0	245.7	4,279.7	-	4,279.7
Air Force:							
AX	1,025.5	1,025.5	-	-	1,025.5	-	1,025.5
OTH-B (note d)	100.9	100.9	-	3.9	104.8	-	104.8
ENGINEERING AND/OR OPERATIONAL SYSTEMS DEVELOPMENT (57):							
Army:							
Cheyenne (note b)							
Shillelagh	125.9	125.9	-	76.2	202.1	-	202.1
SAFEGUARD	357.4	357.4	-18.1	156.5	495.8	25.8	521.6
DRAGON	4,185.0	-	1,365.0	389.0	5,939.0	-	5,939.0
SAM-D (note c)	382.2	404.2	-232.7	75.9	247.4	37.4	284.8
LANCE	4,916.8	3,989.0	-1,791.4	1,215.9	3,413.5	82.4	3,495.9
TOM	386.7	652.9	-	103.2	761.1	50.4	851.5
Improved HAWK	410.4	737.3	-300.1	248.1	675.3	33.3	708.6
M-50 A1E2	573.3	573.3	-79.8	210.8	704.3	107.2	811.5
MBT-70	162.1	202.6	-15.0	172.5	359.3	16.5	375.8
Sheridan Tank (note f)	2,126.5	2,091.4	-602.4	336.7	1,825.7	293.3	2,119.0
Sheridan Ammunition	422.5	375.6	-13.1	93.4	455.9	31.6	487.5
GAMA GOAT	370.1	370.1	-125.2	105.9	350.8	-	350.8
CHAP/VULCAN	69.1	163.9	6.1	16.9	186.9	11.7	198.6
TACFIRE	58.2	58.2	387.2	78.4	523.8	138.8	662.6
	123.6	160.5	-	24.0	184.5	3.8	188.3
Navy:							
S-3A	1,763.8	2,891.1	-	42.7	2,933.8	20.6	2,954.4
F-14	6,166.0	6,166.0	2,036.1	77.0	8,279.1	294.4	8,573.5
EA-6B	689.7	817.7	-50.7	291.6	1,058.6	31.5	1,090.1
F-3C	1,294.2	1,294.2	971.1	285.7	2,551.0	59.0	2,610.0
A-7E	1,465.6	1,465.6	-385.3	494.4	1,574.7	91.7	1,666.4
AN/SQS-23	157.1	170.5	-82.7	144.5	232.3	50.8	283.1
AN/SQS-26	95.7	88.8	-	30.8	119.6	-	119.6
AN/BQQ-2	126.9	179.0	-	86.2	265.2	33.5	298.7
DIPAR	178.5	414.1	97.0	46.9	558.0	(e)	558.0
VAST AN/USM-335	49.8	57.5	-26.6	22.5	53.4	1.4	54.8
VAST AN/USM-247	241.1	312.0	-182.2	282.6	412.4	77.3	489.7
FROENTIX	370.8	677.4	642.3	181.2	1,500.9	11.0	1,511.9
CNDOR	356.3	441.0	-220.9	131.3	351.4	1.9	353.3
POSEIDON	-	4,568.7	-243.6	790.2	5,115.3	1,740.2	6,855.5
Standard ARM	180.3	241.6	-10.4	-20.2	211.0	17.2	228.2
Sparrow E	687.2	740.7	-459.8	11.7	292.6	32.5	325.1
Sparrow F	139.8	453.6	114.7	489.9	1,058.2	26.3	1,084.5
Standard	313.2	-	-7.0	34.0	340.2	468.1	808.3
Mark 48 Mod 0s1	720.5	714.0	488.9	2,554.3	3,757.2	28.2	3,785.4
LHA	1,380.3	1,380.3	-	47.5	1,427.8	8.2	1,436.0
CVAN-68	427.5	-	-	116.7	544.2	-	544.2
CVAN-69	519.0	-	-	-	519.0	-	519.0
DE-1052	1,285.1	1,259.7	-	167.9	1,427.6	(e)	1,427.6
SSN-637	-	2,515.8	-	397.3	2,913.1	-	2,913.1
SSN-685	100.8	151.7	-	23.4	175.1	-	175.1
ILC modernization	698.8	698.8	-	153.4	852.2	-	852.2
AMTRAC	324.4	328.5	-129.8	-12.6	186.1	10.0	196.1
DSRV	100.2	143.7	-41.3	101.9	204.3	30.6	234.9
DD-963	1,784.4	2,581.2	1,595.4	-	4,176.6	-	4,176.6
AECIS (note g)	388.0	427.6	-	13.0	440.6	-	440.6

APPENDIX I
Page 2

	Planning <u>estimate</u>	Development <u>estimate</u>	Cost change		Current <u>estimate</u>	Additional procurement <u>costs</u>	Total <u>costs</u>
			Quantity	Other			
(millions)							
ENGINEERING AND/OR OPERATIONAL SYSTEMS DEVELOPMENT (57) (continued):							
Air Force:							
B-1	8,954.3	10,107.8	-	-	10,107.8	392.9	10,500.7
F-15 (note h)	6,039.1	7,355.2	-	1.2	7,356.4	763.7	8,120.1
C-5A	3,423.0	3,413.2	-736.2	1,631.6	4,308.6	285.7	4,594.3
F-111 A/C/D/E/F	4,686.6	5,505.0	-2,581.3	3,456.6	6,380.3	960.3	7,340.6
FB-111	1,781.5	1,781.5	-1,043.3	468.7	1,206.9	231.6	1,438.5
A-7D	1,379.1	1,379.1	-282.6	303.1	1,399.6	173.5	1,573.1
AWACS	2,656.7	2,661.6	-	-	2,661.6	126.0	2,787.6
MAVERICK	257.9	383.4	-73.6	33.8	343.6	8.0	351.6
TITAN III	932.2	814.1	-	373.8	1,187.9	(e)	1,187.9
SRAM	167.1	236.6	118.3	735.8	1,090.7	590.9	1,681.6
Minuteman II	3,014.1	4,254.9	4.0	207.5	4,466.4	583.2	5,049.6
Minuteman III	2,695.5	4,673.8	-37.7	999.1	5,635.2	362.6	5,997.8
777 COMSAT	133.5	138.0	-	5.1	143.1	-	143.1

^aComparative cost data not available for systems in this phase.

^bThe Cheyenne costs represented research and development costs only. The production contract was terminated on May 19, 1969. Due to pending litigations, the Army's liability was unknown.

^cArmy officials advised us that, while the SAM-D had gone through contract definition, contract award had been limited to advance development.

^dCost data as of August-31, 1970, for the OTH-B.

^eData were not available for inclusion.

^fThe DOD considered this as an annex to the Sheridan vehicle and not a weapon system itself.

^gResearch and development costs only.

^hThe original Development Concept Paper No. 19 dated Sept. 28, 1968, contained a preliminary planning estimate for lower quantity of F-15's as \$5,137 million.

DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

22 JAN 1971

Mr. C. M. Bailey
Director, Defense Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Bailey:

This letter is in response to the request of Mr. Hassell Bell of your organization for informal comments on GAO draft report "The First Report on the Continuing Evaluation of the Acquisition of Major Weapons Systems" (OSD Case #3219).

I know that you appreciate the extremely limited time the DoD had to review this report. However, in recognition of the equally limited time which Mr. Bell indicated the GAO has to meet its commitment for submission of the report to the Congress, we have done our best to prepare a general reaction to it. Because of the nature and importance of this subject, we will want to examine the final report further in a more thorough and logical fashion. It would be appreciated if your report to the Congress could indicate the fact that the DoD has not had sufficient time to make such a review.

We have reviewed the draft report and believe that your recommendations address important aspects of the weapon system process. We agree in particular that we have not yet solved some of the organizational problems and we will see that your report is made available to the Services and OSD offices which are working on those problems.

We do appreciate the recognition that you give to the DoD efforts to improve its management of weapon systems acquisition, and we know that you realize we are giving considerable time and attention to further improvements.

APPENDIX II

Page 2

As you know, we are carrying on comprehensive evaluations of this management problem here in the Department. GAO reviews, such as this, will be of benefit to us, particularly by giving us an independent review and evaluation of our options. We are pleased to assist you by providing these informal comments on the draft report. We will forward more detailed comments after we have made a more thorough evaluation of the report, if you feel that would be helpful.

Sincerely,



John S. Foster, Jr.

Attachment II

APPLICATION OF "SHOULD COST" CONCEPTS IN REVIEWS OF CONTRACTORS' OPERATIONS, DEPARTMENT OF DEFENSE, B-159896

WHY THE REVIEW WAS MADE

In May 1969, the Subcommittee on Economy in Government, Joint Economic Committee, reporting on "The Economics of Military Procurement," expressed concern that the traditional method of pricing negotiated contracts—primarily on the basis of past or historical costs—did not protect the interests of the Government adequately.

The Subcommittee recommended that the General Accounting Office (GAO) :
"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 should-cost approach attempts to determine the amount that weapons systems or products ought to cost, given attainable efficiency and economy of operations.

In May 1970, GAO reported to the Congress that it appeared to be feasible to apply should-cost concepts in its reviews. GAO also stated that it would perform trial reviews of this type to obtain additional information concerning benefits that could be realized and problems that might be encountered.

This report presents GAO's findings and conclusions based on its trial applications of should-cost concepts.

FINDINGS AND CONCLUSIONS

On the basis of four trial reviews applying should-cost techniques, GAO has concluded that such reviews can be extremely beneficial and that it should make should-cost-type reviews in the future.

GAO found a number of areas at each of four contractor plants where increased management attention could result in lower costs to the Government. For example, improvements were needed in production planning and control, there was a need for increased competition in the procurement of material from subcontractors, and higher quality engineering talent was utilized than was required by the nature of the work being performed.

GAO brought the specific findings to the attention of appropriate contractor and agency officials and made suggestions for improvements. (See pp. 8 to 10 and 14 to 15.)

Although should-cost review techniques primarily are intended to find out how contractors' operations can be improved, they also lead to disclosures of areas where Government contracting or administration practices affect contract costs adversely. GAO noted instances of excessive packaging requirements, failure to consolidate purchasing, and excessive testing requirements. (See p. 14 and 15.)

The total savings which could accrue to the Government as a result of the GAO reviews and the resulting improvements in contractor and Government management practices cannot be determined readily because the effects on costs of certain of the suggestions could not be measured readily. In those instances where they could be determined, the savings amounted to almost \$6 million. (See p. 33.)

The military services have performed should-cost reviews in order to be in a better position to negotiate contract prices for major weapons systems. Recognizing that the negotiation of contract prices is the responsibility of the procuring agency, GAO believes that its reviews should not be conducted in a preaward environment.

Future GAO reviews therefore will attempt to evaluate how procuring agencies and contract administrators are discharging their responsibilities and to suggest ways in which contractors can reduce the costs to the Government. (See p. 21.)

Procuring agencies that perform should-cost reviews prior to the awards of major contracts are in a strategic position to obtain contractor cooperation and concurrence in changes needed. Application of should-cost concepts during preaward reviews enables Government contracting officers to negotiate from positions of strength because the comprehensive findings and observations of the review teams are available during negotiations. Since this type of information is available, the contracting officer can influence the contractor to adopt recommendations for improved operations. (See p. 21.)

Although GAO had some success in encouraging contractors to study and/or improve their operations, GAO could not be as effective as the procuring agencies

in motivating the contractors. There was no obligation on the part of contractors to accept the suggestions of the GAO review teams, and in some instances no interest was shown in considering GAO proposals objectively. In other instances contractors took a positive attitude toward reducing the costs of future operations. (See p. 22.)

The success of future reviews of this type by GAO probably will depend almost entirely on the cooperation of contractors and on the extent to which the Department of Defense contracting officials apply GAO findings and recommendations during negotiations of contracts. (See p. 22.)

AGENCY AND CONTRACTOR COMMENTS

The Office of the Assistant Secretary of Defense (Installations and Logistics) advised GAO that the Department of Defense agencies concerned would look into the specific matters reported by GAO at the contractors' plants.

Pertinent contractor comments were:

GAO should place greater emphasis on reviewing overall Government and contractor procurement systems rather than detailed costs.

There should be some additional evaluation of cost benefits resulting from should-cost reviews versus the costs of accomplishment.

Additional statutory authority for GAO may not be necessary.

GAO does place primary emphasis on evaluating procurement systems rather than detailed costs, and GAO reviews are so designed. GAO also applies criteria to ensure, insofar as possible, that the benefits resulting from should-cost reviews will be significant in relation to the costs of making the reviews.

MATTERS FOR CONSIDERATION BY THE CONGRESS

Should-cost reviews require examinations into many facets of contractors' operations and management. The present provisions of GAO's statutory authority to examine contractors' records are not broad enough to enable GAO to cover all of the matters which should be considered. The Congress therefore may wish to consider expanding GAO's statutory authority to enable GAO to make effective should-cost reviews on an independent basis.

Attachment III

PROCEDURES USED BY THE GENERAL ACCOUNTING OFFICE IN DEVELOPING PROFITS OF DEFENSE CONTRACTORS

QUESTIONNAIRE DATA

We developed a questionnaire to obtain annual information from selected contractors for the years 1966 through 1969 on sales, profits, total capital investment, and contractor equity investment for defense business and comparable commercial sales. Provision was made for separate reporting of the operating results for Government-owned contractor-operated (GOCO) facilities and similar activities requiring little or no contractor investment, to prevent distortion of data on return on capital.

Questionnaires were sent to 154 contractors which, as a group, had received (1) about 60 percent of recent DOD prime contract awards of \$10,000 or more, (2) about 80 percent of similar NASA contract awards, and (3) a significant part of AEC and Coast Guard contract awards. The 154 contractors included the 81 largest DOD contractors, excluding oil companies and nonprofit companies, taken from a list of the 100 contractors and their subsidiaries receiving the largest dollar volume of military prime contracts of \$10,000 or more in fiscal year 1969. Oil companies were excluded because a major part of the procurement involved had been advertised or awarded through price competition and would not have been affected by DOD's policies in negotiating profit.

In summarizing data for large DOD contractors, a large corporation was excluded because its great volume of commercial sales would have substantially altered our commercial data and the result would not have been representative of most of the companies included in the study. Also, the defense business of 6 of the large contractors was primarily in GOCO type work which we summarized separately. Thus, our annual profit data for large contractors pertains to 74 companies.

We selected 63 additional contractors by taking (1) every 72nd contractor from an alphabetical list of DOD contractors receiving awards of \$10,000 or

more and totaling \$500,000 or more in fiscal year 1968, exclusive of the 81 top contractors and their subsidiary companies already selected, and (2) some AEC contractors. Two of these contractors had gone out of business at the time of our study, so that our results for the smaller contractors are based on replies for 61 contractors. The 61 included 47 smaller defense contractors and 14 AEC contractors.

We also obtained data from 10 contractors who received a major part of their defense business in the form of subcontract awards.

A random selection of 40 of the 154 questionnaires was made for verification at the contractors' plants. Each of the above groups was represented in the 40 questionnaires selected. In addition, each remaining questionnaire was carefully reviewed and verified through calls, letters, and follow-up visits to the contractors' offices. We also checked to see whether the data provided agreed with similar data in the contractors' audited financial statements and appeared reasonable.

In summarizing the questionnaires for the 74 large DOD contractors we found that profit on defense work measured as a percent of sales was significantly lower than on comparable commercial work. Due to the effect of Government-furnished capital, we found that when profit was considered as a percent of total invested capital, the difference narrowed and when profit was considered as a percent of equity capital there was little difference between the rate of return for defense work and that for commercial work.

Attachment IV

PROCEDURES USED IN REVIEW OF INDIVIDUAL CONTRACTS

In reviewing hearings of the Subcommittee on Economy in Government on the subject of the economics of military procurement, we noted considerable concern that return on capital had not been considered in negotiating defense contract prices. For example, on page 16 of published hearings for November 11 through 14, 1968, Admiral Rickover discussed (1) two cases where a low percentage of profit based on costs was very misleading without consideration of the rate of return on capital, and (2) that under the present system of determining profits as a percentage of estimated costs a contractor who increases his efficiency may in the long run lose profit, since the latter is determined as a percent of cost.

Later, after our review had started, in hearings before the same Subcommittee in May of 1970, Mr. Robert N. Anthony, a former DOD comptroller, commented on the need for the computation of defense profits, at least in part, as a percentage of capital employed.

We also had developed some thoughts as to the need for consideration of invested capital in negotiating defense contract profits from work we had done in examining into the use of the weighted guidelines for the House Appropriations Committee in 1967 and from other contract audit work that we had done in the Department of Defense.

As a result, in addition to the annual profit data developed through our questionnaire, we decided to review a number of individual contracts in order to determine whether it was generally practicable to develop return on investment data by contract and to see whether there was a great range in rates of return for individual contracts, particularly rates of return on capital.

We initially considered obtaining a representative sample of recently completed defense contracts, however, we soon abandoned this idea because of the lack of a readily available identification of the universe from which a random sample could be selected. We planned to base our study on completed contracts in order that there would be no question as to what the actual profits were.

The population of Department of Defense contracts completed during any period is unknown but might be constructed by querying every contractor that had received contract awards. About 180,000 contract actions of \$10,000 or more are consummated each year by DOD. However, even if the population was limited to contracts over \$1 million we estimate that the number of such contract awards amounts to about 5000 per year and involve over 800 contractors.

One possible approach to obtaining a viable population could have been to obtain a listing from each of the 74 larger DOD contractors, covered in the questionnaire phase of our study, of all contracts completed during the four year period of our study, regardless of when they were awarded. This in itself

would have been a formidable job since many of the 74 contractors were made up of numerous subsidiary companies. For example, one contractor consisted of more than 100 subsidiary companies as well as numerous organizational contracting points below that level that would have been involved in reporting on completed contracts.

Once these listings were obtained it would have been necessary to check a number at the site to determine whether they were accurate and complete prior to inclusion in a population from which selections might be made. We have no real way of estimating how many contracts would be included in this population.

If we could have developed a population it would then have been necessary to take a random sample to determine the final sample size necessary to produce statistics that would be of an acceptable level of reliability. We decided that this approach would not be feasible and decided to use a judgment sample instead. A judgment sample cannot be objectively evaluated by statistical methods. This precludes determination of representativeness and any basis for measuring and quantitatively expressing the sampling error (precision) and associated degree of confidence in the sample estimates. From pilot reviews we estimated that it would take an average of 75 man-days to develop profit and investment data for a contract. On the basis of spending about 10 to 11 thousand man-days on this phase of the study, we estimated that we could cover a maximum of about 150 contracts. Further, to have the work done on a timely basis we planned on reviewing about 4 contracts at each of the 40 locations. We actually did work at 37 contractors' plants and these were selected based upon consideration of the following factors:

(1) Those with the largest volume of DOD awards during 1968.

(2) Products involved—we wanted to cover the major areas where defense dollars are being spent. Such as aircraft, missiles, tank-automotive, weapons, ammunition, electronics, communications equipment.

(3) Availability of qualified personnel and workload of our regional offices.

We computed profit as a percentage of sales and of costs for each contract. We also computed profit as a percentage of the contractor's capital employed in contract performance. We excluded consideration of Government-furnished capital and leased assets as we were interested in the rate of return on resources provided by the contractor. Our computation of total capital employed included provision for the cost of work in process, finished goods, accounts receivable, fixed assets, and other assets such as cash, raw materials, and prepaid expenses.

The assets discussed above were financed on an overall basis by current liabilities, long-term debt, and equity capital. We refer to this overall investment in assets as total capital invested (TCI). In computing rate of return on TCI, we added interest expense to net profit, since interest represents the return to the providers of debt capital.

After determining average contract total capital investment, we completed the approximate contract equity capital investment. This was done on the basis of the overall corporate relationship of equity capital to the total liabilities and capital. The rate of return on equity capital was based on net contract income before Federal income taxes but after deducting all contractor expenses allocable to the contract, including interest expense.

The profit rates we computed in our contract reviews were substantially higher than the annual profit rates developed from our questionnaires. A comparison of the rates of return on total capital investment for the 37 companies involved showed 28 companies with higher rates of return for the individual contracts and 9 companies with higher rates of return shown in their questionnaires. A discrepancy was not unexpected since we had used a judgment sample in our contract reviews and it would have been pure coincidence if the rates had turned out the same. We obtained numerous explanations for the differences between the contract and annual profit data of the 37 contractors. A few examples are as follows:

1. The contracts we reviewed for one company were primarily related to production of missiles and rockets. These showed about 6 times (34.2% versus 5.8% respectively) the annual rates of return on TCI that the company reported in the questionnaire. The lower annual rates of return were due to significant losses in other divisions involving shipyard operations, torpedo production, start up costs of a new ordnance plant, and certain fixed-price development contracts.

2. The contracts we reviewed for another company were for missiles and showed about 10 times the rate of return on TCI of the company as a whole (48% and 4.7% respectively). While the rates of return on contracts were

representative of the particular company segment where they were performed, they were not representative of the company as a whole. Two of the four contracts involved low investments and high contract profits due to the earning of incentives. Other segments of this corporation were incurring losses on a variety of aircraft and ship construction projects for DOD, thus pulling down the overall average rate of return on capital for the entire company.

3. Contracts were reviewed in the aerospace division of another corporation showed about 3 times the rate of return on TCI of the company as a whole (28.2% and 10.2% respectively). Four of the five contracts (3FPI & 1FFP) earned about twice the average profit on sales that was earned company wide.

The rate of return on TCI was enhanced because the division that performed these contracts held substantial Government-furnished equipment and was the only division that received progress payments under its Government contracts.

4. At another company, the contracts we reviewed were for an ammunition component, flares and aircraft starting cartridges. The overall rate of return on TCI for the contracts was about 5 times the rate of return on DOD sales for the company as a whole. (101.5% and 19.9% respectively). The contractor is a sole source producer for the particular ammunition component and earned a high rate of profit on this item as a result of cost underruns, and an above average going-in profit rate. The contractor's investment in fixed assets was low because contractor-owned facilities were about 60 percent depreciated. In addition, the contractor had substantial Government-owned facilities used in performing some of the contracts we reviewed. The starting cartridge contract that we reviewed earned less than one-fourth the rate of return on TCI that was earned on the ammunition component and flare contracts. There were other producers competing for the award of this contract and the going-in profit rates were lower.

5. Contracts covered at another contractor were for ammunition components. The rate of return of TCI for the contracts we examined was over four times the rate of return on DOD business for the corporation as a whole (115.2% and 27.0% respectively). The manufacture of the ammunition components utilized a substantial portion of the Government-owned facilities available and had a high turnover rate. Other products furnished to DOD included development and fabrication of ground handling equipment for missiles and rockets and commercial type proprietary items. The latter products did not provide as great a rate of return and at least in some instances this was caused by competition from other suppliers.

After considering the facts developed in checking our data with the contractors, our auditors did any additional review work considered necessary.

As a result of our contract review work we found that there was a great range in profits. For example, the rate of return on total capital investment ranged from a loss of 78 percent to a profit of 240 percent. The range in annual rate of return on total capital obtained through our questionnaire was also substantial. For example, for 1969 the rate of return range for the 74 large DOD contractors was from -12 to +96, a range of 108. For all 4 years the range in rates of return on defense work of the 74 contractors was greater on defense work than on commercial work. For example, in 1969 the range on commercial work was from -33 percent to +39 percent, a range of 72 compared with 108 for the same year for defense work.

Attachment V

GOVERNMENT-OWNED PROPERTY FURNISHED TO CONTRACTORS

As of June 30, 1970, the cost of Department of Defense-owned facilities in contractors' custody was \$9.9 billion. This amount is substantially the same as it was at June 30, 1967. The \$9.9 billion is broken down as follows: industrial plant equipment costing over \$1,000 per item—\$2.2 billion; other plant equipment—\$2.4 billion, of which \$63 million is ADP equipment; and industrial real property—\$2.3 billion. There is no reported amount for special tooling and test equipment. It has been estimated by DOD officials to be around \$3 billion.

Since the hearings on Government procurement and property management before the Subcommittee on Economy in Government in November and December 1967, the Department of Defense has taken a number of actions designed to improve its management of property in the possession of contractors. Most of these actions can be directly associated with specific recommendations of the Subcommittee. With respect to furnishing facilities to contractors, DOD has restated its policy of placing maximum reliance on the use of privately owned

production equipment in connection with the performance of defense contracts. Under Defense Procurement Circular No. 63 dated September 30, 1968, the circumstances under which Government-owned facilities will be furnished to the contractor are very limited.

With respect to improving the management of equipment after it has been placed in the contractors' custody, DOD's principal actions have been:

1. Recommendations to the Office of Emergency Preparedness to revise rental rates. The rates were subsequently revised upward and are contained in Defense Mobilization Order 8555.1A dated June 1968; and
2. Tightening up prior approval before Government-owned equipment can be used on non-defense work.

Although DOD has made some progress in its efforts to improve the management of equipment in the custody of contractors, there remain a number of problems concerning this equipment. Some of these relate to:

1. Determination of the adequacy of reimbursement to the Government for utilization of the property by contractors for commercial production.
2. Identifying equipment and facilities for which current or future needs are insufficient to warrant retention by the contractor.
3. Disposal of equipment and facilities no longer needed.

In our November 1967 report on need for improved controls over Government-owned property in contractors' plants (B-140389) we concluded that the determination of rent on a machine-by-machine basis would be more accurate and more equitable than the various methods in use. In November 1968 we advised the Subcommittee that DOD had been conducting a test of 20 contractors' plants to study the feasibility of maintaining records of equipment utilization on a machine-by-machine basis. The test, completed in the latter part of November 1968, produced such varied cost estimates for maintaining utilization records that the results were considered inconclusive as to whether the cost to maintain such records would be justified. We were advised by DOD officials at that time that the adoption of a program to phase-out the use of Government-owned facilities in the possession of contractors was, in their opinion, a more practical solution to the problem of contractors using Government-owned equipment for purposes other than authorized in the contract.

In lieu of requiring utilization records on a machine-by-machine basis, DOD revised the Armed Services Procurement Regulation (ASPR) on June 30, 1969, to require contractors to submit in writing their basis for determining and allocating rental charges. Also, ASPR was revised to provide for establishing a minimum level of utilization for industrial equipment so that contracting officers can identify equipment with low usage for which retention cannot be justified.

DOD PROGRAM TO PHASE OUT FACILITIES IN POSSESSION OF CONTRACTORS

To emphasize its basic policy to place maximum reliance on the use of privately-owned facilities in the performance of Government contracts, DOD issued a memorandum, dated March 4, 1970, calling for the phase-out of Government-owned facilities in the possession of contractors and subcontractors. Under the provisions of the memorandum each contractor, except non-profit contractors and contractors operating wholly Government-owned plants which do not compete with commercial firms, would be required to submit a plan which would advise the Department of Defense of its intention to replace in-place Government-owned facilities in its possession with privately owned facilities. Certain types of facilities were exempted and could be retained by contractors when removal to another location would be impractical or too costly in relation to their dollar value. All other equipment was to be phased-out over a period not to exceed 5 years. Any decision to continue Government ownership of industrial facilities had to be justified to the Secretary of Defense as being in the best interest of the Government.

The military services and Defense Supply Agency first reported to the Assistant Secretary of Defense (Installations and Logistics) on the status of the phase-out program in December 1970. Out of 821 phase-out plans expected, 111 plans have been approved for phasing-out Government facilities now in the possession of contractors.

We were told that some contractors have not submitted plans because their production contracts with the Government will terminate before 1973 which is the latest date for implementation of the phase-out plan. Others delayed submitting phase-out plans because they favored procuring the Government-owned

equipment in their possession but there is no legislation permitting the direct sale of such production equipment through negotiation with the holding contractor. The Department of Defense has since issued a memorandum on February 13, 1971, stating that the DOD was reassessing its mobilization production planning program. The memorandum authorizes the Secretaries of the Departments to approve exemptions or exceptions to the basic policy of the five year phase-out plan. We believe that this memorandum will suspend some of the activity which may have been anticipated in connection with the five-year phase-out plan.

GAO Reviews

TEST EQUIPMENT THAT SHOULD HAVE BEEN PROVIDED BY PRIVATE INVESTMENT

Since our statement to the Subcommittee on Economy in Government in November 1968, concerning Government-owned property furnished to contractors, we have continued our surveillance of the DOD management of this property. Our most recent report on the subject pertained to an examination into the controls over test equipment acquired by contractors. On April 9, 1971, we reported (B-140389) to the Congress that significant quantities of plant equipment—specifically, general purpose test equipment—have been acquired as special test equipment and paid for by the Government. We found that five contractors had spent for the account of the Government an estimated \$12 million for such equipment which should have been provided by private investment.

The acquisition of plant equipment as special test equipment has been permitted by the Armed Services Procurement Regulation definition of special test equipment which specifically includes all components of any assemblies, of such equipment. This definition permits the acquisition of plant equipment as special test equipment when it is to be included in a group of test equipment items assembled for a specific use.

The Department of Defense concurred in our recommendation to revise the definition of special test equipment to exclude general-purpose equipment and said the revision would be made promptly.

INEFFECTIVE MANAGEMENT OF MOBILIZATION RESERVE EQUIPMENT

In another report to the Congress (B-140389, dated April 7, 1970), we stated that there had been ineffective management, by two Army Commands, of industrial plant equipment retained in mobilization reserve packages to meet production contingencies in time of war. These packages, valued at approximately \$500 million, contain the equipment necessary to produce such items as artillery, rifles, ammunition casings, and tanks. Over a period of years the readiness status of that equipment had received insufficient attention. Some equipment packages did not contain enough equipment to meet planned production requirements; others had the capability for more production than DOD estimated would be needed; while others were being retained even though not identified with a specific producer or plant.

Our limited tests also showed that, during one 6-month period, the possibility existed that the Government had spent \$6 million to buy new equipment—although similar unneeded equipment was being held by the two Army commands and was not reported as available for redistribution.

As a result of our report, DOD is making a study of its mobilization package program including policies and procedures for their establishment, justification, approval retention, and management. The Army plans to review all such packages and report to the Defense Industrial Plant Equipment Center all excess production equipment.

ACQUISITION OF FACILITIES WITHOUT DISCLOSURE TO THE CONGRESS

In January 1970 we also reported (B-140389) that, in a number of cases, the acquisition of Government-owned contractor-operated facilities had been financed indirectly through the operating contractors, and thus had not been included in budget requests submitted to the Congress. In these cases we found that the Departments of the Navy and Air Force had authorized contractors to provide financing for facilities costing \$31 million and to recover costs involved through overhead charges against Government contracts. DOD has assured us that its internal regulations will be revised to (1) preclude indirect financing of industrial real property and (2) to ensure that acquisitions of such property are disclosed in budget submissions to the Congress.

GAO Follow-Up Review in Progress

As recommended in the April 1968 report of this Committee, we are currently reviewing the adequacy of DOD's controls over the acquisition and utilization of industrial plant equipment. In this connection, we are looking into acquisitions since the September 1968 instructions contained in Defense Procurement Circular No. 63 restricting the furnishing of equipment to the contractors. We are also examining into the need for retention of equipment and the use of equipment for commercial purposes, including the payment of rent for such use.

We are visiting a total of 28 contractors that have in their possession plant equipment costing about \$347 million. The amounts of plant equipment at these locations range between \$300,000 and \$55.3 million.

Although we do not expect to complete our views until about September 1971, we have found that at the contractors we visited there has been very little acquisition of Government-owned equipment in the past three years. However, there continues to be deficiencies in contractors' records of machine utilization, and we are still finding some cases where there is a lack of uniformity in computing rent due for commercial use of Government-owned equipment.

Also, in a number of instances we have found Government equipment being used on commercial work in excess of 25 percent of available time without obtaining prior approval from the Office of Emergency Preparedness as required by the Armed Services Procurement Regulation.

LEGISLATION TO CONTROL USE OF GOVERNMENT-FURNISHED EQUIPMENT

S. 1469, a bill to provide more effective control over the use of Government production equipment by private contractors, has been introduced in the 92nd Congress. This bill differs in certain important respects from similar bills introduced previously. With limited exceptions, it prohibits furnishing production equipment to all contractors, including those operating Government-owned plants. Current DOD policy as set forth in ASPR 13-301, concerning furnishing equipment to contractors, is consistent with this prohibition, except for furnishing equipment for use in a Government-owned contractor-operated facility.

It appears to us that, if the Government-owned contractor-operated concept for certain types of Defense items is to be retained, it will be necessary to continue the authority for the Government to provide facilities and equipment for such plants.

The previous bills provided for the negotiated sale of all production equipment at a fair and reasonable price to the holding contractor. In commenting on this provision in a previous bill the Secretary of Defense gave his support to the proposed legislation adding that he felt such legislation would facilitate the phase-out of Government-owned facilities in the hands of contractors.

The legislative proposal defines production equipment and sets it apart from special-purpose production equipment, special-purpose reduction systems, and special tooling and special test equipment. It provides for the sale of production equipment by competitive sale and limits negotiated sale to items which meet the definition of special purpose production equipment, etc. We believe this provision will, to a considerable degree, diminish the Government's opportunity to divest itself of Government-owned equipment by delaying the sale of production equipment until the contracts are completed or until it is determined that the equipment is no longer needed for the purpose intended by the contractor. Under the provisions of the previous proposed legislation, negotiations could be conducted with contractors even though the equipment was currently being used in production under Government contracts. We believe the Department's plan to divest itself of Government-owned facilities could be accelerated by authorizing sale by negotiation of all equipment to holding contractors. Although the competitive sale requirement of the present legislation should result in greater assurance that amounts realized from disposal will be fair and reasonable, we believe that the requirement will extend the time period that the Department will be managing large inventories of Government-owned production equipment.

In addition, S. 1469 would also (1) require a periodic review of the circumstances under which any production equipment was furnished so that the equipment could be removed as soon as the initial reason for providing it ceased to exist; and (2) prohibit the use of Government equipment on commercial work.

We agree that there is need for periodic review of the utilization of equipment to determine whether its retention by the contractor is appropriate. On the other hand, some flexibility might be warranted with respect to the commercial

use of equipment. In this connection, we note that the position of the Office of Emergency Preparedness is that such use may help keep the equipment in a high state of operational readiness through regular usage, may result in substantial savings to the Government, and may avoid an inequity to the contractor who is required to retain Government equipment in place intermingled with contractor-owned equipment required for commercial work.

We noted that the definition of production equipment excludes special-purpose production equipment, special-purpose production systems, special tooling equipment, and special test equipment for commercial purposes. Also, these types of equipment are excluded from periodic reviews to determine whether the circumstances that existed prior to furnishing it to the contractor still exist. If it is desired to have the same restrictions apply to special production equipment, special-purpose production systems, special tooling equipment, and special test equipment, as well as production equipment, appropriate changes should be made in the language of the bill.

Attachment VI

PUBLIC LAW 87-653—THE TRUTH-IN-NEGOTIATIONS ACT

As you know, the Law requires a contractor to submit certified cost or pricing data for use in negotiations of noncompetitive contracts expected to exceed \$100,000. It also provides the Government a legal right to a price adjustment if the price had been increased because of submission of noncurrent, incomplete or inaccurate cost data.

There are several basic exceptions in the law to the requirement for submission of cost or pricing data. One is when the contracting officer determines that there is adequate price competition; a second is when the price is based on a catalog price of a commercial item sold in substantial quantities to the general public; a third is when the head of the agency determines that the requirements for certified cost data may be waived.

In our contract audits we cover the basic provisions of the law from the standpoint of their effective implementation by DOD. We review selected individual contracts over \$100,000 whose prices were established on the basis of certified data. We perform broad examinations into contracting officers' determinations that the exceptions exist and certified data are not required.

In a statement before your subcommittee on December 29, 1969, we discussed our examination of prices negotiated for 34 procurements of general purpose bomb bodies valued at \$343 million awarded to six different contractors. We reported to the Congress of December 11, 1969, that, prices for 33 procurements of about \$309 million were higher by about \$13.9 million than indicated by cost or pricing data available to the contractors prior to each negotiation, and prices for 12 procurements of about \$172 million included cost estimates of about \$46 million for which sound and realistic cost or pricing data were not available.

For each of the six contractors, the *negotiated* average profit ranged from about 6.7 percent to 11.4 percent of negotiated costs, while *actual* average profits ranged from 6.4 percent to 30.2 percent of actual costs.

Another report to the Congress on July 15, 1969, describes our review of prices negotiated under two contracts valued at about \$23.3 million for 750-pound bomb fuzes. Negotiated prices included estimated costs that were about \$3.5 million higher than indicated by cost information available to the contractor at the time of negotiation. The contractor had no factual support for other estimates of about \$1.6 million consisting of anticipated price increases, production lot losses, scrap and rework. Since the contract was not completed at the time of our review, we did not compare the contractor's negotiated profit of about 10 percent with the actual profit realized. After our review, the contractor agreed to a price adjustment of \$1.3 million.

I would now like to discuss our audits since January 1970, and our plans for the immediate future.

CONTRACT PRICES BASED ON CERTIFIED COST OR PRICING DATA

We have issued 16 reports to the Congress and agency officials since January 1, 1970, covering 56 contracts having a value of about \$278 million awarded to 34 contractors. Our findings on overpricing totaled about \$6 million. Reviews of contracts awarded 13 other contractors are underway.

A summary report will be sent to the Congress on the work performed each fiscal year. These summary reports, the first of which will cover individual reports

issued during fiscal year 1971, will provide us with a basis for identifying and planning broad examinations into selected areas where improvements appear to be needed.

On December 29, 1970, we reported to the Congress on the effectiveness of revised procedures implementing the Truth-In-Negotiations Act in achieving fair and reasonable prices. We also reported on the problems experienced by contractors and agency officials in applying the Act and the implementing regulations. We reviewed 35 contracts, valued at \$135 million awarded to 21 contractors. The contracts were primarily awarded during 1968. For 18 procurements of \$47 million, the data available to the contractors at the time of negotiation indicated that negotiated prices should have been \$1.5 million lower. Little or no overpricing was found in the other 17 procurements amounting to about \$88 million. The effectiveness of the Act seems to depend largely on how well it is administered by Defense procurement, audit, and technical personnel. It seems too that the cost or pricing data provisions of the Act and the regulations have posed no serious problems for Government or industry.

A Defense regulation effective January 1, 1970, established the requirement for prime contractors to obtain and submit cost or pricing data in support of major prospective subcontracts to be awarded on the basis of cost data. Previously there was no specific regulation requiring such a submission although many contractors did so. The prime contractor's certification covers the accuracy, completeness, and currency of the subcontractor data.

Since subcontract cost estimates are a major element in contract prices, we are currently planning a review to find out if (1) the new regulation is being effectively implemented by major Defense procurement offices, (2) subcontract estimates are reasonable in relation to available cost data, and (3) improvements in this area are needed.

Regarding the provisions in the law which give the Government a legal right to price adjustments, we reported to the Congress in 1966 on the need for the Defense Contract Audit Agency to establish a formal program for conducting postaward audits as a means of identifying defective pricing data. The Audit Agency formally established a program for regularly scheduled postaward reviews in March 1966. To aid the Audit Agency in this work, Congress enacted legislation which permits the auditors to examine cost records related to firm fixed-price contracts. The objectives of the postaward audits are to identify those instances where prices were increased because data submitted were noncurrent, incomplete, or inaccurate, and to provide the contracting officer with the facts needed to effect price reductions.

By June 30, 1970, the Audit Agency had performed postaward audits on about 4,000 contracts totaling \$38 billion. Defective pricing of \$185 million on 787 contracts was reported to contracting officials. These officials had completed actions on 185 contracts and had reduced contract prices by about \$14 million.

We are currently beginning a review of the Defense Contract Audit Agency's defective pricing program. We plan to determine the efficiency and effectiveness of the Audit Agency's performance, its basis for selecting contracts for review, the audit techniques employed, and the benefits compared with the costs of the program.

EXCEPTIONS TO OBTAINING CERTIFIED COST OR PRICING DATA

1. *Contract prices based on adequate price competition.*—This year we started a review of a number of negotiated procurements subjected to the provisions of Public Law 87-653 where the price was determined to have been based on adequate price competition. Defense regulations establish criteria for identifying the presence of adequate price competition. We will consider whether these standards are being correctly and consistently applied and whether, in practice, they provide a sound basis for contract pricing without requiring submission of certified cost data. We will also evaluate the application and effectiveness of these standards to subcontract pricing.

A provision of the law requires discussions with all offerors in a competitive range, except where it can be clearly shown from the existence of adequate competition that acceptance of the initial proposal without discussion would result in a fair and reasonable price and offerors are notified in advance that award may be made without discussion. We will review the circumstances under which discussions are conducted with competing offerors in order to understand the objectives, the substance, and the effect of these discussions on contract pricing.

We will also consider the circumstances and justification for awarding contracts without discussions.

2. *Contract prices based on catalog prices.*—Public Law 87-653 provides that proposed prices may be accepted without requiring submission of certified cost data if they are based on catalog prices of commercial items sold in substantial quantities to the public. We examined 68 contracts negotiated on this basis and in December 1969 we reported to the Congress on needed improvements.

For 45 of the 68 contracts, there was no record of the information used to determine that substantial quantities had been sold to the public. Defense regulations do not provide guidance with respect to the amount of commercial sales that should be considered substantial.

We found instances where the largest individual commercial sale of an item at a catalog price was for substantially smaller quantities than those being purchased under individual Defense contracts. Under these circumstances there was no assurance that the price paid by the Defense Department would have been paid by commercial buyers for comparable quantities.

We recommended that, to improve determinations of whether the catalog price exception should apply, the Defense Department:

1. provide more definite criteria for determining what constitutes substantial sales to the public;
2. require appropriate consideration of relative quantities involved in individual commercial sales and sales to the Government;
3. consider requiring the contracting officer to (a) obtain a certification from the contractor that the sales data submitted are complete and accurate, (b) include a provision in each proposal and any resulting contract which would permit Government representatives to examine the contractor's pertinent records in order to verify the information submitted in support of the proposal, and (c) verify sales data obtained from contractors.

The Defense Department, in September 1970, circulated to industry associations and Government agencies for comment a proposed revision to its regulations which covered most of our recommendations. The proposed changes are still under consideration by the Defense Department.

3. *Waivers of requirements for certified cost data.*—Public Law 87-653 authorizes the head of an agency to waive the requirement for certified cost data in exceptional cases, provided he states in writing the reasons for such determination. Since enactment of the law, about 85 Secretarial waivers have been issued by Defense officials. Most of the waivers were considered necessary because the item was urgently needed and the contractor was sole source.

Some contractors would not provide cost or pricing data or a certificate, or accept a price adjustment clause on the grounds that the item was competitive or that its price was based on an established catalog or market price. Waivers have also been granted for purchase from foreign firms. One waiver has been made for procurements from Canadian contractors under special arrangements by which the Canadian Government audits the contracts and obtains a refund for the United States of any profits over 10 percent of estimated costs.

LAIRD STATEMENT ON INFLATION QUESTIONED

Chairman PROXMIRE. In your statement, Mr. Staats, you argue with respect to developing a cost, or rather a price index for defense. You say: "The initial consensus of this group"—the nine experts that you stated—"is that it would be impossible to compute an accurate price index for military hardware."

How then do you explain the statement on April 13 by the Secretary of Defense, Melvin Laird, who said, and I quote:

"Within the last 5 years we have had a cost growth due to inflation alone of over 50 percent." This is with respect, of course, to defense spending.

The news article "Laird Stresses Inflation Impact," without objection, will be included in the record at this point.

(The article referred to follows:)

[From the New York Times, Apr. 14, 1971]

LAIRD STRESSES INFLATION IMPACT

TELLS OF 50 PERCENT RISE IN 5 YEARS—F-14 INQUIRY BEGAN

(By Dana Adams Schmidt)

WASHINGTON, April 13.—Secretary of Defense Melvin R. Laird explained today that inflation constantly overtakes weapons systems because they take so long—five to nine years—to develop.

"Within the last five years we have had a cost growth due to inflation alone of over 50 per cent," he said at a Pentagon news conference.

His comments coincided with the announcement by John C. Stennis, Democrat of Mississippi, chairman of the Senate Armed Services Committee, that Government auditors have begun investigating the plea of the Grumman Aircraft Corporation that the swing-wing F-14 fighters it is building for the Navy will cost many millions of dollars more than expected.

Mr. Laird contrasted the type of contract concluded by the Johnson Administration for the F-14 with the type that the present Administration has used to order the more advanced F-15.

Under the new system, financial aides explained later, the Pentagon commits itself only to a prototype. If that is satisfactory, it negotiates a production contract.

Mr. Laird indicated he viewed the problem of the F-14 and its costs as a mere detail in the general problem of inflation, particularly of rising personnel costs, confronting the defense establishment.

SEES NEED FOR INCREASES

"To prevent war during the 1970's, to see that we don't have more Vietnams, to see that we can maintain this generation of peace that the President and this Administration are committed to—if we are going to do that, we need increased defense resources to meet this Soviet threat during this period of time," Mr. Laird said.

While the vast majority of Americans "feel that parity in the strategic weapon field is perhaps a level that can be acceptable," he said, "I don't believe a vast majority of the American people want to become a second-rate power in this area; they are unwilling to accept inferiority in this particular area."

Suggesting that the costs would probably be higher than most Americans realize, he observed that "sometimes we forget to realize that this inflation, these personnel costs, affect this department more than any other department of government and more than any other industry."

CONTRAST WITH SOVIET

It was particularly to make these points, Mr. Laird indicated, that he called his news conference at the Pentagon today. He extended the usual time of the conference and said it was up to his people in the department to do "a little better job" of explaining the cost problem to the American people.

Elaborating on the rising cost of personnel, Mr. Laird said that whereas personnel costs account for 53 per cent of the defense budget he has been defending before Congress, the Soviet Union has only 25 per cent personnel costs.

Although the department will be employing 133,000 fewer people at the end of the fiscal year, 1972 than it did in fiscal 1964, he added, its personnel costs will have grown 100 per cent, from \$20-billion to almost \$40-billion. By 1974 and 1975, he predicted, personnel costs would make up 60 per cent of the budget.

Mr. STAATS. I observed the same statement, Mr. Chairman. This statement was made as I recall it, in connection with the F-14, a matter which has been in the press.

I have not been able to find out exactly where the information came from. I have made inquiry with respect to it. I do have a statement with respect to the basis on which the F-14 price inflation factor had been projected at the time of the contract as against what has actually

developed. But with respect to the 50-percent figure; frankly, we have not been able to find the source of or the backup for that statement.

Chairman PROXMIRE. In fact, by and large, the wholesale price index and the index of industrial prices have risen much more slowly than the consumer price index—those components have been more stable; they certainly have not risen anything like 50 percent; possibly 12 percent in the last 5 years—it is beyond me to understand how the Secretary could come up with that kind of statement, especially in view of the fact your study of this particular problem by the best experts, as you say, you can find, indicates they feel it is impossible to compute an accurate price index.

MILITARY PRICE INDEX

Mr. STAATS. I might add to that, Mr. Chairman, that I guess we are a little stubborn. We have not given up on this idea of developing indexes that would more nearly reflect the inflation factor for major weapons systems.

One of the concerns of the consultants is the changes that take place in the inputs, particularly for a weapons system developed over a long period of time. I think what they are saying to us is that applying cost-benefit tests to the development of such index, it is not likely that we will be able to overcome the difficulties in sufficient measure to make any special index much more worthwhile than to utilize the wholesale price index, adjusted for any quite obvious factor where you have a peculiar situation involved.

To be fair to their position, they are saying that the difficulties are so formidable and the effort required would be so great that they doubt if we could do much better than use the wholesale price index and adjust it for any obviously overriding considerations.

Chairman PROXMIRE. I notice, if you take consumer durables, they have gone up about 11 percent in the last 5 years. If you take all industrial products, they have gone up about 12 percent. If you take "all commodities," it has gone up about 12 percent, not 50 percent—in the last 5 years. So, as I say, that Laird estimate is hard to accept.

SHOULD COST ANALYSIS

Now, on the "should cost" point that you make, I want to say that we have not neglected the legislation that you propose, and I am very anxious to introduce legislation along this line, because I think it is a constructive way of providing a guide and a system of holding down costs.

But we would like to see as much evidence as we can that this instrument would not be abused, that it could be used effectively to hold down costs.

We do not see any evidence, although you indicated in a general sentence in your statement you do not see any evidence yet, that the Army "should cost" studies, for example, are reducing unit costs in the particular weapons systems.

Mr. STAATS. We have been able to look at only one they have finished. I am not sure the test is really an adequate test.

I can say this though, that there seems to be no reticence or reluctance on the part of the Defense Department to embrace the concept of "should cost."

The reason that we have difficulties that they do not have is that we have to work on a postaward basis, whereas they can apply this concept on a preaward basis, and as a part of the contract negotiation. It is the same thing exactly that Sears, Roebuck does when they are negotiating a contract with a supplier for their company. They work with this company in getting the cost down and obtaining the quality that they need for their stores.

Chairman PROXMIRE. Let me take a couple of minutes to read a statement in connection with "should costs," so I can lay it out and have further discussion.

As I wrote to you, Mr. Staats, on March 10, 1971, we were pleased that the GAO determined that application of the should-cost approach to contract pricing was feasible. This subcommittee recommended the should-cost approach in our report, the "Economics of Military Procurement," published in May 1969. However, as you also know from our correspondence and from my comments in the past, we recognize that it is possible to go through the motions of applying should-cost techniques, perhaps at great expense, and still not capture potential savings. I must say that none of the material we have received from either the GAO or the Department of Defense has allayed our fears on this point. As just one example of the causes of our concern, let me quote a portion of your statement:

The total of the savings which could accrue to the Government as a result of our reviews at these four plants could not be readily determined.

This concerned us because the very essence of the should-cost approach is quantification of inefficiencies. We fear that emphasis in should-cost studies may be shifting from objective, quantitative analysis to subjective, qualitative analysis. This concern is heightened by the fact that we have seen no hard evidence of actual reduction in overall unit costs of things we are buying. Further, we have no assurance that prices negotiated reflect efficient operations even if claimed savings are actually captured.

HOW MUCH SHOULD A SHOULD-COST COST?

At the same time, there are indications that costs of making should-cost studies may be getting out of control. For example, Secretary Shillito reported to us that consultant fees on just the first phase of the Mark 48 torpedo should-cost study were \$323,000 and that phase 2 of the study is still underway. The Navy estimates that consultant fees for phase 2 will be about \$900,000, making a total of over \$1,200,000 in consultant fees for the study. Frankly, this price shocks me, and I was further dismayed to learn that a phase 3 study for the Mark 48 torpedo is planned. We may have inadvertently helped create a whole new industry—making should-cost studies.

We really have more concerns regarding application of the should-cost studies than we have time to deal with here. However, since we recommended the approach, we have the duty to make sure we have not created an expensive but sterile monster which will not help achieve economy in Government. Accordingly, I would greatly appre-

ciate your furnishing to this subcommittee copies of the reviews you conducted to establish feasibility of the should-cost approach. You wrote me that you had promised not to reveal names of contractors involved in the reviews. I do not understand why such a limitation was necessary, but since the commitment was made, we will accept the reviews with contractor names deleted. Second, I would appreciate your obtaining copies of should-cost studies performed by the Department of Defense for review by the subcommittee staff.

Third, I would like to have your analyses of potential and actual savings realized in each of the major DOD should-cost studies. I would hope that you could work out a routine way to follow up each of these studies to make sure savings potential is captured and that the approach does not degenerate into window-dressing and make-work for consultants.

Fourth, I would like to have your analysis of why the cost of making should-cost studies appears to be so high and your recommendations for keeping these costs in bounds.

Mr. STAATS. We would be happy to respond to those in more detail in writing, but I do have a few reactions I would like to give to you right now.

(The following information was subsequently supplied for the record:)

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., June 1, 1971.

HON. WILLIAM PROXMIRE,
Chairman, Subcommittee on Priorities and Economy in Government, Joint Economic Committee, Congress of the United States.

DEAR MR. CHAIRMAN: In hearings before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee on April 27, 1971, with respect to the "should cost" technique of cost estimating, you requested that the General Accounting Office:

Furnish the Subcommittee copies of the reviews we conducted to establish feasibility of the should cost approach,

Obtain copies of the should cost studies performed by the Department of Defense for review by the Subcommittee staff,

Analyze the potential and actual savings realized in each of the major Department of Defense should cost studies, and develop a method to follow up on each of these studies, and

Analyze why the cost of making should cost studies appears to be so high and make recommendations for keeping these costs in bounds.

During subsequent discussions it was agreed that we would respond to the first three items at a later date. The following comments relate to the fourth item above:

HIGH COSTS OF SHOULD COST REVIEWS

It appeared, from your comments, that your primary concern with the costs of should cost studies stemmed from the fact that the Department of the Navy will expend in excess of \$1 million for the current study relating to the MK-48 torpedo.

Our review of the tasks covered by the Navy's study indicated that its scope is much broader than that of the typical should cost review. In addition to a production cost phase, which can be likened to a should cost review, the Navy's study encompasses (1) product engineering and (2) performance requirements (i.e., performance-cost, trade-off) analyses.

There are other aspects to this study that contribute to the significant costs, as follows:

1. The study is being conducted almost entirely by consultants under contract to the Navy. Other studies, primarily those by the Army, are being conducted by Government personnel with some assistance from consultants on an as-needed basis. The incremental costs of such studies are therefore limited largely to travel costs.

2. Two contracts are involved in the MK-48 program at this time. The Navy's study was undertaken prior to the decision as to which design would be chosen for production. The study therefore covers the previously described areas at both contractors' plants.

Should cost studies conducted by the Army have been estimated to cost approximately twice what a "normal" preaward analysis would cost. In recent testimony before a congressional committee, Dr. J. Ronald Fox, Assistant Secretary of the Army (Installations and Logistics) indicated that the additional incremental (travel and per diem) costs attributed to the use of should cost techniques were averaging about \$100,000 per study. It was Dr. Fox's opinion the benefits realized far outweighed the costs, about \$9 million for an investment of \$100,000.

On the basis of the staffing of the Army's study of the Improved HAWK Missile, we estimate that the total salaries for the team members was about \$108,000. Utilizing the Army's estimate that one-half of the total costs are applicable to should cost efforts, this would add another \$54,000 to the total costs. These salaries, of course, would have been incurred even if the study had not been accomplished.

We were subsequently advised by Army officials that the costs of the most recent studies have shown a downward trend because they are being accomplished with fewer team members than had been previously thought necessary.

We have not attempted to verify either the reported costs or savings of the studies that have been completed. In our future evaluations of these studies, we will be looking into both of those factors.

RECOMMENDATIONS FOR KEEPING COSTS OF SHOULD COST STUDIES WITHIN REASONABLE LIMITS

The major factor causing the wide variance in the reported costs of the Navy's MK-48 studies, and the should cost studies conducted by the Army, is that the Navy is using several consulting firms to accomplish its objectives while the Army uses primarily Government employees. It is probable that the salaries of employees of consulting firms are higher than the salaries of Government personnel who would be utilized on should cost reviews. In addition, the contracts with consulting firms would include some type of reimbursement for overhead, and for a profit. Therefore, even for a similar level of effort, it is reasonable to expect that the costs of a study performed under contract would substantially exceed the costs that would be incurred for an in-house effort.

In our opinion, the procedure being followed by the Army—use of Government personnel supplemented by consultants on a limited scale—is probably the most effective method of keeping costs at a minimum. In addition, we believe that careful consideration should be given to those contractors selected for review so that the techniques will be applied only where there is a potential for substantial savings.

We will be glad to discuss these matters further with you or your staff if you so desire.

Sincerely yours,

ELMER B. STAATS,
Comptroller General of the United States.

QUANTIFYING POTENTIAL SAVINGS

Mr. STAATS. One is we expect to quantify savings as a result of a review of this type. I would hope that you would not take the position, however, that we should not make recommendations for corrective actions unless we can quantify the results, because I think many times these savings we can quantify but many times we cannot quantify savings. In the GAO we set these out separately in our annual report.

I think the same thing applies here. I think it would be a mistake to say you cannot do it unless you can quantify savings. I think you should quantify them wherever you can, recognizing many times you cannot do it. Nevertheless, there will be real savings.

Second, with respect to the cost of conducting these reviews—

Chairman PROXMIRE. May I just interrupt to ask you where you say you cannot quantify, you think that this would be in most of the instances, most of the cases, that you cannot quantify, or only a few?

Mr. STAATS. Well, I can only generalize within our own experience in GAO. For example, last year we were able to quantify what you might call "cash-register-type savings" amounting to \$250 million as a result of the GAO work. But we all agreed, in GAO, that several times over that saving to the Government took place as a result of recommendations which we did not, and cannot say "This review saved this amount."

Chairman PROXMIRE. How can you reflect this in contract prices, the "should cost" saving?

Mr. STAATS. I would say that in some cases you should not expect the payoff to be a payoff that you can translate into dollars-and-cents savings, Mr. Chairman. It would be a step backward, Mr. Chairman, if you limited the advantages of "should cost" only to those cases.

Mr. GUTMANN. I could add something here.

Chairman PROXMIRE. Go ahead, sir.

Mr. GUTMANN. In those where we are unable to quantify the effects of a recommendation we make on the specific contracts currently being performed, we certainly could expect, if our recommendations are put into effect and savings are obtained by the contractor, that it can be translated to savings to the Government on follow-on awards.

Chairman PROXMIRE. What I am concerned about is that this is going to bog down into a matter of concern with procedures rather than actual savings.

Mr. STAATS. We do not have this worry. I would make the same point with respect to whether you go outside and hire consultants. We would prefer to see the Government have this capability in-house. We did not go out and enter into contracts for the work we did. We did it primarily in-house with our own people, and we feel this approach—at least over the long term—is best. I realize it takes time to build up a quality staff of this type, but over the long term, I think the Defense Department ought to have this capability in-house and only in an exceptional situation should it go outside to contract for this kind of work.

They are going to be in this business all of the time. You learn on one case, and that helps you on the next case, and you ought to have this kind of expertise within the organization, as I see it.

Chairman PROXMIRE. My time is up.

Mr. Conable.

DEFENSE PROFITS-RETURN ON INVESTMENT

Representative CONABLE. Thank you, Mr. Chairman.

Mr. Staats, I notice your recommendation here that contractors' actual investments be given great weight in setting profits on defense contracts. I am going to ask you: Doesn't basing the profit on return on investment leave out incentive elements, such as the ability to meet deadlines, and so forth?

Doesn't this leave out elements that are necessary to be considered in the awarding of contracts and in the rewarding of good performance?

Mr. STAATS. No; I do not really quite see how there is any less incentive at all. What we are saying essentially is that where you are buying only management, such as the AEC does at a Government-owned, contractor-operated plant, obviously, the contractor himself does not have any of his capital employed in the contract work unless it is in his own automobile, or things like that, but his investment is nil or virtually nonexistent. Therefore, you obviously have to apply a different test as to what his fee or his profit is going to be.

But you also have the other situation where it is important to provide the incentive on the part of the contractor to make his own capital investment to attain savings in production costs.

Representative CONABLE. But what about incentive payments; are you ruling them out completely?

Mr. STAATS. No; we are not.

Representative CONABLE. You would be willing to graft them on top of a basic grant for the amount of capital invested; is that right?

Mr. STAATS. I think the answer to your question is "Yes, we would." As a separate issue, we have some doubt as to whether some of the incentive contracts are performing the function they ought to perform. But that is a separate question.

Representative CONABLE. You do not object conceptually to the idea of incentive payments?

Mr. STAATS. Not in principle.

Representative CONABLE. Certainly, the Government wants to have some lever to encourage skillful, prompt performance beyond repaying for the investment the contractor makes in the contract.

Mr. GUTMANN. Mr. Conable, in 1964, the Department of Defense promulgated some guidelines for contracting officers in arriving at profit objectives in negotiating contracts. Those guidelines include consideration of the element that you mentioned, that is, the contractor's performances, meeting of schedules, and so on. Our suggestion is not necessarily to throw out those guidelines but more particularly to include among the guidelines this matter of consideration of return on investment.

Representative CONABLE. So that there will be some range of return influenced by performance, with only the range reflecting the amount of capital the contractor put into the contract?

Mr. GUTMANN. Yes, sir.

Representative CONABLE. Let me ask you, Mr. Staats, will the effect of this be to discourage the use by contractors of Government-owned assets?

I suppose it is possible to set your range in such a way that becomes a neutral factor, but we have a certain number of Government-owned assets we want to get used in one way or another, and we have got to adjust whatever return we give on the use of those assets in such a way we will not discourage the use of them, do we not?

Mr. STAATS. We have shared the views this committee has taken, that we ought to minimize the use of Government-furnished capital and equipment whatever we can. We recognize that there will be some situations where it is not possible to do this, but, so far as possible, we would prefer to see the Government-furnished equipment phased out and the ownership of that taken by the contractor.

Representative CONABLE. I think the Liberty Lobby would agree with you on that, too.

Mr. STAATS. On-balance, we feel our recommendation would provide an incentive for the contractor to buy the Government-furnished equipment.

GOVERNMENT-OWNED EQUIPMENT

Representative CONABLE. I note also your comment about the failure to get reasonable rents or have reasonable audit of Government-owned property used for commercial work. Can you give us any estimate of the percentage of use of Government-owned production equipment which is applied by prime contractors to commercial work?

Is this a serious problem?

Mr. STAATS. For their commercial business?

Representative CONABLE. Yes.

Mr. STAATS. I do not have figures offhand.

Mr. GUTMANN. No, sir; we do not have statistics of that kind. We know there is approximately \$10 billion of Government-owned facilities in contractors' plants that are being used by contractors. I do not think that statistics are available as to the percentage of commercial use being given to those facilities.

Representative CONABLE. Why aren't those statistics available?

Mr. STAATS. We recommended, Mr. Conable, in our report on this subject, to Defense and to Congress, that there be a machine-by-machine utilization record maintained.

Representative CONABLE. Inventory?

Mr. STAATS. Unless that is done, I do not know there is any way in which anyone can answer your question. Defense has run some tests on this, and they have said, in their opinion, it was too costly to maintain that kind of a record. Therefore, they are pushing the idea of transferring ownership as much as they can to the contractor. But they are not maintaining machine-by-machine utilization records.

Representative CONABLE. You do not know whether it is a significant factor or not. Certainly, there's not much reason for confidence. We know what we're doing with respect to Government-owned equipment that is being used for commercial purposes.

In your statement, you testify that the Department of Defense has adopted a very restrictive policy with respect to providing additional facilities to contractors.

How much additional equipment and plant has been provided to contractors in recent years in, let us say, the last 5 years?

Is this a substantial factor now or has this restrictive policy resulted in virtually none?

Mr. GUTMANN. There has not been any significant addition in total to these facilities in the past 3 years. They are remaining relatively constant.

Representative CONABLE. In the past 3 years?

Mr. GUTMANN. Yes.

Representative CONABLE. Up to that time it had been increasing, had it not?

Mr. STAATS. If you want a quick rundown on figures, see attachment V to my statement. It gives a breakdown of the \$10 billion which Mr. Gutmann quoted.

Representative CONABLE. That is a big hunk.

RENEGOTIATION

In attachment IV to your statement, you describe a number of Department of Defense contracts, and on some of these contracts apparently the rate of return on total capital investment per year was found to be in excess of 100 percent.

Now, which of these contracts were subject to renegotiation?

They are all subject to renegotiation, are they not?

MR. STAATS. On an overall company basis profit on Government defense business is subject to renegotiation with exceptions established by law.

Representative CONABLE. That includes all of the Government contracts. What they make in apples they may lose in bananas if the contracts are both apples and bananas?

MR. STAATS. That is correct; right.

Representative CONABLE. They are all subject to renegotiation, are they not?

MR. STAATS. There are certain exceptions. There is a floor in the statute.

Representative CONABLE. But the floor is very low compared to the areas of our concern here. So, we do have to assume the great bulk of these would be subject to renegotiation. Do you agree with that; is this a sound provision of the Renegotiation Act which applies to the overall industry; or do you feel each contract should be separately renegotiated?

MR. STAATS. I think, in principal, that we ought to look at profits on Government work, defense work certainly, in terms of the total company business. If this were to be done on a case-by-case basis, then my concern would be that you would get pressure to build up estimated costs. If a contractor had a loss, he would be in serious trouble unless the Government was prepared to bail him out automatically.

Representative CONABLE. Isn't the result of this then, that, with respect to contracts that you describe having 100-percent profit, in fact, after renegotiation it will be very substantially lower if it appears it has not been offset by unprofitable contracts or other sorts?

MR. STAATS. Indeed, more than two-thirds of the companies we reviewed had annual profits that were relatively low or involved losses.

I would like to emphasize our contract reviews were for a completely different purpose. Obviously, we were not going to make two completely different kinds of analyses and let Congress take its choice as to which figures were correct. That would not have made any sense at all.

What we were after was to settle the argument, if we could, as to whether it was possible to allocate capital to individual contracts. You have to do this if you want to take capital into account in fixing your target profit objectives when you negotiate the contract amount. This is a basic requirement.

Therefore, what we were trying to do was to see if we could allocate capital on a contract-by-contract basis; and second, we were trying to see to what extent there was a broad range of profits on individual contracts. We were trying to get at the question of the extent that a criterion of capital investment would affect this range.

Now, we would not have had to take 146 contracts to prove our first point. We could have done it with relatively a smaller number, but in order to get at the second point we tried to get as much of a mix of different products and other variables as we could. This is why we selected 146.

Representative CONABLE. I did not question, for a minute, either of your studies, sir. I am simply asking if the overall effect of, let us call it, profiteering is somewhat mitigated by the impact of the Renegotiation Act, and that it is not part of this particular study, regardless of the value of the study.

Mr. STAATS. I think the Renegotiation Act is important to preserve and I would say, from the point of view of the contracting process, the important thing is what the overall company profit is for a contractor, as far as defense business is concerned. That is why, I think, the best way to measure profits is to take the overall company business and take it over a particular period of time.

We took 1966 through 1969, a 4-year period. We would have gone back further except that the makeup of the industry itself had changed to the point that many people had said we could not accurately measure profits on a trend basis if we went back before 1966.

One of the reasons we delayed our report to the Congress by 3 months was to be able to reflect 1969 data in our analysis. We could not have covered 1969 data if we had met the target date of December 31, 1970.

Representative CONABLE. Thank you.

Chairman PROXMIRE. Isn't it true, Mr. Staats, the Renegotiation Board is really riddled with exceptions, that it is badly understaffed, they have a 4-year backlog, they have one-third of the staff they had during the Korean war when they had less procurement. The amount of renegotiation they achieve, that is, the extent to which they reduce the profit and reclaim part of the payment to the Federal Government is secret so that the whole operation is one that is considerably limited.

I remember fighting on the floor of the Senate to provide more staff for the Renegotiation Board. It was a tough fight. We got a little more staff—not much. But I am thinking of asking the Renegotiation Board to come up next month to testify in the same area, to complement the overall degree to which the Federal Government has any control over excess profits.

GAO REPORT ON SHIPBUILDERS' CLAIMS

I would like to ask you this: As you know, this subcommittee held hearings in December of 1969 on the question of claims against the Navy by shipbuilders, and a year ago I wrote to you requesting a review of the Navy's disposition of those claims.

Now, you have issued your report, and, as I stated earlier, my worst fears have been realized. Claims are being settled by the Navy on what I call "giveaway terms," without adequate information, and, according to Admiral Rickover, without adequate legal analysis.

I have two questions:

First, in light of your own findings, aren't the conclusions in the GAO report rather mild?

It seems as if all you are saying is that the Navy ought to be careful in the future. No action is taken with respect to the more than \$114 million that was given away.

Doesn't the GAO have authority to try to recapture improper outlays of this sort or to recommend that someone with authority do so?

Mr. STAATS. I would like Mr. Keller to respond.

Mr. KELLER. Mr. Chairman, as we pointed out in our report, and I want to make this quite clear, these claims, in our opinion, are not substantiated. We are not saying they are invalid, or what the amounts of the claims should be.

Chairman PROXMIRE. But they are not substantiated?

Mr. KELLER. That is right. In other words, we do not think the documentation supports the claims in full.

We did not recommend there be a recovery. I am not quite sure of the status of these three claims, but I think one of them has been settled the others are close to being settled. We can take this up with the Navy.

Chairman PROXMIRE. I wish you would, if they are not substantiated and if they have been paid out without substantiation, without legal analysis, it seems to me there ought to be an effort to revoke that award and to reclaim it.

Mr. KELLER. Mr. Chairman, we can pursue it with the Navy, but I would not want to give you any legal position this morning.

Chairman PROXMIRE. Then, what about the individuals responsible for the claims that you have reported on?

Do you know who they are?

Why don't you recommend disciplinary action against them, those who permitted these claims to be paid out while they are not substantiated adequately and no legal analysis secured before the claims were paid?

Mr. KELLER. Mr. Chairman, we are saying that there are two things at fault here: (1) the Navy system did not require the proper documentation by the contractors or by the Navy and (2) the contractors themselves did not have sufficient supporting information in their systems. Claims of these types go back a number of years in some cases. They involve a number of events which result in the claims. Our position is: Unless you insist on a documentation when it happens, it is very difficult to go back and reconstruct later on. I realize that does not specifically answer your question as to pinpointing responsibility. I think it is difficult in this case to say that particular individuals are responsible for what has happened.

Chairman PROXMIRE. Is this the reason for a lack of report on the rest of the claims?

Last year, there were \$800 million in claims pending or about to be filed. You reported on only \$114 million of that.

My request was for an examination of the Navy's disposition of all the claims.

Is there another study in progress at the GAO, or are we going to have to wait until all of the claims are disposed of so that GAO can tell us later that they were settled improperly?

Mr. HAMMOND. This review was made basically to determine what problems the Navy has, what is causing these claims. We selected three companies for this purpose.

The Department of the Navy has taken action to try to improve its procedures and avoid claims in the future. We have just recently made a review of that. Our question is: For those corrective actions that the

Navy has taken, how soon can they get corrective procedures in to the contracts?

Chairman PROXMIRE. It is constructive, and I am glad to see that. What about the \$800 million?

Mr. HAMMOND. These are the ones we reviewed specifically. This is work we had underway at the time you made the request, and these are all that we have been able to review.

Chairman PROXMIRE. So far you have only been able to report on about 14 percent of that or \$114 million out of \$800 million?

Mr. HAMMOND. Yes.

Chairman PROXMIRE. Will you be able to give us the report on the request?

Mr. HAMMOND. Yes; we will be able to.

NO METHOD TO MEASURE WEAPONS PROPOSALS AGAINST OVERALL
DOD NEEDS

Chairman PROXMIRE. Mr. Staats, I am particularly interested in the conclusion in your statement, that the Defense Department has no organized method by which proposals for new weapons can be measured against its total needs.

That is amazing and, I think, a rather disturbing conclusion because what it indicates to me is that the Defense Department, up to now at least, has had no systematic way for determining priorities in going ahead with this weapon or that. Am I correct in my understanding of your statement?

Mr. STAATS. Yes, and I would like Mr. Hassell Bell to respond to this point, Mr. Chairman. Basically, what we are concerned about is too much ad hoc-ing that has to go on, on individual problem situations that arise, such as close air support, for example. Mr. Bell would be glad to respond further.

Mr. BELL. Mr. Chairman, in the work that we completed over the last year, we made a particular point of studying the way that the individual weapon systems were proposed and evaluated. We found that each of the services had its own system for determining what its requirements would be. But the Department of Defense had not developed a way of comparing what it needed overall for a total mission against the things that were being proposed.

About a year ago, the Department started to develop a classification of mission needs, such as the strategic deterrent, ocean control, land warfare, and, then, to develop an inventory of the types of weapons they already had to meet the missions, thereby creating a better means of measuring the importance of the ones that are now being produced.

At the time we completed our job, the development was still in its infancy. We certainly think that it is a very important thing for the Department to do. Without it, they really do not have a way of measuring the proposal of one service against that of another service with a relatively common mission.

Chairman PROXMIRE. Doesn't this mean that some methods have been pushed forward through to development and production without regard to our overall military requirements?

To give you examples, the deep-submarine rescue vehicle, the F-14, B-1 bomber, would they fall into that category?

Mr. BELL. I think they would have that potential.

Chairman PROXMIRE. You say, however, that the Department of Defense is now setting up a system by which they will try to evaluate weapons mission bases?

Mr. BELL. Yes, sir.

Chairman PROXMIRE. I thought that was one of the innovations that Hitch and McNamara brought to the Department of Defense.

Mr. BELL. The planning, programing, and budgeting system.

Chairman PROXMIRE. And try to relate the different methods to different missions and alternative ways to achieve it, how you could do it with the least cost with the most efficiency.

Mr. BELL. Indeed, the PPBS system was to be exactly that also, but I do not believe it ever was effectively implemented.

Chairman PROXMIRE. You recall the emphasis Hitch and McNamara had—and Hitch wrote quite a book on it. I just wonder if we can rely on the latest vague implication, the Defense Department is moving in the same direction again.

You said you had a chance to study it in its infancy. How long ago was that?

Mr. BELL. In the fall of last year. We share your view of the importance of this type of thing. One of the things we plan to do in our future weapon systems work is to stress the need of this development and to measure its progress as we go along. We hope that kind of external view will contribute to the development of the system.

Mr. STAATS. Could I add just a word on that, Mr. Chairman?

Chairman PROXMIRE. Yes.

DECENTRALIZATION UNDER LAIRD

Mr. STAATS. You are quite correct that Secretary McNamara and Secretary Hitch pushed very hard, you might say, the program category concept which tended to focus, in budgetary terms, the major weapons systems in terms of strategic as against tactical, and so on. This approach was supported by the Congress and has been retained for purposes of budget justification. The systems analysis staff has not gone forward in the same way as previously. There has been an effort to decentralize since Secretary Laird and Secretary Packard have been responsible. One can get a lot of disagreement as to which of these two philosophies is the right philosophy.

Chairman PROXMIRE. When you decentralize it, it means each individual service may have their system of evaluation, but it is not pulled together so the overall expenditure by the Department of Defense is made coherent. So, you do not know whether the Army, Navy, and the Air Force have the best way of achieving a particular objective.

Mr. STAATS. That is exactly the problem, and what Mr. Bell is saying is that there is a move currently to redress that situation by trying to centralize more decisionmaking.

Chairman PROXMIRE. So we moved forward, we moved backward, and now maybe we are moving forward again.

MR. STAATS. For example, Secretary Packard is now heading up a task group to look at the whole subject of close air support where all three services have somewhat the same airplane. The Marine Corps has the Harrier plane; the Air Force is interested in the AX plane, and the Army is interested in the Cheyenne helicopter. This kind of issue develops when you have three services, each defending their own requirements. You have to balance those service requirements against some kind of overall need for the Defense Department.

Chairman PROXMIRE. Congressman Conable.

WAYS TO IMPROVE MANAGEMENT OF DEFENSE RESOURCES

Representative CONABLE. Mr. Staats, this is a kind of perplexing investigation we are having, because we are dealing mostly with history. In respect to possible punitive action, I guess we are talking mostly about officials of prior administrations who have long since left, or, in many cases, have gone into other activities.

Do you have any outstanding disagreements with the Defense Department at this time about which the Defense Department is obdurate, on matters of procurement, about which there is not at least studying going on to determine whether or not improvement cannot be made?

Are there issues of policy between your office and the Department of Defense that require some sort of congressional clarification?

And, if so, is there any way of bringing this policy issue to Congress pending—I am asking you a rather broad question here, sir, but we are always a little perplexed here, peering back and seeing how badly we have done something, talking about contracts let many years ago and now in unhappy fruition. We see our mistakes, but we are assured they have been corrected. Then 6 years later we have another crop of unhappy fruitions.

I would just like to know, in present terms, what kinds of lines of disagreement have been drawn between what you can see could be good accounting and procurement practices and what the present Defense Department management conceives good accounting and procurement practices?

MR. STAATS. Yes; I will try to respond to that.

The question, as you say, is a pretty broad general one. It covers a lot of different specific subjects. But this illustration of the kind of thing we feel we can make a contribution on is in the area, for example, of the study we did on the relationship of capital investment to profit objectives. The whole issue between our office and the Defense Department is that we think there has been enough demonstration to go ahead, while the Defense Department, even though it has been concerned with the problem at least as far back as 1967, feels that a lot more work must be done. What we are trying to do is push them harder and push them faster to consider capital investment in negotiating contract prices.

We have no disagreement in principle, you might say, or philosophy. The question is how do you do it and how long does it take. We think they could have moved faster than they have. That is a matter of timing and getting down to specifics.

In case of Government-furnished equipment, again, there is all of the work we did, work which the committee did here, going back

several years. A number of actions were taken. Leasing charges on equipment for commercial purposes were increased. These would not have been increased without the assistance of the GAO and the interest of this committee.

These do not resolve themselves into differences, you might say, of basic policy as much as they do of whether they are moving fast enough in the direction we think is needed to improve the management of the resources of the Defense Department. We try not to deal with minutia and we think we have the capability as an outside group, made up of people who have had long experience in this field, to find areas where improvements could be made.

I guess what I am saying here is that we are not dealing purely with problems as revealed by hindsight; we are also dealing with ways to improve the management of the resources of the Defense Department.

Representative CONABLE. I am sure they are interested in that, too.

Mr. STAATS. A different kind of illustration.

We did a study on the subject of man, on personnel activities of people involved in the procurement function in the Defense Department. This goes to the question of length of tour of duty, how long they keep a man on the project, and whether or not his successor has information or knowledge about the project he has been working on.

The Defense Department bought most of this; the Fitzhugh panel bought most of what we recommended. I do not say this critically of the Defense Department, but I think, without the benefit of a study of this type, they would not have taken the action, at least as timely and to the extent they did.

Representative CONABLE. I do not question for a minute the value of your study. Do you have any way of judging what we are talking here about, in terms of money?

How much fat could be eliminated from the Defense budget?

Are we talking about a very substantial part of the procurement budget, or are we talking about probable comparatively modest amounts at this point?

Mr. STAATS. I do not know any way that I can honestly say that we or anybody else could give you a ballpark figure on that. Our philosophy is, wherever you see the opportunity for savings, you ought to take it.

Representative CONABLE. That is a good philosophy.

Mr. STAATS. Whether it is small or large or medium size.

Let me give you another kind of illustration of where we think we can make a contribution to the phasedown in our operations in Vietnam. We have a staff in that area. From the point of trying to identify ways and means by which we can get better utilization of the equipment that is in transit or already there as against having to buy more, where you could transfer over the military assistance purchase to Vietnam instead of buying new equipment, where there are accurate standards as to what the Vietnamese can use or not use—this is the type of management problem where we can contribute to greater economy in DOD operations, I think we can safely say, and I think the Defense Department agrees that our recommendations resulted in very substantial savings, but I could not give you a dollar amount as to what would be involved.

Representative CONABLE. Thank you, Mr. Chairman.

NON-COMPLIANCE WITH TRUTH IN NEGOTIATIONS ACT

Chairman PROXMIRE. Yesterday, Mr. Staats, serious charges were made about violations of the Truth-in-Negotiations Act. According to Admiral Rickover, this act is being violated by whole segments of major industries doing business with the Defense Department, including the steel industry, the computer industry, the nickel industry, and the forging industry. Has GAO been aware of this situation? And is GAO in the process of investigating any of these charges?

Mr. STAATS. Mr. Hammond will gladly respond to this.

Mr. HAMMOND. In 1965 we reported to the Congress that cost data was not being obtained on HY 80 steel, that the prices paid to Lukens and United States Steel, were the same and that cost data should be obtained. Under the law there is an exemption for the catalog-priced items, but since this steel is sold primarily to the Government, there are no commercial sales, or very few commercial sales, to compare them with.

This is something that we believe cost data should be obtained on.

Chairman PROXMIRE. That report was 6 years ago, as I understand it. United States Steel and Lukens Steel.

Mr. HAMMOND. That is right; they were prime producers.

Chairman PROXMIRE. They were not complying with the Truth in Negotiations Act and were making identical bids for steel contracts that the navy yard require compliance. Has GAO done anything to follow up that case?

Mr. HAMMOND. One other thing happened. In reply to that report, the Navy advised they had brought another company in to compete with those two, but we do not believe this has really changed the situation, and we are now following up to see what can be done.

We received a letter from Assistant Secretary of the Navy, I. & L., I think in March, asking for any assistance we could give them in trying to resolve this issue.

Chairman PROXMIRE. Here is exactly what Admiral Rickover was complaining about. These companies seemed to be still in violation after 6 years. I wonder what action can be taken.

He refers to the Justice Department. Can we act on the antitrust statutes?

Mr. KELLER. One of the problems, Mr. Chairman, is that the Truth-in-Negotiations Act requires submission of cost and pricing information when negotiating a contract over \$100,000—assuming it does not fall within one of the exceptions to the act. The Government on occasions finds itself in the position where the seller may say: "I just will not sell on those terms." In other words, it is a question of enforcing the Truth-in-Negotiations Act.

It is kind of like the story of the person with the best mousetrap.

Chairman PROXMIRE. Isn't he mandated to sell, under the Defense Production Act?

Mr. KELLER. I suppose, if that was invoked, he could be. But I do not recall that step being taken.

Chairman PROXMIRE. Why not?

Why hasn't it been taken? It is the law. Either we ought to repeal that law or use it.

Mr. KELLER. I cannot answer your question.

Chairman PROXMIRE. You will agree that he can be mandated to sell, under the Defense Production Act?

Mr. KELLER. Yes, sir; under certain conditions laid out in the act.

Chairman PROXMIRE. Isn't the GAO doing anything to follow up on these cases, to recommend action that could be taken to secure compliance with the law?

Mr. KELLER. At the present time, Mr. Chairman, we are taking a good hard look at what has happened, the number of exceptions that have been granted at the secretarial level, for what reasons, and seeing what can be done in this area.

Chairman PROXMIRE. Would you report to us on that?

Mr. KELLER. Yes, sir.

MISUSE AND GOVERNMENT-OWNED EQUIPMENT

Chairman PROXMIRE. We also heard testimony from small independent businessmen and from the head of the National Association of Tool and Die Makers of widespread misuse of Government-owned industrial production equipment in the hands of contractors, especially large aerospace contractors. The witnesses gave us specific instances of misuse, and I would like to ask you whether you will investigate these specific instances reported to us and whether you have plans for a larger investigation of this entire matter? They made, I thought, a devastating case. They pointed out the tool and die industry really has been hit hard. Here are these independent businessmen with their backs to the wall, with very large contractors who have Government-owned equipment that is being used for commercial purposes; and, even if rental, full rental, is charged, it gives the contractor a tremendous advantage, because when that equipment is idle, he does not have to worry about depreciation charges on it or it being idle, because it is the Federal Government itself. When he uses it, a rental charge is made, but usually it is not very big. It is variable; it is not strictly enforced, and these men seemed to me to have a very strong case.

What they have recommended and what I have introduced as a bill is a prohibition against the use of this equipment for commercial work at all. I would hope that we could get some favorable consideration of that.

Can you tell us the figures for annual purchases of industrial production equipment and other categories of Government-owned property in the hands of contractors since 1965?

We had testimony from this particular industry that the Defense Department said there was a slowdown, that they were suspending it, that they would not be doing too much purchasing, but for 5 years, up until 1968, I believe, they averaged \$50 million of purchases, and it went to \$150 million in 1969, and then last year it was \$100 million. So, rather than a slowdown, it has been speeded up. If this is a slowdown, a status-quo situation would ruin them.

Mr. STAATS. The figures we have in the report relate to the total now held which also reflect any disposals. But I do not have the new purchases. That is your question, I believe.

Chairman PROXMIRE. Yes, sir.

Mr. STAATS. Year by year.

Chairman PROXMIRE. Can you get this for us?

Mr. STAATS. I think we can get that.

Chairman PROXMIRE. I meant to ask—and it was my fault I did not ask you about it. Could you respond to the point of whether you have plans for a larger investigation of this matter?

Mr. STAATS. Of Government-owned equipment?

Chairman PROXMIRE. That is right.

Mr. STAATS. Yes; we have set this out in the appendix. We can go into it, if you would like, now. We have set it out in attachment V to my statement.

Chairman PROXMIRE. I wondered if you planned a larger investigation of these charges.

Mr. STAATS. Made yesterday by the individual companies?

Chairman PROXMIRE. Yes.

Mr. STAATS. I read their testimony. We have not discussed the feasibility of our getting into it, but we would be very happy to consider it.

If I understand it correctly, in part they are raising the issue you mentioned; the other is, they do not feel the charges are high enough yet. We can look at that question, certainly.

Chairman PROXMIRE. I wish you would.

INADEQUATE RECORDS OF GOVERNMENT-OWNED EQUIPMENT

I note in your statement that there is no reported amount for special tooling and test equipment and that it has been estimated by DOD to be around \$3 billion.

Why are there no records for this huge category of property, \$3 billion?

Mr. GUTMANN. We really do not know why the Department of Defense does not have any better records. We have that estimate also from the Department of Defense, of \$3 billion.

Chairman PROXMIRE. Well, could you recommend to us action that we might take to persuade the Defense Department to keep records on that? That is pretty appalling.

Mr. GUTMANN. Certainly, you could make a strong recommendation that they do it. There are lots of problems involved in it because of special tooling composed of many, many relatively small items.

Chairman PROXMIRE. But isn't the problem that they really do not know how much there is?

They have been using the same estimate for years. They do not know how much there, so they say \$3 billion. It may be more or less, but they won't study it and come up with an accurate analysis of how much there is.

Mr. GUTMANN. That is true.

Mr. STAATS. We would be happy to see what we have.

Chairman PROXMIRE. So, they could have given half of it away, for that matter.

Mr. STAATS. I refer you to attachment V of our statement on the review we are making currently on this. Again, it is not complete, but the plants we have visited so far in this particular study, there has not been, we say at the bottom of the page—" * * * there has been very little acquisition of Government-owned equipment in the past 3 years. However, there continues to be deficiencies in contractors' records of machine utilization, and we are still finding some cases where there is

a lack of uniformity in computing rent due for commercial use of Government-owned equipment.”

Chairman PROXMIRE. When you say “no acquisition,” in view of the testimony yesterday, does that explain the fact they may be talking about replacement, that they have the same amount of equipment but they may be replacing it?

Mr. STAATS. Offhand, I do not see why we could not take the cases of yesterday and check out the specific plants. They apparently know what they are talking about.

Chairman PROXMIRE. In your statement, you note that no progress has been made in the disposition of Government-owned property in the hands of contractors, since at least 1967. I refer to the entire \$13 billion worth of property which you describe in attachment V to your statement.

You also indicate that the Defense Department is about to reverse its stated policy of disposing of this property in the near future, after assuring the Congress that it did intend to get rid of it and after issuing a DOD memorandum dated March 4, 1970, calling for the phaseout of Government-owned facilities in the hands of contractors.

Does the GAO have authority to do anything about the Pentagon's failure to adhere to its own stated policy and about its apparent intent to reverse this policy and to do nothing in the future, or must we all simply stand by and continue watching the flagrant abuse and misuse of Government-owned property?

Mr. STAATS. We have no authority to direct anybody, Mr. Chairman, in this respect. All we can do is develop the facts and report them to the Congress.

SUSPENSION OF DOD POLICY TO PHASEDOWN GOVERNMENT-OWNED EQUIPMENT PROGRAM

Chairman PROXMIRE. I understand that.

What I should ask, perhaps, is whether what I have just stated is accurate and the case, that they do intend now to reverse their position on the basis of what they have said recently.

Mr. GUTMANN. Well, I think that the announced phasedown program of a few years ago has slowed down materially. There is no question about that.

Mr. Rothwell, who is in charge of our work in that area, could shed some more light on that and also could tell you about the reviews we are planning. In fact, we have some underway now at 28 contractors' plants where there is about \$350 million of this type of equipment involved.

Mr. Rothwell, do you want to comment on that?

Mr. ROTHWELL. Mr. Chairman, the statement with respect to slow-down and reversal of phaseout had reference, I believe, to Mr. Packard's memorandum of February 13, 1971, in which he reiterates the desire of the Department of Defense to continue a phaseout program. However, he qualifies this with the statement that there will be a reassessment of the phaseout program in light of the mobilization requirements of the Department. And together with that, he permits the Secretaries of the Army, Navy, and Air Force to take certain steps which, in our opinion, as reflected in our statement here, in effect, suspend the phaseout program for the present.

These exceptions, for example, include the authority to defer any phaseout where it would work an economic hardship on a particular company. Exceptions of that type, in our opinion, in effect suspend—

Chairman PROXMIRE. I think your conclusion is absolutely logical, but when you talk about "in view of the needs of mobilization," what are we mobilizing?

It is my understanding, by listening to the President's speeches, we are getting out of Vietnam; we are demobilizing to some extent; they are cutting down. People are talking about a peace dividend and reducing the claim on resources of the Defense Department. Now, we are talking about mobilization and, therefore, a need for more equipment, Government equipment, in the hands of contractors.

I do not understand what this flows from. I am not criticizing you. I think your interpretation of what the Defense Department states may be logical, but I cannot understand what they are talking about.

Mr. ROTHWELL. I believe they are referring to the long-range plans of the Department of Defense to maintain an industrial equipment mobilization base, and, therefore, they have suspended the 5-year phaseout program until they determine what their long-range plans in this regard should be.

Chairman PROXMIRE. Have you ever looked at that, Mr. Staats, at what they have in mind in terms of a long-range mobilization program at this phase of our international affairs?

Mr. STAATS. It is made up of not only equipment and tools, it is also made up of stockpile, and in this area the Office of Emergency Preparedness is responsible.

We have not made a review, from the standpoint of whether it is adequate or inadequate, from the standpoint of what the Nation needs. I doubt if we could make much of a contribution on it.

Chairman PROXMIRE. This is what you conclude in attachment V to your statement:

The Department of Defense has since issued a memorandum on February 13, 1971, stating that the DOD was reassessing its mobilization production planning program. The memorandum authorizes the Secretaries of the Departments to approve exemptions or exceptions to the basic policy of the 5-year phaseout plan. We believe that this memorandum will suspend some of the activity which may have been anticipated in connection with the 5-year phaseout plan.

It certainly looks like at the very least they are slowing down the acquisition of equipment for Government contractors, not reversing it, and they may very well be reversing it. At a time when it seems, on a basis of logic, if we are deescalating Vietnam and pursuing the Nixon doctrine of lessened military involvement of our own troops elsewhere, it does not seem to make logical sense.

Mr. GUTMANN. It could be considered logical in this sense, Mr. Chairman. I think he is referring to a mobilization reserve. There are industrial equipment mobilization packages that are set up even now, and some years back we made a review of the extent to which these are being properly maintained.

Now, in a period of declining defense activity and defense procurement, it probably would be very difficult to dispose of some of this equipment at a fair price. Contractors are probably not going to be interested in buying it. However, if we do dispose of it and later an emergency does arise, we do not have the production capacity to quickly get back into production.

Chairman PROXMIRE. Well, the first point: Yesterday, the industry people, tool and die people, the Tool and Die Association, they were competent people who represented the industry, said there was a demand for this, that you could get a good price, that you could sell it.

Mr. GUTMANN. I think this probably could very well be true with respect to certain types of equipment, but, broadly speaking, I would tend to agree, at this stage of changing emphasis on expenditures, and so on, that it would be well to appraise this program before they continue very hard in the direction of disposing of this equipment.

IMPACT OF PROHIBITING USE OF GOVERNMENT-OWNED EQUIPMENT FOR COMMERCIAL USE

Chairman PROXMIRE. Let me just ask you one more question and I will yield to Congressman Conable.

What adverse impact, if any—and I can see the favorable part of it—would there be in prohibiting at any time under any circumstances the use of Government-owned equipment for commercial work? I am talking about adverse impact on the defense of this country, on the security of our country.

Mr. GUTMANN. It is difficult to see adverse impact on the defense of the country. I can see adverse economic impact, but if the need for defense utilization of this equipment declines, rather than have it lie idle, you might just as well rent it to the contractors for their commercial use.

Chairman PROXMIRE. I am not talking about having it lie idle. Once you do this, there will be an incentive of defense contractors to sell it, dispose of it.

I cannot think of a more advantageous situation. I used to own a printing plant, and to have my equipment with either no depreciation on it—and that is a big worry when you have a lot of equipment and capital intensive operations—or being able to use it any time I want to, to any extent I wanted to, you could beat any competitor.

The advantage on the side of the big contractor under the circumstances, using Government-owned equipment, is so decisive and so unfair, it seems to me. Unless you can show a clear defense reasoning, it would seem that the arguments for prohibiting its use for commercial purposes are very large. You know yourself Mr. Staats, how very hard it is to discipline effectively, to charge adequate rentals, fair rentals, and to make sure they are being charged. It is a tough thing to do, isn't it?

Mr. STAATS. It is difficult. I think the answer to your question in part revolves around the point of whether or not it is necessary to keep that tool in place or that piece of equipment in place for mobilization reserve purposes.

If there has been a justification for that, then you would be better off to use that piece of equipment, to keep it in a higher state of readiness as well as getting some rental from it. But the real test is whether or not it is absolutely necessary to have it for mobilization purposes.

Chairman PROXMIRE. In the meantime, you are killing your small business people because they cannot compete. It is clear they are suffering.

There is the case of bankruptcy and the case of severe economic hardship.

Representative CONABLE. Is it necessary to kill the small business by charging adequate rent for the use of the Government-owned equipment? It is not necessary, is it?

Mr. STAATS. I think the answer obviously is that there ought to be adequate rental.

Representative CONABLE. Obviously.

Mr. STAATS. But I think there may be an issue here as to what is an adequate rental. We are not prepared to pass judgment on these cases presented to the Government yesterday, as to whether there were or were not adequate rental.

VALUE OF GOVERNMENT-OWNED EQUIPMENT

Representative CONABLE. Mr. Staats, I want to know what we are talking about again. The Chairman used the figure of \$13 billion. I notice in attachment V to your statement, "the cost of Department of Defense-owned facilities in contractors' custody was \$9.9 billion." That is cost. If there is, roughly, \$100 million a year added on the machine-tools' side of it, a lot of it must be pretty old, isn't it?

Mr. STAATS. Some of this is old. Some of it may date back to World War II.

Representative CONABLE. Is there any effort to establish an inventory value, other than a cost value?

Mr. STAATS. As far as I know, there is not.

Representative CONABLE. So we do not know whether we are talking of \$29 billion or \$5 billion or \$15 billion if, in some cases, the values have gone up.

Mr. STAATS. This is true with all Government-owned equipment. It is neither depreciated nor calculated at its current market value.

Chairman PROXMIRE. If the Congressman would yield for a moment on that point.

What I refer to is attachment V to your statement where you say: "The \$9.9 billion is broken down as follows:" And the last two sentences in the same paragraph: "There is no reported amount for special tooling and test equipment. It has been estimated by DOD officials to be around \$3 billion."

So adding the roughly ten to three is where we get the \$13 billion.

Representative CONABLE. You do not know whether that test equipment is useful for any other purpose or not? Is there any way we can improve our knowledge of this, other than requiring the Defense Department to make some sort of an inventory?

They must have an inventory of some sort, or you could not come up with these figures.

Mr. GUTMANN. I believe, Mr. Conable, that the Defense Department believes that it would be more costly for them to maintain a perpetual inventory of \$3 billion worth of relatively small items than the benefits to be obtained by it. This is special test equipment which has been purchased especially for a given piece of equipment, a missile, a gun, or any kind of weapon and does not have general application. It is not likely to be available and is not useful for transfer to other plants as general-purpose equipment when it becomes excess at one plant. The Department of Defense has a facility for assuring that needed equipment is transferred to another plant rather than buying

new equipment. They have a Defense Industrial Production Equipment Center that clears this equipment, clears requests for purchases of new equipment against designations of excess equipment at other locations.

But the cost entailed in dealing in that manner with special test equipment is just not worth it.

Representative CONABLE. Apparently, then, there is an inventory for the \$9.9 billion but not the \$3 billion, is that right?

Mr. GUTMANN. Yes.

Representative CONABLE. So, we do have accurate figures on \$9.9 billion, but that is only on a cost basis, and we do not know to what extent that should be depreciated or to what extent the age of it has affected its value.

Mr. GUTMANN. Yes, I think that is true.

Mr. CONABLE. Mr. Rothwell would like to add something.

Mr. ROTHWELL. If I might attempt to clarify these figures for just a moment.

The \$9.9 billion is the total amount of the Government equipment and brick-and-mortar facilities and is comprised of items of industrial plant equipment, other plant equipment, and so forth. It does include the \$3 billion of special tools and special test equipment.

Chairman PROXMIRE. It does. Beg your pardon. It does include. I stand corrected.

The \$10 billion is the total amount, then?

Mr. ROTHWELL. That is correct. The difference between this \$10 billion here and the \$13 billion mentioned earlier is an amount of approximately \$3 billion representing Government-furnished materials usable by contractors.

Representative CONABLE. You mean inventory items?

Mr. ROTHWELL. Inventory items, yes, sir.

Representative CONABLE. Stockpiling of nickel and things like that?

Mr. ROTHWELL. It could be paint, lumber, hardware, and things of that nature. But to add one further point, sir, the \$3 billion in special tooling is so categorized because it is identified as equipment or tooling which is only usable for a particular program, such as the F-14 aircraft program or the Mark 48 torpedo program.

It is thought to be usable only in that particular program and generally only by the prime or subcontractors involved in that program. Therefore, the Department of Defense has concluded that the expense and effort of maintaining dollar inventories would not be worthwhile for those particular items of equipment. The contractors individually are expected to maintain records of such tools, but the Defense Department does not receive or get reports from them; it does not accumulate an overall inventory of that \$3 billion.

Representative CONABLE. It has no commercial utility?

Mr. ROTHWELL. This is the assumption.

Representative CONABLE. The only value would be salvage value, if there were to be any?

Mr. ROTHWELL. That is correct.

Chairman PROXMIRE. I have here a table presented by the GAO at our request. It shows a total of \$13.765 billion in Government property held by contractors, consisting of industrial plant equipment, \$2.2 bil-

lion; other plant equipment, \$2.4 billion; materials, \$3.8 billion; industrial real property, \$2.2 billion, and special tooling and test equipment, \$3 billion. That is, as of 1971, it is \$13.3 billion.

Mr. STAATS. That has materials in it. This \$9.9 billion does not.

IMPACT OF GOVERNMENT-OWNED EQUIPMENT ON COMMERCIAL PROFITS
IN AEROSPACE INDUSTRY

Chairman PROXMIRE. All right, fine.

Has GAO made any attempt to calculate the impact of the misuse of Government-owned property by aerospace contractors on their commercial profits?

In other words, if the contractors are misusing Government-owned property in order to unfairly compete with small business and subcontractors, as the testimony indicated yesterday, wouldn't this help to explain the fact that their profits on commercial business are as high or higher than their defense profits?

In other words, if they can take Government-owned equipment and make use of it in their commercial operation, this is going to increase their nondefense profits and make the nondefense profits compare very favorably?

Mr. STAATS. I would not think so, Mr. Chairman, if the rentals are adequate.

Chairman PROXMIRE. But you say they are not.

In your statement you say:

The adequacy of reimbursement to the Government for use of the equipment for commercial production continues to be a problem. * * * Our preliminary observations are that there continue to be deficiencies in contractors' records of machine utilization and a lack of uniformity in computing rent due to commercial use of Government-owned equipment.

Certainly, the testimony we had a couple of years ago documented that very, very thoroughly and carefully. It is very hard to insist on those records and to discipline.

Mr. GUTMANN. I think you are right, Mr. Chairman. That is a difficult problem. We have given attention to this subject off and on for many years. We wrote a report on it in 1958; we wrote another one on it in 1964, and we have issued a more recent one in 1969.

Chairman PROXMIRE. Have you made a study of the impact on the commercial profits?

Mr. GUTMANN. As far as a study of the impact on commercial profits, no, sir. We have not included that in our work.

Chairman PROXMIRE. Wouldn't that be helpful and useful and couldn't that explain one of the reasons why the nondefense profits are high for these contracts?

Mr. GUTMANN. Have you been into that, Mr. Flynn?

Mr. FLYNN. No, we did not cover that in our study.

Chairman PROXMIRE. This is Mr. Flynn; right?

Mr. FLYNN. Right. Of course, many of the contractors we looked at did have Government equipment. But if the rentals were adequate, then that would keep the situation in balance.

Chairman PROXMIRE. And if the rentals weren't adequate, and your testimony is that they often were not, then there would be—

Mr. FLYNN. Certainly, there would be an advantage if a contractor

were paying less rental than he should for a piece of equipment. The problem would be to get those rentals up to where they should be. If it is in the interest of national defense to have that equipment in the contractor's plant, it would seem to me—

Chairman PROXMIRE. We were told that DOD's surveillance of Government-owned property is limited to reviewing the paperwork. Do you know whether DOD regularly inspects Government-owned equipment in the contractor's plant to check on their use, or do they simply examine the form that the contractors submit?

Mr. GUTMANN. Mr. Proxmire, we have in past reviews found that in the larger plants there is a Government property accountability officer, and he does keep inventory records of the property there. The contractor generally holds a cost-reimbursement type of contract for the proper maintenance and care of that Government-owned property. This kind of a situation is the one that we are going to review in the present work we are doing at 28 different locations.

GAO DEFENSE PROFITS STUDY

Chairman PROXMIRE. Mr. Staats, I want to make a comment about the GAO's Profits Study before asking any questions on this. There seems to be some misunderstanding about why GAO conducted the onsite reviews of the 146 contractors, and this confusion may exist in the minds of some of your people in GAO. One of the reasons we asked for this study was because there had never been a comprehensive study of defense profits and also because of the questions that had been raised about the LMI study. Those questions concern the fact that LMI did its study with a questionnaire and that they did not audit the books and records of the contractors. Therefore, when I discussed the amendment I introduced in 1969 for a profits study, I made it clear on the floor of the Senate that in addition to whatever questionnaire or voluntary submission of data, that there would also be an audit of individual contractors. Let me read the statement I made in response to a question from Senator Stennis:

In my view, it would be necessary to make a comprehensive audit of particular contractors investigated, to be sure it is accurate. It would not be sufficient, obviously, simply to ask them what their profits were.¹

At this point, I would like for you, Mr. Staats, to submit for the record the GAO profit study as finally reported, as well as the earlier draft, a copy of which was inserted in the Congressional Record a few days ago by Congressman Aspin, and also copies of the correspondence with LMI, the Department of Defense, the Aerospace Industries Association, and the other groups who were asked to comment on the early draft.

(The material referred to follows:)

¹ Congressional Record, Sept. 17, 1959, p. S10744.



REPORT TO THE CONGRESS

**Defense Industry
Profit Study** B-159896

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

MARCH 17, 1971



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-159896

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on our defense industry profit study, made pursuant to the provisions of the Armed Forces Appropriation Authorization Act for fiscal year 1970, approved November 19, 1969 (Pub. L. 91-121).

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of Defense; the Administrator, National Aeronautics and Space Administration; the Chairman, Atomic Energy Commission; the Secretary of Transportation; and the Commandant, United States Coast Guard.

A handwritten signature in cursive script, reading "Thomas P. Abate".

Comptroller General
of the United States

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ABBREVIATIONS

AEC	Atomic Energy Commission
ASPR	Armed Services Procurement Regulation
CPFF	cost plus fixed fee
CPIF	cost plus incentive fee
DOD	Department of Defense
DOT	Department of Transportation
ECI	equity capital investment
FFP	firm fixed price
FPI	fixed price incentive
GAO	General Accounting Office
GOCO	Government-owned contractor-operated
NASA	National Aeronautics and Space Administration
TCI	total capital investment

D I G E S TWHY THE REVIEW WAS MADE

The Armed Forces Appropriation Authorization Act for fiscal year 1970, approved November 19, 1969 (Pub. L. 91-121), directed the General Accounting Office (GAO) to study profits earned on negotiated contracts and subcontracts entered into by the Department of Defense (DOD), National Aeronautics and Space Administration (NASA), and the Coast Guard. Contracts of the Atomic Energy Commission (AEC) awarded to meet requirements of DOD were included. (See p. 7.)

FINDINGS AND CONCLUSIONS

Profit before Federal income taxes, on defense work, measured as a percentage of sales, was significantly lower than on comparable commercial work for 74 large DOD contractors included in the GAO study. For example, profits on DOD contracts averaged 4.3 percent of sales over the 4 years, 1966 through 1969, but profits on comparable commercial work of the 74 contractors averaged 9.9 percent of sales for the same period. When profit was considered as a percent of the total capital investment (total liabilities and equity but exclusive of Government capital) used in generating the sales, the difference narrowed--11.2 percent for DOD sales and 14 percent for commercial sales. Further, when profit was considered as a percent of equity capital investment of stockholders, there was little difference between the rate of return for defense work and that for commercial work. The 74 large DOD contractors realized average returns before Federal income taxes of 21.1 percent on equity capital allocation to defense sales and 22.9 percent on equity capital allocated to commercial sales. (See p. 15.)

The major factor causing the rates of return on contractor capital investment for defense and commercial work to be similar was the substantial amount of capital provided by the Government in the form of progress payments, cost reimbursements, equipment, and facilities. This reduced the capital investment required from the contractors for defense work. (See pp. 15 and 16.)

In reviewing congressional hearings which led to this study, GAO noted some concern that contractor capital requirements had not been considered in negotiating defense contract prices. Although such a review was not called for specifically in the legislation, GAO reviewed 146 negotiated contracts to see whether it was practicable to develop

investment data by contract and whether any wide range in profits on defense contracts existed. The work showed that cost, profit, and invested capital data could be developed by contract and that there was a wide range of profit rates on defense contracts. (See pp. 34 to 38.)

The average rates of return for individual contracts were substantially higher than the average annual profit rates developed from GAO's questionnaires to 74 large defense contractors. The 146 contracts examined cannot be considered as a representative sample, and it would have been mere coincidence if similar rates had resulted in both phases of the study. The differences between the two were:

- The large number of DOD procurement actions, over 180,000 a year of \$10,000 or more, covering a large number of different items and industries involved and the work required to develop data for each made it impracticable to attempt to develop a representative sample.
- The data furnished by contractors in response to the questionnaire were on overall defense business, not on an individual-contract basis.
- GAO considered only completed contracts where profits or losses were ascertainable and, as a result, probably avoided many, loss contracts having large unsettled claims. (See p. 38.)

Under current defense contract negotiation procedures, little consideration is given to the amount of capital investment required from the contractor for contract performance. Instead, profit objectives are developed as a percentage of the anticipated costs of material, labor, and overhead. As a result inequities can and do arise between contractors' providing differing proportions of capital required for contract performance. (See pp. 41 to 43.)

Further, by relating profits to costs, contractors in noncompetitive situations are not provided with positive incentives to make investments in equipment that would increase efficiency and result in reduced costs, especially where follow-on contracts are involved. Under the current system of negotiating contract prices, such investments tend to lower, rather than increase, profits in the long run. Other factors, however, such as whether the program will be continued, could be overriding considerations affecting contractors' decisions concerning investments in equipment. (See pp. 44 and 45.)

GAO believes that, in determining profit objectives for negotiated Government contracts where effective price competition is lacking, consideration should be given to capital requirements as well as to such other factors as risk, complexity of the work, and other management and performance factors. (See p. 54.)

Where contractor capital requirements are insignificant, such as in many service-type contracts or contracts for the operation of

Government-owned plants, profit objectives would continue to be developed primarily through consideration of the other factors. (See p. 54.)

The system adopted should be used, where applicable, by all Government agencies to simplify industry participation. (See p. 55.)

CONTRACTOR COMMENTS

GAO requested comments from five contractor associations on a draft of this report that was based on incomplete data. Two of the associations agreed with the conclusion that investment should be considered in determining profits; however, they and two other associations felt that the report grossly overemphasized the rate of return on investment and reflected a preoccupation with the need to consider contractors' capital requirements in negotiating profit factors. The fifth association did not furnish any comments on this point.

GAO agrees that there are other factors that must be considered in negotiating contract profit rates. Such factors as the contractors' assumption of cost risk, difficulty of the task, and other management and performance factors must be evaluated and considered. In some cases, such as for a Government-owned contractor-operated plant, little or no contractor investment is involved; in other cases the entire investment required for contract performance is provided by the contractor. Where the investment required from the contractor is insignificant, the other factors naturally would be the determining items in establishing profit objectives. In still other cases, however, GAO believes that, to the degree that contractor capital is required, it should be considered. (See p. 50.)

Two of the contractor associations questioned GAO statements that contractors have little incentive to invest in more modern equipment to reduce costs relating to many negotiated procurements. The associations stated that GAO had failed to consider and recognize the "real world" competitive environment of today's defense business.

For competitive and other reasons, contractors make some investments in facilities and equipment for performance of negotiated defense contracts. Actually, however, little price competition is involved in much of the DOD procurement. For example, of the total dollar value of DOD procurement for fiscal year 1970, only 11 percent was formally advertised and an additional 27 percent was negotiated on the basis of price competition. A total of 57 percent was placed on a sole-source basis, and the remaining 5 percent involved design or technical competition.

There is, of course, some incentive to reduce costs on negotiated firm fixed-price and fixed-price incentive contracts even if they are sole-source contracts. Such reductions in cost, however, could reduce profits on subsequent defense contracts. Such contracts would be priced

on the basis of prior cost experience to a large extent, and the profits would be determined as a percentage of estimated costs.

The contractor associations almost unanimously questioned GAO data for the 146 individual contracts and stated that they felt that either an unfortunate selection of contracts was involved or there were flaws in the method of ascertaining capital invested in such contracts. (See p. 51.)

For reasons stated previously, GAO agrees that no attempt was made to obtain a sample representative of all defense contracts. GAO was interested in determining whether it was feasible to develop cost, profit, and invested capital data by contract and, if so, the range of the rate of return on invested capital realized for individual contracts. GAO found that it was feasible to develop the desired data for most contracts and that there was a great range in rates of return on investment for individual contracts. (See p. 51.)

In each case GAO, in developing data for individual contracts, presented its data to the contractors involved and gave them an opportunity to review the data and comment on it. GAO has carefully considered the comments received and believes that the final data are reasonably accurate. The number of cases involving factual disagreements was relatively small. (See p. 51.)

AGENCY COMMENTS

GAO provided a draft of this report, based on incomplete data, to AEC, DOD, the Department of Transportation (DOT), and NASA for review and comment.

All the agencies agreed that due consideration should be given to the total capital investment of contractors in negotiating Government contracts which do not involve price competition. DOD pointed out, however, that the solution of highly complex administrative problems was required before the policy could be put into effect. Also AEC believes that there is no need for a uniform Government-wide fee policy stressing consideration of invested capital and feels that the development of detailed uniform guidelines could have a serious, disruptive effect on the existing overall fee policies of the various executive agencies.

GAO agrees that there are serious administrative problems in providing for consideration of contractor total invested capital related to a particular contract in negotiating contract profit rates. DOD had been considering this matter since 1962, and GAO believes that it is time to move ahead.

GAO agrees also that there are many advantages to permitting agencies to tailor their policies to their individual needs. Many companies, however, deal with numerous Government agencies, and GAO believes that, where feasible, uniform policies should be established governing the relations between Government and industry. GAO believes further that

it seems feasible and desirable to establish uniform Government-wide guidelines for establishing profit objectives for negotiating Government contracts where effective price competition is lacking. (See p. 52.)

RECOMMENDATION

Action required to establish uniform guidelines does not require legislation. The Office of Management and Budget should take the lead in interagency development of uniform Government-wide guidelines for determining profit objectives for negotiating Government contracts that will emphasize consideration of the total amount of contractor capital required when appropriate, where effective price competition is lacking. (See p. 55.)

CHAPTER 1INTRODUCTION

The Armed Forces Appropriation Authorization Act for fiscal year 1970, approved November 19, 1969 (Pub. L. 91-121), directed the General Accounting Office to study profits earned on negotiated contracts and subcontracts entered into by the Department of Defense, National Aeronautics and Space Administration and the Coast Guard. Contracts of the Atomic Energy Commission awarded to meet requirements of DOD were included. (See app. I.)

Unless otherwise stated, the profits presented in this report are before Federal income taxes to prevent any distortion due to special tax considerations. We also felt that it would be preferable to obtain data on profits prior to reductions for Renegotiation Act determinations of excessive profits. Such actions would not have been completed for much of our data on 1969 profits and there were some outstanding actions pertaining to prior years. Further, the dollar amounts of excessive profits determinations have not been substantial in recent years in relation to the profits involved.

For example, our average rate of return on total capital investment for DOD sales of 74 large DOD contractors was 11.2 percent. Even if all excessive profit determinations of the Renegotiation Board during the period covered by our study had been considered as applying solely to the 74 large contractors, the effect would have been to reduce this amount by only 0.2 percent, to 11 percent. Voluntary refunds and price reductions reported by contractors to the Renegotiation Board would normally have been deducted by the contractors in arriving at net income reported to us. In any event, these amounts would have had an insignificant effect on the profit data presented in this report.

The costs of defense business include all costs allowable, including costs unallowable under section 15 (contract cost principles and procedures) of the Armed Services Procurement Regulation. This made computations of profit rates for defense and commercial work comparable.

DEVELOPMENT OF ANNUAL PROFIT RATES
FOR PERIOD 1966 THROUGH 1969

We developed a questionnaire to obtain information from selected contractors for the years 1966 through 1969 on sales, profits, total capital investment, and contractor equity investment for defense business and comparable commercial sales. We asked that noncomparable commercial sales and related investment data be reported under the category "Other." This category included such items as sales by overseas activities and sales of transportation and communication services where the rates were set pursuant to law or regulation. The profits on such noncomparable items and related data are not discussed in this report. Provision was made for separate reporting of the operating results for Government-owned contractor-operated (GOCO) facilities and similar activities requiring little or no contractor investment, to prevent distortion of data on return on capital.

A further breakdown of defense sales and profits by type of contract was requested, although the legislation called for a study of only negotiated defense contracts, we asked for and received information on all work of the contractors in order to (1) reconcile cost allocations to the various categories of sales, (2) reconcile capital allocations to the various sales categories, and (3) permit comparisons of contractors' rates of profit on total defense business and on commercial work.

Questionnaires were sent to 154 contractors which, as a group, had received (1) about 60 percent of recent DOD prime contract awards of \$10,000 or more, (2) about 80 percent of similar NASA contract awards, and (3) a significant part of AEC and Coast Guard contract awards. The 154 contractors included the 81 largest DOD contractors, excluding oil companies and nonprofit companies, taken from a list of the 100 contractors and their subsidiaries receiving the largest dollar volume of military prime contracts of \$10,000 or more in fiscal year 1969. Oil companies were excluded because a major part of the procurement involved had been advertised or awarded through price competition and would not have been affected by DOD's policies in negotiating profit. We received excellent cooperation from the contractors in completing the questionnaire and in all phases of the study.

In summarizing data for large DOD contractors, General Motors Corporation was excluded because its great volume of commercial sales would have substantially altered our commercial data and the result would not have been representative of most of the companies included in the study. The data excluded would have had no appreciable effect on the defense profits reported.

We selected 63 contractors by taking (1) every 72d contractor from an alphabetical list of DOD contractors receiving awards of \$10,000 or more and totaling \$500,000 or more in fiscal year 1968, exclusive of the 81 top contractors and their subsidiary companies already selected, and (2) some AEC contractors. Two of these contractors had gone out of business at the time of our study, so that our results for the smaller contractors are based on replies for 61 contractors.

We also obtained data from 10 contractors who received a major part of their defense business in the form of subcontract awards.

A random selection of 40 of the 154 questionnaires was made for verification at the contractors' plants. Each of the above groups was represented in the 40 questionnaires selected. In addition, each remaining questionnaire was carefully reviewed and verified through calls, letters, and follow-up visits to the contractors' offices.

We checked to see whether the data provided agreed with similar data on the contractors' audited financial statements and appeared reasonable. Although we think that the breakdown of profit data by sales category is reasonable, there are several factors which make it impossible to certify to its absolute correctness.

Profit data by customer not disclosed
by contractors' records

Contractors' records are designed for the needs of management and generally do not provide breakdowns of sales, profits, and related capital for defense work. Since the information we needed on defense sales was not separately maintained, it was developed on an after-the-fact basis from

the available records. Accumulating data involved numerous individual judgments as to the degree of accuracy necessary in relation to the costs involved. For example, one contractor indicated that its summary records did not segregate subcontract sales of commercial-type items to higher tier defense contractors from regular commercial sales. Individual sales documents, however, frequently did contain such information. This problem was resolved in one case on the basis of a detailed analysis of a representative sales sample and a projection of the result to the total sales.

Similarly, allocations were necessary to determine capital investment for the sales categories in which we were interested. Contractors were requested to submit allocations representative of the extent to which contractor-owned assets were used in generating the sales. We were particularly interested in ensuring that allocations to defense sales reflected adequate consideration of (1) Government cost reimbursements and progress payments and (2) Government-furnished facilities and equipment. The importance of the latter is indicated by data showing that as of June 1969 Government land, buildings, and equipment costing about \$7 billion were under the control of all DOD contractors. These assets were of various ages. Data about their depreciated net book value generally were not maintained.

Although some capital allocations were made through identification of assets with sales categories, this was not possible in all cases. In some cases a less desirable cost-of-sales basis was used.

Complexity of participating companies

Many of the companies in our study are complex and include numerous diversified subsidiaries which, in turn, are made up of a number of operating segments. We requested that data submitted be consolidated and that it include data on all majority-owned domestic subsidiaries, so that we could obtain as much data as practicable on total defense profits of the selected companies. Although in some cases operating segments were almost entirely engaged in defense work and thus had data on defense sales readily available, this was the exception. In most cases it was necessary for the participating companies to do substantial work to break

out data on defense sales and the other categories of sales that we requested and to allocate related costs and invested capital.

Accounting alternatives available

There are acceptable alternatives available for determining costs under generally accepted accounting principles. We did not attempt to draw up a uniform set of accounting rules for the purpose of recasting the results of operations for the companies participating in the study. The work and cost involved prohibited such an approach. We did, however, insist that the profit data furnished agree with the data reported in the audited financial statements of the companies, and we attempted to see that the accounting methods used were appropriate to the circumstances.

FINANCIAL TERMS DEFINED

This report contains financial terms which are defined below.

1. DOD sales--Net sales to DOD under both prime contracts and subcontracts, exclusive of sales, profits, fees or costs for operation of DOD GOCO plants, and performance of operation and maintenance contracts and service contracts. These latter contracts were excluded from sales and identified separately, since they have the common characteristic of requiring little or no contractor capital investment.
2. Other defense agency sales--Net sales to NASA, AEC, and the Coast Guard under both prime contracts and subcontracts, exclusive of sales, profits, fees or costs for operation of GOCO plants, and performance of operation and maintenance contracts and service contracts.
3. Commercial sales--Net sales to commercial customers and to State, local, and foreign governments of products or services which are reasonably comparable to those sold to the defense agencies or which involve comparable manufacturing operations.
4. Total capital investment (TCI)--The total investment in all assets used in the business, exclusive of any Government-owned items or leased items. In other words, the total capital provided by creditors (debt capital) and the owners of the business (equity capital). We assumed that total capital allocated to each sales category was composed of equity and debt capital in proportion to those of the business as a whole.
5. DOD TCI, other defense agency TCI, and commercial TCI--The parts of TCI which are allocable to sales to DOD, other defense agencies, and commercial customers, respectively.

6. Turnover of TCI--Sales divided by TCI equals the number of times TCI of the business, or segment thereof, turned over during a year. Another definition of turnover is the amount of sales dollars brought about by, or resulting from, each dollar of TCI.
7. Equity capital investment (ECI)--The total dollars assigned to capital shares, retained earnings, retained-earning reserves, minority interests, and such other equity-type items as deferred-investment tax credits.
8. DOD ECI, other defense agency ECI, and commercial ECI--The parts of total ECI which are allocable to sales to DOD and other defense agencies and comparable sales to commercial customers, respectively.
9. Turnover of ECI--Sales divided by ECI equals the number of times the ECI of the business, or a segment thereof, turned over during a year. Another definition of turnover is the amount of sales dollars brought about by, or resulting from, each dollar of equity investment.
10. DOD and other defense agency profits before Federal income taxes--The net income or loss on prime contracts and subcontracts of DOD and other defense agencies, respectively, after deducting all allocable costs, whether or not allowable or recoverable.
11. Commercial profits before Federal income taxes--The net income or loss from sales to commercial customers and to State, local, and foreign governments of products or services which are reasonably comparable to those sold to the defense agencies or which involve comparable production processes.

We believe that of the various ratios available for evaluating profits earned by contractors under negotiated defense contracts, the percentage of profit earned on TCI is the most meaningful for evaluating defense profits. The rate of return on TCI relates earning to total capital

employed, regardless of whether it was provided by the owners of a business, its creditors, or its suppliers, and the Government should not be particularly concerned with whether contractors obtain capital from creditors or from stockholders. Further, since interest is not an allowable cost under Government contracts and must be paid out of profits, it seems only equitable to consider total capital in determining profits.

The rate of return on ECI is primarily of interest to the owners or prospective owners of a business, since it represents the return on the owners' capital interest in the business. Ratios of profit to costs or sales are important to management to determine how profit margins compare with those of similar companies. Cost and sales ratios, however, are less meaningful than capital ratios in that cost and sales ratios do not consider the amount of capital used in producing the profit or the period of time the capital was committed.

CHAPTER 2ANNUAL PROFIT RATES OF LARGE DOD CONTRACTORS

The data submitted by 74 large DOD contractors on annual profit showed that profit, as a percent of sales, was much lower on defense sales than on commercial sales. When profit was considered as return on contractor TCI and ECI, however, the profit rates for commercial and DOD sales were closer to each other. One explanation for this is Government-furnished capital in the form of progress payments, cost reimbursements, and industrial facilities and equipment. Further details on this and other points are set out in the schedules and analyses which follow. To give an indication of the effect of Federal income taxes on profits, we have provided summary data on profits both before and after Federal income taxes for the 74 large DOD contractors included in our study. The after-tax data is presented in schedule 2. All the other profits presented are before Federal income taxes, unless otherwise stated.

Data are presented separately, in schedule 15, relating to (1) the operation of GOCO plants for fees and (2) the performance of service contracts requiring little or no contractor capital. Six of our large DOD contractors reported that their DOD work was almost entirely under service contracts. Therefore much of the defense procurement data that follow pertains to 74 of the 80 large DOD contractors from which we obtained data. Some of the 74 contractors are operating with substantial quantities of Government facilities. They also have major investments in facilities of their own, however, and they are paid for the items produced, rather than for the operation of the facilities.

SUMMARY OF DATA FOR LARGE DOD CONTRACTORS

Defense and comparable commercial sales over the 4 years we covered averaged \$94 billion a year for 74 large DOD contractors included in our study. The \$94 billion in sales were 25 percent to DOD, 71 percent to commercial customers, and 4 percent to the other defense agencies. The

average profit rate on sales for commercial business, 9.9 percent, was significantly higher than the DOD sales rate of 4.3 percent or the other defense agency sales rate of 4.9 percent.

Profits measured as a percentage of TCI and as a percentage of ECI were more nearly the same for defense and commercial sales. The commercial rates of return, however, remained higher than the rates for DOD sales. The rates of return for the less significant sales to the other defense agencies were actually higher than the rates for the commercial sales, as shown below.

<u>Category</u>	<u>Four-year average</u>	
	<u>Profit</u> <u>sales</u>	<u>Return on</u> <u>TCI</u> <u>ECI</u>
	————(percent)————	
DOD	4.3	11.2 21.1
Other defense agencies	4.9	15.0 27.5
Commercial	9.9	14.0 22.9

The narrow range of the rates of return on capital investment for the three sales categories, compared with the wider range in profit rates on sales, is due largely to the effect of Government-furnished capital, as mentioned previously. The relatively smaller amount of capital required of the contractor for defense work also shows up in the higher capital turnover rates (sales divided by related TCI and ECI, respectively) for these sales compared with commercial sales, as shown below.

<u>Category</u>	<u>Four-year average</u> <u>turnover rates</u>	
	<u>TCI</u>	<u>ECI</u>
DOD business	2.3	4.9
Business with other defense agencies	2.8	5.6
Commercial business	1.3	2.3

(For further details see sch. 1.)

Return of large DOD contractors on
TCI for DOD and commercial sales

As shown in the following table, the range in rates of return on total capital investment was fairly wide for both DOD and comparable commercial sales of the 74 large DOD contractors. A larger percentage of DOD sales dollars was in the loss category in 3 of the 4 years, but the losses on commercial sales extended to a significantly lower range in 3 of the 4 years. The rate of return on profitable DOD sales extended to a significantly higher range than profitable commercial sales in 3 of the 4 years. In general, the average return on total capital investment was higher on commercial sales in each of the 4 years.

<u>Year</u>	<u>Return on TCI</u>			
	<u>DOD</u>		<u>Commercial</u>	
	<u>Average</u>	<u>Range</u>	<u>Average</u>	<u>Range</u>
	(percent)			
1966	11.3	-27 to +60	16.2	-16 to +61
1967	12.1	- 6 to +85	12.2	-27 to +44
1968	11.9	-22 to +81	15.6	-50 to +46
1969	9.5	-12 to +96	12.4	-33 to +39

(For further details see schs. 3 and 4.)

Profit data for various categories of large DOD contractors

We were interested in seeing whether profit rates varied for contractors of various sizes and types. For this purpose the 74 large DOD contractors were divided into the following three categories.

1. High-volume defense contractors--Contractors having:
 - (a) At least 10 percent of total company business in defense sales.
 - (b) Over \$200 million in average annual defense sales.
2. Medium-volume defense contractors--Contractors having:
 - (a) At least 10 percent of total company business in defense sales.
 - (b) Average annual defense sales of less than \$200 million.
3. Commercially oriented defense contractors--Contractors having:
 - (a) Less than 10 percent of total company business in defense sales.
 - (b) Substantial defense business.

The data shown in schedules 5 through 10 represent the same data shown in schedule 1 but segregated into the three categories of contractors. Some of the more significant points follow.

Sales

The major part of defense work is concentrated in 32 high-volume defense contractors, as shown in the following breakdown of sales data for 74 large DOD contractors

for the 4-year period 1966 through 1969. The 13 commercially oriented contractors account for about the same amount of commercial sales as do the 61 defense-oriented contractors.

<u>Sales category</u>	<u>Annual average sales 1966-69</u>			
	<u>Defense-oriented contractors</u>			13 commercially oriented contractors
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	(billions)			
DOD	\$19.0	\$2.6	\$21.6	\$ 2.0
Other defense agencies	2.8	0.1	2.9	0.4
Commercial	<u>27.5</u>	<u>6.5</u>	<u>34.0</u>	<u>32.9</u>
Total	<u>\$49.3</u>	<u>\$9.2</u>	<u>\$58.5</u>	<u>\$35.3</u>

(For further details see sch. 5.)

Profit on sales

Profit as a percent of sales is lowest on DOD sales; slightly higher on other defense agency sales, except for the medium-volume contractors; and significantly higher on commercial sales. The operations of the large commercially oriented defense contractors, as a group, appear to be more profitable than those of the defense-oriented contractors, as shown below.

<u>Sales category</u>	<u>Profit/sales average 1966-69</u>			
	<u>Defense-oriented contractors</u>			13 commercially oriented contractors
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	(percent)			
DOD	3.8	6.1	4.1	6.5
Other defense agencies	4.4	3.7	4.4	8.1
Commercial	8.2	8.6	8.3	11.6
Overall	6.3	7.8	6.5	11.2

(For further details see sch. 6.)

Return on TCI

The commercially oriented contractors had an average 15.2 percent rate of return on TCI compared with an average 12.3 percent rate of return for the defense-oriented contractors. It is interesting to note that the average rate of return on DOD work was almost the same for commercially oriented and defense-oriented contractors, (11.1 and 11.2 percent, respectively). Thus, as shown below, a major part of the overall difference in rates of return is attributable to commercial work on which the defense-oriented contractors averaged 12.6 percent return on TCI and the commercially oriented companies averaged 15.4 percent. In addition, the commercially oriented companies had a much greater proportion of their sales from their more profitable commercial customers.

<u>Sales category</u>	<u>Return on TCI</u>			
	<u>Defense-oriented contractors</u>			<u>13 commercially oriented contractors</u>
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	<u>(percent)</u>			
DOD	11.0	12.2	11.2	11.1
Other defense agencies	16.3	6.4	15.3	14.1
Commercial	12.6	12.3	12.6	15.4
Overall	12.3	12.2	12.3	15.2

(For further details see sch. 7.)

Return on ECI

As shown below, the three classes of contractors compare very closely on return on ECI the averages for the 4-year period being 22.7 percent for 32 high-volume defense contractors, 21.4 percent for 29 medium-volume defense contractors, and 23.1 percent for the commercially oriented contractors.

The defense-oriented contractors were able to approach the commercially oriented contractors in return on ECI

because a smaller part of TCI of the defense contractors was ECI. In other words, the defense contractors in our study relied on borrowed capital for a greater proportion of their capital needs.

<u>Sales category</u>	<u>Return on ECI</u>			
	<u>Defense-oriented contractors</u>			13 commercially oriented contractors
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	(percent)			
DOD	21.4	21.9	21.5	18.4
Other defense agencies	31.6	10.3	29.6	21.8
Commercial	22.8	21.4	22.5	23.3
Overall	22.7	21.4	22.5	23.1

(For further details see sch. 8.)

Turnover rates of TCI and ECI

The average annual capital turnover rates, determined by dividing sales by capital, were higher for the defense-oriented contractors than for the commercially oriented contractors. Also the rates were higher for the high-volume defense contractors than for the medium-volume contractors. As mentioned before, this reflects the effect of Government-furnished capital in the form of progress payments, cost reimbursements, facilities, and equipment. A summary of the turnover rates for the various categories of contractors follows.

<u>Sales category</u>	<u>Defense-oriented contractors</u>			<u>13 commercially oriented contractors</u>
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
Turnover of TCI:				
DOD	2.5	1.8	2.4	1.6
Other defense agencies	3.4	1.3	3.2	1.7
Commercial	1.4	1.3	1.4	1.3
Overall	1.7	1.4	1.7	1.3
Turnover of ECI:				
DOD	5.6	3.6	5.3	2.8
Other defense agencies	7.1	2.8	6.7	2.7
Commercial	2.8	2.5	2.7	2.0
Overall	3.6	2.7	3.4	2.1

(For further details see schs. 9 and 10.)

Summary of profits by type of contract

The types of negotiated contracts covered are those most commonly used in recent years by the Department of Defense: cost-plus-fixed-fee (CPFF), cost-plus-incentive-fee (CPIF), fixed-price incentive (FPI), and firm fixed-price (FFP) contracts. Formally advertised contracts are also covered.

Profit rates were about the same for prime contract and subcontract sales.

The bulk of the DOD sales fell in the FPI and FFP contract categories, while the sales to other defense agencies were concentrated in the CPFF and CPIF contract categories.

Advertised prime contracts appeared to be the least profitable in that contractors reported losses for 3 of the 4 years on DOD work and for 2 of the 4 years on other defense agency work. The dollar volume of such contracts is relatively small. It amounts to about 6 percent of total sales reported. It is probable that our data on formally advertised contracts are not representative, since certain industries that perform the bulk of their defense contracts under advertised contracts, such as petroleum companies and construction companies, were not included in our review.

Following is a summary of average profit data, by type of contracts, for the 74 large DOD contractors. Profit data for DOD work and work of the other defense agencies are shown separately.

Type of contract	DOD		Other defense agencies	
	Prime contractor	Subcontractor	Prime contractor	Subcontractor
CPFF:				
Sales	\$ 1,849	\$ 186	\$1,044	\$ 70
Profit	4.4	4.7	3.6	3.6
CPIF:				
Sales	2,738	299	1,182	236
Profit	5.3	5.5	5.2	3.8
FPI:				
Sales	6,564	533	71	12
Profit	3.9	0.7	8.7	6.5
FFP:				
Negotiated sales	7,234	2,132	241	145
Profit	5.3	5.0	10.1	6.0
Advertised:				
Sales	1,151	-	6	-
Profit	<u>-3.4</u>	<u>-</u>	<u>0.7</u>	<u>-</u>
Total sales	<u>\$19,536</u>	<u>\$3,150</u>	<u>\$2,544</u>	<u>\$463</u>
Profit	4.2	4.2	5.0	4.5

Notes:

1. Sales in millions of dollars.
2. Profit as percent of sales.

(For further details see schs. 11 and 12.)

Comparison of actual profit rates with going-in profit rates for DOD contracts for 74 large DOD contractors

The actual rates of profit reported by the DOD contractors for FPI contracts and for FFP negotiated contracts were substantially below the average going-in profit rates DOD has reported in recent years for these types of contracts. "Going in" rates are rates anticipated at the time of contract award and are based on estimated costs.

Following are the actual profit rates reported by contractors as a percent of sales compared with the average going-in profit rates DOD reported for the years 1966 through 1969 for the major types of negotiated DOD contracts. Since the actual profit rates are after deduction of all costs, we have added to the actual rates a percentage estimated to cover costs unallowable under DOD negotiated contracts as provided in section 15 of the Armed Services Procurement Regulations. Until June 30, 1970, it was not mandatory to apply section 15 in negotiating FPI and FFP negotiated contracts. For the purpose of this comparison, however, we assumed the provisions were applied to all negotiated contracts. The 1.4 percent adjustment that we added was developed during our review of individual contracts discussed in chapter 5 of this report.

Profit as a percent of sales					
Negotiated contract type	Average actual profit	Estimated adjustment for unallowable cost	Adjusted actual profit	Average DOD going-in rate	Actual rate under going-in rate
CPFF	4.4	1.4	5.8	6.3	-0.5
CPIF	5.3	1.4	6.7	7.0	-0.3
FPI	3.9	1.4	5.3	9.2	-3.9
FFP	5.3	1.4	6.7	9.8	-3.1

The small differences in the cost-type contracts are not significant and are probably due, in large part, to unallowable cost exceeding our estimated figure of 1.4 percent or to cost incurred above that on which the fee was based. The reductions in actual profit rates compared with going-in profit rates for the FFP and FPI types of contracts are significant.

We also recomputed the overall profits and rates of return, reported by the 74 large DOD contractors, on the basis of what they would have been if the contractors had realized the going-in profit rates on the prime contracts shown above. Following is a comparison of the results. The average actual commercial rates of profit of the 74 contractors are also included for comparison.

	<u>Profits</u>		
	<u>DOD</u>		<u>Commercial</u>
	<u>Actual</u>	<u>Revised</u>	
Profit as a percent of sales	4.3	6.3	9.9
Profit as a percent of total capital investment	11.2	15.8	14.0
Profit as a percent of equity capital investment	21.1	31.1	22.9

Profit data by product category

Most of the 74 large DOD contractors sell more than one product line to the Government, and many diversified companies sell a great variety of products. The sales and profit data we obtained from contractors were not broken down by product category. In analyzing contract awards to the 74 large DOD contractors, however, we noted that some had received a preponderance of their awards in one of two product categories: (1) ammunition and (2) aircraft, missile, and space work. Profit data for these contractors are discussed below.

Ammunition contractors

We identified nine major DOD contractors whose contract awards for ammunition averaged more than 80 percent of their total annual DOD contract awards for the period 1966 through 1969. These contractors accounted for about 24 percent of the total DOD contract awards for this commodity. Their total annual DOD sales averaged \$700 million a year for all products. The award and sales figures are not comparable, however, since there is a production time lag and since the sales figures, although primarily for ammunition, include some sales of other products. These contractors produce ammunition components, and the sales data presented here do not include any data relating to operation of GOCO ammunition load, assembly, and pack plants or other GOCO plants where the contractors were paid fees for operating the plants.

Average profit, as a percent of sales, for these nine contractors was about the same for their defense business and for their commercial business (10.3 percent and 10.1 percent, respectively). Profit as a percent of TCI and as a percent of ECI was considerably higher on defense business than on comparable commercial business. As shown on page 28, these nine contractors also had profits on their defense business that were substantially higher than the average profit for the balance of our total group of 74 large DOD contractors after the nine ammunition contractors and 12 aircraft missile and space contractors were excluded.

Aircraft, missile and space contractors

We identified 12 other major DOD contractors whose contract awards for aircraft, missile or space work averaged more than 80 percent of their total annual DOD contract awards for the period 1966 through 1969. Contract awards to these companies accounted for more than 55 percent of the total DOD contract awards for this product grouping during the years covered by our study. Their total annual average DOD sales amounted to over \$9 billion per year for all products.

The average profit on sales to DOD for these 12 contractors was the same as the average profit for the major DOD contractors--4.3 percent. However, the average 12.9 percent rate of return on TCI related to sales to DOD by these 12 contractors was about 34 percent higher than the average 9.6 percent for the 53 other major DOD contractors. This indicated that these 12 contractors had more Government financing than the average contractor in the total group. These 12 contractors had a rate of return on their defense business considerably better than on their commercial business. The following table presents comparative profit data for the nine ammunition contractors; the 12 aircraft, missile, and space contractors; and the 53 other large defense contractors. The data presented represents weighted average data for the 4 years, 1966 through 1969.

	Contractor groups		
	Ammunition	Aircraft, missile, and space	53 other large DOD contractors
Sales (in billions)			
DOD	\$.7	\$ 9.1	\$13.9
Other defense agencies	-	1.8	1.5
Commercial	1.9	9.0	55.9
Profit as percent of sales:			
DOD	10.3	4.3	4.0
Other defense agencies	-	5.0	4.8
Commercial	10.1	6.6	10.4
Profit as percent of TCI:			
DOD	28.3	12.9	9.6
Other defense agencies	-	20.8	11.5
Commercial	11.5	10.0	14.8
Profit as percent of ECI:			
DOD	54.4	28.0	16.9
Other defense agencies	-	43.2	19.3
Commercial	19.2	17.8	23.8
Total TCI turnover rate:			
DOD	2.6	2.7	2.0
Other defense agencies	-	4.0	2.1
Commercial	1.0	1.3	1.3
ECI turnover rate:			
DOD	5.3	6.5	4.2
Other defense agencies	-	8.7	4.0
Commercial	1.9	2.7	2.3

(For further details see schs. 13 and 14.)

Profit data for GOCO plants and
service contracts of 80 large DOD contractors

We obtained separate data pertaining to the operation of GOCO plants, contracts for operation and/or maintenance of Government facilities, and service contracts for DOD and the other defense agencies (NASA and AEC). The characteristic common to these contracts is that they require little or no investment of contractor capital. If we included data on these contracts, our overall profit data would be distorted.

Of the 80 large DOD contractors, six reported all, or practically all, their defense business in GOCO-type sales, and 38 others reported some sales of this type to DOD or other defense agencies. The volume of GOCO business reported was about 2-1/2 times greater for DOD than for the other defense agencies (\$2.1 billion and \$0.8 billion, respectively). The profit on sales for the other defense agency business was about 32 percent higher than for DOD business (4.1 percent and 3.1 percent, respectively).

The difference in profit between DOD and the other defense agencies on GOCO sales may be explained, in part, by the nature of the work performed. The bulk of GOCO sales to DOD were for the operation of Government-owned ammunition plants and to NASA were largely for technical services. GOCO sales to AEC were divided between support services and GOCO plant operations. Cost-type contracts were the contracts most widely used by both DOD and other defense agencies for this work.

(For further details see sch. 15.)

CHAPTER 3ANNUAL PROFIT DATA OF SELECTEDDEFENSE SUBCONTRACTORS

Data were obtained from 10 companies that perform about 80 percent of their defense work under subcontracts and only about 20 percent under prime contracts. Generally speaking, defense sales of these companies were for raw or semifinished materials rather than completed end products. Defense work accounted for about 9 percent of their sales; commercial work accounted for 91 percent. Their sales to other defense agencies were relatively insignificant.

The 10 companies, which we will refer to as subcontractors, earned a higher profit on sales (7.1 percent) on defense business than the 74 large DOD contractors earned (4.3 percent). The subcontractors, however, had a lower rate of return on total capital and equity capital assigned to both defense and commercial production than the major defense contractors. This was caused by the fact that the majority of these contractors provided raw materials to prime contractors and were reimbursed upon delivery of their products. Thus, their progress payments were relatively minor and they had very little in the way of Government-owned facilities. The relatively small amount of Government capital they had, however, resulted in a higher rate of return on their investment for defense work as compared with their commercial work. Their capital turnover rates were lower than those of the 74 large defense contractors but were higher for defense work than for commercial work.

<u>Average 4 years 1966-69</u>	<u>10 major defense subcontractors</u>	<u>74 large defense contractors</u>
Profit as percent of sales:		
DOD	7.1	4.3
Commercial	7.5	9.9
Profit as percent of TCI:		
DOD	9.4	11.2
Commercial	7.8	14.0
Profit as percent of ECI:		
DOD	15.4	21.1
Commercial	12.2	22.9
Turnover of TCI (Sales/TCI):		
DOD	1.1	2.3
Commercial	0.9	1.3
Turnover of ECI (Sales/ECI):		
DOD	2.2	4.9
Commercial	1.6	2.3

(For further details, see schs. 1 and 16.)

CHAPTER 4ANNUAL PROFIT DATA OF SMALLERDEFENSE CONTRACTORS

As discussed earlier in this report, our sample of smaller defense contractors represents a random selection of 61 defense contractors, exclusive of the 74 large DOD contractors, 10 subcontractors, and six GOCO contractors separately covered. The data presented should not be considered representative of all such contractors because over 180,000 procurement actions of \$10,000 or more were negotiated by DOD in each year covered by our study for hundreds of thousands of different items. The large sampling necessary to get representative profit data for the great number of industries involved precluded our attempting it in this study. Further, we felt that the cost was not justified since we had accounted for almost 60 percent of the DOD procurement dollars through our coverage of 80 of the largest DOD contractors.

The 61 smaller contractors were considered commercially oriented because only about 5 percent of their sales were to DOD. Their average profit rate on sales to DOD of 4 percent was 40 percent of the average profit rate they earned on commercial sales. It was, however, only slightly below the 4.3-percent profit rate on sales earned by the 74 major DOD contractors.

The rates of return on TCI and ECI on DOD sales for these contractors were less than rates they earned on commercial sales and the rates earned by 74 large DOD contractors on DOD sales. The fact that the capital turnover rates of these contractors for their DOD business were not much more than their rates for commercial sales indicates that they received little Government capital.

Following is a summary of profit data, before Federal income taxes, for the 61 smaller contractors compared with similar data for the larger contractors.

	4-year averages	
	<u>61 smaller contractors</u>	<u>74 large contractors</u>
Sales (in billions of dollars):		
DOD	\$ 0.7	\$23.7
Other defense agencies	.2	3.3
Commercial	<u>11.8</u>	<u>66.8</u>
Total	<u>\$12.7</u>	<u>\$93.8</u>
Profit as percent of sales:		
DOD	4.0	4.3
Other defense agencies	2.7	4.9
Commercial	10.0	9.9
Profit as percent of TCI:		
DOD	7.3	11.2
Other defense agencies	5.8	15.0
Commercial	13.0	14.0
Profit as percent of ECI:		
DOD	10.6	21.1
Other defense agencies	8.0	27.5
Commercial	20.9	22.9
TCI turnover (Sales/TCI):		
DOD	1.4	2.3
Other defense agencies	1.6	2.8
Commercial	1.2	1.3
ECI turnover (Sales/ECI):		
DOD	2.7	4.9
Other defense agencies	3.0	5.6
Commercial	2.1	2.3

(For further details, see schs. 17 and 1.)

CHAPTER 5NEED TO CONSIDER CONTRACTORS' CAPITAL REQUIREMENTSIN NEGOTIATING PROFIT FACTORS

Although not called for specifically in the legislation, we reviewed 146 negotiated Government contracts. We found that contractors' rates of return on capital employed in contract performance varied greatly. These contract rates varied from a loss of 78 percent to a profit of 240 percent of total capital investment. This wide range is due, to some degree, to the fact that, under present policies, Government procurement personnel give little consideration to contractors' capital requirements in developing profit rate objectives for negotiated contracts. Profit objectives are usually developed as percentages of various cost elements. Further, by relating profits to costs in noncompetitive situations, the higher the costs the higher the profits. Thus, in many cases, contractors are not provided with a positive incentive to invest in more efficient facilities because an investment in facilities that would lower unit costs would also result in lower profits.

In reviewing congressional hearings which led to this study, we noted some concern that contractor capital requirements were not considered in negotiating defense contract prices. To determine whether it was practical to develop investment data by contract and to see if there was a wide range in profits as a percent of invested capital, we selected 146 negotiated contracts for review at 37 contractor locations. The contracts totaled about \$4.3 billion in expenditures for such items as aircraft, missiles, space equipment, ship repairs, weapons, ammunition, electronics, and communications equipment. Contract types involved were those commonly used by DOD: CPFF, CPIF, FPI, and FFP contracts. Our selection was limited to recently completed negotiated contracts and was made without regard to profitability.

The selection of locations for contract reviews was made primarily from the top 80 defense contractors after considering such factors as significance of dollar value of awards and types of products being furnished. Consideration

was also given to obtaining coverage of some awards of each of the defense agencies. Certain contractors were excluded whose work was predominantly of a maintenance or service nature rather than manufacturing. Also, we excluded GOCO plant activities.

We computed profit as a percentage of sales and of costs for each contract. We also computed profit as a percentage of the contractor's capital employed in contract performance. We excluded consideration of Government-furnished capital and leased assets as we were interested in the rate of return on resources provided by the contractor. Our computation of total capital employed included provision for the following asset elements.

1. Cost of work in process, finished goods, and accounts receivable--On a monthly basis, we totaled costs incurred under the contract, deducting progress payments and cost or other reimbursements received from the Government. From these data, we computed the average amount the contractor had invested in work in process, finished goods, and accounts receivable.
2. Investment in fixed assets (including land)--In developing the contractor's average investment in fixed assets for the contract, we generally determined (1) depreciation charged to the contract and (2) the ratio between depreciation charged to the contract and total depreciation charges during the contract period. Using this ratio, we computed the approximate fixed-asset investment. We based the investment allocation on the contractor's net book value of assets.
3. Other assets--We used several methods to allocate assets such as cash, raw materials inventories, and prepaid expenses. For example, in some cases, investment in raw materials inventories was allocated by using the ratio of the value of material issued to the contract to total material issued during the period involved. Prepaid expenses were allocated in the same proportion as other more directly allocable items.

The assets discussed above were financed on an overall basis by current liabilities, long-term debt, and equity capital. We refer to this overall investment in assets as total capital invested (TCI). In computing rate of return on TCI, we added interest expense to net profit, since interest represents the return to the providers of debt capital.

After determining average contract TCI and computing the rate of annual profit, we computed the approximate contract ECI. This was done on the basis of the overall corporate relationship of equity capital to the total liabilities and capital. The rate of return on equity capital was based on net contract income before Federal income taxes but after deducting all contractor expenses allocable to the contract, including interest expense.

RATES OF PROFIT ON 146 CONTRACTS

Overall rates of return, before Federal income taxes, and other data on the 146 contracts follow.

Total value of contracts	\$ 4.3 billion
Profit as a percent of costs	6.9 ^a
Annual rate of return on total capital	28.3% ^a
" " " " " equity "	56.1% ^a

^aPercentages weighted by costs, TCI, or ECI, as appropriate.

The great range in return on TCI is shown in the following schedule of the average rates we developed for the 146 contracts.

<u>Return on TCI</u>	<u>Number of contracts</u>	<u>Percent of total</u>	
		<u>Contracts</u>	<u>Sales</u>
Loss contracts:			
78% to 0%	17	12	8.2
Return of:			
0.1% to 20%	46	32	17.7
20.1 to 40	43	29	23.1
40.1 to 60	19	13	16.2
60.1 to 80	9	6	27.2
80.1 to 100	4	3	1.9
100.1 to 240	<u>8</u>	<u>5</u>	<u>5.7</u>
Total	<u>146</u>	<u>100</u>	<u>100.0</u>

The range in profits is also indicated by the fact that the contractor who made 240 percent on his TCI on one contract suffered losses of about 14 percent and 25 percent of TCI on two other contracts we reviewed. This contractor had an overall loss on TCI of 4 percent on all contracts that we reviewed.

The average rates of return for individual contracts were substantially higher than the average annual profit rates developed from our questionnaires to 74 large DOD contractors. The 146 contracts examined cannot be considered as a representative sample, and it would have been pure

coincidence if similar rates had resulted in both phases of our study. The differences between the two were:

- The large number of DOD procurement actions, over 180,000 a year of \$10,000 or more, covering a large number of different items and industries involved and the work required to develop data for each made it impracticable to attempt to develop a representative sample.
- The data furnished by contractors in response to our questionnaire were on overall defense business not on an individual-contract basis.
- We considered only completed contracts where profits or losses were ascertainable and, as a result, probably avoided many loss contracts having large unsettled claims.

This phase of the study was not for the purpose of validating the profits as reported by the contractors in replying to the questionnaire. This was done, to the extent possible, by site verification of 40 questionnaires selected at random, as discussed earlier in this report. Our purpose was to determine (1) whether it was practicable to develop cost, profit, and invested capital data by contract and (2) whether any wide range in profits on DOD work existed. The work showed that cost, profit, and invested capital data could be developed by contract and that there was a wide range of profit rates on DOD contracts.

EFFECT OF GOVERNMENT PROGRESS PAYMENTS
ON INVESTMENT RETURN

Government progress payments significantly reduce the need for contractor capital.

Under defense contracts, there are usually provisions for reimbursing contractors periodically in whole or in part as costs are incurred. This reduces the working capital required for contract performance. Cost contracts generally provide for reimbursement of costs on a monthly or more frequent basis. Other types of defense contracts, involving predelivery or unbillable partial performance expenditures that will have material impact on the contractors' working capital, provide for periodic progress payments of 85 percent of total costs incurred for small business concerns and 80 percent for larger companies.

For 12 contracts involving eight different contractors, we computed the rates of return on TCI with progress payments and without progress payments. In all cases, the rates of return were substantially higher when progress payments were received. The overall average increase, weighted for TCI required for each contract, is shown below.

Annual rate of return on TCI with progress payments	45.3%
Annual rate of return on TCI if progress payments had not been received	<u>25.1%</u>
Increase in rate of return due to progress payments	<u>20.2%</u>

The increase in rate of return (20.2% ÷ 25.1%) because of the progress payments was 80 percent.

In one case, we noted that a contractor was selling the same item under a Government prime contract and under a subcontract. The Government, however, provided progress payments under the prime contract whereas the contractor did not receive progress payments from the prime contractor under the subcontract. Also, the Government paid for deliveries within an average of 29 days whereas the

subcontractor did not receive payments for deliveries under the subcontract until an average of 131 days after delivery.

Although this case is probably not representative, it does demonstrate the effect of progress payments and the time difference in payment for deliveries.

	<u>Prime</u> <u>contract</u>	<u>Subcontract</u>	<u>Difference</u>
	—————(percent)—————		
Profit rate on costs, over or short (-)	10.9	14.2	-3.3
Annual return on TCI	29.7	16.6	13.1
" " " ECI	49.4	27.5	21.9

Return on TCI on the prime contract was substantially more than on the subcontract because of progress payments and more timely payments after delivery of the items ordered, even though profit as a percent of cost was 3.3 percent higher under the subcontract.

Government-furnished facilities, of course, have a similar effect in reducing the capital investment required of contractors.

GUIDELINES FOR DEVELOPMENT OF NEGOTIATED
CONTRACT PROFIT OBJECTIVES

Guidelines used by DOD procurement officials to develop profit objectives are set forth in section 3-808 of the Armed Services Procurement Regulation (ASPR). In the absence of price competition and where analysis of the contractor's proposed costs is required, a procedure known as the weighted guidelines method is used. Using this method, procurement officials prepare a systematic analysis of profit objectives before they begin negotiations. The factors and weights considered in developing the profit objective are:

<u>Factors</u>	Profit range (note a)	x	Estimate cost	=	Profit
Contractor's Input to Total Performance:					
Direct materials:					
Purchased parts	1% to 4%	x		=	
Subcontracted items	1 to 5	x		=	
Other materials	1 to 4	x		=	
Engineering labor	9 to 15	x		=	
" overhead	6 to 9	x		=	
Manufacturing labor	5 to 9	x		=	
" overhead	4 to 7	x		=	
General and administrative expense	6 to 8	x		=	
Total				=	
				=	
Composite Rate on Cost Input (profit computed above divided by total estimated cost shown above)					

<u>Factors</u>	Profit range (note a)	<u>Profit</u> (percent)
ADD: Specific percentages assigned below:		
Contractor's Assumption of Contract Cost Risk:		0 to +7
By type of contract:		
CPFF	0 to 1	
CPIF (cost incentive)	1 to 2	
CPIF (cost-performance-delivery)	1-1/2 to 3	
FPI (cost incentive)	2 to 4	
FPI (cost-performance-delivery)	3 to 5	
Prospective price redetermination	4 to 5	
FFP	5 to 7	
Reasonableness of cost estimates	(a)	
Difficulty of task	(a)	
Record of Contractor's Performance:		-2 to +2
Considerations:		
1. Management	(a)	
2. Cost efficiency	(a)	
3. Reliability of cost estimates	(a)	
4. Cost reduction program accomplish- ments	(a)	
5. Value engineering accomplishments	(a)	
6. Timely deliveries	(a)	
7. Quality of product	(a)	
8. Inventive and development contri- butions	(a)	
9. Small business and labor surplus area participation	(a)	
Selected Factors:		-2 to +2
Source of resources	-2 to 0	
Special achievement	0 to +2	
Other	(a)	
Special Profit Consideration		<u>+1 to +4</u>
Total profit rate		=====
Profit Objective (total profit rate x total recognized costs)		\$ =====

^aNS--No specific weight range designated.

As shown above, there is no provision to consider the amount of contractor capital investment required during contract performance. Further, only minor consideration is given to the use of Government-owned facilities under the source of resources factor. This could amount to a penalty of as much as minus 2 percent for a contractor with Government facilities. We have found, however, that the penalty assessed usually has not exceeded 1 percent, even where all

facilities were Government owned. In the case of a contractor having no Government facilities, there is no provision for increasing his profit percentage to compensate him for adding privately owned facilities. In fact, since the acquisition of improved facilities should result in reduced costs, his profits on negotiated follow-on contracts would probably be reduced if such facilities were added.

ASPR states that normal progress payments shall not be weighted in developing profit objectives.

The other agencies included in our profit study generally follow profit negotiation policies similar to those of the Department of Defense. In fact, the Coast Guard uses the Department of Defense weighted guidelines to negotiate some contracts. Although NASA has not adopted the weighted guidelines method, NASA's procurement regulation calls for consideration of essentially the same profit factors covered in the guidelines. AEC provides in its procurement guidelines that contractor investment will be considered in determining profit objectives and has developed maximum fee curves which are based, in part, upon invested capital. There are, however, no formalized procedures for development and consideration of invested capital in negotiating individual contracts.

STUDIES AND REPORTS CONCERNING CONSIDERATION
OF CONTRACTOR-INVESTED CAPITAL REQUIRED
TO FULFILL GOVERNMENT CONTRACTS

Several studies have been made which conclude that some consideration should be given to contractor-invested capital requirements when negotiating the profit factor of noncompetitive Government contracts. These studies are summarized below.

Contractor incentives for acquiring private facilities

A study was completed by the Logistics Management Institute in September 1967 at the request of the Assistant Secretary of Defense (Installations and Logistics). Its objective was to develop and propose ways of improving the incentives for contractors to acquire and maintain efficient facilities. Some significant parts of the study are quoted below.

"Facility investments, soundly made, generally reduce total contract costs. Under the present ASPR, however, facilities investment tends to lower rather than increase profit dollars on negotiated contracts. Lower profits result from lower estimated costs for labor, materials, and overhead. This is the most significant deficiency in the incentives for defense contractors to acquire facilities."

"The acquisition of facilities that increase efficiency may affect the ability to obtain a contract. Under the present rules, however, if a contractor can get the business without additional facilities investment, he can expect more dollars, and a higher percentage of profit on invested capital by refraining from investment as much as possible and allowing or causing expected costs to be as high as will be acceptable."

"Other things being equal, a modern efficient plant can be expected to have lower labor and material costs than one with less up-to-date facilities. Therefore, the present Guidelines applied on individual contract negotiation tend to

establish a lower dollar profit objective for an efficient plant with a large investment in facilities than it would for a less efficient plant producing the same output."

"Most of the contractors stated frankly that they invest as little capital as possible in facilities for production on negotiated contracts in order to avoid reducing their return on invested capital. Since more than half of the defense procurement dollars are spent on contracts negotiated on the basis of cost analysis, it would appear that a change in profit policy giving greater consideration to invested capital would be equitable for defense industry and beneficial to the Department of Defense."

One of several recommendations made in the report was as follows:

"Percentages of profit on net book value of plant and operating capital (equity plus debt less facilities and outside investments) should be included in the Weighted Guidelines for determining profit objectives. The present percentages on labor, material and overhead costs and the percentages to be applied to the capital elements should be adjusted as necessary to accomplish overall DOD profit objective policies."

Prior GAO report on increased costs due to lease rather than purchase of fixed assets by contractors

In November 1967, GAO issued a draft report entitled "Effect on Cost to the Government of the Leasing of Land and Buildings by Contractors, Department of Defense" (B-156818).

The report concluded that contractors' decisions to lease land and buildings result in greater cost to the Government than if facilities were purchased. Defense policies do not offer an inducement to contractors to purchase facilities as opposed to leasing them. Defense and industry representatives should study possible methods of acquisition which would be most advantageous to industry and most economical to the Government.

We recommended that (1) DOD consider modifying the weighted guidelines profit factors to distinguish between contractors who purchase facilities and contractors who lease them and (2) Defense policies provide contractors with a financial incentive to acquire facilities in a manner which would be least costly to the Government.

Subsequently, the Department of Defense revised ASPR to provide that rental costs under long-term leases would be allowable only up to the amount that the contractor would be allowed had he purchased the building, unless the contractor could demonstrate that the leasing costs would result in less cost to the Government over the anticipated life of the property.

ASPR Special Subcommittee Report

A special subcommittee was established in December 1967 by the ASPR Committee to consider the Logistics Management Institute recommendation. The ASPR Committee is part of the Office of the Assistant Secretary of Defense (Installations and Logistics) and is responsible for developing any needed amendments to ASPR. The Special Subcommittee was given a specific task to (1) develop and test procedures for giving greater weight in prenegotiation profit objectives to capital employed, (2) evaluate the results of the test, and (3) if appropriate, recommend any needed changes to ASPR.

The Subcommittee issued a report, in March 1968, presenting a test plan and procedures for developing information on contractor capital employed in contract performance. After further study, in October 1968, the proposal was presented to a panel of the Defense Industry Advisory Council which was chartered to explore ways and means for fostering a healthy defense industrial base. (The Defense Industry Advisory Council was established in 1962 to provide a means for direct and regular contact between the Secretary of Defense and his assistants and industry representatives.)

Subsequently, in June 1969, the Defense Industry Advisory Council recommended to the Secretary of Defense that, in addition to costs, DOD profit policy should recognize and provide for adequate return on company capital employed. Since then progress has been slow. However, a new ASPR Subcommittee has been established and in October 1970 the subcommittee distributed for comment draft forms for gathering preliminary data.

In regard to DOD progress in this area, Dr. Robert N. Anthony, a former DOD comptroller, appearing before the Subcommittee on Economy in Government of the Joint Economic Committee on May 21, 1970, stated:

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

NASA report on an investment-oriented profit analysis technique

NASA has developed a contract negotiation procedure that includes consideration of contractor investment required during contract performance. The procedure was developed in 1968 by George Washington University and presented to NASA procurement personnel during a 3-day course in profit and fee analysis. NASA then decided to conduct a test of the new procedure. Each NASA procurement office was asked to furnish data on new procurements over \$100,000, outlining the profit negotiated. In addition, the negotiators were asked to furnish an estimated profit objective using the return on investment analysis technique. The latter was not to be used, however, in actual contract negotiations.

NASA awarded a contract to George Washington University to monitor the test and to evaluate data. On June 29, 1970, we received a copy of an interim report on the test which concluded that (1) it was feasible to develop the requisite investment data from contractors and (2) NASA personnel were able to employ the new technique under operational conditions for research and development and hardware contracts. NASA cautioned, however, that the wisdom and practicableness of using a return on investment approach to determine profit compensation was still being explored and that NASA was not prepared, at the time, to endorse any particular return on investment technique.

The NASA and DOD proposed procedures for developing invested capital data differ. For example, to compute operating capital used, DOD uses accounting data from the most recent fiscal year in computing the estimated operating capital required for a new contract. In contrast, NASA uses a monthly forecast of the estimated costs to be incurred, less progress payments, during performance of the new contract.

BRITISH CONSIDER CAPITAL USED IN NEGOTIATING
PROFIT ON NONCOMPETITIVE GOVERNMENT CONTRACTS

The relationships between Government and industry are not the same in the United Kingdom as in the United States. It is of interest to note, however, that capital used has been considered for some time in negotiating profit rates for noncompetitive Government contracts. Their objective is to provide a rate of return on noncompetitive Government work that approximates the overall average return earned by British industry in the years 1960 to 1966.

Recently the British system was revised to provide that contracts involving an excessive realized profit or loss may be referred to a review board. The findings of the board are binding to both parties. It is still too early to determine how well the system will operate.

USE OF RETURN ON INVESTED CAPITAL
IN RENEGOTIATION

Capital employed is one of the factors specified in the Renegotiation Act to be taken into consideration in determining excessive profits. In view of the differences we found in proportionate amounts of contractor capital allocated to defense and commercial business, we met with Renegotiation Board representative to discuss this matter. Board representatives told us that capital allocations were made, for the most part, on a cost-of-sales basis. In a few instances, the Board had requested allocations from contractors on the basis of the extent that assets were used on defense work but had not been very successful in obtaining them.

In view of our findings, Board representatives said that further consideration would be given to obtaining better contractor capital allocations for defense work when Government resources were furnished.

CHAPTER 6CONTRACTOR ASSOCIATION COMMENTS

Comments were requested from five contractor associations on a draft of this report that was based on incomplete data. Two of the associations agreed with the conclusion that investment should be considered in determining profits; however, they and two other associations stated that the report grossly overemphasized the rate of return on investment and reflected a preoccupation with the need to consider contractors' capital requirements in negotiating profit factors. The fifth association did not furnish any comments on this point.

We agree that there are other factors that must be considered in negotiating contract profit rates. Such factors as the contractors' assumption of cost risk, difficulty of the task, and other management and performance factors must be evaluated and considered. In some cases, such as a GOCO plant, little or no contractor investment is involved, whereas in others the entire investment required for contract performance is provided by the contractor. Where the investment required from the contractor is insignificant, the other factors naturally would be the determining items in establishing profit objectives. In still other cases, however, to the degree that contractor capital is required, it should be considered.

Two of the contractor associations questioned GAO statements that contractors have little incentive to invest in more modern equipment to reduce costs relating to many negotiated procurements. The associations stated that GAO had failed to consider and recognize the "real world" competitive environment of today's defense business.

For competitive and other reasons, contractors make some investments in facilities and equipment for performance of negotiated defense contracts. Actually, however, little price competition is involved in much of the DOD procurement. For example, of the total dollar value of DOD procurement for fiscal year 1970, only 11 percent was formally advertised and an additional 27 percent was negotiated on the

basis of price competition. A total of 57 percent was placed on a sole-source basis, and the remaining 5 percent involved design or technical competition.

There is, of course, some incentive to reduce costs on negotiated firm fixed-price and fixed-price incentive contracts even if they are sole-source contracts. Such reductions in cost, however, could reduce profits on subsequent defense contracts. Such contracts would be priced on the basis of prior cost experience to a large extent, and the profits would be determined as a percentage of estimated costs.

The contractor associations almost unanimously questioned our data for the 146 individual contracts and stated that they felt that either there was an unfortunate selection of contracts involved or there were flaws in the method of ascertaining capital invested in such contracts.

For reasons stated earlier in this report, GAO agrees that no attempt was made to obtain a sample representative of all defense contracts. GAO was interested in determining (1) whether it was feasible to develop cost, profit, and invested capital data by contract and (2) if so, the range of the rate of return on invested capital realized for individual contracts. We believe that it is feasible to develop the desired data for most contracts, and we found that there was a great range in rates of return on investment for individual contracts.

In each case of developing data for individual contracts, we presented our data to the contractors involved and gave them an opportunity for review and comment. We carefully considered the comments received and believe that the final data are reasonably accurate. The number of cases involving factual disagreements was relatively small.

CHAPTER 7AGENCY COMMENTS

We provided a preliminary draft of this report to AEC, DOD, DOT, and NASA for review and comment.

All the agencies agreed that due consideration should be given to the TCI of contractors in negotiating Government contracts which do not involve price competition. DOD pointed out, however, that the solution of highly complex administrative problems was required before the policy could be put into effect. Also, AEC believes that there is no need for a uniform Government-wide fee policy stressing consideration of invested capital and feels that the development of detailed uniform guidelines could have a serious, disruptive effect on the existing overall fee policies of the various executive agencies.

We agree that there are serious administrative problems in providing for consideration of contractor TCI related to a particular contract in negotiating contract profit rates. DOD has been considering this matter since 1962 and we believe that it is time to move ahead.

We agree also that there are many advantages to permitting agencies to tailor their policies to their individual needs. Many companies, however, deal with numerous Government agencies. We believe that, where feasible, uniform policies should be established governing the relations between Government and industry. We believe further that it seems feasible and desirable to establish uniform Government-wide guidelines for establishing profit objectives for negotiating Government contracts where effective price competition is lacking.

CHAPTER 8CONCLUSIONS AND RECOMMENDATIONCONCLUSIONS

Profit measured as a percent of sales was significantly lower on defense work than on comparable commercial work for the 74 large DOD contractors included in our study. However, when we measured profit as a percent of the contractors' TCI used in generating the sales, the difference narrowed. Further, when we measured profit as a percent of ECI of the stockholders, we found very little difference in the rate of return for defense and commercial work.

The major factor involved in making the rates of return on contractor capital investment for defense and commercial work similar was the substantial amount of capital provided by the Government in the form of progress payments, cost reimbursements, equipment, and facilities. Government resources, of course, reduce the capital investment required of the contractor for defense work.

The 10 large companies that do the bulk of their defense business in the form of subcontracts earned a considerably higher rate of profit on defense sales than the 74 large DOD contractors. When profit was measured as a percent of TCI and of ECI, however, the subcontractors had a lower average rate of return than the 74 large DOD contractors. The subcontractors did realize a higher rate of return on capital for defense work than on their comparable commercial work. In our opinion, this was due to the effect of Government-furnished capital, even though the subcontractors have use of relatively fewer Government resources than the 74 large DOD contractors.

Under current defense contract negotiation procedures, little consideration is given to the amount of capital investment required from the contractor for contract performance. Instead, profit objectives are developed as a percentage of the anticipated costs of material, labor, and overhead. As a result, inequities can and do arise among contractors providing differing proportions of the capital

required for contract performance. Also, by relating profits to costs, contractors have little incentive to make investments in equipment which would increase efficiency and reduce costs. Such investments tend to lower rather than increase profits in the long run. Of course, other factors, such as whether or not the program will be continued, could be an overriding consideration in bringing about contractor investments to reduce costs.

We believe that it is essential to change the present system in order to motivate contractors to reduce costs under Government noncompetitive negotiated contracts. Where the acquisition of more efficient facilities by contractors will result in savings to the Government in the form of lower contract costs, contractors should be encouraged to make such investments. Proper consideration of contractor provided capital can cause a greater reliance on private capital to support defense production. To accomplish this, it is essential that capital investment be substituted for estimated costs as a basis for negotiating profit rates. We realize that other factors are also important, such as the specificity and life expectancy of a Government program. Most important, the present strong incentive for contractors to minimize their investments for Government work should be eliminated.

We believe that, in determining profit objectives for negotiated Government contracts where (1) effective price competition is lacking and (2) the amount of contractor capital required is a significant factor, consideration should be given to total contractor capital requirements. Consideration should, of course, continue to be given to such other factors as risk, complexity of the work, and other management and performance factors. Where contractor capital requirements are insignificant, such as in many service-type contracts or contracts to operate Government-owned plants, profit objectives would continue to be developed primarily through consideration of the other factors.

In our opinion, a system providing for consideration of capital requirements in negotiating profit rates would be fairer than the present system to both contractors and the Government.

We believe also that the system adopted should be used where applicable by all Government agencies to simplify industry participation.

RECOMMENDATION

Action required to establish uniform guidelines does not require legislation. Accordingly, we recommend that the Office of Management and Budget take the lead in interagency development of uniform Government-wide guidelines for determining profit objectives for negotiating Government contracts that will emphasize consideration of the total amount of contractor capital required when appropriate where effective price competition is lacking.

SCHEDULES

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 74 LARGE DOD CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted Average
<u>SALES (in billions of dollars)</u>					
1. DOD	19.1	24.1	25.8	25.8	23.7
2. Other defense agencies	4.3	3.2	3.1	2.6	3.3
3. Commercial	59.1	60.6	72.3	75.0	66.8
4. Totals	82.5	87.9	101.2	103.4	93.8
<u>PROFIT AS PERCENT OF SALES</u>					
5. DOD	4.7	4.7	4.5	3.4	4.3
6. Other defense agencies	4.6	5.0	5.1	5.0	4.9
7. Commercial	11.2	8.7	10.8	8.9	9.9
<u>PROFIT AS PERCENT OF TCI</u>					
8. DOD	11.3	12.1	11.9	9.5	11.2
9. Other defense agencies	15.8	14.7	15.5	14.0	15.0
10. Commercial	16.2	12.2	15.6	12.4	14.0
<u>PROFIT AS PERCENT OF ECI</u>					
11. DOD	21.4	22.9	22.6	17.4	21.1
12. Other defense agencies	28.7	27.1	28.9	24.8	27.5
13. Commercial	26.4	19.6	25.8	20.4	22.9
<u>TCI TURNOVER (sales/TCI)</u>					
14. DOD	2.2	2.3	2.4	2.3	2.3
15. Other defense agencies	3.2	2.7	2.8	2.5	2.8
16. Commercial	1.4	1.3	1.3	1.3	1.3
<u>ECI TURNOVER (sales/ECI)</u>					
17. DOD	4.6	4.8	5.1	5.1	4.9
18. Other defense agencies	6.3	5.5	5.7	4.9	5.6
19. Commercial	2.4	2.2	2.4	2.3	2.3

SUMMARY OF FINANCIAL DATA AFTER FEDERAL INCOME TAXES
FOR 74 LARGE DOD CONTRACTORS

SCHEDULE 2

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES</u> (in billions of dollars)					
1. DOD	19.1	24.1	25.8	25.8	23.7
2. Other defense agencies	4.3	3.2	3.1	2.6	3.3
3. Commercial	59.1	60.6	72.3	75.0	66.8
<u>PROFIT AS PERCENT OF SALES</u>					
4. DOD	2.5	2.5	2.3	1.8	2.3
5. Other defense agencies	2.4	2.6	2.5	2.5	2.5
6. Commercial	6.0	4.9	5.6	4.6	5.3
<u>PROFIT AS PERCENT OF TCI</u>					
7. DOD	6.5	7.0	6.8	5.8	6.5
8. Other defense agencies	8.8	8.3	8.4	7.7	8.3
9. Commercial	9.1	7.3	8.5	7.0	7.9
<u>PROFIT AS PERCENT OF ECI</u>					
10. DOD	11.4	12.0	11.6	9.2	11.0
11. Other defense agencies	15.3	14.3	14.4	12.5	14.2
12. Commercial	14.3	11.1	13.4	10.5	12.2
<u>TCI TURNOVER</u> (sales/TCI)					
13. DOD	2.2	2.3	2.4	2.3	2.3
14. Other defense agencies	3.2	2.7	2.8	2.5	2.8
15. Commercial	1.4	1.3	1.3	1.3	1.3
<u>ECI TURNOVER</u> (sales/ECI)					
16. DOD	4.6	4.8	5.1	5.1	4.9
17. Other defense agencies	6.3	5.5	5.7	4.9	5.6
18. Commercial	2.4	2.2	2.4	2.3	2.3

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DISTRIBUTION OF RETURN ON TCI BEFORE FEDERAL INCOME TAXES
FOR DOD SALES OF 74 LARGE DOD CONTRACTORS

Return on TCI	1966		1967		1968		1969	
	Percent of total		Percent of total		Percent of total		Percent of total	
	Con- tractors	Sales	Con- tractors	Sales	Con- tractors	Sales	Con- tractors	Sales
LOSS (%)	5.4	0.5	5.4	2.4	6.8	3.0	13.5	19.5
<u>PROFIT (%)</u>								
0.1 to 5	17.6	11.1	10.8	8.0	8.1	15.3	10.8	10.4
5.1 to 10	13.5	13.5	16.2	26.1	17.5	22.2	17.6	14.1
10.1 to 15	39.2	46.2	27.0	26.5	25.7	17.9	25.7	25.7
15.1 to 20	9.5	6.7	25.7	20.8	23.0	20.5	13.5	12.1
20.1 to 25	13.5	21.8	5.4	6.8	8.1	16.9	9.5	13.9
25.1 to 30	-	-	1.4	0.4	2.7	0.5	4.0	2.8
30.1 to 50	-	-	2.7	7.8	5.4	2.8	2.7	0.8
50.1 to 100	1.3	0.2	5.4	1.2	2.7	0.9	2.7	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total sales (billions)	\$19.1		\$24.1		\$25.8		\$25.8	
Return on TCI spread by year	-27% to +60%		-6% to +85%		-22% to +81%		-12% to +96%	
Average return on TCI	11.3%		12.1%		11.9%		9.5%	

DISTRIBUTION OF RETURN ON TCI BEFORE FEDERAL INCOME TAXES
FOR COMMERCIAL SALES OF 74 LARGE DOD CONTRACTORS.

SCHEDULE 4

Return on TCI	1966		1967		1968		1969	
	Percent of total		Percent of total		Percent of total		Percent of total	
	Con-tractors	Sales	Con-tractors	Sales	Con-tractors	Sales	Con-tractors	Sales
LOSS (%)	4.0	1.0	8.1	1.8	8.1	0.8	10.8	3.0
<u>PROFIT (%)</u>								
0.1 to 5	4.0	0.2	9.5	20.4	5.4	6.2	12.2	16.5
5.1 to 10	9.5	14.6	12.2	5.9	13.5	7.3	16.2	8.4
10.1 to 15	35.1	33.7	36.5	40.0	37.8	26.3	31.1	42.2
15.1 to 20	16.2	21.1	18.9	6.9	17.6	42.8	14.9	14.8
20.1 to 25	16.2	20.1	6.8	16.6	6.8	2.9	5.4	6.2
25.1 to 30	6.8	5.6	4.0	5.3	5.4	5.0	5.4	6.0
30.1 to 50	6.8	3.7	4.0	3.1	5.4	8.7	4.0	2.9
50.1 to 100	1.4	-	-	-	-	-	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total sales (billions)	\$59.0		\$60.6		\$72.3		\$75.0	
Return on TCI spread by year	-16% to +61%		-27% to +44%		-50% to +46%		-33% to +39%	
Average return on TCI	16.2%		12.2%		15.6%		12.4%	

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SALES BY CATEGORY FOR 74 LARGE DOD CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
(billions)						
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	\$15.5	\$19.4	\$20.5	\$20.5	\$19.0
2.	Other defense agencies	3.6	2.7	2.6	2.2	2.8
3.	Commercial	23.4	25.7	29.7	31.1	27.5
4.	Total	\$42.5	\$47.8	\$52.8	\$53.8	\$49.3
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	\$ 1.9	\$ 2.6	\$ 3.0	\$ 3.2	\$ 2.6
6.	Other defense agencies	0.2	0.1	0.1	0.1	0.1
7.	Commercial	5.8	5.9	6.7	7.5	6.5
8.	Total	\$ 7.9	\$ 8.6	\$ 9.8	\$10.8	\$ 9.2
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	\$17.4	\$22.0	\$23.5	\$23.7	\$21.6
10.	Other defense agencies	3.8	2.8	2.7	2.3	2.9
11.	Commercial	29.1	31.7	36.4	38.6	34.0
12.	Total	\$50.3	\$56.5	\$62.6	\$64.6	\$58.5
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	\$ 1.7	\$ 2.0	\$ 2.2	\$ 2.1	\$ 2.0
14.	Other defense agencies	0.5	0.4	0.4	0.3	0.4
15.	Commercial	30.0	29.0	35.9	36.5	32.9
16.	Total	\$32.2	\$31.4	\$38.5	\$38.9	\$35.3
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	\$19.1	\$24.1	\$25.8	\$25.8	\$23.7
18.	Other defense agencies	4.3	3.2	3.1	2.6	3.3
19.	Commercial	\$9.1	\$6.6	\$7.3	\$7.0	\$6.8
20.	Total	\$82.5	\$87.9	\$101.2	\$103.4	\$93.8

Some columns do not add due to rounding.

PROFIT ON SALES BEFORE FEDERAL INCOME TAXES
FOR VARIOUS CATEGORIES OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	4.6%	4.4%	3.8%	2.6%	3.8%
2.	Other defense agencies	4.5	4.6	4.6	3.9	4.4
3.	Commercial	9.2	7.8	8.4	7.5	8.2
4.	Total	7.1	6.2	6.5	5.5	6.3
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	2.7	6.0	7.6	6.9	6.1
6.	Other defense agencies	0.3	2.7	8.0	6.7	3.7
7.	Commercial	10.5	8.6	8.3	7.5	8.6
8.	Total	8.4	7.7	8.1	7.3	7.8
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	4.4	4.6	4.3	3.2	4.1
10.	Other defense agencies	4.3	4.5	4.8	4.1	4.4
11.	Commercial	9.5	7.9	8.4	7.5	8.3
12.	Total	7.3	6.4	6.7	5.8	6.5
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	7.5	6.3	6.2	6.0	6.5
14.	Other defense agencies	6.5	8.1	7.2	11.4	8.1
15.	Commercial	12.9	9.6	13.2	10.4	11.6
16.	Total	12.5	9.4	12.7	10.2	11.2
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	4.7	4.7	4.5	3.4	4.3
18.	Other defense agencies	4.6	5.0	5.1	5.0	4.9
19.	Commercial	11.2	8.7	10.8	8.9	9.9
20.	Total	9.4	7.5	9.0	7.5	8.3

RETURN ON TCI BEFORE FEDERAL INCOME TAXES
FOR VARIOUS CATEGORIES OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	12.1%	12.3%	11.3%	8.4%	11.0%
2.	Other defense agencies	18.1	16.1	16.6	13.7	16.3
3.	Commercial	14.1	12.2	13.5	11.3	12.6
4.	Total	13.7	12.3	13.0	10.6	12.3
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	5.6	11.9	15.0	14.2	12.2
6.	Other defense agencies	2.1	5.5	11.7	7.5	6.4
7.	Commercial	15.5	12.3	11.7	10.7	12.3
8.	Total	13.1	12.1	12.4	11.4	12.2
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	11.1	12.3	12.0	9.4	11.2
10.	Other defense agencies	16.5	15.1	16.2	12.9	15.3
11.	Commercial	14.4	12.2	13.1	11.2	12.6
12.	Total	13.6	12.3	12.9	10.8	12.3
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	12.3	10.8	11.4	10.0	11.1
14.	Other defense agencies	12.9	13.3	13.3	17.5	14.1
15.	Commercial	17.8	12.3	17.9	13.7	15.4
16.	Total	17.5	12.2	17.6	13.6	15.2
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	11.3	12.1	11.9	9.5	11.2
18.	Other defense agencies	15.8	14.7	15.5	14.0	15.0
19.	Commercial	16.2	12.2	15.6	12.4	14.0
20.	Total	15.3	12.2	15.0	12.0	13.5

RETURN ON ECI BEFORE FEDERAL INCOME TAXES
FOR VARIOUS CATEGORIES OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	24.0%	24.4%	22.0%	15.7%	21.4%
2.	Other defense agencies	34.9	31.7	32.6	26.0	31.6
3.	Commercial	25.7	21.9	23.9	20.4	22.8
4.	Total	25.7	22.8	23.6	19.5	22.7
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	9.1	20.9	27.9	25.6	21.9
6.	Other defense agencies	1.1	3.5	23.5	11.1	10.3
7.	Commercial	29.0	20.9	20.2	18.0	21.4
8.	Total	24.3	20.7	22.0	19.5	21.4
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	21.6	23.8	23.1	17.7	21.5
10.	Other defense agencies	31.9	29.7	31.8	23.9	29.6
11.	Commercial	26.4	21.7	23.1	19.9	22.5
12.	Total	25.4	22.4	23.3	19.5	22.5
<u>13 COMMERCIALLY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	20.1	18.0	19.6	16.2	18.4
14.	Other defense agencies	19.4	20.6	20.9	27.0	21.8
15.	Commercial	26.5	18.1	27.9	20.8	23.3
16.	Total	26.1	18.1	27.5	20.7	23.1
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	21.4	22.9	22.6	17.4	21.1
18.	Other defense agencies	28.7	27.1	28.9	24.8	27.5
19.	Commercial	26.4	19.6	25.8	20.4	22.9
20.	Total	25.8	20.3	25.4	20.1	22.8

TURNOVER OF TCI FOR VARIOUS CATEGORIES
OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	2.4	2.5	2.6	2.5	2.5
2.	Other defense agencies	3.8	3.3	3.3	3.1	3.4
3.	Commercial	1.4	1.4	1.4	1.3	1.4
4.	Total	1.8	1.8	1.8	1.6	1.7
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	1.6	1.8	1.8	1.8	1.8
6.	Other defense agencies	1.7	1.3	1.2	0.9	1.3
7.	Commercial	1.4	1.3	1.2	1.2	1.3
8.	Total	1.4	1.4	1.4	1.3	1.4
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	2.3	2.4	2.4	2.4	2.4
10.	Other defense agencies	3.6	3.1	3.1	2.8	3.2
11.	Commercial	1.4	1.4	1.4	1.3	1.4
12.	Total	1.7	1.7	1.7	1.6	1.7
<u>13 COMMERCIALLY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	1.5	1.6	1.7	1.5	1.6
14.	Other defense agencies	1.9	1.5	1.7	1.5	1.7
15.	Commercial	1.3	1.2	1.3	1.2	1.3
16.	Total	1.4	1.2	1.3	1.3	1.3
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	2.2	2.3	2.4	2.3	2.3
18.	Other defense agencies	3.2	2.7	2.8	2.5	2.8
19.	Commercial	1.4	1.3	1.3	1.3	1.3
20.	Total	1.6	1.5	1.5	1.4	1.5

TURNOVER OF ECI FOR VARIOUS CATEGORIES
OF LARGE DEFENSE CONTRACTORS

SCHEDULE 10

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	5.2	5.5	5.8	5.9	5.6
2.	Other defense agencies	7.8	7.0	7.0	6.6	7.1
3.	Commercial	2.8	2.8	2.8	2.7	2.8
4.	Total	3.6	3.7	3.7	3.5	3.6
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	3.3	3.5	3.7	3.7	3.6
6.	Other defense agencies	3.9	3.1	2.9	1.7	2.8
7.	Commercial	2.8	2.4	2.4	2.4	2.5
8.	Total	2.9	2.7	2.7	2.7	2.7
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	4.9	5.2	5.4	5.5	5.3
10.	Other defense agencies	7.4	6.6	6.7	5.9	6.7
11.	Commercial	2.8	2.7	2.7	2.6	2.7
12.	Total	3.5	3.5	3.5	3.3	3.4
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	2.7	2.8	3.2	2.7	2.8
14.	Other defense agencies	3.0	2.5	2.9	2.4	2.7
15.	Commercial	2.1	1.9	2.1	2.0	2.0
16.	Total	2.1	1.9	2.2	2.0	2.1
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	4.6	4.8	5.1	5.1	4.9
18.	Other defense agencies	6.3	5.5	5.7	4.9	5.6
19.	Commercial	2.4	2.2	2.4	2.3	2.3
20.	Total	2.8	2.7	2.8	2.7	2.7

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SUMMARY OF PROFITS BEFORE FEDERAL INCOME TAXES
ON DOD SALES BY TYPE OF CONTRACT FOR 74 LARGE DOD CONTRACTORS

(sales in millions of dollars)

	1966		1967		1968		1969		Average	
	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor
CPFF										
Sales	\$ 1,443.7	\$ 123.8	\$ 1,716.4	\$ 142.0	\$ 1,909.4	\$ 197.0	\$ 2,327.0	\$ 282.9	\$ 1,849	\$ 186
Profit (%)	5.2	4.1	4.4	5.0	4.2	4.8	4.1	4.9	4.4	4.7
CPIF										
Sales	2,295.9	258.1	2,835.9	351.8	3,055.2	302.0	2,763.0	283.7	2,738	299
Profit (%)	4.9	4.6	5.0	6.4	5.2	5.9	6.0	4.5	5.3	5.5
FPI										
Sales	5,072.0	333.9	6,923.7	449.0	6,845.4	659.3	7,413.8	687.9	6,564	533
Profit (%)	5.4	6.1	4.4	2.2	3.9	2.3	2.4	-4.3	3.9	0.7
FFP-NEG.										
Sales	6,094.6	1,778.4	7,040.5	2,123.8	8,229.9	2,274.6	7,572.9	2,350.2	7,234	2,132
Profit (%)	4.0	7.0	5.6	4.9	5.9	4.6	5.3	4.0	5.3	5.0
ADVERTISED										
Sales	938.1	-	1,367.0	-	1,252.0	-	1,047.6	-	1,151	-
Profit (%)	-0.1	-	0.9	-	-5.8	-	-9.0	-	-3.4	-
TOTAL										
Sales	15,844.3	2,494.2	19,883.5	3,066.6	21,291.9	3,432.9	21,124.3	3,604.7	19,536	3,150
Profit (%)	4.4	6.1	4.7	4.3	4.4	4.6	3.6	2.5	4.2	4.2

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SCHEDULE 11

SUMMARY OF PROFITS BEFORE FEDERAL INCOME TAXES
ON OTHER DEFENSE AGENCIES SALES
BY TYPE OF CONTRACT FOR 74 LARGE DOD CONTRACTORS

(sales in millions of dollars)

SCHEDULE 12

	1966		1967		1968		1969		Average	
	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor
<u>CPFF</u>										
Sales	\$ 880.0	\$ 89.6	\$1,034.2	\$ 64.6	\$1,175.0	\$ 64.9	\$1,084.6	\$ 59.4	\$1,043.4	\$ 69.6
Profit (%)	2.9	4.0	3.3	3.9	4.0	3.6	3.9	3.0	3.6	3.6
<u>CPIF</u>										
Sales	2,149.6	434.9	1,161.6	222.7	893.0	178.8	524.6	109.0	1,182.2	236.4
Profit (%)	5.6	2.3	5.6	4.6	4.9	5.4	3.1	5.9	5.2	3.8
<u>FPI</u>										
Sales	77.6	16.5	73.7	7.7	72.1	12.9	59.5	12.1	70.7	12.3
Profit (%)	7.1	10.7	12.4	7.2	7.9	4.0	7.2	3.0	8.7	6.5
<u>FFP-NEG.</u>										
Sales	248.7	130.5	258.7	140.7	244.6	129.1	211.9	179.1	241.0	144.8
Profit (%)	6.6	4.4	9.4	5.6	11.0	7.3	14.1	6.4	10.1	6.0
<u>ADVERTISED</u>										
Sales	7.8	-	5.2	-	4.2	-	8.3	-	6.4	-
Profit (%)	-1.4	-	7.7	-	-6.8	-	2.2	-	0.7	-
<u>TOTAL</u>										
Sales	3,363.7	671.5	2,533.4	435.7	2,388.9	385.7	1,888.9	359.6	2,543.7	463.1
Profit (%)	4.9	3.4	5.2	4.6	5.1	5.4	4.8	5.5	5.0	4.5

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SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR NINE DOD AMMUNITION CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES (in billions of dollars)</u>					
1. DOD	0.4	0.7	0.8	0.8	0.7
2. Commercial	1.8	1.8	2.0	2.2	1.9
<u>PROFIT AS PERCENT OF SALES</u>					
3. DOD	5.5	12.2	11.6	9.7	10.3
4. Commercial	13.0	10.7	7.9	9.2	10.1
<u>PROFIT AS PERCENT OF TCI</u>					
5. DOD	11.8	36.3	33.5	28.7	28.3
6. Commercial	14.8	11.4	9.1	11.1	11.5
<u>PROFIT AS PERCENT OF ECI</u>					
7. DOD	21.6	71.3	66.7	51.9	54.4
8. Commercial	27.1	18.5	14.5	18.1	19.2
<u>TURNOVER OF TCI</u>					
9. DOD	1.9	2.8	2.8	2.8	2.6
10. Commercial	1.0	.9	1.0	1.0	1.0
<u>TURNOVER OF ECI</u>					
11. DOD	3.9	5.8	5.8	5.4	5.3
12. Commercial	2.1	1.7	1.8	2.0	1.9

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SCHEDULE 13

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 12 AIRCRAFT, MISSILE, AND SPACE CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES</u> (in billions of dollars)					
1. DOD	7.8	9.6	9.5	9.5	9.1
2. Other defense agencies	2.4	1.7	1.7	1.3	1.8
3. Commercial	6.9	8.2	10.4	10.4	9.0
<u>PROFIT AS PERCENT OF SALES</u>					
4. DOD	4.9	5.2	4.6	2.6	4.3
5. Other defense agencies	5.2	5.2	5.1	4.0	5.0
6. Commercial	7.6	4.4	7.3	7.2	6.6
<u>PROFIT AS PERCENT OF TCI</u>					
7. DOD	13.8	15.9	13.8	8.5	12.9
8. Other defense agencies	24.7	20.0	20.5	16.4	20.8
9. Commercial	11.0	7.0	11.9	9.9	10.0
<u>PROFIT AS PERCENT OF ECI</u>					
10. DOD	28.7	34.6	29.8	18.4	28.0
11. Other defense agencies	48.8	42.0	44.3	34.1	43.2
12. Commercial	19.4	11.6	20.9	18.7	17.8
<u>TCI TURNOVER</u> (sales/TCI)					
13. DOD	2.6	2.8	2.7	2.7	2.7
14. Other defense agencies	4.6	3.6	3.8	3.7	4.0
15. Commercial	1.3	1.3	1.5	1.2	1.3
<u>ECI TURNOVER</u> (sales/ECI)					
16. DOD	5.8	6.7	6.5	7.0	6.5
17. Other defense agencies	9.3	8.1	8.7	8.5	8.7
18. Commercial	2.6	2.7	2.9	2.6	2.7

SCHEDULE 14

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SUMMARY OF SALES AND PROFITS BEFORE FEDERAL INCOME TAXES
FOR GOCO PLANTS AND SERVICE CONTRACTS
OF LARGE DOD CONTRACTORS

	1966	1967	1968	1969	Weighted average
<u>GOCO SALES</u>					
(in billions)					
DOD	\$1.7	\$1.9	\$2.3	\$2.5	\$2.1
Other defense agencies	0.7	0.8	0.8	0.8	0.8
<u>PROFIT AS PERCENT OF SALES</u>					
DOD	2.5%	3.1%	3.3%	3.3%	3.1%
Other defense agencies	4.3	4.6	4.2	3.3	4.1

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SCHEDULE 15

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 10 DOD SUBCONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES (in billions of dollars)</u>					
1. DOD	0.5	0.7	0.7	0.5	0.6
2. Commercial	5.7	5.4	6.0	6.4	5.9
<u>PROFIT AS PERCENT OF SALES</u>					
3. DOD	9.3	9.0	6.0	3.5	7.1
4. Commercial	9.7	7.6	6.8	6.3	7.5
<u>PROFIT AS PERCENT OF TCI</u>					
5. DOD	12.1	11.3	8.4	5.4	9.4
6. Commercial	10.6	7.3	7.1	6.8	7.8
<u>PROFIT AS PERCENT OF ECI</u>					
7. DOD	20.7	19.2	13.5	7.5	15.4
8. Commercial	16.2	11.6	11.0	10.2	12.2
<u>TURNOVER OF TCI (sales/TCI)</u>					
9. DOD	1.2	1.1	1.2	1.1	1.1
10. Commercial	1.0	.8	.9	.9	0.9
<u>TURNOVER OF ECI (sales/ECI)</u>					
11. DOD	2.2	2.1	2.2	2.1	2.2
12. Commercial	1.7	1.5	1.6	1.6	1.6

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 61 SMALLER DEFENSE AGENCY CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES</u> , (in billions of dollars)					
1. DOD	0.6	0.8	0.8	0.8	0.7
2. Other defense agencies	0.1	0.1	0.2	0.2	0.2
3. Commercial	11.0	11.4	12.0	12.9	11.8
<u>PROFIT AS PERCENT OF SALES</u>					
4. DOD	6.4	4.7	3.4	1.7	4.0
5. Other defense agencies	1.9	0.1	2.5	5.5	2.7
6. Commercial	12.3	9.9	9.5	8.2	10.0
<u>PROFIT AS PERCENT OF TCI</u>					
7. DOD	10.3	8.3	6.5	4.6	7.3
8. Other defense agencies	4.1	1.3	5.2	11.8	5.8
9. Commercial	16.2	13.0	12.4	11.1	13.0
<u>PROFIT AS PERCENT OF ECI</u>					
10. DOD	16.4	12.6	9.0	5.0	10.6
11. Other defense agencies	5.1	0.1	7.0	20.3	8.0
12. Commercial	26.2	20.5	19.6	17.9	20.9
<u>TCI TURNOVER</u> (sales/TCI)					
13. DOD	1.4	1.4	1.4	1.4	1.4
14. Other defense agencies	1.6	1.6	1.6	1.8	1.6
15. Commercial	1.2	1.2	1.2	1.2	1.2
<u>ECI TURNOVER</u> (sales/ECI)					
16. DOD	2.5	2.7	2.6	2.9	2.7
17. Other defense agencies	2.7	2.7	2.8	3.7	3.0
18. Commercial	2.1	2.1	2.1	2.2	2.1

APPENDIX

EXCERPTS FROM SECTION 408 OF PUBLIC LAW 91-121

"(a) The Comptroller General of the United States (hereinafter in this section referred to as the "Comptroller General") is authorized and directed, as soon as practicable after the date of enactment of this section, to conduct a study and review on a selective representative basis of the profits made by contractors and subcontractors on contracts on which there is no formally advertised competitive bidding entered into by the Department of the Army, the Department of the Navy, the Department of the Air Force, the Coast Guard, and the National Aeronautics and Space Administration under the authority of chapter 137 of title 10, United States Code, and on contracts entered into by the Atomic Energy Commission to meet requirements of the Department of Defense. The results of such study and review shall be submitted to the Congress as soon as practicable, but in no event later than December 31, 1970.

"(b) Any contractor or subcontractor referred to in subsection (a) of this section shall, upon the request of the Comptroller General, prepare and submit to the General Accounting Office such information maintained in the normal course of business by such contractor as the Comptroller General determines necessary or appropriate in conducting any study and review authorized by subsection (a) of this section. Information required under this subsection shall be submitted by a contractor or subcontractor in response to a written request made by the Comptroller General and shall be submitted in such form and detail as the Comptroller General may prescribe and shall be submitted within a reasonable period of time.

"(c) In order to determine the costs, including all types of direct and indirect costs, of performing any contract or subcontract referred to in subsection (a) of this section, and to determine the profit, if any, realized under any such contract or subcontract, either on a percentage of the cost basis, percentage of sales basis, or a return on private capital employed basis, the Comptroller General and authorized representatives of the General Accounting Office are authorized to audit and inspect and to make copies of any books, accounts, or other records of any such contractor or subcontractor.

APPENDIX I

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"(d) Upon the request of the Comptroller General, or any officer or employee designated by him, the Committee on Armed Services of the House of Representatives or the Committee on Armed Services of the Senate may sign and issue subpoenas requiring the production of such books, accounts, or other records as may be material to the study and review carried out by the Comptroller General under this section.

"(e) Any disobedience to a subpoena issued by the Committee on Armed Services of the House of Representatives or the Committee on Armed Services of the Senate to carry out the provisions of this section shall be punishable as provided in section 102 of the Revised Statutes.

"(f) No book, account, or other record, or copy of any book, account, or record, of any contractor or subcontractor obtained by or for the Comptroller General under authority of this section which is not necessary for determining the profitability of any contract, as defined in subsection (a) of this section, between such contractor or subcontractor and the Department of Defense shall be available for examination, without the consent of such contractor or subcontractor, by any individual other than a duly authorized officer or employee of the General Accounting Office; and no officer or employee of the General Accounting Office shall disclose, to any person not authorized by the Comptroller General to receive such information, any information obtained under authority of this section relating to cost, expense, or profitability on any nondefense business transaction of any contractor or subcontractor.

"(g) The Comptroller General shall not disclose in any report made by him to the Congress or to either Committee on Armed Services under authority of this section any confidential information relating to the cost, expense, or profit of any contractor or subcontractor on any nondefense business transaction of such contractor or subcontractor."

DEFENSE INDUSTRY PROFITS STUDY (DRAFT)

U.S. GENERAL ACCOUNTING OFFICE,
DEFENSE DIVISION,
Washington, D.C., January 5, 1971.

The Honorable SECRETARY OF DEFENSE,
(Attention: Assistant Secretary of Defense (Comptroller)).

DEAR MR. SECRETARY: Enclosed for your review and comment are twelve copies of a draft of a major segment of our profit study report. The draft gives background information on our approach to the study and the procedures we followed. It also covers basically what we plan to say on the very significant point concerning our belief in the need for consideration of invested capital in negotiating Government contract where (1) there is no effective price competition, and (2) invested capital is a significant factor.

As we complete our reviews of contractor questionnaires we will be adding various additional charts and schedules to chapter 4 of the report in presenting the data on annual profit rates. The data should be considered illustrative only and will not be the data contained in our final report after we complete our reviews and process the remaining questionnaires. We believe, however, that it would be very helpful to have any suggestions, comments, or criticisms you might have on the report as it is developed to date. This will assist us materially in meeting our deadline for a report to the Congress by March 31, 1971.

It is unlikely that there will be time available to obtain your comments on the final version of this report prior to its transmittal to the Congress. However, we will be glad to discuss the final report prior to its issuance, if you desire.

Your attention is directed to the limitations on the use of this draft report as indicated on the cover.

We would appreciate receiving your comments on this draft report by January 25, 1971. We will be glad to discuss matters in the draft report with you or your representatives. If you wish to discuss this draft, please contact Mr. John F. Flynn, Deputy Associate Director, telephone number 386-4325.

This report is also being sent to the Acting Administrator, National Aeronautics and Space Administration; Comptroller, Atomic Energy Commission; the Secretary of Transportation and various industry associations for review and comment.

Sincerely yours,

C. M. BAILEY, *Director.*

Enclosures.

CHAPTER I—INTRODUCTION

During the hearings in November 1968 and in January the Subcommittee on Economy in Government of the Joint Economic Committee developed in considerable detail the need for a comprehensive study of the profits realized by defense contractors and recommended that GAO conduct such a study under its existing authority. To make the study, we felt that additional authority was needed giving GAO the right to: (1) examine any records relating to a defense contract; (2) require defense contractors to furnish data considered necessary by GAO; (3) issue subpoenas with authority of a United States District Court to require compliance; and (4) examine records of (a) formally advertised contracts, (b) second and lower tier subcontracts, and (c) the commercial business of defense contractors.

The Armed Forces Appropriation Authorization Act for fiscal year 1970, Public Law 91-121, approved on November 19, 1969, authorized GAO to study profits earned on selected contracts and subcontracts entered into by the *Department of Defense (DOD)*, *National Aeronautics and Space Administration (NASA)* and *Coast Guard*. Contracts of the *Atomic Energy Commission (AEC)* awarded to meet requirements of the Department of Defense were also included. The study authorized was limited to *negotiated contracts*, and subpoena power was retained by the Senate and House Committee on Armed Services.

In making the study we took two approaches. First, we developed cost, profit, and invested capital data for 146 individual contracts at 37 contractor locations. Second, to obtain information on annual overall profits on defense contracts, we circulated a questionnaire to the larger defense contractors and subcontractors and to a relatively small sample of other defense contractors and subcontractors. The profit data developed in each of these phases are without reduction from renegotiation. Unless otherwise stated, the profit rates shown for defense busi-

ness are after deduction of all costs allocable to defense business, including costs unallowable under Section 15 (contract cost principles and procedures) of the Armed Services Procurement Regulation. By deducting all applicable costs, the profit rates on defense and commercial work are placed on a comparable basis.

DEVELOPMENT OF PROFIT DATA ON SPECIFIC CONTRACTS

We reviewed 145 negotiated contracts at 37 contractor locations. The contracts totaled \$4.3 billion in expenditures for such items as aircraft, missiles, space equipment, ship repairs, weapons, ammunition, electronics, and communications equipment. Contract types involved were those commonly used as *cost plus fixed fee*, *cost plus incentive fee*, *fixed price incentive* and *firm fixed price*. Our selection was limited to recently completed contracts and was made without prior knowledge concerning their profitability.

We computed profit as a percentage of sales and of costs for each contract. We also computed profit as a percentage of the contractor's capital employed in contract performance. We excluded consideration of Government resources as we were interested in the rate of return on contractor resources employed. Our computation of total capital employed included provision for the following asset elements.

(1) *Cost of work in process, finished goods and accounts receivable.*—On a monthly basis we totaled costs incurred under the contract, deducting progress payments and cost or other reimbursements received from the Government. From these data we computed the average amount the contractor had invested in work in process, finished goods, and accounts receivable.

(2) *Investment in fixed assets.*—In developing the contractor's average investment in fixed assets for the contract, we determined (1) depreciation charged to the contract, and (2) the ratio between depreciation charged to the contract and total depreciation charges during the contract period. Using this ratio we computed the approximate fixed asset investment. Allocation was based on the contractor's net book value of assets involved.

(3) *Other assets.* We used several methods to allocate assets such as cash, raw materials inventories, and prepaid expenses. For example, in some cases investment in raw materials inventories was allocated on the basis of the ratio of the value of material issued to the contract to total material issued during the period involved. Prepaid expenses were generally allocated in the same proportion as other more directly allocable items.

In computing rate of return on total capital investment, we added back interest expense since we included related liabilities as an element of total capital, and interest represents the return to the providers of debt capital.

After determining average contract total investment and computing the rate of annual profit, we computed the approximate contract equity investment. This was done based on the overall relationship of the contractor's equity to the total amount of his liabilities and capital. The rate of return on equity capital was based on net contract income after deduction of all contractor expenses allocable to the contract, including interest expense.

DEVELOPMENT OF ANNUAL PROFIT RATES FOR PERIOD 1966 THROUGH 1969

We developed a questionnaire to obtain information from selected contractors for the years 1966 through 1969 on sales, profits, total capital investment, and contractor equity investment for defense business, comparable commercial sales, and other categories of sales. We also requested a breakdown of defense sales and profits by type of contract. While the legislation only called for a study of negotiated defense contracts, we asked and received information on all work of the contractors involved in order to reconcile cost allocations to the various categories of sales and to make significant comparisons of contractors' rates of profit on total defense business and on commercial work.

We sent questionnaires to 154 contractors who received (1) more than 60 percent of recent Department of Defense prime contract awards of over \$10,000, (2) about 80 percent of similar NASA awards, and (3) a significant portion of Atomic Energy Commission and Coast Guard contract awards. The 154 contractors included:

Selected from a listing of the 100 contractors receiving the largest dollar volume of military prime contractors of \$10,000 or more in fiscal year
1969 -----

Selected by taking (1) every 72nd contractor from a random listing of military prime contractors receiving awards of \$10,000 and aggregating \$500,000 or more in fiscal year 1968, exclusive of the 81 top contractors already selected and their subsidiary companies, and (2) a small number of contractors receiving Atomic Energy Commission awards or receiving a major portion of their defense business in the form of subcontract awards -----

73

Total ----- 154

A random selection of 40 questionnaires was made for detailed site verification. Each of the groups mentioned above was represented in the 40 contracts selected. In addition, each remaining questionnaire was carefully reviewed and verified through calls, letters, and follow-up visits to the contractors' offices.

We checked to see that on an overall basis the data provided agreed with similar data on the contractors' audited financial statements and appeared reasonably accurate. While we believe the breakdown of profit data by sales category is reasonably accurate, there are several factors which made it impossible to certify to its absolute correctness.

CONTRACTORS' RECORDS NOT SET UP TO DISCLOSE PROFIT DATA BY CUSTOMER

Contractors' records are generally designed to provide only overall results of operations. Since the data we needed on defense sales was not produced in the normal course of business, it was developed on an after the fact basis from the available records. Accumulating the data involved numerous individual judgments as to the degree of accuracy necessary in relation to the costs involved. For example, some contractors had little information available to show whether subcontract sales of commercial type items related to defense prime contracts. This problem was resolved in some cases on the basis of a detailed review of a representative sales sample, and projection of the results to the total population involved.

Similarly, allocations were necessary to determine capital investment for the sales categories in which we were interested. We explained to contractors what we wanted and requested that allocations be representative of the extent to which company-owned assets were used in generating the sales. We were particularly interested in assuring that allocations to defense sales reflected adequate consideration of (1) Government cost reimbursements and progress payments, and (2) Government-furnished facilities and equipment. The importance of the latter is indicated by the fact that as of June 30, 1969, Government land, buildings, and equipment costing about \$7 billion were in the hands of contractors.

While we obtained some capital allocations based on specific identification of assets with sales categories, this was not possible in all cases. In the latter instances the less desirable cost of sale basis was usually employed.

COMPLEXITY OF SOME OF PARTICIPATING COMPANIES

Many of the business enterprises covered in our study were complex organizations and included numerous diversified subsidiary corporations which in turn were made up of a number of diversified operating segments. We requested that questionnaire data be provided on a consolidated basis, including information on all majority-owned domestic subsidiaries, in order to obtain as much information as it was practical to get on total defense profits of the selected companies. While in some cases divisions or other operational segments were almost entirely engaged in defense work and thus had data readily available for defense sales, this was probably the exception. In most cases it was necessary for the participating companies to do substantial work to break out information on defense and the other categories of sales that we requested and to allocate related costs and invested capital.

NUMEROUS ACCOUNTING ALTERNATIVES AVAILABLE

Numerous alternatives are available in determining costs and profits under generally accepted accounting principles. In this regard, in considering the results of operations over a long period of time, the alternatives adopted may be unimportant as long as they are followed consistently. However, in looking at the relatively short four year time period covered in our study, the alternatives

followed could make a significant difference in profit rates. Two of the major items affected are research and development costs, and depreciation expense.

A good description of the differences that can result from using some of the various bases available for allocating costs is contained in an article in the June 1968 issue of the *Financial Executive*. The article, "Common Cost Allocation in Diversified Companies," was written by Robert K. Mautz and K. Fred Skousen. While the article deals with certain common costs not affecting inventory values such as general and administrative expenses, a similar situation exists with respect to common manufacturing overhead and other costs which are included in inventory valuations. The participating companies, thus, had considerable latitude in determining and allocating costs to the various categories of sales. In our review work, however, we attempted to see that the methods utilized were reasonable in the circumstances.

FINANCIAL TERMS DEFINED

(1) *Total Sales*.—Net sales to all customers exclusive of the cost of operation of DOD and other defense agencies' Government-owned contractor operated (GOCO) plants, and performance of operation and maintenance contracts and service contracts.

(2) *DOD Sales*.—Net sales to DOD under both prime and subcontracts exclusive of sales, profits or fees for operation of DOD GOCO plants, and performance of operation and maintenance contracts and service contracts.

(3) *Other Defense Agency Sales*.—Net sales to NASA, AEC and the Coast Guard under both prime and subcontracts exclusive of sales, profits or fees for operation of GOCO plants, performance of operation and maintenance contracts and service contracts for these agencies.

(4) *Commercial Sales*.—Net sales of defense industry companies to commercial customers, domestic, state and local governments and foreign governments, of products or services that are reasonably comparable to those sold to the defense agencies or involve comparable manufacturing operations.

(5) *Equity Capital Investment (ECI)*.—The total dollars assigned to capital shares, retained earnings, retained earning reserves, minority interests and other equity type items such as deferred investment tax credits. A basic premise was established for this study that generally ECI allocated to any sales category should be in the same proportion as the total equity capital was to the total capital utilized in the business. Total capital allocated to each sales category is assumed to be composed of equity and debt capital in proportion to that contained in the business as a whole.

(6) *Turnover of Equity Capital Investment (ECI)*.—Sales divided by Equity Capital Investment equals turnover of ECI.

(7) *DOD ECI, Other Defense Agency ECI and Commercial ECI*.—The portions of total ECI which are allocable to Sales to the Department of Defense, Other Defense Agencies and commercial customers respectively.

(8) *Total Capital Investment (TCI)*.—Equity Capital Investment plus all liabilities. In other words, the total investment in assets utilized in the production and sale of company products.

(9) *Turnover of Total Capital Investment (TCI)*.—Sales divided by total capital investment equals turnover of TCI.

(10) *DOD TCI, Other Defense Agency TCI, and Commercial TCI*.—The portion of total TCI which is allocable to sales to the Department of Defense, Other Defense Agencies and commercial customers respectively.

(11) *Total Profit before Federal income taxes*.—The net income or loss after deduction of all state and local taxes but before provision for U.S. Federal income taxes or reduction of profits as a result of renegotiation.

(12) *DOD and Other Defense Agency Profits before Federal Income Taxes*.—The net income or loss on prime contracts and subcontracts of the DOD and Other Defense agencies respectively, after deduction of all allocable costs, whether or not allowable or recoverable.

(13) *Commercial Profits before Federal Income Taxes*.—The net income or loss from sales to commercial customers, as well as state, local and foreign governments, of products or services that are reasonably comparable to those sold to the defense agencies, or involve comparable production processes.

CHAPTER 2—NEED TO CONSIDER CONTRACTOR'S CAPITAL REQUIREMENTS IN NEGOTIATING PROFIT FACTORS

In our review of 146 negotiated Government contracts, we found that contractors' rates of return on capital employed in contract performance varied greatly.

The range extended from a loss of 78 percent to a gain of 240 percent of contractor total capital investment. This wide range is due to the fact that under present policies Government procurement personnel give little consideration to contractors' capital requirement in developing profit rate objectives for negotiated contracts. Profit objectives are usually developed as percentages of various cost elements. In general, the higher the costs, the higher the profits. Thus, paradoxically, contractors are discouraged from investing in new, more efficient facilities because an investment in facilities that would lower unit costs would also result in lower profits.

RATES OF PROFIT ON 146 CONTRACTS

Overall rates of return, before Federal income taxes, and other data on the 146 contracts:

Total value of contracts.....	\$4, 256, 000
Profit as a percent of costs (percent).....	¹ 6. 9
Annualized rate of return on total capital employed (percent).....	¹ 28. 3
Annualized rate of return on equity capital employed (percent).....	¹ 56. 1

¹ Percentages weighted by costs, total capital investment, or equity capital investment, as appropriate, for the contracts involved.

The great range in return on total capital investment for the 146 contracts is pointed up in the following schedule:

Profit category	Number of contracts	Percent of total	
		Contracts	Sales dollars
Loss contracts, 78 to 0 percent.....	17	12	8. 2
Return of—			
0 to 20 percent.....	46	32	17. 7
20.1 to 40 percent.....	43	29 ¹	23. 1
40.1 to 60 percent.....	19	13	16. 2
60.1 to 100 percent.....	13	9	29. 1
100.1 to 240 percent.....	8	5	5. 7
Total.....	146	100	100. 0

EFFECT OF GOVERNMENT PROGRESS PAYMENTS ON RETURN ON INVESTMENT

Government progress payments significantly increase rates of return on contractors' capital investments.

Under defense type contracts there are usually provisions for reimbursing contractors periodically in whole or in part as costs are incurred. This reduces the working capital required for contract performance. Cost type contracts generally provide for reimbursement of costs on a monthly, or more frequent basis. Other types of defense contracts, involving pre-delivery or unbillable partial performance expenditures that will have material impact on the contractors working capital, provide for periodic progress payments of 85 percent of total costs incurred for small business concerns and 80 percent for larger companies.

For 12 contracts involving 8 different contractors, we computed the rates of return on total capital investment with progress payments and without progress payments. In all cases the rates of return were higher when progress payments were received. The overall average increase, weighted for the total capital investment required for each contract, is shown below.

Annual rate of return on total capital investment with progress payments.....	45. 3
Annual rate of return on total capital investment without progress payments.....	25. 1
Increase in rate of return due to progress payments.....	20. 2

The increase in rate of return because of the progress payments is 80 percent. (20.2 ÷ 25.1)

In one case we noted that a contractor was selling the same item under a Government prime contract and under a subcontract. The Government, however, provided progress payments under the prime contract while the contractor did not receive progress payments from the prime contractor under the subcontract. Also, the Government paid for deliveries within an average of 29 days while the contractor did not receive payments for deliveries under the subcontract until an average of 131 days after delivery.

The effect of progress payments and the time difference in payment for deliveries is shown below.

[In percent]

	Prime contract	Subcontract	Difference
Profit rate on costs.....	10.9	14.2	(3.3)
Annual return on total capital investment.....	29.7	16.6	13.1
Annual return on equity capital investment.....	49.4	27.5	21.9

Return on total capital investment on the prime contract was substantially more than on the subcontract because of progress payments and more timely payments after delivery of the items ordered, even though profit as a percent of cost was 3.3 percent higher under the subcontract.

Government-furnished facilities, of course, have a similar effect in reducing the capital investment required of contractors.

GUIDELINES FOR DEVELOPMENT OF NEGOTIATED CONTRACT PROFIT OBJECTIVES

Guidelines used by Department of Defense procurement officials in developing of profit objectives are set forth in Section 3-808 of the Armed Services Procurement Regulation (ASPR). In the absence of price competition and where analysis of the contractor's proposed costs is required, a procedure known as the weighted guidelines method is used. Using this method, procurement officials prepare a systematic analysis of profit objectives before they begin negotiations. The factors and weights considered in developing the profit objective are as follows:

Factors	Profit range ¹	×	Estimate cost =	Profit
Contractor's input to total performance:				
Direct materials:				
Purchased parts.....	1 to 4	×	=	
Subcontracted items.....	1 to 5	×	=	
Other materials.....	1 to 4	×	=	
Engineering labor.....	9 to 15	×	=	
Engineering overhead.....	6 to 9	×	=	
Manufacturing labor.....	5 to 9	×	=	
Manufacturing overhead.....	4 to 7	×	=	
General and administrative expense.....	6 to 8	×	=	
Total.....				

Note: Composite rate on cost input (profit computed above divided by total estimated cost shown above, in percent)

Factors	Profit range ¹	Profit
Add: Specific percentages assigned below:		
Contractor's assumption of contract cost risk.....		0 to 7 percent.
By type of contract:		
Cost plus fixed fee.....	0 to 1	
Cost plus incentive fee (cost incentive).....	1 to 2	
Cost plus incentive fee (cost-performance delivery).....	1½ to 3	
Fixed price incentive (cost incentive).....	2 to 4	
Fixed price incentive (cost-performance delivery).....	3 to 5	
Prospective price redetermination.....	4 to 5	
Firm fixed price.....	5 to 7	
Reasonableness of cost estimates.....	(1)	
Difficulty of task.....	(1)	
Record of contractor's performance.....		-2 to +2 percent.
Considerations:		
(a) Management.....	(1)	
(b) Cost efficiency.....	(1)	
(c) Reliability of cost estimates.....	(1)	
(d) Cost reduction program accomplishments.....	(1)	
(e) Value engineering accomplishments.....	(1)	
(f) Timely deliveries.....	(1)	
(g) Quality of product.....	(1)	
(h) Inventive and development contributions.....	(1)	
(i) Small business and labor surplus area participation.....	(1)	
Selected factors.....		-2 to +2.
Source of resources.....	-2 to 0	
Special achievement.....	0 to +2	
Other.....	(1)	
Special profit consideration.....		+1 to +4.
Total profit rate.....		
Profit objective (total profit rate × total recognized costs) (in dollars).....		

¹ No specific weight range designated.

As shown above, there is no provision to consider the amount of contractor capital investment required during contract performance. Further, only minor consideration is given to the use of Government-owned facilities under the source of resources factor. This could amount to a penalty of as much as minus 2 percent for a contractor with Government facilities. However, we have found that the penalty assessed usually has not exceeded 1 percent, even in some cases where all facilities involved were Government owned. In the case of a contractor having no Government facilities, there is no provision for increasing his profit percentage as a result of his adding new, privately-owned facilities. In fact, since new, improved facilities should result in reduced costs, his profits on negotiated follow-on contracts would probably be reduced if such facilities were added.

The Armed Services Procurement Regulation provides that normal progress payments shall not be weighted in developing profit objectives.

The other agencies included in our profit study follow profit negotiation policies similar to those of the Department of Defense. In fact, the Atomic Energy Commission and the Coast Guard use the Department of Defense weighted guidelines to negotiate some contracts. While NASA has not adopted the weighted guidelines method, NASA's procurement regulation calls for consideration of essentially the same profit factors covered in the guidelines.

STUDIES CONCERNING CONSIDERATION OF CONTRACTOR INVESTED CAPITAL REQUIREMENTS IN PERFORMING GOVERNMENT CONTRACTS

Several studies have been made which concluded that some consideration should be given to contractor invested capital requirements when negotiating the profit factors of noncompetitive Government contracts. These studies are summarized below.

WEIGHTED GUIDELINE CHANGES AND OTHER PROPOSALS FOR INCENTIVES FOR CONTRACTOR ACQUISITION OF FACILITIES

This study was completed by the Logistics Management Institute in September 1967, at the request of the Assistant Secretary of Defense (Installations and Logistics). The objective was to develop and propose ways of improving the incentives for contractors to acquire and maintain efficient facilities of adequate capacity. Some significant quotes from the study are as follows:

"Facility investments, soundly made, generally reduce total contract costs. Under the present ASPR, however, facilities investment tends to lower rather than increase profit dollars on negotiated contracts. Lower profits result from lower estimated costs for labor, materials, and overhead. *This is the most significant deficiency in the incentives for defense contractors to acquire facilities.*"

"The acquisition of facilities that increase efficiency may affect the ability to obtain a contract. Under the present rules, however, if a contractor can get the business without additional facilities investment, he can expect more dollars, and a higher percentage of profit on invested capital by refraining from investment as much as possible and allowing or causing expected costs to be as high as will be acceptable."

"Other things being equal, a modern efficient plant can be expected to have lower labor and material costs than one with less up-to-date facilities. Therefore, the present Guidelines applied on individual contract negotiation tend to establish a lower dollar profit objective for an efficient plant with a large investment in facilities than it would for a less efficient plant producing the same output."

"Most of the contractors stated frankly that they invest as little capital as possible in facilities for production on negotiated contracts in order to avoid reducing their return on invested capital. Since more than half of the defense procurement dollars are spent on contracts negotiated on the basis of cost analysis, it would appear that a change in profit policy giving greater consideration to invested capital would be equitable for defense industry and beneficial to the Department of Defense."

One of several recommendations made in the report was as follows:

"Percentages of profit on net book value of plant and operating capital (equity plus debt less facilities and outside investments) should be included in the Weighted Guidelines for determining profit objectives. The present percentages on labor, material and overhead costs and the percentages to be applied to the capital elements should be adjusted as necessary to accomplish overall DOD profit objective policies.

ARMED SERVICES PROCUREMENT REGULATION SPECIAL SUBCOMMITTEE REPORT

A special subcommittee was established in December 1967 by the ASPR Committee to consider the LMI recommendation. The ASPR Committee is part of the Office of the Assistant Secretary of Defense (Installations and Logistics) and is responsible for developing any needed amendments of ASPR. The Special Subcommittee was given the specific task to (1) develop and test procedures for giving greater weight in prenegotiation profit objectives to capital employed, (2) evaluate the results of the test, and (3) if appropriate, recommend any needed changes to ASPR.

The Subcommittee issued a report dated March 15, 1968, presenting a test plan and procedures for developing information on contractor capital employed in contract performance. After further study, in October 1968, the proposal was presented to a panel of the Defense Industry Advisory Council which was chartered to explore ways and means to foster and maintain a healthy defense industrial base. (The Defense Industry Advisory Council was established in 1962 to provide a means for direct and regular contact between the Secretary of Defense and his management assistants and knowledgeable industry representatives.)

Subsequently, in June 1969, the Defense Industry Advisory Council recommended to the Secretary of Defense that in addition to costs, DOD profit policy should recognize and provide for adequate return on company capital employed. Since then, however, progress has been slow. However, a new ASPR Subcommittee has been established and in October 1970 the subcommittee distributed for comment draft forms for gathering preliminary data on contractor capital employed.

In regard to progress in the Department of Defense in this area, Dr. Robert N. Anthony, a former Department of Defense Comptroller, appearing before the Subcommittee on Economy in Government of the Joint Economic Committee on May 21, 1970, stated:

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

NASA REPORT ON AN INVESTMENT ORIENTED
PROFIT ANALYSIS TECHNIQUE

NASA has developed a contract negotiation procedure that includes consideration of contractor investment required during contract performance. The procedure was developed in 1968 by George Washington University and presented to NASA procurement personnel during a three day course in profit and fee analysis. NASA then decided to conduct a test of the new procedure and each NASA procurement office was requested to furnish data on new procurements over \$100,000, outlining the profit negotiated. In addition, the negotiators were asked to furnish an estimated profit objective using the return on investment analysis technique. The latter was not to be used in actual contract negotiations, however.

NASA awarded a contract to George Washington University to monitor the test and evaluate data. On June 29, 1970, we received a copy of an interim report on the test which concluded that (1) it was feasible to develop the requisite investment data from contractors, and (2) NASA personnel were able to employ the new technique under operational conditions for research and development and hardware contracts. NASA cautioned, though, that the wisdom and practicality of using a return on investment approach as a means of determining profit compensation was still being explored, and NASA was not prepared, at the time, to endorse any particular return on investment technique.

The NASA and DOD proposed procedures for developing invested capital data differ to some extent. For example, in computing operating capital employed DOD uses accounting data from the most recent fiscal year in computing the estimated operating capital required for a new contract. In contrast, NASA uses a monthly forecast of the estimated costs to be incurred, less progress payments, during performance of the new contract.

IN NEGOTIATING PROFIT ON NONCOMPETITIVE GOVERNMENT
CONTRACTS BRITISH CONSIDER CAPITAL EMPLOYED

In the United Kingdom, capital employed, has been considered for some time in negotiating profit rates for non-competitive Government contracts. The British objective is to provide a rate of return on non-competitive Government work that approximates the overall average return earned by British industry in the years 1960 to 1966. At the present time an average annual rate of 11 percent on capital employed, plus 3 percent on costs, is applicable on non-competitive risk Government contracts, with 8 percent on capital employed, plus 3 percent on costs for nonrisk Government contracts. The extent of risk is determined by the nature of the work involved, the degree of difficulty in estimating costs, and the point in time at which the price is fixed. It is also important to note that these rates are computed before the United Kingdom Corporation tax is deducted (currently 45 percent).

The British system also provides that contracts involving an excessive profit or loss may be referred to a review board. The findings of the board are binding to both parties. The board will consider contracts referred to it by either the Government or a contractor, where the profit made is 27½ percent or more of capital employed, or the loss on capital employed is 15 percent or more.

CONCLUSIONS

We believe that in determining profit objectives for negotiated Government contracts where (1) effective price competition is lacking, and (2) the amount of contractor capital required is a significant factor, consideration should be given to the capital requirements. Where contractor capital requirements are insignificant, such as in many service type contracts to operate Government-owned plants, profit objectives would, of course, continue to be developed primarily through consideration of other factors.

Under present policies the profits being negotiated for contracts where there is no effective price competition are based upon a percentage of the estimated costs involved. As a result, contractors have no incentive to invest in more modern equipment to increase efficiency and reduce costs. Such investments tend to lower rather than increase profits in the long run. Thus, contractors have a strong incentive to minimize their investments. Of course, other factors, such as whether or not the program will be continued, could be an overriding consideration in bringing about contractor investments to reduce costs.

Present policies also give no consideration to the effect of customary progress payments or cost reimbursements in reducing contractor operating capital requirements for contract performance.

We believe that it is essential to change the present system in order to motivate contractors to reduce costs under Government non-competitive negotiated contracts. Where the acquisition of new, more efficient facilities by contractors will result in savings to the Government in the form of lower contract costs, we believe that contractors should be encouraged to make such investments. We also believe that proper consideration of contractor provided capital can cause a greater reliance on private capital to support defense production. To accomplish this, it is essential that capital investment be considered in negotiating profit rates.

In our opinion, a system providing for consideration of capital requirements in negotiating profit rates would be fairer to both contractors and the Government, than the present system.

We believe also that the system adopted should be used where applicable by all Government agencies to simplify industry participation.

RECOMMENDATION

We recommend that the Director, Office of Management and Budget, take the lead in interagency development of uniform Government-wide guidelines for determining profit objectives for negotiating Government contracts where (1) effective price competition is lacking, and (2) the amount of contractor capital required is substantial. These guidelines should stress return on capital in determining profits.

CHAPTER 3—UNALLOWABLE AND NONRECOVERABLE COSTS

During our reviews of selected defense contracts we developed some information about the significance of costs that are not allowable under Section XV of the Armed Services Procurement Regulation. For 42 cost type contracts with contract prices totaling \$833 million; the unallowable costs amounted to 1.4 percent of sales. This percentage is within the range of percentages reported in profit studies of the Logistics Management Institute for the years 1958 through 1968. The Logistics Management Institute percentages ranged from 1.4 percent to 1.8 percent of sales.

Section XV of the Armed Services Procurement Regulation contains general cost principles for the determination of costs in the negotiation and administration of cost reimbursement-type contracts. As of July 1, 1970, use of Section XV became mandatory for fixed price contracts and contract modifications whenever cost analysis is performed, and for the determination or negotiation of costs whenever such action is required by a fixed price contract clause.

The most significant unallowable costs we noted were *interest, research and development* (in excess of amounts agreed to for reimbursement by the Government), *advertising, contributions, and entertainment*.

CHAPTER 4—ANNUAL PROFIT RATES OF DEFENSE CONTRACTORS

The questionnaire data on annual profits of defense contractors disclosed that the ratio of profit to sales is much higher for their commercial sales than for their defense sales. However, when profit is considered as a percentage of return on contractor invested capital, the rates for commercial and defense work are much closer together. This is due to the effect of Government-furnished capital in the form of progress payments, cost reimbursements and industrial facilities and equipment. Further details on this and on other points are set out in the schedules and analyses thereof which follow.

Schedule 1—Summary of data for large DOD contractors (before Federal income taxes).—In Schedule 1, we present a summary of profit data developed from our sample of the 100 largest DOD contractors. The profit rates for the other Defense Agencies (NASA, AEC, and Coast Guard) in most instances are slightly higher but are comparable to the DOD data. Therefore, we will generally limit our discussion to the DOD data and the comparable commercial data.

The dollar volume of commercial sales, comparable to defense sales, (line 3) is from 2 to 3 times greater than the DOD sales volume (line 1). Also, the ratios obtained by dividing profits by sales (lines 4 through 6), are considerably higher for commercial sales. However, profits measured as a percentage of total capital investment (lines 7 through 9) and as a percentage of equity capital investment (lines 10 through 12) compare much more closely for defense and commercial sales. As stated above, this is due to the effect of Government-furnished capital. The relatively smaller amount of capital required of the contractor for defense work also shows up in the higher capital turnover rates for these sales compared with commercial sales (see lines 13 through 18).

Schedules 2 and 3—Stratification of return on T.C.I. (before Federal income taxes) for DOD and commercial sales, respectively, of large DOD contractors.—The range in profit rates was fairly wide for both DOD and comparable commercial sales of the larger defense contractors. A larger percentage of DOD sales was in the loss category in each of the four years. However, the rate of return on DOD sales also extended to a higher range in three of the four years. On an overall basis, the return on TCI was higher on commercial sales for three of the four years.

Schedule 4—Stratification of return on TCI for various categories of defense contractors.—In this schedule we have broken down our sample of the larger defense contractors into three categories and show return on TCI for DOD and commercial sales. All of the contractors had at least \$50 million in annual defense sales. The categories are:

High volume defense contractor.—A contractor which has:

- (1) At least 10 percent of total company business in defense sales.
- (2) Over \$200 million in annual defense sales.

Medium volume defense contractor.—A contractor which has:

- (1) At least 10 percent of total company business in defense sales.
- (2) Annual defense sales of less than \$200 million.

Commercially oriented contractor.—A contractor which had less than 10 percent of total company business in defense sales.

In all years the commercially oriented companies had higher rates of return overall, than the defense oriented companies. Also, except for one instance, the rates of return on commercial sales of the commercially oriented companies were higher than the comparable rates of the defense companies. Further, the commercially oriented companies had lower rates of return on their DOD work than on their comparable commercial work for all four years.

There were no very significant differences in the rates of return of the high volume and medium volume defense contractors except for the year 1966. In that year the low rate of 2.5 percent, on DOD sales of medium volume defense contractors, was due to large losses of a small number of companies.

Schedule 5—Stratification of return on Equity Capital Investment (ECI) for various categories of defense contractors.—In this schedule we have broken down our sample of the larger defense contractors into three categories and show return on ECI for DOD and commercial sales. The three categories are *high volume defense contractors*, *medium volume defense contractors*, and *commercially oriented contractors*. The definitions of the categories are on page 25.

In three of the four years the commercially oriented contractors had a higher return on ECI than the defense oriented contractors. The defense and commercially oriented contractors compared much more closely on return on ECI than on return on TCI. This is due to the fact that our defense contractors have a higher proportion of borrowed capital than our commercial contractors. It is interesting to note also that in three of the four years the defense oriented contractors, as an overall group, show a higher rate of return on ECI for defense work than the commercially oriented contractors. Also, in all four years the commercially oriented contractors show a higher rate of return on commercial work.

Schedule 6—Summary of profits, before Federal income taxes, by types of contract for large DOD contractors.—The types of contracts covered are those most commonly used in recent years by the Department of Defense, *cost plus fixed fee (CPFF)*, *cost plus incentive fee (CPIF)*, *fixed price incentive (FPI)*, *firm fixed price, negotiated (FFP)* and *firm fixed price, formally advertised*.

The data indicates that the bulk of the dollars are in the firm fixed price, negotiated, and fixed price incentive categories. In addition, firm fixed price negotiated contracts appear to be generally the most profitable.

Advertised prime contracts appear to be the least profitable in that contractors reported losses in three of the four years. The dollar volume of such contracts is small, however, amounting to only about 4 percent of the total sales reported.

On an overall basis, profits were slightly higher on subcontract sales than on prime contract sales except for 1969 when a loss on fixed price incentive subcontracts reduced the overall profit rate for subcontracts.

Schedule 7—Profit data (before Federal income taxes) for sample of smaller defense contractors.—This schedule presents data we obtained from a sample of the defense contractors with less defense work than those covered in our sample of the top 100 DOD contractors. The magnitude of the population and diversity of operations involved made it impractical to obtain a sufficiently large sample to project the overall profit rates. Therefore, the results of this portion of our review are simply a summary of the data for our sample of the smaller contractors and should not be considered representative of all contractors in the group.

The dollar value of defense sales of these contractors (line 1) amounts to only about 7 percent of their comparable commercial sales (line 2). Thus, these companies are much more commercially oriented than those in our large defense contractor sample. In that sample the dollar volume of defense sales amounted to about one-third of the comparable commercial sales.

Profit as a percent of sales (lines 3 and 4) averaged slightly more than half the profit earned on comparable commercial sales. This is not significantly different from the experience of the larger defense contractors for which we show average defense profits of slightly less than half of their comparable commercial profits.

The rate of return on TCI and ECI is significantly greater for commercial sales (lines 6 and 8) than for defense sales (lines 5 and 7) in 1966 and 1968. In 1967 the rate was slightly higher on DOD sales and in 1969 slightly higher on commercial sales. In comparison with the large companies, the wider spread in rates of return on DOD and commercial work may result from many of the smaller

contractors selling products that have shorter production cycles or off the shelf items which do not qualify for progress payments or cost reimbursements. Under these circumstances the contractor would be paid after delivery and would not benefit from Government financing. In addition, such contractors are less likely to obtain Government plant and equipment to the extent that major DOD contractors do.

The rates of turnover on TCI and ECI for DOD sales (lines 9 and 11) are significantly lower for the smaller defense contractors than for the larger DOD contractors. This, of course, is also a good indication that the contractors have substantially less Government financing and other assistance than the larger DOD contractors.

Schedule 8—Comparison of GAO profit data (before Federal income taxes) with LMI profit data for DOD contractors meeting LMI criteria.—In this schedule we compare GAO profit data for large DOD contractors with similar data developed by the Logistic Management Institute (LMI) for the Department of Defense. Our comparison is limited to the years 1966 through 1968 since LMI did not develop data for 1969.

LMI's criteria, in recent years, for including companies in its studies, provided that they have at least \$25 million in annual DOD sales and do at least 10 percent of their business with DOD. We did not have similar limitations, therefore, for this comparison we have included only those companies that met LMI's criteria.

Our study also differed from LMI in the following respects:

1. LMI defined total capital investment (TCI) as equity capital plus long term debt. We included the investment in all assets used by the company in producing and selling material, regardless of whether the investment was financed by current liabilities, long term debt, equity capital, or other items on the liability and capital side of the balance sheet.
2. In computing return on TCI we added interest expense to profit since we considered the related liabilities as capital. LMI did not add back interest on the basis that the effect would be insignificant.

* * * * *

For this schedule we have adjusted our data to meet LMI's criteria for TCI, and interest was not added to profit.

Our rate of profit on DOD sales (line 3) is about the same as LMI in 1966, about 28 percent higher in 1967, and about 31 percent higher in 1968. (These differences may be due to differences in the companies covered. Also, so far we have processed data for only about one-half of the companies included in our study.) Our rate of profit on commercial sales compares very closely with LMI.

In the return on TCI and ECI sections (lines 5 through 8) we show some fairly significant differences from LMI. Our DOD rates of return are much higher than LMI's in all three years and our commercial rates of return are slightly lower. We believe that much of the difference is due to our attempt to identify assets such as inventories, accounts receivable, and fixed assets specifically with DOD sales and with commercial sales rather than accepting an allocation based on cost of sales. While it was not possible to directly associate assets with sales categories in all cases, we were at least partially successful in many instances, particularly in obtaining direct allocations of inventories and receivables.

The proper identification of assets with each sales category was important to assure proper consideration of Government-furnished capital for defense work.

The capital turnover rates (sales divided by capital) are shown on lines 9 through 12. Our rates are much higher for DOD sales than LMI's and are slightly lower for commercial sales. We believe that basically, as stated above, the differences were due to different allocation methods.

CONCLUSIONS

Commercial work on an average basis appears somewhat more profitable than defense work. This shows up, for example, in our schedules showing return on TCI (pages 32 and 38). For both the large defense contractors and the smaller defense contractors, commercial work was more profitable than defense work in three of the four years.

Contractors, of course, realize benefits in addition to profits on defense work. These include such items as:

- (1) The Government generally pays for research and development costs for defense work while a contractor may invest a substantial amount in developing a commercial product which doesn't sell.

(2) The defense work may result in substantial benefits for the contractor in commercial applications.

(3) The absorption of overhead costs by defense work, particularly independent research and development costs.

Because of the additional benefits it would not seem unreasonable that the profit on defense work would be somewhat lower than on commercial work. There is no one right answer on what the rate of profit should be, however, for all types of defense work. Where there is a good price competition, there is probably no need to be concerned with the profit rate. For the noncompetitive contracts, a number of factors must be considered, such as complexity of the work, the difficulty in estimating costs, the type of contract involved, and the capital required for completion of the contract. The profit rates must be sufficient to maintain a strong defense industry. This is vital to the security of the country. On the other hand, profit rates should not be greater than necessary, particularly with the huge unmet social needs of the country.

SCHEDULE 1

SUMMARY OF DATA, BEFORE FEDERAL INCOME TAXES, FOR LARGE DOD CONTRACTORS

[The figures in this chart are not final and are illustrative only]

	1966	1967	1968	1969
Sales (in billions):				
DOD.....	\$10.4	\$13.1	\$13.5	\$13.6
Other Defense agencies.....	2.0	1.5	1.5	1.4
Commercial.....	31.1	32.3	41.1	41.3
Profit as percent of sales:				
DOD.....	5.1	5.4	5.2	3.9
Other Defense agencies.....	4.9	4.6	5.5	5.4
Commercial.....	11.6	7.9	11.6	9.2
Profit as percent of T.C.I.:				
DOD.....	11.9	14.1	13.7	10.2
Other Defense agencies.....	14.4	14.5	14.7	13.0
Commercial.....	17.1	11.1	17.4	13.0
Profit as percent of E.C.I.:				
DOD.....	23.6	28.4	27.3	19.8
Other Defense agencies.....	26.3	26.6	26.4	21.8
Commercial.....	26.7	17.2	28.6	20.9
T.C.I. turnover:				
DOD.....	2.2	2.4	2.4	2.2
Other Defense agencies.....	2.7	2.4	2.4	2.1
Commercial.....	1.4	1.3	1.4	1.3
E.C.I. turnover:				
DOD.....	4.7	5.2	5.2	5.1
Other Defense agencies.....	5.3	4.7	4.8	4.0
Commercial.....	2.3	2.2	2.5	2.3

SCHEDULE 2

STRATIFICATION OF RETURN ON T.C.I. (BEFORE FEDERAL INCOME TAXES) FOR DOD SALES OF LARGE DOD CONTRACTORS

[The figures in this chart are not final and are illustrative only]

Return on T.C.I.	1966—Percent of total		1967—Percent of total		1968—Percent of total		1969—Percent of total	
	Contractors	Sales	Contractors	Sales	Contractors	Sales	Contractors	Sales
Loss.....	4.8	3.62	9.8	8.44	4.8	1.56	12.2	14.63
0 to 5 percent.....	17.1	8.41	2.4	2.57	7.4	8.59	12.2	8.60
5.1 to 10 percent.....	17.1	15.63	12.2	18.59	9.8	23.74	14.6	14.07
10.1 to 15 percent.....	39.0	43.14	31.7	33.85	26.8	19.42	24.4	25.65
15.1 to 20 percent.....	12.2	9.78	22.0	8.15	26.8	20.63	12.2	8.81
20.1 to 25 percent.....	9.8	19.42	7.3	11.79	9.8	19.24	9.8	20.72
25.1 to 30 percent.....	0	0	2.4	.81	2.4	.53	7.3	5.34
30.1 to 50 percent.....	0	0	4.9	14.18	7.3	4.60	4.9	1.41
50.1 to 100 percent.....	0	0	7.3	1.62	4.9	1.69	2.4	.77
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total sales (billions).....		\$10.4		\$13.1		\$13.5		\$13.6
Return on T.C.I., spread by year.....		-26.7 to +22.4		-6.1 to +85.0		-21.5 to +81.4		-12.3 to +95.7
Average return on T.C.I.....		11.9		14.1		13.7		10.2

SCHEDULE 3

STRATIFICATION OF RETURN ON T.C.I. (BEFORE FEDERAL INCOME TAXES) FOR COMMERCIAL SALES OF LARGE DOD CONTRACTORS

[The figures in this chart are not final and are illustrative only]

Return on T.C.I.	1966—Percent of total		1967—Percent of total		1968—Percent of total		1969—Percent of total	
	Contractors	Sales	Contractors	Sales	Contractors	Sales	Contractors	Sales
Loss.....	5.1	1.79	12.8	3.50	12.8	1.41	15.4	5.31
0 to 5 percent.....	2.6	.22	7.7	26.31	2.6	0	10.3	17.08
5.1 to 10 percent.....	7.7	4.73	18.0	6.89	15.4	10.18	15.4	8.57
10.1 to 15 percent.....	38.5	35.83	33.3	37.10	33.3	22.86	28.2	39.06
15.1 to 20 percent.....	17.9	32.74	12.8	3.24	15.4	44.64	10.2	8.20
20.1 to 25 percent.....	10.3	12.32	7.7	11.68	5.1	.59	7.7	9.60
25.1 to 30 percent.....	10.3	10.71	5.2	10.16	7.7	8.79	7.7	11.02
30.1 to 50 percent.....	5.1	1.65	2.5	1.12	7.7	11.53	5.1	1.16
50.1 to 100 percent.....	2.5	.01	0	0	0	0	0	0
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total sales (billions).....		\$31.1		\$32.3		\$41.1		\$41.3
Return on T.C.I., spread by year.....	-16.2 to	+61.3	-27.2 to	+35.2	-50.2 to	+45.9	-17.8 to	+38.8
Average return on T.C.I.....		17.1		11.1		17.4		13.0

SCHEDULE 4

RETURN ON T.C.I. FOR VARIOUS CATEGORIES OF DEFENSE CONTRACTORS

[The figures in this chart are not final and are illustrative only]

Description	1966	1967	1968	1969
Contractors:				
Overall.....	14.7	11.4	16.3	12.5
DOD.....	10.9	12.6	13.1	10.3
Commercial.....	16.2	11.1	16.9	12.9
High and medium volume defense contractors:				
Overall.....	11.7	10.3	12.3	10.4
DOD.....	10.4	12.8	13.1	10.2
Commercial.....	12.3	9.7	12.0	10.5
High volume defense contractors:				
Overall.....	11.4	10.2	12.3	10.2
DOD.....	12.1	13.3	12.4	9.2
Commercial.....	11.1	8.8	12.3	10.6
Medium volume defense contractors:				
Overall.....	12.6	11.9	12.3	11.2
DOD.....	2.5	10.7	16.0	14.0
Commercial.....	15.1	12.2	11.3	10.4
Commercially oriented contractors:				
Overall.....	19.0	12.2	20.6	15.0
DOD.....	14.5	11.3	12.7	10.8
Commercial.....	19.2	12.2	21.0	15.2

Note: Data is included in this schedule for a few more contractors than were covered in schedule 1.

SCHEDULE 5

RETURN ON E.C.I. FOR VARIOUS CATEGORIES OF DEFENSE CONTRACTORS

[The figures in this chart are not final and are illustrative only]

Description	1966	1967	1968	1969
All contractors:				
Overall.....	24.7	18.2	27.1	20.5
DOD.....	20.9	24.0	25.1	19.3
Commercial.....	25.3	17.2	27.4	20.7
High and medium volume defense contractors:				
Overall.....	21.4	18.7	21.8	18.7
DOD.....	20.4	25.0	25.7	19.8
Commercial.....	21.8	16.4	20.5	18.3
High volume defense contractors:				
Overall.....	20.6	18.2	22.1	18.8
DOD.....	24.4	26.9	24.7	18.3
Commercial.....	19.6	14.8	21.2	18.9
Medium volume defense contractors:				
Overall.....	22.8	19.9	21.3	18.4
DOD.....	2.9	18.1	29.0	24.4
Commercial.....	27.6	20.4	18.9	16.8
Commercially oriented contractors:				
Overall.....	27.2	17.7	31.6	22.1
DOD.....	23.6	18.9	22.0	17.4
Commercial.....	27.4	17.7	32.0	22.3

Note: Data is included in this schedule for a few more contractors that were covered in schedule 1.

SCHEDULE 6

SUMMARY OF PROFITS BY TYPE OF CONTRACT FOR LARGE DOD CONTRACTORS (BEFORE FEDERAL INCOME TAXES)

[The figures in this chart are not final and are illustrative only]

[Sales in millions of dollars]

	1966		1967		1968		1969	
	Prime contractor	Subcontractor	Prime contractor	Subcontractor	Prime contractor	Subcontractor	Prime contractor	Subcontractor
CPFF								
Sales.....	630	45	727	45	775	68	900	110
Percent profit.....	5.3	5.8	3.7	5.6	3.6	6.1	3.8	4.6
CPIF								
Sales.....	1,069	163	1,434	233	1,528	228	1,297	210
Percent profit.....	4.9	3.8	5.3	6.2	5.8	6.9	7.1	4.6
FPI								
Sales.....	3,040	189	4,285	236	3,509	325	4,528	293
Percent profit.....	4.9	4.9	3.9	(0.6)	4.0	2.9	2.5	(5.3)
FFP-NEG.								
Sales.....	3,771	807	4,552	939	5,485	967	4,643	987
Percent profit.....	5.1	7.2	6.6	6.9	6.5	6.0	5.4	4.6
ADVERTISED								
Sales.....	512		619		513		520	
Percent profit.....	(1.3)		2.3		(3.8)		(2.7)	
Total sales.....	9,022	1,204	11,617	1,453	11,810	1,588	11,888	1,591
Percent profit.....	4.6	6.4	5.1	5.5	5.0	5.4	4.0	2.8

SCHEDULE 7

PROFIT DATA BEFORE FEDERAL INCOME TAXES FOR SAMPLE OF SMALLER CONTRACTORS

[The figures in this chart are not final and are illustrative only]

	1966	1967	1968	1969
Sales (in billions):				
DOD.....	0.17	0.26	0.28	0.26
Commercial.....	3.26	3.38	3.45	3.65
Profit as percent of sales:				
DOD.....	4.6	7.3	5.0	5.8
Commercial.....	11.0	9.5	10.8	10.3
Profit as percent of T.C.I.:				
DOD.....	8.9	14.6	10.3	12.1
Commercial.....	15.9	13.9	15.4	14.9
Profit as percent of E.C.I.:				
DOD.....	13.8	22.7	15.4	18.6
Commercial.....	25.0	21.2	23.2	23.2
Turnover of T.C.I.:				
DOD.....	1.7	1.8	1.8	1.8
Commercial.....	1.4	1.3	1.3	1.3
Turnover of E.C.I.:				
DOD.....	3.0	3.1	3.1	3.2
Commercial.....	2.3	2.2	2.2	2.3

SCHEDULE 8

COMPARISON OF GAO PROFIT DATA (BEFORE FEDERAL INCOME TAXES) WITH LMI PROFIT DATA FOR DOD CONTRACTORS MEETING LMI STUDY CRITERIA

[The figures in this chart are not final and are illustrative only]

Description	1966		1967		1968	
	GAO	LMI	GAO	LMI	GAO	LMI
Sales (in billions):						
DOD.....	9.1	14.7	11.5	17.9	11.8	20.8
Commercial.....	9.6	13.5	11.5	17.6	14.2	24.2
Profits plus sales:						
DOD.....	4.6	4.5	5.4	4.2	5.1	3.9
Commercial.....	9.1	9.2	5.8	6.4	7.2	7.6
Profit plus T.C.I.:						
DOD.....	18.5	13.0	22.3	13.0	20.6	12.8
Commercial.....	18.6	19.7	11.1	13.4	14.7	16.3
Profit plus E.C.I.:						
DOD.....	24.6	17.4	32.5	18.9	30.4	18.5
Commercial.....	25.9	27.5	16.2	19.5	21.2	23.8
T.C.I. turnover:						
DOD.....	4.0	2.9	4.2	3.1	4.1	3.3
Commercial.....	2.1	2.2	1.9	2.1	2.1	2.1
E.C.I. turnover:						
DOD.....	5.3	3.9	6.1	4.5	6.0	4.8
Commercial.....	2.9	3.0	2.8	3.1	2.9	3.1

LOGISTICS MANAGEMENT INSTITUTE,
Washington, D.C., January 20, 1971.

Mr. C. M. BAILEY,
Director, Defense Division,
U.S. General Accounting Office, Washington, D.C.

DEAR MR. BAILEY: As requested in your letter of 7 January 1971 I am herewith providing you with the comments of LMI on the preliminary report on your Defense Industry Profit Study.

I am pleased to learn that the findings, conclusions, and recommendation of the General Accounting Office, based upon a study of the four-year period,

1966-1969, are consistent with those of LMI based upon a study of the eleven-year period, 1958-1968. The findings deal with the relative profitability of defense and commercial business. The conclusions and recommendation are concerned with the need to consider contractor capital requirements in determining profit objectives for negotiated contracts. The relevant material appears, as you know, on pp. 21, 22, and 31 of your draft report and at various places in several LMI reports.

Since you state that the data in your draft report are illustrative and will not be the data in your final report we make no comment on them. I have one additional comment which I wish to make in this letter. Some further, essentially technical points which may be helpful to you are contained in an attachment to this letter.

Your draft report (p. 30) discusses the differences between the return on TCI and ECI shown by GAO and LMI, and resulting differences in capital turnover rates. The differences in profit on TCI and ECI are ascribed to GAO efforts to identify assets specifically with DoD sales and with commercial sales rather than accepting an allocation based on costs of sales. You note that your efforts were only partially successful. There is a clear inference here that LMI did not make a similar effort to associate assets specifically with defense and commercial sales, an inference which I am sure you did not intend. A description of the extensive efforts which LMI has made to insure the adequacy of capital allocations appears on pp. 39-43 of our March 1970 report.

If we can be of further assistance do not hesitate to let us know.

Sincerely yours,

WILLIAM F. FINAN, *President.*

Attachment.

TECHNICAL POINTS ON GENERAL ACCOUNTING OFFICE DRAFT REPORT ON DEFENSE INDUSTRY PROFIT STUDY

1. On p. 6 it is stated that as of June 30, 1969, government land, buildings and equipment costing about \$7 billion were in the hands of contractors. Some of your readers may need help in placing this figure in perspective. We suggest that something be said about the effect of depreciation. Data supplied to LMI indicate that, when depreciated, government-furnished facilities account for only about 5½% of the capital requirements of major defense contractors.

2. Chapter 2 deals with the need to consider contractors' capital requirements in negotiated profit factors. Results of a review of 146 contracts are displayed as illustrations of the problem. The findings and argument are effective and LMI agrees with the conclusions.

The problem we have with this chapter is emphasis. The 146 contract results are very useful for the purpose you intend them, but they may be considered your basic findings on profit generally if they are not qualified in some way.

We recommend that you re-structure Chapter 2 to emphasize that the 146 contracts illustrate one problem only, the profit on capital inequity. We suggest that it be clearly stated that they are not a representative sample, and in fact their average is about double the profit on equity capital shown in your complete survey. We would favor reversing the order of Chapters 2 and 4.

3. On p. 12 appears the sentence: "Government progress payments significantly increase rates of return on contractors capital investments." It should be sufficient, and less open to argument, to say that government progress payments significantly reduce the requirements for contractor capital. We have data for 1968 which generally support the GAO analysis of the impact of progress payments on 12 contracts. The data show that 45.2% of the defense total capital requirements of major defense companies were met with company capital and that 54.8% were met with government capital (49.4% progress payments and 5.4% facilities). LMI has discussed the impact of progress payments in several reports and has pointed out how they create some unintended profit inequities (e.g., see p. 23, March 1969 report).

Along the same lines we suggest that the sentence on p. 14 regarding government-furnished facilities say that government-furnished facilities have a similar but much smaller effect (5.4% vs. 49.4% of defense total capital requirements).

4. With regard to the narrative on pp. 29-30 of your study, there are some remarks which we should like to see clarified if this narrative is to become a part of your final report.

In the last line on page 29, your interpretation that LMI did not add back interest on the basis that the effect would be insignificant standing alone is subject to misinterpretation. One of our primary goals was to compare defense profits with a large sample of companies generally outside of and not affected significantly by the defense industry. We used a sample from the FTC-SEC financial summaries. The FTC-SEC profit results were after deduction of interest. We conformed our data for comparison purposes. However, we made a special study and included in our March, 1969 report covering the ten-year period 1958-67, a comparison of the ratios with and without interest as a deductible cost. The results showed that the relationships between defense and commercial profits on TCI were not affected significantly by our choice. Nothing in any of our reports should be taken to imply that we disagree with your position on interest insofar as profit on total capital is concerned.

LOGISTICS MANAGEMENT INSTITUTE,
Washington, D.C., February 9, 1971.

Mr. C. M. BAILEY,
Director, Defense Division,
U.S. General Accounting Office, Washington, D.C.

DEAR MR. BAILEY: On 20 January 1971 we responded to your letter of 7 January requesting our comments on the preliminary report on your Defense Industry Profit Study. Since the data in the draft report were said to be preliminary and illustrative we did not comment on them. More recently we have received informally from Mr. Flynn and Mr. Wolin Schedule No. 1 and Schedule No. 8 data which we understand are nearly complete. We believe that we should supplement our earlier letter with comments based upon a careful analysis which we have made in an attempt to compare results of the GAO study with those of the various Defense Industry Profit Reviews performed by LMI.

Our findings are as follows:

1. As we stated in our earlier letter, the basic findings and conclusions of the GAO are virtually identical with those of LMI.

2. The data contained in GAO Schedule No. 1 are comparable with those of LMI. Although the specific ratios are not identical, the relationships of commercial profits to defense profits and their trends are similar. Either study would result in the same conclusions. An analysis of the GAO Schedule No. 1 and the LMI data is enclosed as Attachment No. 1.

For reasons which are set out below, the differences between the GAO and LMI ratios are believed to be caused by factors which preclude a reconciliation of the exact numbers in the two studies. It should be emphasized at this point that none of the discussion below implies that one basis for selecting companies or one methodology is better than the other but only that the different universes and methodologies used by GAO and LMI produced differences in the numerical results. The factors are:

1. Differences in the universes covered.
2. Differences in the amounts of commercial business reported by some companies which we believe participated in both studies.
3. Differences between commercially-oriented companies which participated in the GAO study and the LMI defense-oriented companies in their capital structures, i.e., debt to equity ratios.
4. Differences in the definition of total capital investment.
5. Differences in the impact on capital allocation between the total asset method used by GAO and the net asset method used by LMI.

Each of these differences is discussed below.

DIFFERENCES IN THE UNIVERSES COVERED

The LMI study was designed to develop data on major companies which are most sensitive to DoD profit policies. Consequently, a sample was designed to permit conclusions to be drawn about companies meeting the following definition: more than \$25 million annual defense sales and more than 10% of total company business in defense sales. The original sample of major companies represented durable goods manufacturing.

The GAO study was in response to a specific statute calling for a study of the profits on defense business, making no reference to the sensitivity of the com-

panies to DoD profit policies. The GAO did not take a sampling approach but selected 81 contractors from a listing of the 100 contractors receiving the largest dollar volume of military prime contracts of \$10,000 or more in fiscal year 1969. The companies in the GAO study thus differ from those in the LMI study in that a) some do less than 10% of their total company business with DoD and b) some are not durable goods manufacturers.

The GAO study presumably includes all high defense volume companies contained in the LMI study. However, many medium defense volume companies are not included in the top 100 defense contractors. The list of the top 100 companies for fiscal year 1969 includes only companies having DoD awards in excess of \$48.2 million. The LMI definition of medium companies included those having DoD sales (prime and subcontract) in excess of \$25 million, and it was determined that the criterion would include companies having DoD awards in excess of \$16.75 million. The differences between the ratios of the medium companies and the high companies are significant, both in capital turnover and in profit on sales. It would appear that if all medium volume companies had been included in the GAO study the ratios of the GAO and LMI studies would have been closer together.

DIFFERENCES IN THE AMOUNTS OF COMMERCIAL BUSINESS REPORTED BY COMPANIES PARTICIPATING IN BOTH STUDIES

The GAO obtained data on the complete net sales of the participating companies.

In the March 1970 LMI report (p. 2) the following passage appears:

"The original sample of major defense companies represented durable goods manufacturing. All except two of the companies fell into SEC codes 34 through 39. Mergers and acquisitions, however, have changed the character of some companies. To help maintain the integrity of the defense ratios, careful choice was made of reporting organizations. In some cases the total business of a company was reported. In other cases the data were obtained only on subsidiary companies or on defense (or Government) products divisions. As a result, the commercial sales obtained from some defense companies were only the commercial sales of their defense divisions. Hence, *the commercial ratios of the defense sample may not be representative of the commercial ratios of all major defense companies when considered on a total company basis. The FTC-SEC sample is considered a more appropriate basis for comparing defense profits with commercial profits.*" (Italics supplied.)

When a comparison is made between the Profit/TCI ratios on the commercial business of the GAO companies and the corresponding ratios of the LMI FTC-SEC companies for the years 1966-1968, the results are remarkably close, the differences ranging from 0% to 1.7%.

DIFFERENCES BETWEEN COMMERCIALY-ORIENTED COMPANIES IN THE GAO STUDY AND THE LMI DEFENSE-ORIENTED COMPANIES IN THEIR CAPITAL STRUCTURES, I.E., DEBT TO EQUITY RATIOS

In the LMI March 1969 report, Chart IV-4 presented a comparison between the debt to equity ratios of the defense companies and the corresponding ratios of FTC-SEC companies. The figures for 1966 and 1967 and updated figures for 1968 are as follows:

	1966	1967	1968
Long-term debt, E.C.I.:			
Defense companies.....	31.2	39.2	45.8
FTC-SEC.....	19.3	22.0	24.0

If two samples of companies having similar debt to equity ratios are compared, their Profit/ECI ratios can be expected to have the same relationship as their Profit/TCI ratios. If two samples having different debt/equity ratios are compared, their Profit/ECI ratios will not have the same relationship as their Profit/TCI ratios. For example, if the Profit/TCI ratios are equal, the sample having the higher debt/equity ratio will have a higher Profit/ECI ratio.

The effect of comparing samples having different debt/equity ratios is illustrated by the LMI companies' Profit/TCI and Profit/ECI ratios for 1968 and the corresponding FTC-SEC ratios (using LMI definitions) :

	LMI defense	LMI commercial	(6 groups) FTC-SEC
Profit, T.C.I.	12.8	16.3	19.5
Profit, E.C.I.	18.5	23.8	24.4
Profit, E.C.I./profit, T.C.I. equals.....	145.0	146.0	125.0

It will be observed that the LMI Profit/TCI and Profit/ECI ratios have similar defense to commercial relationships, showing the homogeneity of the companies in their debt to equity ratios. However, the FTC-SEC relationship is different.

LMI used Profit/TCI ratios for measuring profit because the DoD was interested in profit on capital regardless of the source of the capital. However, the conclusions on the relationship between defense and commercial profits on capital could have been drawn from the Profit/ECI ratios because the companies were homogeneous.

It is believed that the GAO study contains a significant number of companies whose debt/equity ratios would be more similar to the FTC-SEC debt/equity ratios than to those of the LMI major defense companies.

The GAO Schedule No. 1 ratios for 1968 are compared with the FTC-SEC ratios (using GAO definitions) as follows :

	GAO, DOD	GAO, commercial	(9 groups) FTC-SEC
Profit, T.C.I.	11.4	15.5	13.3
Profit, E.C.I.	21.7	25.5	22.5
Profit, E.C.I./profit, T.C.I. equals.....	190.0	165.0	169.0

It will be observed that while the GAO commercial Profit/TCI and Profit/ECI ratios correlate with the FTC-SEC ratios, the GAO defense ratios do not. This indicates that the companies in the GAO sample are not homogeneous in their debt/equity ratios. It would appear that the weighting of defense total capital is reduced when the proratons are applied to equity capital.

DIFFERENCES IN THE DEFINITION OF TOTAL CAPITAL INVESTMENT

In the LMI study TCI equalled Equity Capital Investment (ECI) plus long-term debt. Profit was computed after the deduction of interest (an allowable cost).

In the GAO study TCI equalled ECI plus all liabilities. Profit was computed before interest deduction.

With other factors at work, one cannot compute the difference in results which might be caused by these differences in definition. Since interest as a per cent of defense sales came to only about .5% in 1968, one would intuitively expect GAO to compute profit/TCI somewhat lower than did LMI because of the relatively heavy impact of GAO's larger capital base. That is what happened: for the years 1966-1968 GAO showed defense profits lower than LMI by from 1.2% to 1.7% and commercial profits lower than LMI by from 0.8% to 4.0%.

DIFFERENCES IN THE IMPACT ON CAPITAL ALLOCATION BETWEEN THE TOTAL ASSET METHOD AND THE NET ASSET METHOD

The GAO study is based upon an analysis of total assets to determine which of those assets were allocable to DoD, other defense agencies, and to commercial business for the purpose of allocating capital. The LMI study used net assets (total assets minus current liabilities) to determine capital allocations.

Because of those different methods, the capital allocations in the two studies are different. Use of the total asset method results in a lower percentage of defense capital to total capital whenever the ratio of defense current assets to commercial current assets is lower than the ratio of defense fixed assets to commercial fixed assets. The relationships are illustrated in the following table.

	Total	Defense/ commercial percent	Defense	Commercial
GAO method:				
Current assets.....	700	40/60	280	420
Fixed assets.....	300	60/40	180	120
Total assets (percent in parentheses).....	1,000	(46)	460 (54)	540
LMI method:				
Current assets.....	700			
Current liabilities.....	-500			
Net working capital.....	200	40/60	80	120
Fixed assets.....	300	60/40	180	120
Total asset (net) (percent in parentheses).....	.500	(52)	260 (48)	240

Our analyses indicate that the GAO companies allocated a lower proportion of capital to defense business than did the LMI companies. We believe that the lower percentage allocation was caused by the difference between the total assets and net assets methods. We would expect the ratio of defense current assets to commercial current assets to be lower than the ratio of defense fixed assets to commercial fixed assets in the GAO study because defense current assets were decreased by progress payments on defense inventories, and faster payments on defense accounts receivable.

In view of the above, we believe that a simple comparison of GAO and LMI data such as that contained in Schedule 8 would be misleading. Further, inclusion of such a schedule would tend to focus attention on detailed numerical differences rather than on the common GAO and LMI findings and conclusions regarding the relationship of defense profits to commercial profits. We therefore recommend that Schedule 8, together with associated textual material, be omitted from your final report.

Sincerely yours,

(Signed) William F. Finan,
WILLIAM F. FINAN,
President.

Attachment.

SCHEDULE 1 DATA, JAN. 18, 1971

	1966		1967		1968		1969	
	GAO	LMI	GAO	LMI	GAO	LMI	GAO	LMI
Profit/TCI:								
DOD.....	11.3	13.0	11.8	13.0	11.4	12.8	8.8	
Commercial.....	15.7	19.7	11.5	13.4	15.5	16.3	13.0	
Commercial-Defense difference (percent).....	+39.0	+52.0	-3.0	+3.0	+36.0	+27.0	+48.0	
FTC-SEC (6 groups).....	15.7	22.6	13.2	18.2	14.1	19.5	12.9	17.9
FTC-SEC (9 groups).....	15.2		12.6		13.3		12.5	
Profit/ECI:								
DOD.....	21.4	17.4	22.4	18.9	21.7	18.5	16.1	
Commercial.....	25.3	27.5	18.1	19.5	25.5	23.8	21.0	
Commercial-Defense difference (percent).....	+18.0	+58.0	-19.0	+3.0	+18.0	+29.0	+30.0	
FTC-SEC (6 groups).....	27.1	27.1	22.5	22.5	24.4	24.4	22.8	22.8
FTC-SEC (9 groups).....	25.2		20.8		22.5		21.4	

TCI: LMI—ECI plus LT debt and GAO—ECI plus all liabilities

Profit (TCI): LMI—Interest deducted and GAO—Before interest

FTC-SEC (GAO): TCI plus profit: Same definition as GAO and 9 groups: 6 plus primary metals, chemicals, rubber.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
Washington, D.C., February 8, 1971.

Mr. LLOYD G. SMITH,
Associate Director,
U.S. General Accounting Office,
Washington, D.C.

DEAR MR. SMITH: Reference is made to your letter of January 5, 1971, for forwarding for our review and comment copies of a draft of a report on the results to date of your study of Government profits.

In your report, you demonstrate the existence of vast differences in earned profits, as a percentage of total capital investment, from one contract to another and to a lesser extent, from one contractor to another. These differences, you conclude, are the product of a percentage-of-cost-oriented policy and system of evaluating and negotiating profits which, contrary to the Government's stated objective in this area, may actually discourage efficient contract performance. You recommend, in this connection, the establishment of a Government-wide policy and the adoption of uniform procedures which would stress the consideration of return on capital investment in determining contract profit compensation.

Although all of the data are not in yet, your report also shows that average annual profit rates achieved on Government sales are lower by about one-half than the profit rates realized on comparable commercial business, when measured as a percentage of sales, and slightly lower, generally, when measured as a percentage of total capital investment. For various reasons, you indicate in your report that Government sales should be somewhat less profitable than commercial sales.

With one possible exception, we believe the definitions and methods you have adopted for investment allocation are sound and will produce reasonably accurate measurements. As a matter of fact, the methodology used closely resembles the investment analysis technique developed by George Washington University for NASA, a program that you refer to and describe on Page 19 of your report. We do observe, however, unlike most other techniques and published data and statistics on the subject, your definition of total capital investment includes short-term debt. Thus, the comparability of your data with other published material, now and later, may prove difficult. Unless there are compelling reasons to the contrary, we recommend that you exclude short-term debt from the total capital investment base.

In recent years, there has been a growing concern that the Government's ability to attract and retain the best industrial capability may, in the long run, be seriously impaired by the reported and apparently widening disparity between Government and commercial profits. Your report addresses this issue, but only in the context of comparable commercial sales of companies included in your sample. For a more balanced and convincing presentation, we recommend that your report include a sampling of firms exclusively or predominantly involved in commercial markets.

Certainly, NASA does not question the validity of the report findings which indicate rates of return on total capital investment for individual contracts ranging from a loss of 70 percent to a gain of 240 percent. It would be a mistake to conclude, however, that this wide range of observed rates is caused solely by the near absence of any consideration of investment requirements in developing contract profit objectives. It would also be wrong to assume that NASA profit policy does not call for the consideration of investment in determining contract profit objectives.

It is more likely, in our opinion, that the wide range in observed rates is caused or is more greatly influenced by variations between going-in and coming-out profits, rather than by negotiation practices, whatever they may be. The actual rate of return, in other words, is dictated in large part by the actual costs of performing the contract and the degree of variation between final and negotiated costs and profit. For example, an adequately negotiated profit arrangement, which included appropriate consideration of contractor's fixed assets and working capital required to perform the contract, could result in a negligible return or even a loss if a substantial overrun occurred. NASA does not maintain that inequities in terms of investment compensation for going-in profits do not exist. We do maintain, however, that an accurate and meaningful appraisal of the problem cannot be made without taking into account the cost and profit variable.

NASA profit policy has consistently expressed the need to analyze, as determinants of contract profit, the underlying factors, including investment considerations, attending each procurement situation. Moreover, our regulations have long condemned the use of ratios or percentages of cost as a basis for developing contract profit objectives. As indicated on Page 16 of your report, NASA did not adopt the DOD weighted guidelines method of profit evaluation for reasons, quite frankly, separate and apart from its cost-oriented features now being contested in your report. Like DOD, NASA profit policy is founded on the premise that the profit motive can and should be used to stimulate higher levels of contract performance. Within the last five years, NASA has made a concerted effort to under-

stand the dynamics of the profit function, as a motivational force, and to develop better ways to exploit more fully this dimension of our profit policy. The problem, as we see it, is not with the policy, but with the development of viable procedures which will result in the effective and faithful execution of that policy.

Since early 1967, NASA has been working with George Washington University to develop and test a workable approach to making investment analysis an integral part of the proposal evaluation and negotiation function. Under the developed approach, profit would be awarded on the basis of investment, risk, management and performance considerations, all calculated from a common investment base using predetermined values and nomographic rating scales. The limited tests that have been conducted to date simply do not provide the needed assurance that this approach will yield reasonable results in every instance, especially in the realm of service contracting.

NASA agrees with your conclusion that, where contractor capital requirements are insignificant, as they are with our support service contracts, profit objectives would, of course, continue to be developed primarily through consideration of other factors. NASA also endorses your recommendation for the development of a Government-wide profit policy together with uniform procedures of application.

Thank you for the opportunity of commenting on your report. We trust that our comments have been useful and will be of assistance.

Sincerely yours,

BERNARD MOUTZ,
(For Richard C. McCurdy)

Associate Administrator for Organization and Management.

ASSISTANT SECRETARY OF DEFENSE,
INSTALLATIONS AND LOGISTICS,
Washington, D.C., February 16, 1971.

MR. C. M. BAILEY,
*Director, Defense Division,
U.S. General Accounting Office,
Washington, D.C.*

DEAR MR. BAILEY: This is in response to your letter of January 5, 1971, transmitting for comment a draft of a major segment of the GAO profit study. We appreciate that GAO has a tight deadline in preparing a final report to Congress by March 31, 1971, but we are pleased with the opportunity to comment on the draft report. (OSD Case 3223)

We are most impressed with the GAO data collection and summarization of data as evidenced by the draft report. GAO has apparently been successful in obtaining profit results from a significant sample of large and medium size companies doing business with the Department of Defense. However, we are very concerned about the manner of presenting the results of the study. The prominent place given in the draft report to the analysis of 146 contracts results in a grossly misleading presentation. An analysis of 146 contracts valued at \$4.3 billion is obviously not as significant statistically as an analysis would be based on Schedule 1 of the report which reflects total sales of about \$50 billion in defense business. The analysis of 146 contract reflects a profit percentage to costs as well as a percentage return on capital investment that is significantly higher than that reflected on Schedule 1. Further, the range of return on total capital investment for the much larger volume of defense sales is considerably less than the range displayed for one-twelfth the volume represented by the 146 contracts. Possibly the so-called "Defense Industry is as depressed as any other segment of today's economy. "Overplaying" this segment of an excellent report accomplishes nothing other than presenting ammunition to the critics of this Industry. In fact, such overemphasis could adversely affect this Industry.

Had GAO reported the results of the study of the much larger volume of Defense business shown on Schedule 1 and supporting schedules, it would have shown that earned profits on commercial business ranged from 150% to 240% greater than profits on Defense business. Further, the schedule displays of profit as a return on capital investment both on equity and equity plus debt show, except for one year of the four years involved, that profit as a return on capital under either method of computation was greater on commercial business than on Defense business.

The data on Schedule 1 also shows that Defense profits declined over the past three years from 5.4% of sales down to 3.9% (before taxes). This was occurring at a time when profit from commercial business was increasing from 7.9% to 11.6% and last year at 9.2%. Defense profits on the basis of equity capital has similarly declined from 28.4% in 1967 to 19.8% in 1969. While at the same time profit from commercial business measured on the same basis went up from 17.2% to 28.6% in 1968 with a decline to 20.9% in 1969.

The significant data contained in Schedule 1 is not adequately discussed in the body of the report commensurate with its importance and the reader, to a large extent, must make this analysis himself. We suggest the subordination of analysis of 146 contracts to an analysis oriented more discretely to the data presented in schedules.

We note that conclusions are presented separately at the end of Chapter 2 and at the end of Chapter 4. We would recommend that the conclusions of the report be consolidated in one place. With regard to the conclusions themselves, the report acknowledges the efforts by the DoD to develop a new policy for the calculation of profit objectives which would more closely relate profits to contractor capital employed. We expect to continue this effort and to develop appropriate procedures as rapidly as possible. However, it seems to us that your discussion of consideration of contractor capital in profit negotiations conveys the impression that the Defense Department needs only to make a policy decision. We sincerely wish this were so as you know. Actually, highly complex problems of administration are involved and we have been trying to devise workable solutions to those problems to reduce the matter to a policy issue. A recognition of the difficulty of implementing the capital employed profit policy would seem to be in order in this chapter. In fact, any suggestions you can make relative to resolving our implementation problems would be most helpful.

With regard to the conclusion inferred from the discussion at the end of Chapter 4, i.e., that profit on defense work should be somewhat lower than on commercial work due to the fact that contractors realize benefits in addition to profits from (1) Government payment for R&D costs, (2) alleged benefits in commercial application, and (3) absorption of overhead costs, particularly IR&D costs, we suggest that the analysis in the report of this important subject is quite superficial. If this subject is contained in your final report, we suggest a much more penetrating analysis. As a minimum, this should include mention of factors which tend to offset the benefits. As you know, there are many such offsetting factors such as the ability of a contractor to lose money on a commercial product and more than recoup his loss through continued production. Each defense contract is an entity unto itself and offsets of this nature; therefore, are not allowed. I am really only suggesting that the entire story be presented, if at all. The so-called benefits of Defense to commercial transfusion should be covered in depth for example. Actually, other than in a few specific segments of industry, not much of this takes place.

We note with interest the material contained in your draft report with respect to the profit policies used by the British Government. We have been aware of the approach used by the British for some time and we take no issue with the brief description of this process contained in your draft report. However, it is our impression that the British have recently modified their procedures and we are not aware of the actual experience that has been gained thus far. We recommend that you ascertain the actual experience of the British and, as well, examine whether the British approach to its Defense industry is the same as prevails in this country. Without this more comprehensive coverage in your report, the reader will be left with the impression that the British industrial and profit system is wholly comparable to our own. We know this is not the case inasmuch as too often in discussions with us the British comment on the benefits of our system over theirs.

Schedule 1 in the draft report shows that there is little difference between the overall results of the LMI and GAO studies. In fact, your conclusions are similar to those of LMI. I believe it very important that this point be made in your report. At the same time, we have spent considerable time, recognizing the soundness of both the GAO and LMI samples, attempting to determine why there is the slight difference in profit to capital ratios. We are inclined to believe that the total assets approach used by the GAO versus the net assets approach used by LMI accounts for the majority of this difference. Should you care to discuss this reasoning, we will be glad to do so. We believe the report should recognize the difference in these approaches if any comparison is to be

made. We think that no useful purpose is served by specific comparisons of profit to capital ratios such as those shown in Schedule 8. Even when the same data are used, the use of total assets as a basis for distribution of capital can be expected to result in allocations which are different from those derived from net assets, resulting in different profit to capital ratios. We would, therefore, suggest that in view of the similarity of the findings, the report state that no detailed reconciliation is needed at this time. If you desire we can work towards interpreting differences in exact numbers sometime after the report is released. Under these circumstances, I suggest you delete Schedule 8 from your report.

We appreciate the opportunity to comment on your draft report and should there be sufficient time for us to comment on your final report before its release we would be most pleased to do so.

Sincerely,

BARRY J. SHILLITO,
Assistant Secretary of Defense.

OFFICE OF THE SECRETARY OF TRANSPORTATION,
Washington, D.C., February 16, 1971.

Mr. RICHARD W. KELLEY,
*Assistant Director, Civil Division,
U.S. General Accounting Office,
Washington, D.C.*

DEAR Mr. KELLEY: This is in reply to your letter of January 6, 1971, requesting comments on the General Accounting Office (GAO) draft report entitled "Defense Industry Profit Study."

GAO concludes that consideration should be given to capital investment requirements in determining profit objectives for negotiated Government contracts where (1) effective price competition is lacking, and (2) the amount of contractor capital required is a significant factor. GAO recommends that (1) the Director, Office of Management and Budget, take the lead in interagency development of uniform Governmentwide guidelines for determining profit objectives for negotiating Government contracts under the above circumstances, and (2) such guidelines stress return on capital in determining profits.

We agree with the foregoing conclusions and recommendations. However, we suggest that the guidelines developed should:

(1) Specify the types and size of contracts to which the concept is to be applied. Although the report indicates that the concept should be limited to non-competitive procurements, experience has shown that once such a factor is included in any method used to negotiate or determine fees or profits, procurement personnel tend to apply such direction to all procurements without regard to their competitive or noncompetitive nature. For contracts which are relatively small in dollar value, the cost of applying the concept could possibly outweigh the financial benefit.

(2) Consider both contractor-provided capital as well as Government-furnished capital in the form of progress payments, cost reimbursements and industrial facilities and equipment. Where the contractor-provided capital constitutes real estate, capital facilities or equipment, only that portion of value not yet depreciated should be considered as opposed to the contractor establishing a value to the contract basis.

We appreciate the opportunity to comment on the draft report.

Sincerely,

WILLIAM S. HEFFELFINGER.

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C., February 26, 1971.

Mr. LLOYD G. SMITH,
*Associate Director, Civil Division, U.S. General Accounting Office,
Washington, D.C.*

DEAR Mr. SMITH: In response to your letter of January 5, 1971, we have the following comments to offer on the draft report dealing with GAO's defense industry profit study.

On page 16, after a description and some comments on the Department of Defense's weighted guidelines method of establishing profit objectives, the following statement is made:

On page 16, after a description and some comments on the Department of Defense's weighted guidelines method of establishing profit objectives, the following statement is made:

"The other agencies included in our profit study follow profit negotiation policies similar to those of the Department of Defense. In fact, the Atomic Energy Commission and the Coast Guard use the weighted guidelines to negotiate some contracts."

The above statement is not entirely accurate. At best it is misleading, particularly insofar as AEC is concerned. In a discussion of this section of the report by members of our respective staffs, it was pointed out that there are some very distinct differences between the AEC's profit policies and the DOD weighted guidelines approach. A more accurate statement of AEC's policy would be that:

"AEC's profit policies are based on FPR 1-3.808-2 and AECPR 9-3.808-50 which define a number of factors that must be considered in determining profit objectives for use in negotiation, such as complexity of the work, amount of contractor capital to be employed, risk, and past performance. These factors are not weighted—as is the case with the DOD system. Also, AEC provides in its procurement regulations and instructions that contractor investment will be considered in determining profit objectives and has developed maximum fee curves which are based in part upon investment capital. There are, however, no formalized provisions for development of invested capital data for individual contracts."

With regard to the weighted guidelines method, the AEC has not adopted it as profit policy. It is referred to only in one part of the AEC profit policies. AECPI 9-3.808-51(v) Profit Guidelines for Fixed-Price Contracts Awarded on Basis of Cost Analysis. While the AECPI says that consideration should be given to the use of the DOD weighted guidelines method as *one means* of testing the reasonableness of the contractor's profit request, it makes it clear that the factors in FPR 1-3.808-2 and AECPR 9-3.808-50 are controlling.

The report recommends that uniform Government-wide guidelines be developed for determining profit objectives for negotiating Government contracts and that these guidelines should stress return on capital in determining profits.

We believe that there should be a Government-wide policy that requires all agencies to give appropriate consideration in their respective fee policies to return on capital investment. However, we do not believe there is a need for a *uniform* Government-wide fee policy which *stresses* consideration for determining profit objectives on the basis of return on capital investment. We also believe the development of such detailed, uniform guidelines could have a serious, disruptive effect on the existing overall fee policies of the various executive agencies. As pointed out in our statement regarding AEC's policy regarding profits cited above, the capital investment factor is only one of the important factors that must be considered when determining profit objectives for use in negotiating fees. We believe that is basically the correct approach; fee policies should not stress a single factor.

Also, we do not believe that all agencies should be required to follow a uniform approach to determining profit objectives. So long as each agency's basic policy is sound, the agency should be permitted to tailor its policy to meet its programmatic needs.

We also believe that AEC's minor involvement in the study should be recognized in the report since only a few AEC contracts were included in the study in contrast to DOD's 100 largest. This also has a bearing on the statement on page 24 of the draft that AEC profit rates are slightly higher than, but comparable to, DOD's. The relative size of the contracts being compared would, we believe, have an effect on the comparability of the profit rates.

Sincerely,

ARTHUR SCHOENHAUT,
(for John P. Abbadessa, Controller).

AEROSPACE INDUSTRIES
ASSOCIATION OF AMERICA, INC.,
Washington, D.C., January 22, 1971.

Mr. C. M. BAILEY,
Director, Defense Division,
U.S. General Accounting Office,
Washington, D.C.

DEAR MR. BAILEY: We appreciate the opportunity to review the preliminary draft of the General Accounting Office Defense Industry Profit Study report forwarded by your letter of January 5, 1971.

The relatively few days made available for review; restrictions on us with respect to disseminating the report; and the preliminary nature of this draft have greatly influenced our comments. Since you state that your draft report is in-

complete and tentative in nature, our comments must be considered as different than those we might otherwise submit. Our comments are directed to three principal matters—the validity of the data, the emphasis on return on investment, and the lack of explanation on the role of profits.

VALIDITY OF DATA

In drafting your final report I am sure you will consider the manner in which the information could be interpreted particularly by those not completely familiar with the subject and the methods used in the study. Of the data in the draft report, that most subject to misinterpretation and improper conclusion is the information on return on capital of the 146 selected contracts.

The developed rates of return on capital on the 146 contracts are completely out of line with annual rates of return on DoD business as developed from the questionnaire data which are tied to contractors' audited financial statements. One of the criteria for the contracts selected was that the contracts be "recently completed". Therefore, these contracts should be expected to be performed principally in the four years covered by the questionnaire. The magnitude of differences between the two sets of data may be because the contracts themselves are not truly representative, the methods to relate capital to contracts are not properly chosen, or simply that there is no practical way of associating investment to individual contracts. In any event, the information presented supports the conclusion that the data regarding the 146 selected contracts does not fairly represent the normal returns on DoD business. For this reason alone, we strongly urge that all data on the 146 contracts be eliminated from the final report. A further reason for such elimination is that there is no way to evaluate the indicated rates of return on capital on individual government contracts simply because the report does not present data on corresponding rates of return on commercial business.

A further suggestion regarding data is that profits be reported in a manner which shows the amounts taken away by Federal Income Taxes and Renegotiation.

RETURN ON INVESTMENT

The report grossly overemphasizes the role of return on investment in government contracts. In addition, we believe that use of the terms TCI (Total Capital Investment) and ECI (Equity Capital Investment) will generate misunderstanding and confusion for those readers who are not familiar with these technically complex and controversial concepts and do not know that there are many different ways of computing these factors. We hope that the final report will adequately stress the importance of expressing profit as a percentage of sales, along with return on capital. Return on sales is the one indicator of profitability which has universal understanding and agreement. An emphasis on return on sales (at least equal to the emphasis on return on investment) would help readers to better understand the overall study results.

We also believe that the subject of Progress Payments as related to return on investment has been presented in an extremely one-sided fashion. Progress payments are not restricted to defense contracts. Progress payments are used in long term, high dollar value, complex contracts, programs, or projects whether defense or nondefense, government or commercial. Simply stated, were it not for progress payments the buyer would be either unable to buy what he needs or certainly not on as favorable terms. We suggest the section on progress payments be deleted or at least revised in the interest of more objectivity in presentation.

The report also has recurring statements indicating that contractors have strong incentives to minimize investment in order to increase profits. Industry people have continued to take issue with this premise as unwarranted and unsubstantiated. Such statements fail to consider and recognize the "real world" competitive environment of today's defense business.

ROLE OF PROFITS

Another of our concerns follows from the observation in the report that profits on defense work could reasonably be expected to be lower than on commercial work due to substantial benefits flowing from defense work to contractors' commercial activities. Such statements fail to recognize that benefits flow both ways and that an equally compelling list can be arrayed of the benefits flowing to the government from commercial work.

In order that readers of the final report can arrive at valid conclusions based upon facts presented, we believe the report should contain an explanation of the role of profit in industry. Such an explanation would point out that government contractors are in a free market as to obtaining investment capital, and that defense contractors must compete for this capital in the same manner as all other types of producers. The report should explain the fact that profit is one of the greatest means of attracting capital; that profit affects the ability of contractors to perform; that profit is necessary to attract the kind of people needed to perform the extremely complex tasks characteristic of defense business; that profit is compensation for risks such as technical difficulty, length of contract terms, potential for program and contract terminations; and that profit is effected by the contract terms which vary widely in defense contracting and are often different than those used in commercial business. Enclosed is a copy of the AIA review of "Risk Elements in Government Contracting" which explains in greater detail the nature of the risks and the kind of contract terms used currently in government contracting.

We believe that there is justification for higher profits on many defense contracts than for commercial work. In any event we are convinced that if all the relevant factors regarding profit are adequately considered that there is no valid basis for the conclusion that "it would not seem unreasonable that the profit on defense work would be somewhat lower than on commercial work".

CONCLUSIONS

In summary, we believe the preliminary draft report:

Contains data that, if not completely invalid, is subject to great misunderstanding and misinterpretation;

Includes material not germane or relevant to this profit study especially the subject of investment as a factor in price negotiations;

Inadequately covers the subject of defense contractor profits especially from a business and economic standpoint.

We are not commenting about any of the specific language in the tentative report since we believe that the final report will not likely contain unsubstantiated conclusions and unnecessary comment on unrelated matters.

We would be happy to discuss any of the foregoing with you at your convenience, and would appreciate an opportunity to comment on a draft of the final GAO report prior to its official release.

Sincerely yours,

KARL G. HARR, Jr., *President.*

Enclosure.

AMERICAN ORDNANCE ASSOCIATION,
Washington, D.C., January 22, 1971.

MR. CHARLES M. BAILEY,
*Director, Defense Division,
U.S. General Accounting Office,
Washington, D.C.*

DEAR MR. BAILEY: The American Ordnance Association very much appreciates the opportunity, offered in your letter of January 5, 1971, to comment on the December 22, 1970 draft of your report to the Congress entitled, "Defense Industry Profit Study." Our corporate members have great interest in this important field and desire to offer comments and suggestions.

Being primarily a technical organization, however, this Association does not have a standing committee dealing with procurement. Moreover, shortage of time precludes assembling a special Ad Hoc committee of procurement experts from our member companies in order to generate considered, meaningful comments on your draft report.

Many of our corporate members, however, are also members of other defense-oriented associations which have been invited to comment. We have determined that suggestions which reflect the American Ordnance Association position have been provided to other Associations for consideration in preparing their comments to you.

Many thanks for including us in your survey. We hope that the American Ordnance Association may be given the opportunity of assisting in any future study relating to defense preparedness.

Sincerely,

W. K. GHORMLEY,
Executive Vice President.

ELECTRONIC INDUSTRIES ASSOCIATION,
Washington, D.C., January 22, 1971.

Mr. C. M. BAILEY,
Director Defense Division,
U.S. General Accounting Office,
Washington, D.C.

DEAR MR. BAILEY: The Electronic Industries Association appreciates the opportunity to review and comment on the preliminary draft of the report on Defense Industry Profit Study transmitted with your letter of January 5. Because the draft is preliminary and the data illustrative only, our comments are necessarily general in nature and our later reaction to the final report may differ somewhat from the comments expressed herein.

You will recall that you received a number of first hand comments from our members as a result of your presentation on this subject at the Annual Meeting of our Government Procurement Relations Department at Key Biscayne. Our review of the draft adds to the concern expressed at that time about the use of data on selected contracts.

A significant difference is shown between (a) the profitability of the 146 contracts selected for review as summarized on page 11 and (b) the data furnished by defense contractors on their total defense business, as summarized on pages 32-38. Although some differences are to be expected, the disparity indicated by the following tabulation is so great that it raises a serious question as to whether the selected contracts are representative of defense contracts.

(In percent)

	GAO review of 146 contracts	Large contractors' defense business, 1966-69 range—	
		Low	High
Profit as a percent of sales.....	16.5	3.9	5.4
Annualized rate of return on total capital employed.....	28.3	10.2	14.7
Annualized rate of return on equity capital employed.....	56.1	19.8	28.4

¹ Schedule 1 on p. 32.

² Profit on 146 selected contracts expressed as a percent of cost (6.9 percent) on p. 11 has been adjusted to percent of sales for purpose of comparison.

As you requested we gave copies of your document to several EIA members. These men are convinced that due to either; (a) an unfortunate selection of contracts, or (b) flaws in the method of ascertaining capital invested in such contracts, the data proposed to be published for these 146 selected contracts (particularly rate of return on capital) are clearly non-representative of contractors' typical or normal return on capital for defense business.

The law directing this study is specific that the Comptroller General is "to conduct a study and review on a selective, *representative* (italic added) basis of the profits made by contractors and subcontractors . . ." The law does not specify that the study must include a review of individual contracts as contrasted perhaps with types of contracts.

We are confident the GAO is making every effort for the report to the Congress to present the facts in an accurate, meaningful and objective manner. Unless for reasons which are not apparent in the draft report, the representatives of the data on the 146 selected contracts can be clearly demonstrated in the final report, we strongly urge that the data on these contracts be deleted. In lieu thereof it would appear to be appropriate to include data by types of contracts reported by contractors in part 2 of the questionnaire.

We agree with the conclusion of the report that investment should be a consideration in determining profits. However, we feel the point is over-emphasized and the draft fails to recognize the other important factors which should play a role in the determination of profit. The requirement in human resources, state of the art, risk assumed and available alternatives are but a few other factors which are important considerations to be retained in government procurement policy if industry is to continue to seek government contracts. The British System which relies heavily on the return on investment concept is found in this country only in regulated industries and is incompatible with maintaining a healthy, free, competitive industry.

The recommendation on page 22 that the profit "guidelines should *stress* (italic added) return on capital in determining profits" summarizes the theme throughout the draft which we fear may trigger unwise or precipitate action detrimental to both government and industry.

In addition the report may convey to the uninformed the impression that a policy decision to relate profit to investment would by itself result in an accomplished fact. You are well aware of the years of effort on the part of DOD and many others with disappointing accomplishments to date in implementing the report recommendation. Little precedent exists for the allocation of investment. The circumstances in different industries or contractor operations may require different bases for allocation. Furthermore the administrative burden of requiring the consideration of investment in each of the hundreds of thousands of procurement actions each year might far outweigh any benefits to be derived. This reasoning leads us to urge that any recommendations you offer along this line be limited to major contracts.

The draft cites three reasons to justify lower profits on defense work. Each of these points is debatable and equally strong reasons could be advanced in justification for higher profits on defense business than on commercial business. For example, it is unfortunate that our accounting systems do not record investment in human resources. If recorded we are confident it would show that defense contractors are required to allocate a significantly greater proportion of its professional and technical personnel to defense contracts than to its commercial business. The uncertainty of future defense work and the government's right to terminate on-going programs represent elements presenting greater risk than is experienced in commercial business. We feel that the three reasons cited to justify lower profits present to the reader a biased statement which we feel sure is not intended.

The determination of appropriate rates of profit, if indeed such a determination can be made, is a very complex subject which is not required by the law. We feel it would be contrary to professional standards which are practiced by the GAO to express an opinion on the adequacy of profits particularly as it is expressed in the closing sentence on page 31.

We also offer a comment relating to the statement on page 11, and again on page 21, to the effect that contractors have no incentive to invest in more modern equipment to increase efficiency and reduce costs. This is a condemnation of defense industries which fails to recognize basic economic facts of our American Capitalistic System. No defense contractor will survive unless he constantly maintains competitive cost levels, often by investing in cost-saving capital equipment. There is also the direct profit incentive to reduce costs on FFP and FPI contracts. Although we know of no studies made on the subject, it is our opinion that management in its evaluation of potential expenditures for capital equipment applies the same criteria in the operation of defense businesses as it does in commercial businesses. We believe the unqualified assertion in the draft report is unsupported and misleading.

In summary our comments are as follows:

1. Unless it is established that data in selected contracts are truly representative of all defense contracts, that data should be deleted. In lieu thereof data by types of contracts might be included.

2. We concur with the conclusion that investment should be a consideration in profit determination. However, we feel the point is over-emphasized and does not give recognition to other important considerations. In addition the reader should be made aware of the many difficulties involved in the implementation of such a policy. Any implementation should be limited to major contracts.

3. The report should not judge the adequacy of defense profits. Any discussion of the subject should be unbiased and objective and not be related to any extraneous subjects.

4. The statement that contractors have no incentive to invest in modern equipment is unsupported and contrary to good management practice.

Presumably the reader of the final report will be familiar with the legislative history of the law and the accusations which reflect on the integrity of defense contractors. It is our expectation that the final report will reaffirm the validity of contractors' statements in regard to profits earned on defense contracts.

We would appreciate an opportunity to review the final draft when it becomes available.

If we can be of further assistance please call on us.

Very truly yours,

V. J. ADDUCI, *President.*

NATIONAL SECURITY INDUSTRIAL ASSOCIATION,
NATIONAL HEADQUARTERS,
Washington, D.C., January 27, 1971.

Mr. C. M. BAILEY,
Director, Defense Division,
U.S. General Accounting Office,
Washington, D.C.

DEAR MR. BAILEY: In response to your letter of January 5, 1971, enclosing a preliminary draft of your defense industry profit study, I am pleased to furnish comments on behalf of the National Security Industrial Association. The final report will be of great interest to NSIA, as well as other defense industry and professional accounting associations, the Congress, the Defense Department and the public. We have every confidence that the final report will be characterized by your usual thoroughness and objectivity.

It should be understood that, in keeping with the preliminary nature of the draft, and noting that the final data could change the thrust of the report, our comments are necessarily preliminary in nature. Further, the restrictions placed on the distribution of the draft coupled with your schedule for the development of comments, impact on the completeness of our suggestions. Also, the tight schedule prevented us from obtaining the views of all our member companies.

In view of the original objectives of the study as stated in the legislation and in the letter forwarding the questionnaire to contractors, i.e., to test the accuracy of the repeated charges of excessive profits on defense sales and counter charges of inadequate defense profits compared with the return on commercial sales, we are concerned that the draft lacks sufficient specific coverage on these points. The conclusions on page 31 of the report indicate that commercial work on an average basis is in fact more profitable than defense work. This being the case, we feel the report should also specifically state that your study therefore did not confirm the much repeated charges of excessive defense profits which have been made.

The conclusions also contain a statement that contractors realize benefits in addition to profits on defense work. We do not necessarily agree that any benefits which might accrue to a defense contractor generally outweigh the disadvantages of defense contracting or that such benefits justify a lower level of profit. Specifically we do not agree that the items listed in your conclusions necessarily represent benefits or that they make it reasonable that the profit on defense work should be somewhat lower than on commercial work. For example, it is stated that the Government generally pays for research and development costs, while a contractor may invest a substantial amount in developing a commercial product which does not sell. However, the commercial contractor who operates at a reasonable profit level must and does recover of research and development costs from the Government does not represent an advantage to a Government contractor.

With respect to the second advantage which your conclusions describe, the converse is also true. Commercial work can and very often does result in substantial benefits to defense work.

The same argument is made for the third area which you mention, since it is just as true to say that defense work benefits from the absorption of overhead by commercial work.

The fact is that these benefits are not the one-way street that the report implies, and we therefore do not agree that such benefits make it reasonable that profits on defense work should be lower than on commercial work.

The report's emphasis on return on investment and the recommendation to introduce greater motivation for contractors to make higher investments in facilities for government work should be coupled with a recognition of the higher degree of risk involved in government business, with a corresponding higher return. Government contractors assume a far greater risk in the feast-to-famine economy of defense contracts than do most commercial contractors. The termination of a single contract representing the major portion of the contractor's volume, the stretch-out or partial termination of such a contract, the failure to win in the win-all or lose-all competition of a major new program award, are risks which the commercial company, whose volume typically bears a closer relationship to the much more stable general economy does not have to assume. Since the most elemental function of profit is to reward the entrepreneur for the assumption of risk, we believe the defense contractor must show his stockholders a higher return on defense business than on commercial busi-

ness. The fact that the reverse is true, as an examination of the price earning ratio of defense contractors' equity will show, is a forecast of trouble for the achievement of a broad industrial base for the production of the sophisticated weapons required for our nation's security.

In certain areas, no recommendations in connection with problems identified have been made. The profit diluting impact of unallowable costs, and the difficulty of arriving at feasible methods of allocating investment by contract, are referred to without either conclusion or recommendation.

The draft report fails to caution the quick reader that all the profit statistics are measured before Federal Income Taxes. We believe there is an immense psychological difference between showing a 2% to 2.7% return on sales *after* tax and a 3.9% to 5.4% return on sales *before* tax, unless the measurement before taxes is clearly indicated. Further, the fact that total profits reported are before deductions for renegotiation should be given greater emphasis.

There is no recognition in the report of the understandable differences between the various types of industries engaged in defense work. We recommend that the final version of the report contain reference to the broad spectrum covered by the defense industry and recognition of the fact that variation in profit objectives is appropriate and consequently is to be expected.

We are further concerned with the report's lack of explanation for the variation between individual contracts and overall results. The only inference to be drawn from this is that individual contracts are in no way illustrative of overall results. Consequently, we feel that before final issuance an effort should be made to reconcile the results shown on individual contracts with those reported overall. Further, defense critics have a tendency to place emphasis only upon statements which have, in their opinion, "news-appeal". We refer specifically to Chapter 2 of the draft report which indicates that in some instances return on total capital investment exceeded 200% on certain contracts. We believe that additional comments are required at this point in the draft to present a more balanced view of the situation and to point out that these rates are exceptional. It might also be pointed out that profit rates expressed as a percentage of costs show relatively small variances. Clarifying comments of this type are most necessary because the average reader wants an understanding of the distinction between the difference between profit rates and the different ways of expressing profits.

The placement of clarifying comments is, of course, important. We note that in Chapter 2, page 11 of the report, it is stated ". . . contractors are discouraged from investing in new, more efficient facilities because an investment in facilities that would lower unit costs would also result in lower unit profits". It is necessary to proceed to page 22 before finding ". . . other factors, such as whether or not the program will be continued, could be an overriding consideration in bringing about contractor investment to reduce costs". We would add that the nature of a contractor's business plays an important part. A commercially oriented contractor will understandably be very cautious on heavy investment in areas foreign to his principal business without more assurance than the Department of Defense is able to give that there will be a continuing and long-term need for the facilities.

Another point that needs clarification is the reference that subcontractors' profits are higher as indicated on page 27 of the draft. This statement is misleading since on a TCI basis subcontractors realize a lower return because of having higher capital investments.

We hope that these comments will be useful and you will give them careful consideration. We will be pleased to make similar reviews of further drafts.

Sincerely,

J. M. LYLE, *President.*

MACHINERY AND ALLIED PRODUCTS INSTITUTE,
Washington, D.C., February 12, 1971.

HON. ELMER B. STAATS,
*Comptroller General of the United States, General Accounting Office,
Washington, D.C.*

DEAR ELMER: The Machinery and Allied Products Institute appreciates the opportunity to review and comment on your draft report to Congress on the Defense Industry Profit Study. I want to thank you also for the time which you and your colleagues gave me and my associates on this subject last week.

Our comments are based upon a MAPI staff study and a confidential review of the draft report by a limited number of member company executives who are well qualified by training and experience to undertake such a review. They were aware, as are we, that data contained in the draft report are preliminary and illustrative only. Insofar, however, as those data and the accompanying textual material foreshadow the content and character of the final report, we hope and believe that the results of the advance review of the draft report by MAPI and other commentators will prove useful.

The MAPI statement is divided into two principal sections: First, comments of a general character and of major importance and, second, specific and detailed comments which, although significant, are considered to be of somewhat lesser importance overall.

GENERAL COMMENTS

METHODOLOGY

By comparison with earlier studies of defense profits (i.e., studies prepared by the Logistics Management Institute (LMI) and Professor—now Assistant Secretary of the Treasury—Weidenbaum) your draft report has a number of advantages from the standpoint of statistical adequacy:

- (1) The overall size of the sample is larger;
- (2) Profits are shown both as a percentage of sales and costs and as a percentage of capital employed;
- (3) The data were verified; and
- (4) Responses to the survey were "mandatory."

Unfortunately, in the view of member company executives, there are a number of methodological shortcomings in the study. Each of these shortcomings is discussed briefly below.

The definition of profits.—For purposes of the draft study profits are defined as "The net income or loss after deduction of all state and local taxes but *before* provision for U.S. federal income taxes or reduction of profits as a result of renegotiation." (Underscoring supplied.) Presentation of data on this basis makes profit appear to be about twice as high as the amount actually realized by the contractor. For the statistician this is hardly a problem; however, when the results of this most important study are discussed in Congress and in the press, the qualifying phrase "before-tax" is likely to be overlooked or misplaced with the result that an impression would be left that "profits" are much higher than is the case. (Incidentally, it will be recalled that the LMI data were presented on both a before-and-after-tax basis.) We believe the GAO report should also report profits on both bases.

A similar—although of course not as important in terms of its effect on the final profit figures—objection applies to the presentation of profit figures before the reduction of such figures by the exactions of the Renegotiation Board. Commercial business, the profits on which are being compared with defense profits, is not subject to renegotiation. To the extent that defense profits are ultimately reduced by renegotiation they are overstated in the draft study. The final report should give more prominence to the fact that profits are presented before renegotiation.

The comparison of defense profits with commercial profits.—It is the claim of the draft study that profit rates on defense and commercial work are placed on a comparable basis. In view of this claim we are disappointed that the study fails to compare the contractor's profit margin on sales of comparable commercial products with the *negotiated* profit margin of the same contractor on sales to the Department of Defense (the latter figured on the sum of estimated costs plus the target margin). The theory here is that a competitive profit is considered to be fair (regardless of its dimensions) and the target profit margin should be what the contractor could expect to earn on commercial business of a competitive character.

Period covered by study.—The defense profits study covers a relatively short period of time—1966 through 1969. The relative brevity of the period means that *trends* are not revealed. For example, in the LMI study it can be seen that during the period covered—1958 through 1966—profits on defense business were trending downward while profits on commercial business were trending upward.

Cost of work in process, finished goods and accounts receivable.—As a basis for appraising the validity of the data presented it would be desirable to indicate by percentages: (1) those cases where contractors had readily available for

use acceptable work-in-process, finished goods and accounts receivable data; and (2) those cases in which it was necessary for the GAO and the contractor to develop such information by resort to theoretical procedures. Where theoretical methods were employed examples of techniques used should be presented.

The determination of investment in fixed assets.—The comment of a member company executive on this determination (page 3, draft report) says, "GAO determined investment in fixed assets by assuming that the depreciation charged to the contract was directly in proportion to the use of capital by the contract. This is, or can be, a false assumption where depreciation is charged on other than a machine-hour or capital-utilized base such as a case where overhead is applied on Direct Labor."

Still another commentator says, "The calculation of fixed assets is too theoretical. Many companies do not identify assets or calculate depreciation by cost centers. If a division-wide rate for factory overhead is employed, the calculation of depreciation by contract on the basis of the direct labor in that contract can be as complete variance with the facts if they were actually calculable. As a practical matter, the determination of fixed assets related to specific contracts should not be attempted. Each contract at a profit center, insofar as investment in fixed assets is concerned, should be evaluated on the basis of the profit center's investment in fixed assets as a whole."

In commenting on the study's methodology, another commentator suggests that the reader is given insufficient insight into underlying methods and assumptions. This leads to a major concern which is fully reviewed in our later discussion of the disparity between reported profitability of 146 selected contracts and data reported on total defense business.

"Commercial sales."—One commentator, whose company participated in the study, protests the application to his company's situation of the definition of commercial sales appearing on page 9 of the draft report. In the case of this company, leased machinery and royalty income were excluded from commercial sales. Both of these sources of income are high profit margin items and their exclusion tended substantially to narrow the gap between the profitability of the company's commercial and defense business.

"Reasonable comparability" between products sold commercially and to DOD is made the touchstone of the draft report's definition of commercial sales. The company here involved points out that leased equipment is identical with commercial equipment sold rather than leased and which apparently was included in the auditor's calculation of commercial sales. Similarly, the excluded royalty income is derived from overseas leasing of patents and know-how, both of which are identifiable with products manufactured and sold in the United States and which were included in commercial sales for purposes of the defense profits study.

We stress the point because the capital goods manufacturing companies represented by MAPI derive significant income both from leasing of equipment and machinery which is also sold directly to customers and from the licensing of patents and know-how relating to products sold in the usual course of business. Such income represents "commercial sales" and for purposes of this study the transactions involved differ only from other sales in that the thing sold is a right to use rather than a right of title. The general exclusion of all such income from the total of commercial sales used as a basis for profit comparisons may well tend to produce a significant narrowing of the gap between commercial and defense profits and thus an unintended distortion of the study's results.

Subcontractors.—It is indicated on pages 4 and 5 of the draft study that the 154 contractors who received questionnaires included 81 selected from the list of 100 largest prime contractors with the remaining 73 selected at random from a listing of other prime contractors receiving awards of \$10,000 and aggregating \$500,000 or more in fiscal year 1968. Given this basic selection, it appears to us that any genuine nonmilitary or commercial type subcontractor representation may well be purely accidental. One senses that he is studying the results of a survey of results achieved by defense prime contractors who also do some commercial work and a certain amount of subcontracting. If this is not a reasonable conclusion, a fuller exposition in the final report of methods employed to assure adequate subcontractor representation would seem desirable or a comment acknowledging that the report does not adequately cover subcontractors.

Let me add one further word which reinforces our conclusion on this subject. The "Summary of Profits By Type of Contract, Etc.," Schedule 6 in the draft study, reflects a very low ratio of subcontract sales dollars to prime contract

dollars. We do not believe that 13 percent of prime contract value accurately represents the subcontract effort in defense procurement.

Smaller companies.—As the draft study acknowledges, the number of smaller companies covered is relatively small. This suggests a need for particular care in attributing the findings of the study to such companies.

WIDE DISPARITY BETWEEN REPORTED PROFITABILITY OF 146 SELECTED CONTRACTS AND DATA REPORTED ON TOTAL DEFENSE BUSINESS

No other aspect of the draft study produced as much skepticism among MAPI member company reviewers as the remarkable and unexplained disparity between reported profits on 146 selected contracts (page 11) and those reported for defense contractors generally, as reflected in pertinent Schedules to the draft report.

It is possible that some part of this disparity is attributable to the fact that the sample of 146 selected contracts was limited to *completed* contracts and therefore excluded any consideration of the canceled, terminated, or disputed portion of government business which is, of course, a factor in arriving at final results on government business. We repeat that this explanation may account for a part of the discrepancy; we doubt if it can explain it all.

The real explanation, we suspect, lies deeper. It is the conclusion of our reviewers that the discrepancy results from one or both of the following reasons:

- (1) The 146 contracts are not a representative sample;
- (2) The method of collecting data and the resulting allocation of capital resulted in an unintentional bias.

Relevant data in the draft report are so general in character as to make any conclusive judgment impossible. However, one MAPI member company executive, using T.C.I. turnover as a basis of test, adds to the suspicions so generally voiced in comments received by the Institute. This commentator says:

There is considerable doubt in my mind, however, as to the validity of the rate of return on total capital employed on the 146 contracts summarized on page 11 and the total capital invested turnovers (and, therefore, the profit as a percent of T.C.I.) recorded on Schedules 1 and 7 for DOD and other Defense Agency contracts. From the summary on page 11, there is an implied T.C.I. turnover of 4.4, a very high number in anyone's ball game!¹ Unrealistically high!

Schedules 1 and 7 reflect more realistic T.C.I. turnovers of 1.3 for commercial business with a 1.8 to 2.2 for DOD business. Here the spread between commercial and DOD seems too great. As the study points out, there are two basic factors which should result in higher turnover on DOD business. These are progress payments resulting in lower net inventories and the use of government-owned facilities. However, for the average corporation to achieve a turnover improvement from 1.3 to 1.8 or 2.0 it would require the elimination of 70% of inventories and a substantial percent of net fixed assets. (A practical reduction in assets due to progress payments at an 80% level is about 70% of inventories due to some of the progress payments lodging in accounts receivable, delay in billings, etc.)

The figures in [Exhibit 1, attached], taken from second quarter 1970 SEC-FTC Quarterly Financial Reports for manufacturing corporations demonstrate, through the indicated adjustments, the above point.

* * * * *

Commenting further on the possibilities of error suggested above, this executive says further:

If the approach was to determine capital employed on government contracts as a first step, with the balance allocated to commercial, our experience would indicate the latter could very easily happen. Contract managers consistently underestimate the capital requirements of their projects and tend to ignore the corporate assets required to back up their specific projects. Our experience [at a corporate division almost wholly engaged in defense work] when attempting to allocate total assets of the Division to projects, is that we end up with twenty to thirty percent of the assets in dispute without including any allocation of non-

¹ Profit + cost = sales. In example on page 11 of draft study—

.069 X cost + cost = sales
 Thus, \$4,256 million (sales) ÷ 1.069 = \$3,981 million (total cost).
 \$4,256 million - \$3,981 million = \$275 million (profit)
 \$275 million ÷ \$4,256 million = 6.46% profit on sales
 Annualized rate of return on total capital employed—28.3% ÷ 6.46% = 4.4 (T.C.I. turnover).

divisional corporate assets. If the approach was auditor to contract manager, which would be the normal Government audit approach, the above bias is very likely present.

We strongly urge a thoroughgoing reexamination of this disparity which, if not fully explained in the final report, would certainly be subject to the kind of external, but persuasive, critique quoted above. One point of check is suggested. The 146 negotiated contracts here involved were examined" . . . at 37 contractor locations" (page 1). Might not a comparison of profitability on these 146 contracts with overall profitability on defense contracts of these 37 contractors shed further light on this great disparity and perhaps offer a clue to the very necessary explanation of it?

Finally, let us refer once more to the question of whether or not the 146 negotiated contracts selected for individual study constitute a representative sample. Putting aside the matter of disparity in rates of profitability, the doubts concerning representativeness engendered by that disparity might be allayed in part if the final report were to disclose the standards used in making selections and further information were provided as to the nature of the work performed (e.g., service type, R&D type, etc.). We understand from the conference that the GAO concedes the sample of 146 negotiated contracts is not representative. We ask that this be clearly stated in the final report.

THE RETURN ON INVESTMENT CONCEPT AND DEFENSE CONTRACT PRICING

You will recall that in the recent conference in your office, we expressed the opinion that the draft report reflects a preoccupation with the "Need To Consider Contractor's Capital Requirements in Negotiating Profit Factors," the quoted language representing the title of the draft report's longest chapter. That chapter opens with a reference to the wide range of profit and loss figures revealed by your review of 146 negotiated government contracts and then asserts that "[T]his wide range is due to the fact that under present policies government procurement personnel give little consideration to contractors' capital requirement in developing profit rate objectives for negotiated contracts."

Uniformly, MAPI member company executives who have been privileged to examine the draft report express their approbation at the report's recognition of the need to consider the contractor's capital investments. However, those same commentators caution that capital investment is only one of many factors to be considered in arriving at a target profit, and they challenge the assertion that the wide variation in profitability can be attributed to a lack of consideration for the contractor's capital requirement.

The discussion of return on investment is inextricably linked with the larger questions of how defense contracts are priced, how target profit objectives are arrived at by negotiation and what defense contract profits *should* be. Among those persons to whom we referred the draft report for review was George Terborgh, Consultant and formerly Research Director of MAPI. He responded to my request for review with a memorandum that considers all of those broader questions just cited as well as a number of lesser related issues. Because of its relevance both to the full report and to these larger questions of defense procurement policy, I am attaching Mr. Terborgh's memorandum as Exhibit 2. Let me summarize his main conclusions.

(1) The earnings of a business are a *joint product* of all factors contributing thereto—facilities, working capital, location, management, personnel, research product design, know-how, reputation, sales organization, trade connections, customer goodwill, and many others. This being true, the return-on-investment approach which attributes all earnings to *capitalized* assets is ". . . a snare and a delusion."

(2) The only valid test of the fairness or reasonableness of profit is the test of competition. Whatever the complex of contributing factors (referred to in 1 above) can earn in good competition is a fair profit. And the price that yields this profit is a fair price.

(3) The pricing of defense contracts should *simulate*, so far as possible, the pricing of the competitive market. Simulation can be *direct*, when the items procured are substantially identical with the contractor's regular products, but it must be *indirect* when (as in most negotiated contracts) the items differ too widely from these products for reliable price comparisons.

(4) The return-on-investment approach to price negotiation has a fatal tendency to gravitate toward *standard* allowables as in the case of the British system described in the draft report.

(5) The commercial-profit simulation system outlined in this memorandum would go far to overcome the disincentive to contractor investment which allegedly results from the present system.

PROGRESS PAYMENTS

On page 12 the draft report asserts that "Government progress payments significantly increase rates of return on contractors' capital investments." This comes as no surprise; in fact, it is a recital of the obvious. If a progress payment did not improve the rate of return there would be no point in obtaining it.

We think the discussion of progress payments is subject to at least three criticisms. First, the observation quoted above is uttered with an air of discovery as if the report were revealing some unusual and hitherto unrecognized device by which defense contractors enhance their profitability. As we suggested in last week's conference, progress payments are quite common in commercial business. This is particularly true in the case of capital goods items, many of which are of high unit cost and with very long production/construction cycles. In these respects the circumstances of their design and manufacture are not unlike those applying to the procurement of defense products for which progress payments are customarily available.

Customary commercial practice respecting advance and progress payments in the capital goods industries is illustrated by the attached copy of MAPI Memorandum T-41 (Exhibit 3, attached). Out of 149 companies responding to the questionnaire on which this Memorandum is based, 95, or more than 60 percent, receive advance and/or progress payments on commercial work. As an indication of the volume of such payments, 72 companies answered a question as to the total of advance and progress payments on hand as of the dates of their most recent financial statements. *Exclusive of progress payments on government work*, the total of such payments reported by these 72 companies amounted to \$978 million. Your attention should also be called to the fact that the aerospace industry—perhaps the most important of all industries in defense contracting—receives enormous progress payments in its commercial work.

The comment in the draft report misses the point. What is at issue here is not whether government contractors receive progress payments¹ but to what extent, if any, such contractors receive progress payments above and beyond those customary in commercial business. To the extent there is a difference, the difference should be explained.

Secondly, the draft report's discussion of progress payments cites an example to illustrate the effect on profit rates of progress payments plus a time difference in payment for deliveries by the government and a prime contractor. The example is *atypical* and in no way merits the implications set forth in this section of the study. Moreover, the example just cited implies that subcontractors do not receive progress payments. This is inaccurate and the implication unfair. If the example is used at all—and we suggest it be dropped altogether—it should be made clear that subcontractors are eligible, as are prime contractors, to receive progress payments.

CONCLUSIONS OF THE GAO DRAFT.

The final version of the defense profits study will, of course, be a report to the Congress. As such, its preparation would seem to call for a summing up, in the form of conclusions, of the data collected and analyzed in the course of the study.

Those statements labeled "Conclusions" and appearing on page 31 of the draft report do not satisfy this requirement. They are in no wise supported by evidence adduced in the study. Rather, they are in large measure simply arguable expressions of opinion. For example, it is concluded—somewhat grudgingly—that "Commercial work on an average appears somewhat more profitable than defense work." Thereafter, and gratuitously, the author of the draft report seeks to "explain" the lower profitability of defense work by asserting that "Contractors, of course, realize benefits in addition to profits on defense work." There is no

¹ As to this larger issue we think it would be desirable to acknowledge in the final report that there are very important reasons for making progress payments available in connection with defense business, and we think that this point is clearly indicated by experience in this area during the 60s.

recognition whatever of what may would agree are the related set of disadvantages in such business.

This is not a documented conclusion but an inference and a highly debatable inference at that. Benefits above and beyond profit which are ascribed to defense work by the draft report are Janus-headed. Each of the factual circumstances offered as evidence of a benefit to the defense contractor is reversible; depending upon the facts of the case each of these situations may confer a special benefit on government.

If the report must have conclusions, and we think it probably must, they should be statements of fact which are fully supported by the results of the study. Opinion and speculation should be eliminated. Because the report's conclusions, in whatever form cast, are likely to receive primary attention by Congress, the press and the public, significant qualifications or interpretations of data appearing elsewhere in the report should be repeated in summary form in the general conclusions or summary.

ORGANIZATION OF THE REPORT

Referring once again to the conference in your office, we understand that our suggestions respecting reorganization of the study, at least to some extent, had already been anticipated by your staff and that the organization of the study is being changed. We were pleased to learn this because we think the report can be strengthened by changing its pattern of organization. We have no desire to overstress a point apparently acknowledged already but for the record we repeat below our suggestions as to how the final report might be more logically organized:

- I Introduction
- II Annual Profit Rates of Defense Contractors
- III Need to Consider Contractor's Capital Requirements in Negotiating Profit Factors
- IV Unallowable and Recoverable Costs
- V Conclusions (a new chapter)

Our suggestions for reorganization of the study are, of course, to be further modified by our more general criticisms contained in this statement.

SPECIFIC COMMENTS

Beyond those more general observations set out above, we offer below a number of detailed comments on specific aspects of the draft study.

UNALLOWABLES

Chapter 3 of the draft report is labeled "Unallowable and Non-recoverable Costs," the title referring of course to costs that are not allowable on defense contracts under Section XV of the Armed Services Procurement Regulation. In the review of 42 cost-type contracts with contract prices totaling \$833 million, the unallowable costs are said to amount to 1.4 percent of sales, a figure within the applicable range of percentages reported in profit studies of LMI.

This figure is questioned by certain of the MAPI commentators. One says "Unallowables are much higher for mixed DOD/commercial companies, or will be after the extension of Section XV to fixed-price contracts. Such companies are often subcontractors, who have many customers and have to advertise, they have lots of debt and interest costs, etc. Could be closer to 30%." The effect on unallowability of applying ASPR Section XV to fixed-price contracts is echoed by another reviewer and a third, a major subcontractor whose business is primarily commercial, says "We [have] always felt that these disallowances constituted much more than 1.4% of sales."

We do not question the accuracy of the figure quoted in the draft report. However, it seems to us that the representativeness of the 42-company sample may be subject to question and the final report should acknowledge the probable future increase on unallowability resulting from the application of Section XV to fixed price contracts.

One last comment on unallowables is indicated. We urge that the reference to "entertainment" be deleted from this discussion because of the implication that contractors attempt improperly to charge entertainment costs to the government.

DIFFERENCES IN ACCOUNTING METHODS

At page 7 the draft report says "Numerous alternatives are available in determining costs and profits under generally accepted accounting principles." It is suggested that these differences could make a significant difference in the relatively short four-year period covered by the study. Several MAPI commentators have objected to the implications of this discussion on pages 7-8 of the study.

A pertinent comment typical of those received on this point is quoted below: "So long as individual contractors apply generally accepted accounting principles on a consistent basis during the periods involved, and as between defense and commercial business where applicable, there is no basis for questioning the results. This is apparently intended as a sales pitch for standard cost accounting principles for government contracts and is not relevant to this study."

ABNORMAL RESULTS

In discussing your review of 146 negotiated government contracts on page 11, the draft report refers to a range in rates of return from a loss of 78 percent to a gain of 240 percent contractor total capital investment. The report's reference to the high figure was noted unfavorably in several comments received by the Institute. We agree with this one:

"They should not emphasize the 240% which was obviously a fluke. Such a number should not be used in the report because it will be subject to distortion in headlines. A responsible report would say that 8 contracts earned over 100% (50% A.T.) on T.C.I. Is their objective to get headlines and draw criticism on DOD contracts or to report factually?"

We are quite sure that the objective is to report factually and such a report will involve, in our judgment, a special effort to avoid inflammatory headline material such as the detail just cited.

POSSIBLE AMBIGUITY RESPECTING DEFENSE SALES

One company which participated in the study asserts that the report does not use in its appended schedules all data collected. Additional information was collected on sales to government agencies other than "DOD or Other Defense Agencies," and also on "Other Sales" which appear to consist mainly of sales by foreign subsidiaries. The profit results on such sales may not be germane to the study but no mention of them appears in the report. The omission of any reference to them—based on the present draft—may cause the reader to assume incorrectly that total contractor sales is the sum of sales to DOD, to other Defense agencies and to commercial customers.

SUMMARY AND CONCLUSION

In conclusion let me recapitulate briefly the main points made in this statement.

1. The methodology of the study is deficient in—
 - a. Presenting profits before taxes;
 - b. Presenting profits before renegotiation;
 - c. Failing to compare commercial profits with negotiated profit margin on similar sales to DOD;
 - d. Covering a period of time insufficient to reveal trends;
 - e. Its determination of investment in fixed assets;
 - f. Defining commercial sales; and
 - g. Including an insufficient representation of subcontractors and smaller companies.
2. The wide disparity between the profitability of 146 selected contracts and defense business generally requires a thoroughgoing reexamination and a complete explanation in the final report.
3. The draft report is unduly and perhaps improperly preoccupied with the return on investment concept and its effect on defense contract pricing.
4. The pricing of defense contracts should *simulate*, so far as possible, the pricing of the competitive market.
5. Progress payments are a normal feature of commercial business and progress payments under defense contracts appear to be significant to the report only insofar as they exceed payments that are customary in commercial business.

6. "Conclusions" appearing in the draft report are unsupported and unsupported by the data collected and analyzed. Only fully documented conclusions should appear in the final report; opinion and speculation should be eliminated.

This concludes our statement on the draft version of the defense profits study. We have greatly appreciated the opportunity of reviewing this draft and we hope that our comments may prove of some value in preparing the final report. If the Institute or its staff can be of any further assistance on the project, please don't hesitate to call on us.

Cordially,

CHARLES STEWART, *President.*

Enclosures.

EXHIBIT 1—SECOND QUARTER 1970 SEC FINANCIAL STATEMENTS FOR ALL
MANUFACTURING CORPORATIONS

ASSETS OF \$250 MILLION TO \$1,000 MILLION

Net Sales Annualized, 1,373.
Inventories, 285.
Net Prop., Plant & Equip., 385.
Total Assets, 1,075.
Asset Turns, 1.28.
Assets to Achieve 2.00 Turns=687.
Required Reduction in Assets=1,075-687=388.
Assumed Allocation of Reduction:
Inventories, $285 \times .70 = 200$.
Plant & Equip., $385 \times .49 = 188$.

ASSETS OF \$50 MILLION TO \$100 MILLION

Net Sales Annualized, 342.
Inventories, 68.
Net Prop., Plant & Equip., 90.
Total Assets, 259.
Asset Turns, 1.32.
Assets to Achieve 1.80 Turns=190.
Required Reduction in Assets=259-190=69.
Assumed Allocation of Reduction:
Inventories, $68 \times .70 = 48$.
Plant & Equip., $90 \times .23 = 21$.

EXHIBIT 2—MACHINERY AND ALLIED PRODUCTS INSTITUTE MEMORANDUM

JANUARY 21, 1971.

To Mr. Stewart.
From Mr. Terborgh.

You have invited my comments on the preliminary draft of the GAO Defense Industry Profit Study. As you know, I have no expertise in the practical aspects of defense contracting, hence any contributions I can make must be on the theoretical level. I shall limit my remarks accordingly.

With your indulgence, I should like to begin with a self-quotation:

"The earnings of a business are a *joint product* of all factors contributing thereto—facilities, working capital, location, management, personnel, research, product design, know-how, reputation, sales organization, trade connections, customer goodwill, and many others. They are assignable *in total* to the entire complex of contributing factors, but not *in part* to the segments of that complex. Yet this is what is done in conventional accounting. The rate of return for the business as a whole is considered to be the ratio of its annual earnings to the assets stated on the balance sheet. These do not include all the assets that contributed to the earnings, however, but only those acquired through prior capitalized expenditures. Assets otherwise acquired, such as management skill, research, technical data, know-how, reputation, trade connections, and the like, are either not listed at all or are entered at purely token amounts. The result is that the contribution of these unlisted assets to the earnings of the business gets credited to the capitalized assets only."

Since profit is an unallocable product of a complex of contributory factors, the question of its fairness for defense procurement (or any other government pro-

curement) should be judged by reference to the profit-generating capacity of the entire complex. But how can this be measured? I submit that in an economy like ours there is only one valid test: the test of competition. *Whatever the complex of contributory factors can earn in good competition is a fair profit. And the price that yields this profit is a fair price.*

I take it that the Draft Report agrees with this principle, as evidenced by the statement on page 31 that "Where there is good price competition there is probably no need to be concerned with the profit rate." While a certain lack of conviction is suggested by the word "probably," without this qualification the position appears to be on all fours with my own.

It follows from this principle that the pricing of defense contracts should simulate, so far as possible, the pricing of the competitive market. Thus simulation can be direct, when the items procured are substantially identical with the contractor's regular products, but it must be indirect when (as in most negotiated contracts, the items differ too widely from these products for reliable price comparisons. In this case, it is necessary to build up prices from prospective costs, plus a target profit margin.

It seems to me the basic principle of this indirect simulation is clear. Since a competitive profit, whether large or small, is by definition fair, the target profit margin should be *what the contractor could expect to earn on commercial business of comparable character.*

This is not only the governing principle; I take it from the Draft Report that it could be applied in practice to a wide range of cases (though certainly not to all). The Report points out that most contractors have commercial business broadly comparable to their defense business, and usually in much larger amount. It has found it possible for statistical purposes to compute profit margins on this commercial output, suggesting, at least, that they could be computed for negotiating purposes also.

It is to be regretted that the Draft Report is so preoccupied with return-on-investment studies that it fails to examine its data for conformity to the simulation test. There appears no reason why it cannot compare, on a case by case basis, (1) the contractors' profit margin on sales of comparable commercial products, with (2) the negotiated profit margin of the same contractor on sales to the DOD (the latter figured on the sum of estimated costs plus the target margin). A tabulation of such comparisons would show how widely present procurement procedures diverge from the theoretical goal of simulated competitive pricing. I strongly urge that this be done.

It goes without saying that where simulative pricing is feasible the reckoning of costs on defense business should be assimilated to the reckoning on other business. This means that if the DOD supplies productive facilities, it should charge a normal rental for their use. If it makes progress payments beyond those customary in commercial practice, it should charge interest on the excess. If purchased materials and components are a different proportion of costs on defense than on commercial business, this should be adjusted, perhaps by computing profit margins in both cases on value added. Obviously, these adjustments are no easy task, but are not peculiar to simulative pricing. They should be made also under the present "weighted-guideline" system.

With these comments on theoretically correct pricing, I turn now to the return-on-investment criterion. Here I must draw a corollary from the self-quotation offered at the outset. Since profit is the product of a whole complex of contributory factors, of which capital employed is only one, imputing it exclusively to this factor is unrealistic, and in extreme cases can reach the point of absurdity.

The latter possibility is recognized by the Draft Report in the recommendation on page 21 that return-on-investment pricing should be used only "where the amount of contractor capital required is a significant factor." It points out, by way of example, that such pricing is inappropriate for service-type contracts and others with low investment requirements. But it nowhere defines the term "significant" for this purpose, nor are we told at what point in the rising scale of capital-output ratios rate-of-return pricing becomes legitimate.

In my opinion, it is illegitimate anywhere on this scale unless the allowed return yields the amount of profit the contractor could earn in competition on comparable commercial business. But this amount must be otherwise derived before such a return can be computed. This raises the obvious question, why then compute it at all? Why translate an independently-derived profit allowance into a rate-of-return equivalent?

To my way of thinking, the return-on-investment approach is a snare and a delusion. If a proper profit-simulation system is in effect, it is superfluous. In the absence of such a system, it is without any rational guide or principle. Moreover, there is a fatal tendency for this approach to gravitate toward *standard* allowables. This is beautifully illustrated by the new British system, which has fixed on a *single* figure (11 percent on risk contracts). While the proposed application of this approach here does not contemplate one rate for all cases, there is practically no chance that the range of allowables will reflect the dispersion of actual investment returns on comparable commercial business. A close bunching around a standard figure is almost inevitable.

If this approach is out as an exclusive test, the question may be raised about combining it with the cost-plus approach. This is in fact what the new British system does. It is a hybrid, allowing 11 percent of capital employed, as just noted, plus 3 percent on costs. As I understand it, a hybrid system is proposed for us also, though not necessarily of the same proportions. Such systems reflect a compromise among warring schools of thought unable to resolve their conceptual or theoretical differences, rather than a principled solution of the problem. Except as a political tradeoff, they make little sense.

One of the reasons urged for the introduction of a return-on-investment factor in the negotiation of contract profit targets is the lack of incentive under the present system for the contractor to reduce his operating costs by additional capital investment. Since pricing is presently based on estimated costs plus approved profit, the argument runs, operating cost savings on the instant contract by means of such investment result in a lowered price on follow-on contracts, with the government getting the benefit rather than the contractor.

Whatever the effect of this disincentive (the Draft Report finds it substantial), I should like to point out that a commercial-profit simulation system would go far to obviate it. For cost savings on a defense contract would not reduce the contractor's profit target on follow-on business if his margin on comparable commercial work were maintained. He would start in each negotiation with the same allowable.

In closing, let me acknowledge that simulative pricing is unavailable in many cases; the principal reason being that the contractor does not have enough comparable commercial business to provide a base for analysis. Such cases will have to be dealt with by other means. But where the simulative approach is feasible, it should by all means be preferred. This goes for the Contract Renegotiation Board as well as the Pentagon.

EXHIBIT 3—TAXATION—MACHINERY & ALLIED PRODUCTS INSTITUTE MEMORANDUM

Washington, D.C., October 27, 1970.

ADVANCE PAYMENTS: SUMMARY AND ANALYSIS OF MAPI SURVEY ON RECEIPT, ACCOUNTING FOR, AND USE OF ADVANCE AND PROGRESS PAYMENTS

This memorandum summarizes the results of a MAPI survey concerning the receipt and use of advance and progress payments by capital goods manufacturers. Results of the survey were submitted to the Treasury Department in the course of our continuing consultations with Treasury on the tax treatment of such payments. Proposed Internal Revenue Service regulations, final publication of which is expected at an early date, appear to have eliminated the danger that such payments will be taxed in the year of receipt rather than at the time of contract completion.

Quite apart from its usefulness in government relations, the results of the MAPI survey reveal the scope and nature of a commercial practice that will be, we believe, of interest to all capital goods manufacturers. The survey provides information on the receipt of advance and progress payments and emphasizes their importance in the financing of capital goods production. Because of the importance of these findings and others set out herein, this memorandum is being distributed to presidents and financial officers of all MAPI member companies. Additional copies are available to Institute member companies at \$1.00 per copy—to nonmember companies at \$2.00 per copy.

Recently, the Internal Revenue Service (IRS) published for review and comment by interested persons proposed regulations that would permit in most cases the deferral of taxes on advance or progress payments received in connection with the sale of goods until the taxable period in which the goods are delivered (Bulletin 4460). No significant adverse comment having been received by the Treasury on this proposal and with no public hearing on it presently

scheduled, final publication of these regulations in substantially the form proposed now seems probable. Assuming final adoption of the proposed regulations, their publication will represent the culmination of an extended Treasury and IRS study of the advance payments problem and the substitution of reliable guidelines for a pre-existing state of dismaying legal and administrative confusion, at least with reference to the sale of goods. The new IRS rules governing taxation of advance payments on service contracts are discussed below.

Both in public congressional hearings and in written statements to Treasury and IRS, MAPI repeatedly has called for government action permitting deferral of taxes on advance and progress payments, stressing the importance of such payments in the capital goods industries as a source of financing the production of high-cost and/or long-production-cycle items. This argument was renewed and extended by the Institute in informal conferences on the subject with Treasury officials. In the absence of any substantial and reliable body of data on the subject and in the hope of contributing to Treasury's study of the matter, MAPI undertook some months ago a survey concerning: (1) the incidence of receipt of advance and progress payments; (2) customary practice in accounting for such payments; and (3) an indication of the importance of advance and progress payments to capital goods manufacturers. The results of the survey were furnished to the Treasury Department.

This memorandum sketches briefly the history of the advance payments problem and reproduces a summary and analysis of the results of the MAPI survey on the subject.

BACKGROUND

In 1966 the Tax Court decided in the *Hagen*¹ case that customers' advances received without restriction as to use must be included in income in the year of receipt. This decision was subsequently affirmed by the 6th U.S. Circuit Court of Appeals. Although theoretically limited by the rule of *stare decisis* to the somewhat unusual factual circumstances involved, the *Hagen* decision served as a point of departure for an increasingly vigorous attempt by revenue agents to require the inclusion in currently taxable income of advance or progress payments on all forms of sales of goods, including capital goods. This move toward enforcement of an extended interpretation of the *Hagen* case was, of course, a matter of the most serious concern to manufacturers of capital goods. Moreover, the *Hagen* decision introduced one more element of uncertainty for taxpayers into a situation already confused by contradictory judicial decisions, start-and-stop legislation, and uneven enforcement. (A full account of the then existing uncertainties appears in MAPI Memorandum T-39.)

Much, if not most, of the uncertainty heretofore attaching to the taxation of customer's advances in connection with the sale of goods would be dispelled by the proposed IRS regulations noted above. The regulations adopt the *Hagen* decision but appear to limit its effect to those fairly uncommon factual situations which are directly comparable to *Hagen*. Some concern remains with reference to the questionable theory of accounting upon which the *Hagen* decision rests but, in the main, it appears that capital goods manufacturers would be relieved from current taxation of advance or progress payments by these proposed regulations. We believe that the MAPI survey, the results of which are summarized below, made some contribution to this result.

At the same time that it published regulations on advance payments relating to the sale of goods, the Internal Revenue Service published Revenue Procedure 70-21 which prescribes rules for the taxation of advance payments received under agreements for the performance of future services. Although the deferral of taxes on such payments will be permitted until the time of performance of the services but not later than the year following the year of receipt, no tax deferral will be allowed on "... amounts received by a taxpayer for service, guarantee or warranty contracts that relate to property also sold by the taxpayer." It is the view of both Treasury and the staff of the Joint Committee on Internal Revenue Taxation that legislation will be required before the tax treatment of advance payments for goods and advance payments for services can be made fully consistent. Legislative measures to achieve such consistency are expected to be introduced in the next session of Congress.

¹ *Hagen Advertising Displays, Inc. v. Commissioner*, 47 T.C. 139 (1966); aff'd F. 2d (6th Cir. March 3, 1969). For a full discussion of the Tax Court decision and the advance payments problem generally see MAPI Memorandum T-35.

SCOPE AND PURPOSE OF MAPI SURVEY

A questionnaire relating to advance and progress payments—based upon our discussions with Treasury and developed with the assistance of member company executives—was distributed within MAPI. It was designed to elicit four types of information: (1) the extent to which advance and progress payments are received; (2) how such payments are accounted for; (3) the use to which such payments are put and their tax consequences; and (4) member company experience with the Internal Revenue Service on this issue. Survey results reveal one fact of central importance: advance and progress payments are regarded in many capital goods lines as a normal and essential means of financing high cost items which often are specialized equipment and may involve an extended production/construction cycle.

Responses to the questionnaire were received from 149 companies, approximately one-third of those surveyed. A summary of the survey's principal findings followed by a recital of questions asked and a tabulation of the responses appear on the following pages.

MACHINERY AND ALLIED PRODUCTS INSTITUTE,
October 22, 1970.

SURVEY OF ADVANCE AND PROGRESS PAYMENTS

SUMMARY

1. There is very widespread receipt of advance and progress payments among capital goods manufacturers.
2. Advance and progress payments are received in connection with a broad sweep of capital goods and industrial equipment.
3. There are numerous reasons for seeking such payments but the most significant reason is the dollar amount of the contract.
4. The importance of advance and progress payments to capital goods manufacturers is illustrated by the wide spectrum in values of contracts on which such payments are received. Survey results indicate a range from a low of \$1,000 to a high of \$100 million.
5. The receipt of such payments is not limited to contracts having a long production/construction cycle.
6. Survey results indicate advance and progress payments may be received in connection with contracts for capital goods having performance and delivery cycles as short as 2 months or as long as 4 years.
7. Substantially all advance and progress payments received in connection with commercial contracts are received on an unrestricted basis.
8. The completed contracts method of accounting is employed by almost twice as many companies as the percentage-of-completion method of accounting. As for those who use the latter method of accounting, it is used for only a minor portion of their business by approximately three-quarters of those companies who report its use in any form. An analysis of responses from companies employing the percentage-of-completion method of accounting indicates further that it appears better suited to contracts involving a substantial element of construction and, although the correlation is not exact, the extent of use of the percentage-of-completion method of accounting appears to vary inversely with the size of the company.
9. Companies surveyed were asked to indicate the total of their advance and progress payments as of the dates of their last financial statements. The 71 companies answering this question indicated a total of \$978 million in such payments.
10. Although varying methods of accounting are employed, it appears that companies which make advance or progress payments generally distinguish on their books between advance or progress payments made for the acquisition of capital assets and such payments made for materials or components to be used in filling a customer's order. Advance or progress payments in connection with the acquisition of capital assets are, it would appear, most frequently charged to a fixed asset account entitled "Construction in Progress"; advance or progress payments in connection with performance of a customer's order are most commonly charged to "Work in Process Inventory."
11. The "Average Cost Convention" is little used among capital goods and allied industrial equipment manufacturers.

12. Answers to the survey clearly indicate the importance of advance and progress payments to capital goods manufacturers as a vital source of funds for financing production.

13. Taxation of advance or progress payments in the year of receipt would necessitate increases in borrowings—and in some cases very substantial increases—by many of the companies which now receive such payments.

14. The taxation of advance or progress payments in the year of receipt would, in many cases, affect both profit margins and product prices.

15. Slightly less than 16 percent of the companies reporting the receipt of advance or progress payments have encountered the issue of their taxation in the course of IRS audits. Four such companies have had income tax deficiencies assessed. This involvement might well have been greater but for the IRS hold order.

The questionnaire on advance and progress payments was distributed to approximately 450 member companies of the Machinery and Allied Products Institute. Completed questionnaires were received from 149 companies. Questions asked and, where appropriate, a tabulation of responses appear below together with brief interpretative comments.

ADVANCE AND PROGRESS PAYMENTS (OTHER THAN SUCH PAYMENTS RECEIVED ON GOVERNMENT CONTRACT WORK)

A MAPI SURVEY

I. Receipt of Advance or Progress Payment¹

A. Government contracts excepted, does your company receive advance or progress payments?

Yes—95

No—54

Comment: In percentage terms, 64 percent of the respondents receive advance and/or progress payments; 36 percent do not. These percentages would seem clearly to suggest the importance of such payments to capital goods and industrial equipment manufacturers.

B. If you receive both advance and progress payments, please indicate the percentage of the total of such payments represented by—

Advance payments ----%

Progress payments ----%

Comment: There were 87 tabular responses to this question. Fifty companies receive both advance and progress payments with 37 of such companies, or the great majority receiving the bulk of such payments in the form of progress payments. Fourteen companies receive advance payments only. Twenty-three companies receive progress payments only.

C. Does your company employ standard criteria—such as contract amount, length of contract performance, identity of customers, specialized character of product, or a combination of these or others—as a basis for determining whether or not to seek advance or progress payments?

Yes—86

No—8

If so, please indicate criteria, including any special criteria used by your company.

Comment: Not all companies receiving either type of payment responded to this question. Where responses were received there is an overlap because any one respondent may use several criteria for determining whether or not to seek advance or progress payments. The results of those who did answer this question are as follows:

¹ Definitions.—For the purposes of this questionnaire, the following definitions apply: *Advance payments* are payments received from customers at the time of the contract execution or before the acquisition of necessary inventory or before commencement of other contract performance.

Progress payments are payments received from customers after the company receiving such payments has begun to acquire necessary inventory or has otherwise commenced actual contract performance. Such payments are frequently made in a series and are related to cost accumulations directly applicable to the contract but need not be tied to a specific percentage of contract completion.

Do not include *customer advances* which are returned.

1. Amount of contract.....	44
2. Length of contract.....	29
3. Specialized design of product.....	21
4. Identity and/or credit worthiness of customers.....	19
5. "Normal terms".....	7
6. Export business.....	6
7. "Custom of trade".....	3
8. Field installation.....	3

The amount of the contract is, by a wide margin, the most important of the criteria identified, suggesting the importance of advance and progress payments as a source of financing capital goods production. The overriding importance of this standard is borne out by narrative comments on question I-D (below).

D. *Is the receipt of advance or progress payments by your company limited to long production/construction cycle—more than one year—high unit cost items?*

Yes—33

No—58

Comment: Respondents answering "no" to this question were asked to explain their answers. An examination of representative responses indicates that the size of contract is, as noted above, unquestionably the most important single reason for seeking advance or progress payments, although such responses include reference to nearly all of the criteria identified above. Some sample responses are quoted below:

"Could be less than year but large contract."

"We could have shorter term contracts/high cost items."

"... The criterion is type of contract rather than size or life."

"Some products require advances [regardless] of delivery dates."

"Progress payments based on size rather than length."

"Total contract price is generally our only criterion."

"Some orders are produced in less than a year though still high unit cost items."

"Long production cycle, high unit cost items predominate. However, advances are generally sought on specialized equipment."

E. *For what types of equipment or separate product lines do you receive advance and/or progress payments?*

Comment: Responses to the survey identify a very broad range of capital goods and industrial equipment. Excluding specialized machinery—which was widely reported—and consolidating responses to this question by class or type of equipment, the following list has been prepared.

Air and water pollution control equipment.

Air conditioning and air filtration equipment.

Automatic warehouse systems.

Coal and aggregate equipment.

Complete plants, including power generation, petrochemicals, chemical and food processing.

Compressors and turbines.

Computer systems and instrumentation, automation and control systems.

Concrete batch plants.

Elevators and escalators.

Graphic arts equipment.

Grinding mills.

Heat treating furnaces.

Marine equipment.

Materials handling equipment.

Metal cutting and metal forming machine tools.

Mine hoists.

Nuclear components.

Offshore drilling platforms.

Packaging machinery and bottling machinery.

Paint finishing systems.

Plastic machinery.

Pulp and paper machinery.

Refractories.

Refrigeration equipment.

Ship construction.

Steel mill equipment of all types as well as wire and pipe machinery.

Textile machinery.

Waterwheel and steam generators.

Woodworking equipment.

F. *What is the range in values of those contracts on which your company seeks advance or progress payments?*

Comment: The values reported range from a low of \$1,000 to a high of \$100 million. Of 82 tabulable responses to this question the "floor" figures vary widely but with the bulk of responses—48—falling in the range of \$20,000 to \$100,000. Within that category, 14 companies indicated that such payments are sought on contracts. Of \$50,000 or more. Twenty-one companies indicated that such payments are sought on contracts of \$100,000 or more. Both the lower and the higher figures—the latter varying more widely than the lower—appear clearly related to the product lines involved which in turn, of course, determine the nature and amount of normal contract values.

G. 1. *What is your best estimate of the average time that elapses between receipt of an advance payment and acceptance of the product by the customer?*

Comment: Numerous variables—product, size of contract, backlog, special engineering, etc.—make it difficult to establish an average. The typical response to this question indicated average elapsed time as a range of months, e.g., 4-6 months, 6-9 months, 6-12 months, etc. Moreover, some respondents indicated even broader ranges such as 1-18 months or 6-18 months. However, an analysis of responses indicates a clustering of averages with 9 companies reporting an average period of 6 months or less, 15 companies fall in the 6-9 months range, 5 companies are in the 9-12 months bracket, and 12 companies reported an average elapsed time of one year. A lesser number of companies have even higher average elapsed times between receipt of an advance payment and product acceptance. Four companies indicate the average of this period at 1½ years, 4 companies report an average of 2 years, and 1 company shows an average of 34 months.

2. *What is your best estimate of the average time that elapses between receipt of the first progress payment, if any, and acceptance of the product by the customer?*

Comment: Answers to this question reflect the same variability as was evident in the answers to the preceding question. The bulk of answers were stated in ranges of time rather than in specific numbers of months or years and again there were some very wide ranges reported, e.g., 9-15 months, 1 month-2 years, 6-18 months, and 8-14 months. The great majority of average intervals of time reported were one year or less. Nineteen companies reported average elapsed times for this purpose of 6 months or less. Another 15 companies reported averages of 6-12 months and 14 companies reported an average period of one year. A fairly surprising number of companies—exclusive of those with very broad ranges of time such as were cited above—indicated average periods of time exceeding one year. One company each reported average periods of 15 months, 2 years, and 2½ years. Three companies reported 3 years. One company reported an average elapsed time of "about 4 years."

3. *What is your average production lead time on contracts involving advance and/or progress payments?*

Comment: The pattern of responses to this question resemble those of the two preceding questions in that many respondents reported average production lead times in ranges of time rather than as a specific figure. Here also there were answers covering very broad ranges such as 3-15 months, 2 months-2 years, 6-18 months, etc. Aside from answers of this latter character—which have been excluded from the tabulation below—the general pattern of responses goes like this: 18 companies report an average production lead time of 6 months or less. Thirty-two companies fall in the range of 6-12 months and 13 companies indicate an average production lead time of one year. Above one year, one company shows 12-18 months; 1 company, 15 months; 2 companies, 1½ years; 2 companies, 2 years; 1 company, 26 months; and 1 company, 3 years.

II. Accounting for Advance and Progress Payments

A. *Government contracts excepted, are advance and/or progress payments received on an unrestricted basis or are they received subject to restrictions on their use?*

Unrestricted—87

Restricted—3

Comment: This question derives from *obiter dicta* in the *Hagen* case suggesting that if advance payments subject to current taxation had been segregated in a separate bank account and with the use of such funds restricted to the contracts to which they related, the court might have reached a different result. Obviously, such restrictions are most unusual in commercial contracts calling

for advance or progress payments, although such payments received in connection with government contracts are subject to contractual restrictions on their use.

B. We understand that many manufacturers of long production/construction cycle, high unit cost products employ a percentage-of-completion method of accounting for the results of contract performance. Also, a significant number of companies appear to use the completed-contracts or other methods. One company may use differing methods, depending upon circumstances. (It is recognized that neither of these forms of accounting may be permitted in some cases and that neither may be applicable to some businesses.) In order to give us a better insight as to the extent of use of these differing accounting methods—and the reasons for their selection—please answer the following questions:

1. Does your company employ percentage-of-completion accounting?

Yes—38

No—54.

a. For book purposes? Yes—37.

b. For tax purposes? Yes—28.

c. What criteria are used in deciding whether or not to employ this method of accounting?

(1) *Estimated time of performance? 25.*

(2) *Amount of contract? 24.*

(3) *Specialized character of the end product? 19.*

(4) *Other (Please explain).*

Comment: Only a handful of responses were received to question c(4). However, two of these, quoted below, may provide some insight into reasons for adoption of percentage-of-completion accounting. One company says:

"If contracts permit partial billings and billings extend over 1 month, [we] use percentage-of-completion method."

Another company says:

"In order to qualify for the use of the percentage-of completion basis, a contract should have two of the following elements:

1. Progress payments privileges (essential for qualification).

2. Phases or similar checkpoints for reasonable estimates of the percentage of completion.

3. Reasonably dependable estimates of costs to complete and extent of progress toward completion."

d. What is your estimate in percentage terms of the portion of your total business accounted for by the percentage-of-completion method?

Comment: Responses to this question were received from all of those companies which indicated use of the percentage-of-completion method of accounting. Their answers range from a low of $\frac{1}{2}$, of 1 percent to 100 percent, with 28 or 73 percent of the 38 companies who employ this method of accounting using it for less than 50 percent of their total business. In more specific terms 8 companies use it for less than 5 percent of their business, 7 companies use it for from 5-10 percent of their business, 6 companies use it for 10-25 percent of their business, and 7 companies use it for 25-50 percent of their business. Use of this accounting method among the remaining 10 companies, or 26 percent of those responding to this question, are rather evenly distributed over the range of 50-100 percent. An analysis of responses indicates that this method of accounting is most commonly used where the contracting to which it relates involves some element of construction. In a general way, although correlation is not exact, the extent of use of percentage-of-completion accounting appears to vary inversely with the size of the respondent company. In part, this would seem to result from the desire of smaller companies having a relatively small number of very large contracts to avoid the "bunching" of income. It may be further explained by the fact that the sample of companies here involved includes a number of diversified enterprises where only one division of such a company may use this method of accounting with its use thus quite limited on a corporate-wide basis.

e. Upon the basis of your experience, do you consider the percentage-of-completion method a reliable indicator of current earnings?

Yes—36.

No—9.

Comment: It will be noted that this question was answered by a greater number of respondents—45—than indicated use of the percentage-of-completion method of accounting—38. An analysis of responses indicates general satisfaction with the reliability of the method on the part of those respondents now using

it. Such companies represent, of course, the majority of respondents to the question. However a significant minority of objectors—including companies not now using the method—do not consider the method reliable, either on theoretical or historical grounds.

The responses to this question must be read in the light of answers to the prior question which, of course, indicates that the majority of respondents using percentage-of-completion accounting use it for only a part—and in most cases—a small part—of their business. It also bears repeating that the use of this method of accounting appears to be more common among companies whose business involves a substantial element of construction, and/or smaller companies who use it to avoid "bunching" of income.

2. *Does your company employ the completed contracts method of accounting?*

Yes—69.

No—24.

a. *For book purposes?* 61.

b. *For tax purposes?* 66.

Comment: Overall, almost twice as many respondents use the completed contracts method of accounting as use percentage-of-completion accounting. It should be borne in mind that some companies use both the percentage-of-completion and completed contracts methods of accounting for differing lines of business.

c. *If your company uses both percentage-of-completion and completed contracts accounting in varying circumstances, are the criteria for decision as to which is to be used the same?*

Yes—11.

No—8.

If different criteria apply to selection of the completed contracts method, please explain.

Comment: From the limited number of responses to this question it would appear that the significant differentiating criterion is the type and/or terms of the contract involved. Excerpts from two answers to this question, as quoted below, would seem to bear out this conclusion:

1. "All progress and advance payment contracts [are] on percentage of completion. All other[s] on completed contracts basis."

2. "Until we have right to bill and only one billing per order can be made, we have no alternative but to handle on completed contracts basis."

d. *What is your estimate, in percentage terms, of the portion of your total business accounted for by the completed contracts method?*

Comment: Either through inadvertence or because the information sought was not readily available, not of those respondents indicating use of the completed contracts method of accounting answered this question. Fifty-five companies responded to this question with 20, or more than one-third, indicating that 100 percent of their business was accounted for on the completed contracts method. This surprisingly high figure may well have resulted from an incorrect conclusion that contracts not accounted for by the percentage-of-completion method are necessarily accounted for by the completed contracts method. There was a similar, though lesser, concentration at the opposite end of the spectrum with 7 companies with 2 percent or less of their business thus accounted for. One company reported 4 percent, 3 companies were at 5 percent, 2 companies were in the 20-25 percent range, 7 companies were spread across the 25-50 percent interval and the remainder—15 companies—were spaced out across the 50-100 percent range.

3. *If your company uses a method of accounting for advance or progress payments other than the percentage-of-completion or the completed contracts method of accounting, please describe.*

Comment: Some interesting variants of these methods are best described in the language of respondents, as follows:

"Progress payment invoices to customers include the cost incurred to the end of a period (usually a month) consisting of direct material charges against the order, labor and overhead at standard machine hourly rates, plus other elements of cost associated with the product being sold to which a portion of the total estimated profit on the order is added."

"In cases where advance payments are received, they are treated as balance sheet liability[ies] until billing at time of shipment."

"Actual cost accumulated with markups. Revenue cannot exceed customer advance billings."

"We use a 'percentage of shipments' method, i.e., we invoice customers for partial shipments based on actual value of goods shipped, and allow him a proportional credit for advance payments previously received."

C. What was the total of your advance and progress payments as of the date of your last financial statement?

Comment: Seventy-two companies answered this question. The total of advance and progress payments reported by 71 of those companies as of their last financial statements totals \$978 million. While this averages some \$13 million, averages are not the most important factor. What is significant, of course, is the absolute dollar amount in relation to the size of the company and its order backlog. Information on this point is revealed in answers to question III-A.

D. To the extent of your knowledge, how do customers who make advance payments or progress payments account for such payments on their books?

Comment: Most respondents disclaimed knowledge of customers' accounting practices in this regard. As for answers received they reveal a fairly wide variation in account titles, although probably less variation in accounting theory than differences in account classifications might suggest. For example, "Construction in Progress," a fixed asset account, is the most frequently cited account to which payments of this character are charged. It would appear, however, that such an accounting classification is used only in connection with payments advanced in connection with construction or the acquisition of capital asset. Advance or progress payments of this character are also variously recorded as "Prepayment on Capital Assets," "Cost of Construction in Progress" (a capitalized account), or as a charge to "Plant in Process." Still another respondent says simply: "Dr. Capital Account, Cr. Cash."

Where advance or progress payments apply to raw materials, components, etc., intended for use on a current order, the accounting treatment differs with such payments recorded variously as "Prepaid Expenses," "Advances to Suppliers," as a debit to Accounts Payable until order is received, as a "Payment on Account" or as a miscellaneous receivable.

E. If your company makes advance or progress payments to suppliers how do you account for such payments on your books?

Comment: The account titles identified in answers to this question are quite similar to those indicated in response to the preceding question. However, the distinction in accounting treatment between advance or progress payments made in connection with the acquisition of capital assets and such payments made for a customer's account is sharpened. As in the case of answers to II-D above, payments for capital assets are normally charged to a fixed asset account bearing some such title as "Construction in Progress," "Prepayment of Acquisitions of Asset," "Capital Assets Purchases in Process," or "Deposits Receivable." Payments for materials, components, etc. to be used on a customer's order would appear most commonly to be charged to "Work in Process Inventory." Such payments are also recorded as "Advances to Subcontractors," "Advances to Suppliers," miscellaneous accounts receivable or "Prepaid Materials."

F. If your company is an accrual-basis company, how do you cost sales out of work-in-process and into cost sales?

Comment: Of those answers received it appears that a majority of respondents accomplish this on the basis of actual costs and most frequently on a job order basis. A lesser number of companies make such entries on the basis of standard costs. Some companies use both actual and standard costs, depending on the product involved or the nature of the contract. Still others use a variety of estimating techniques in costing sales for work in process into cost of sales with most such techniques involving use of some estimate of percentage-of-contract completion as the basis for the entry.

G. Is the "average cost convention" said to be used by some companies in the aerospace industry employed in your company or industry?

Yes—8.

No—82.

Comment: Clearly, the vast majority of respondents have had no experience with the "average cost convention" and some indicated their mystification by the term. Among those companies responding in the affirmative some indicated that the average cost convention or a technique similar to it was used in a part of their business. One answer may be helpful in describing one company's understanding of the term, "This would be applicable to a fixed price contract for a number of end items. Each item would be costed as shipped by dividing the

total estimated cost of the job by the total [number of] units rather than attempting to identify what each unit actually cost, particularly when there are lot changes, learning curves, etc."

III. Use of Advance and Progress Payments

A. *It is MAPI's understanding that advance and progress payments are important to many capital goods manufacturers as sources of funds to finance production, particularly on long production/construction cycle contracts. Is this true in the case of your company?*

Yes—72.

No—21.

B. *If advance and progress payments were taxed as received in accordance with the so-called Hagen rule, would this necessitate an increase in your working capital borrowings?*

Yes—67.

No—24.

What is your estimate of any such increase in percentage terms?

Comment: Only 48 respondents answered this question. A considerable number of companies indicated no knowledge of what any such increase might amount to; others, declining to offer estimates, suggested that any such increases would be insignificant. Of the 48 companies which did answer the question, 7 estimated increased borrowings of 0-5%. 7 an increase of 5-10%. 17 an increase of 25%. 9 an increase of 25-50% and 1 an increase of 50-100%. Seven additional companies estimated that their borrowings would be increased—if the *Hagen* rule were to be enforced—by 100% or more. In this latter group 3 companies estimated their borrowings would increase by 100%, one company estimated 150%, one company 200%, one company 300%, and one company 1000%.

C. *In your case, do you believe that the impact of currently taxing advance and progress payments would be sufficient to affect—*

1. Profit margins:

Yes—63.

No—27.

2. Product prices:

Yes—59.

No—29.

IV. Experience With the Internal Revenue Service

A. *If you have had or anticipate IRS experience with the taxation of advance payments, please describe in a separate letter to be returned with the questionnaire.*

Comment: Fifteen respondents—10% of all respondents or about 16% of those respondents which reported receipt of advance or progress payments—have had IRS experience with the taxation or attempted taxation of such payments. Several additional companies who receive such payments indicated audit and clearance of past years with no question raised by examining agents on this issue. Of the fifteen respondents with direct experience, 4 companies have had tax deficiencies assessed for this reason (one such assessment is now being contested in the IRS Appellate Division); the issue has been raised in 4 other cases but placed in suspense, presumably in view of the IRS hold order and in anticipation of definitive Treasury regulations; 1 respondent company has settled for three taxable years but signed at the request of the IRS a waiver with respect to a possible deficiency assessment by reason of advance payments; and in the case of 6 companies the issue has been raised but not pressed by examining agents.



REPORT TO THE CONGRESS

**Defense Industry
Profit Study** B-159896

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

MARCH 17, 1971



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-159896

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on our defense industry profit study, made pursuant to the provisions of the Armed Forces Appropriation Authorization Act for fiscal year 1970, approved November 19, 1969 (Pub. L. 91-121).

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of Defense; the Administrator, National Aeronautics and Space Administration; the Chairman, Atomic Energy Commission; the Secretary of Transportation; and the Commandant, United States Coast Guard.

A handwritten signature in cursive script, reading "Thomas B. Staats".

Comptroller General
of the United States

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ABBREVIATIONS

AEC	Atomic Energy Commission
ASPR	Armed Services Procurement Regulation
CPFF	cost plus fixed fee
CPIF	cost plus incentive fee
DOD	Department of Defense
DOT	Department of Transportation
ECI	equity capital investment
FFP	firm fixed price
FPI	fixed price incentive
GAO	General Accounting Office
GOCO	Government-owned contractor-operated
NASA	National Aeronautics and Space Administration
TCI	total capital investment

D I G E S TWHY THE REVIEW WAS MADE

The Armed Forces Appropriation Authorization Act for fiscal year 1970, approved November 19, 1969 (Pub. L. 91-121), directed the General Accounting Office (GAO) to study profits earned on negotiated contracts and subcontracts entered into by the Department of Defense (DOD), National Aeronautics and Space Administration (NASA), and the Coast Guard. Contracts of the Atomic Energy Commission (AEC) awarded to meet requirements of DOD were included. (See p. 7.)

FINDINGS AND CONCLUSIONS

Profit before Federal income taxes, on defense work, measured as a percentage of sales, was significantly lower than on comparable commercial work for 74 large DOD contractors included in the GAO study. For example, profits on DOD contracts averaged 4.3 percent of sales over the 4 years, 1966 through 1969, but profits on comparable commercial work of the 74 contractors averaged 9.9 percent of sales for the same period. When profit was considered as a percent of the total capital investment (total liabilities and equity but exclusive of Government capital) used in generating the sales, the difference narrowed--11.2 percent for DOD sales and 14 percent for commercial sales. Further, when profit was considered as a percent of equity capital investment of stockholders, there was little difference between the rate of return for defense work and that for commercial work. The 74 large DOD contractors realized average returns before Federal income taxes of 21.1 percent on equity capital allocation to defense sales and 22.9 percent on equity capital allocated to commercial sales. (See p. 15.)

The major factor causing the rates of return on contractor capital investment for defense and commercial work to be similar was the substantial amount of capital provided by the Government in the form of progress payments, cost reimbursements, equipment, and facilities. This reduced the capital investment required from the contractors for defense work. (See pp. 15 and 16.)

In reviewing congressional hearings which led to this study, GAO noted some concern that contractor capital requirements had not been considered in negotiating defense contract prices. Although such a review was not called for specifically in the legislation, GAO reviewed 146 negotiated contracts to see whether it was practicable to develop

investment data by contract and whether any wide range in profits on defense contracts existed. The work showed that cost, profit, and invested capital data could be developed by contract and that there was a wide range of profit rates on defense contracts. (See pp. 34 to 38.)

The average rates of return for individual contracts were substantially higher than the average annual profit rates developed from GAO's questionnaires to 74 large defense contractors. The 146 contracts examined cannot be considered as a representative sample, and it would have been mere coincidence if similar rates had resulted in both phases of the study. The differences between the two were:

- The large number of DOD procurement actions, over 180,000 a year of \$10,000 or more, covering a large number of different items and industries involved and the work required to develop data for each made it impracticable to attempt to develop a representative sample.
- The data furnished by contractors in response to the questionnaire were on overall defense business, not on an individual-contract basis.
- GAO considered only completed contracts where profits or losses were ascertainable and, as a result, probably avoided many, loss contracts having large unsettled claims. (See p. 38.)

Under current defense contract negotiation procedures, little consideration is given to the amount of capital investment required from the contractor for contract performance. Instead, profit objectives are developed as a percentage of the anticipated costs of material, labor, and overhead. As a result inequities can and do arise between contractors' providing differing proportions of capital required for contract performance. (See pp. 41 to 43.)

Further, by relating profits to costs, contractors in noncompetitive situations are not provided with positive incentives to make investments in equipment that would increase efficiency and result in reduced costs, especially where follow-on contracts are involved. Under the current system of negotiating contract prices, such investments tend to lower, rather than increase, profits in the long run. Other factors, however, such as whether the program will be continued, could be overriding considerations affecting contractors' decisions concerning investments in equipment. (See pp. 44 and 45.)

GAO believes that, in determining profit objectives for negotiated Government contracts where effective price competition is lacking, consideration should be given to capital requirements as well as to such other factors as risk, complexity of the work, and other management and performance factors. (See p. 54.)

Where contractor capital requirements are insignificant, such as in many service-type contracts or contracts for the operation of

Government-owned plants, profit objectives would continue to be developed primarily through consideration of the other factors. (See p. 54.)

The system adopted should be used, where applicable, by all Government agencies to simplify industry participation. (See p. 55.)

CONTRACTOR COMMENTS

GAO requested comments from five contractor associations on a draft of this report that was based on incomplete data. Two of the associations agreed with the conclusion that investment should be considered in determining profits; however, they and two other associations felt that the report grossly overemphasized the rate of return on investment and reflected a preoccupation with the need to consider contractors' capital requirements in negotiating profit factors. The fifth association did not furnish any comments on this point.

GAO agrees that there are other factors that must be considered in negotiating contract profit rates. Such factors as the contractors' assumption of cost risk, difficulty of the task, and other management and performance factors must be evaluated and considered. In some cases, such as for a Government-owned contractor-operated plant, little or no contractor investment is involved; in other cases the entire investment required for contract performance is provided by the contractor. Where the investment required from the contractor is insignificant, the other factors naturally would be the determining items in establishing profit objectives. In still other cases, however, GAO believes that, to the degree that contractor capital is required, it should be considered. (See p. 50.)

Two of the contractor associations questioned GAO statements that contractors have little incentive to invest in more modern equipment to reduce costs relating to many negotiated procurements. The associations stated that GAO had failed to consider and recognize the "real world" competitive environment of today's defense business.

For competitive and other reasons, contractors make some investments in facilities and equipment for performance of negotiated defense contracts. Actually, however, little price competition is involved in much of the DOD procurement. For example, of the total dollar value of DOD procurement for fiscal year 1970, only 11 percent was formally advertised and an additional 27 percent was negotiated on the basis of price competition. A total of 57 percent was placed on a sole-source basis, and the remaining 5 percent involved design or technical competition.

There is, of course, some incentive to reduce costs on negotiated firm fixed-price and fixed-price incentive contracts even if they are sole-source contracts. Such reductions in cost, however, could reduce profits on subsequent defense contracts. Such contracts would be priced

on the basis of prior cost experience to a large extent, and the profits would be determined as a percentage of estimated costs.

The contractor associations almost unanimously questioned GAO data for the 146 individual contracts and stated that they felt that either an unfortunate selection of contracts was involved or there were flaws in the method of ascertaining capital invested in such contracts. (See p. 51.)

For reasons stated previously, GAO agrees that no attempt was made to obtain a sample representative of all defense contracts. GAO was interested in determining whether it was feasible to develop cost, profit, and invested capital data by contract and, if so, the range of the rate of return on invested capital realized for individual contracts. GAO found that it was feasible to develop the desired data for most contracts and that there was a great range in rates of return on investment for individual contracts. (See p. 51.)

In each case GAO, in developing data for individual contracts, presented its data to the contractors involved and gave them an opportunity to review the data and comment on it. GAO has carefully considered the comments received and believes that the final data are reasonably accurate. The number of cases involving factual disagreements was relatively small. (See p. 51.)

AGENCY COMMENTS

GAO provided a draft of this report, based on incomplete data, to AEC, DOD, the Department of Transportation (DOT), and NASA for review and comment.

All the agencies agreed that due consideration should be given to the total capital investment of contractors in negotiating Government contracts which do not involve price competition. DOD pointed out, however, that the solution of highly complex administrative problems was required before the policy could be put into effect. Also AEC believes that there is no need for a uniform Government-wide fee policy, stressing consideration of invested capital and feels that the development of detailed uniform guidelines could have a serious, disruptive effect on the existing overall fee policies of the various executive agencies.

GAO agrees that there are serious administrative problems in providing for consideration of contractor total invested capital related to a particular contract in negotiating contract profit rates. DOD had been considering this matter since 1962, and GAO believes that it is time to move ahead.

GAO agrees also that there are many advantages to permitting agencies to tailor their policies to their individual needs. Many companies, however, deal with numerous Government agencies, and GAO believes that, where feasible, uniform policies should be established governing the relations between Government and industry. GAO believes further that

it seems feasible and desirable to establish uniform Government-wide guidelines for establishing profit objectives for negotiating Government contracts where effective price competition is lacking. (See p. 52.)

RECOMMENDATION

Action required to establish uniform guidelines does not require legislation. The Office of Management and Budget should take the lead in interagency development of uniform Government-wide guidelines for determining profit objectives for negotiating Government contracts that will emphasize consideration of the total amount of contractor capital required when appropriate, where effective price competition is lacking. (See p. 55.)

CHAPTER 1INTRODUCTION

The Armed Forces Appropriation Authorization Act for fiscal year 1970, approved November 19, 1969 (Pub. L. 91-121), directed the General Accounting Office to study profits earned on negotiated contracts and subcontracts entered into by the Department of Defense, National Aeronautics and Space Administration and the Coast Guard. Contracts of the Atomic Energy Commission awarded to meet requirements of DOD were included. (See app. I.)

Unless otherwise stated, the profits presented in this report are before Federal income taxes to prevent any distortion due to special tax considerations. We also felt that it would be preferable to obtain data on profits prior to reductions for Renegotiation Act determinations of excessive profits. Such actions would not have been completed for much of our data on 1969 profits and there were some outstanding actions pertaining to prior years. Further, the dollar amounts of excessive profits determinations have not been substantial in recent years in relation to the profits involved.

For example, our average rate of return on total capital investment for DOD sales of 74 large DOD contractors was 11.2 percent. Even if all excessive profit determinations of the Renegotiation Board during the period covered by our study had been considered as applying solely to the 74 large contractors, the effect would have been to reduce this amount by only 0.2 percent, to 11 percent. Voluntary refunds and price reductions reported by contractors to the Renegotiation Board would normally have been deducted by the contractors in arriving at net income reported to us. In any event, these amounts would have had an insignificant effect on the profit data presented in this report.

The costs of defense business include all costs allocable, including costs unallowable under section 15 (contract cost principles and procedures) of the Armed Services Procurement Regulation. This made computations of profit rates for defense and commercial work comparable.

DEVELOPMENT OF ANNUAL PROFIT RATES
FOR PERIOD 1966 THROUGH 1969

We developed a questionnaire to obtain information from selected contractors for the years 1966 through 1969 on sales, profits, total capital investment, and contractor equity investment for defense business and comparable commercial sales. We asked that noncomparable commercial sales and related investment data be reported under the category "Other." This category included such items as sales by overseas activities and sales of transportation and communication services where the rates were set pursuant to law or regulation. The profits on such noncomparable items and related data are not discussed in this report. Provision was made for separate reporting of the operating results for Government-owned contractor-operated (GOCO) facilities and similar activities requiring little or no contractor investment, to prevent distortion of data on return on capital.

A further breakdown of defense sales and profits by type of contract was requested, although the legislation called for a study of only negotiated defense contracts, we asked for and received information on all work of the contractors in order to (1) reconcile cost allocations to the various categories of sales, (2) reconcile capital allocations to the various sales categories, and (3) permit comparisons of contractors' rates of profit on total defense business and on commercial work.

Questionnaires were sent to 154 contractors which, as a group, had received (1) about 60 percent of recent DOD prime contract awards of \$10,000 or more, (2) about 80 percent of similar NASA contract awards, and (3) a significant part of AEC and Coast Guard contract awards. The 154 contractors included the 81 largest DOD contractors, excluding oil companies and nonprofit companies, taken from a list of the 100 contractors and their subsidiaries receiving the largest dollar volume of military prime contracts of \$10,000 or more in fiscal year 1969. Oil companies were excluded because a major part of the procurement involved had been advertised or awarded through price competition and would not have been affected by DOD's policies in negotiating profit. We received excellent cooperation from the contractors in completing the questionnaire and in all phases of the study.

In summarizing data for large DOD contractors, General Motors Corporation was excluded because its great volume of commercial sales would have substantially altered our commercial data and the result would not have been representative of most of the companies included in the study. The data excluded would have had no appreciable effect on the defense profits reported.

We selected 63 contractors by taking (1) every 72d contractor from an alphabetical list of DOD contractors receiving awards of \$10,000 or more and totaling \$500,000 or more in fiscal year 1968, exclusive of the 81 top contractors and their subsidiary companies already selected, and (2) some AEC contractors. Two of these contractors had gone out of business at the time of our study, so that our results for the smaller contractors are based on replies for 61 contractors.

We also obtained data from 10 contractors who received a major part of their defense business in the form of subcontract awards.

A random selection of 40 of the 154 questionnaires was made for verification at the contractors' plants. Each of the above groups was represented in the 40 questionnaires selected. In addition, each remaining questionnaire was carefully reviewed and verified through calls, letters, and follow-up visits to the contractors' offices.

We checked to see whether the data provided agreed with similar data on the contractors' audited financial statements and appeared reasonable. Although we think that the breakdown of profit data by sales category is reasonable, there are several factors which make it impossible to certify to its absolute correctness.

Profit data by customer not disclosed
by contractors' records

Contractors' records are designed for the needs of management and generally do not provide breakdowns of sales, profits, and related capital for defense work. Since the information we needed on defense sales was not separately maintained, it was developed on an after-the-fact basis from

the available records. Accumulating data involved numerous individual judgments as to the degree of accuracy necessary in relation to the costs involved. For example, one contractor indicated that its summary records did not segregate subcontract sales of commercial-type items to higher tier defense contractors from regular commercial sales. Individual sales documents, however, frequently did contain such information. This problem was resolved in one case on the basis of a detailed analysis of a representative sales sample and a projection of the result to the total sales.

Similarly, allocations were necessary to determine capital investment for the sales categories in which we were interested. Contractors were requested to submit allocations representative of the extent to which contractor-owned assets were used in generating the sales. We were particularly interested in ensuring that allocations to defense sales reflected adequate consideration of (1) Government cost reimbursements and progress payments and (2) Government-furnished facilities and equipment. The importance of the latter is indicated by data showing that as of June 1969 Government land, buildings, and equipment costing about \$7 billion were under the control of all DOD contractors. These assets were of various ages. Data about their depreciated net book value generally were not maintained.

Although some capital allocations were made through identification of assets with sales categories, this was not possible in all cases. In some cases a less desirable cost-of-sales basis was used.

Complexity of participating companies

Many of the companies in our study are complex and include numerous diversified subsidiaries which, in turn, are made up of a number of operating segments. We requested that data submitted be consolidated and that it include data on all majority-owned domestic subsidiaries, so that we could obtain as much data as practicable on total defense profits of the selected companies. Although in some cases operating segments were almost entirely engaged in defense work and thus had data on defense sales readily available, this was the exception. In most cases it was necessary for the participating companies to do substantial work to break

out data on defense sales and the other categories of sales that we requested and to allocate related costs and invested capital.

Accounting alternatives available

There are acceptable alternatives available for determining costs under generally accepted accounting principles. We did not attempt to draw up a uniform set of accounting rules for the purpose of recasting the results of operations for the companies participating in the study. The work and cost involved prohibited such an approach. We did, however, insist that the profit data furnished agree with the data reported in the audited financial statements of the companies, and we attempted to see that the accounting methods used were appropriate to the circumstances.

FINANCIAL TERMS DEFINED

This report contains financial terms which are defined below.

1. DOD sales--Net sales to DOD under both prime contracts and subcontracts, exclusive of sales, profits, fees or costs for operation of DOD GOCO plants, and performance of operation and maintenance contracts and service contracts. These latter contracts were excluded from sales and identified separately, since they have the common characteristic of requiring little or no contractor capital investment.
2. Other defense agency sales--Net sales to NASA, AEC, and the Coast Guard under both prime contracts and subcontracts, exclusive of sales, profits, fees or costs for operation of GOCO plants, and performance of operation and maintenance contracts and service contracts.
3. Commercial sales--Net sales to commercial customers and to State, local, and foreign governments of products or services which are reasonably comparable to those sold to the defense agencies or which involve comparable manufacturing operations.
4. Total capital investment (TCI)--The total investment in all assets used in the business, exclusive of any Government-owned items or leased items. In other words, the total capital provided by creditors (debt capital) and the owners of the business (equity capital). We assumed that total capital allocated to each sales category was composed of equity and debt capital in proportion to those of the business as a whole.
5. DOD TCI, other defense agency TCI, and commercial TCI--The parts of TCI which are allocable to sales to DOD, other defense agencies, and commercial customers, respectively.

6. Turnover of TCI--Sales divided by TCI equals the number of times TCI of the business, or segment thereof, turned over during a year. Another definition of turnover is the amount of sales dollars brought about by, or resulting from, each dollar of TCI.
7. Equity capital investment (ECI)--The total dollars assigned to capital shares, retained earnings, retained-earning reserves, minority interests, and such other equity-type items as deferred-investment tax credits.
8. DOD ECI, other defense agency ECI, and commercial ECI--The parts of total ECI which are allocable to sales to DOD and other defense agencies and comparable sales to commercial customers, respectively.
9. Turnover of ECI--Sales divided by ECI equals the number of times the ECI of the business, or a segment thereof, turned over during a year. Another definition of turnover is the amount of sales dollars brought about by, or resulting from, each dollar of equity investment.
10. DOD and other defense agency profits before Federal income taxes--The net income or loss on prime contracts and subcontracts of DOD and other defense agencies, respectively, after deducting all allocable costs, whether or not allowable or recoverable.
11. Commercial profits before Federal income taxes--The net income or loss from sales to commercial customers and to State, local, and foreign governments of products or services which are reasonably comparable to those sold to the defense agencies or which involve comparable production processes.

We believe that of the various ratios available for evaluating profits earned by contractors under negotiated defense contracts, the percentage of profit earned on TCI is the most meaningful for evaluating defense profits. The rate of return on TCI relates earning to total capital

employed, regardless of whether it was provided by the owners of a business, its creditors, or its suppliers, and the Government should not be particularly concerned with whether contractors obtain capital from creditors or from stockholders. Further, since interest is not an allowable cost under Government contracts and must be paid out of profits, it seems only equitable to consider total capital in determining profits.

The rate of return on ECI is primarily of interest to the owners or prospective owners of a business, since it represents the return on the owners' capital interest in the business. Ratios of profit to costs or sales are important to management to determine how profit margins compare with those of similar companies. Cost and sales ratios, however, are less meaningful than capital ratios in that cost and sales ratios do not consider the amount of capital used in producing the profit or the period of time the capital was committed.

CHAPTER 2ANNUAL PROFIT RATES OF LARGE DOD CONTRACTORS

The data submitted by 74 large DOD contractors on annual profit showed that profit, as a percent of sales, was much lower on defense sales than on commercial sales. When profit was considered as return on contractor TCI and ECI, however, the profit rates for commercial and DOD sales were closer to each other. One explanation for this is Government-furnished capital in the form of progress payments, cost reimbursements, and industrial facilities and equipment. Further details on this and other points are set out in the schedules and analyses which follow. To give an indication of the effect of Federal income taxes on profits, we have provided summary data on profits both before and after Federal income taxes for the 74 large DOD contractors included in our study. The after-tax data is presented in schedule 2. All the other profits presented are before Federal income taxes, unless otherwise stated.

Data are presented separately, in schedule 15, relating to (1) the operation of GOCO plants for fees and (2) the performance of service contracts requiring little or no contractor capital. Six of our large DOD contractors reported that their DOD work was almost entirely under service contracts. Therefore much of the defense procurement data that follow pertains to 74 of the 80 large DOD contractors from which we obtained data. Some of the 74 contractors are operating with substantial quantities of Government facilities. They also have major investments in facilities of their own, however, and they are paid for the items produced, rather than for the operation of the facilities.

SUMMARY OF DATA FOR LARGE DOD CONTRACTORS

Defense and comparable commercial sales over the 4 years we covered averaged \$94 billion a year for 74 large DOD contractors included in our study. The \$94 billion in sales were 25 percent to DOD, 71 percent to commercial customers, and 4 percent to the other defense agencies. The

average profit rate on sales for commercial business, 9.9 percent, was significantly higher than the DOD sales rate of 4.3 percent or the other defense agency sales rate of 4.9 percent.

Profits measured as a percentage of TCI and as a percentage of ECI were more nearly the same for defense and commercial sales. The commercial rates of return, however, remained higher than the rates for DOD sales. The rates of return for the less significant sales to the other defense agencies were actually higher than the rates for the commercial sales, as shown below.

<u>Category</u>	<u>Four-year average</u>	
	<u>Profit</u> <u>sales</u>	<u>Return on</u> <u>TCI</u> <u>ECI</u>
	—————(percent)—————	
DOD	4.3	11.2 21.1
Other defense agencies	4.9	15.0 27.5
Commercial	9.9	14.0 22.9

The narrow range of the rates of return on capital investment for the three sales categories, compared with the wider range in profit rates on sales, is due largely to the effect of Government-furnished capital, as mentioned previously. The relatively smaller amount of capital required of the contractor for defense work also shows up in the higher capital turnover rates (sales divided by related TCI and ECI, respectively) for these sales compared with commercial sales, as shown below.

<u>Category</u>	<u>Four-year average</u> <u>turnover rates</u>	
	<u>TCI</u>	<u>ECI</u>
DOD business	2.3	4.9
Business with other defense agencies	2.8	5.6
Commercial business	1.3	2.3

(For further details see sch. 1.)

Return of large DOD contractors on
TCI for DOD and commercial sales

As shown in the following table, the range in rates of return on total capital investment was fairly wide for both DOD and comparable commercial sales of the 74 large DOD contractors. A larger percentage of DOD sales dollars was in the loss category in 3 of the 4 years, but the losses on commercial sales extended to a significantly lower range in 3 of the 4 years. The rate of return on profitable DOD sales extended to a significantly higher range than profitable commercial sales in 3 of the 4 years. In general, the average return on total capital investment was higher on commercial sales in each of the 4 years.

<u>Year</u>	<u>Return on TCI</u>			
	<u>DOD</u>		<u>Commercial</u>	
	<u>Average</u>	<u>Range</u>	<u>Average</u>	<u>Range</u>
	(percent)			
1966	11.3	-27 to +60	16.2	-16 to +61
1967	12.1	- 6 to +85	12.2	-27 to +44
1968	11.9	-22 to +81	15.6	-50 to +46
1969	9.5	-12 to +96	12.4	-33 to +39

(For further details see schs. 3 and 4.)

Profit data for various categories of large DOD contractors

We were interested in seeing whether profit rates varied for contractors of various sizes and types. For this purpose the 74 large DOD contractors were divided into the following three categories.

1. High-volume defense contractors--Contractors having:

- (a) At least 10 percent of total company business in defense sales.
- (b) Over \$200 million in average annual defense sales.

2. Medium-volume defense contractors--Contractors having:

- (a) At least 10 percent of total company business in defense sales.
- (b) Average annual defense sales of less than \$200 million.

3. Commercially oriented defense contractors--Contractors having:

- (a) Less than 10 percent of total company business in defense sales.
- (b) Substantial defense business.

The data shown in schedules 5 through 10 represent the same data shown in schedule 1 but segregated into the three categories of contractors. Some of the more significant points follow.

Sales

The major part of defense work is concentrated in 32 high-volume defense contractors, as shown in the following breakdown of sales data for 74 large DOD contractors

for the 4-year period 1966 through 1969. The 13 commercially oriented contractors account for about the same amount of commercial sales as do the 61 defense-oriented contractors.

<u>Sales category</u>	<u>Annual average sales 1966-69</u>			
	<u>Defense-oriented contractors</u>			13 commercially oriented contractors
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	(billions)			
DOD	\$19.0	\$2.6	\$21.6	\$ 2.0
Other defense agencies	2.8	0.1	2.9	0.4
Commercial	<u>27.5</u>	<u>6.5</u>	<u>34.0</u>	<u>32.9</u>
Total	<u>\$49.3</u>	<u>\$9.2</u>	<u>\$58.5</u>	<u>\$35.3</u>

(For further details see sch. 5.)

Profit on sales

Profit as a percent of sales is lowest on DOD sales; slightly higher on other defense agency sales, except for the medium-volume contractors; and significantly higher on commercial sales. The operations of the large commercially oriented defense contractors, as a group, appear to be more profitable than those of the defense-oriented contractors, as shown below.

<u>Sales category</u>	<u>Profit/sales average 1966-69</u>			
	<u>Defense-oriented contractors</u>			13 commercially oriented contractors
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	(percent)			
DOD	3.8	6.1	4.1	6.5
Other defense agencies	4.4	3.7	4.4	8.1
Commercial	8.2	8.6	8.3	11.6
Overall	6.3	7.8	6.5	11.2

(For further details see sch. 6.)

Return on TCI

The commercially oriented contractors had an average 15.2 percent rate of return on TCI compared with an average 12.3 percent rate of return for the defense-oriented contractors. It is interesting to note that the average rate of return on DOD work was almost the same for commercially oriented and defense-oriented contractors, (11.1 and 11.2 percent, respectively): Thus, as shown below, a major part of the overall difference in rates of return is attributable to commercial work on which the defense-oriented contractors averaged 12.6 percent return on TCI and the commercially oriented companies averaged 15.4 percent. In addition, the commercially oriented companies had a much greater proportion of their sales from their more profitable commercial customers.

<u>Sales category</u>	<u>Return on TCI</u>			
	<u>Defense-oriented contractors</u>			<u>13 commercially oriented contractors</u>
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	<u>(percent)</u>			
DOD	11.0	12.2	11.2	11.1
Other defense agencies	16.3	6.4	15.3	14.1
Commercial	12.6	12.3	12.6	15.4
Overall	12.3	12.2	12.3	15.2

(For further details see sch. 7.)

Return on ECI

As shown below, the three classes of contractors compare very closely on return on ECI the averages for the 4-year period being 22.7 percent for 32 high-volume defense contractors, 21.4 percent for 29 medium-volume defense contractors, and 23.1 percent for the commercially oriented contractors.

The defense-oriented contractors were able to approach the commercially oriented contractors in return on ECI

because a smaller part of TCI of the defense contractors was ECI. In other words, the defense contractors in our study relied on borrowed capital for a greater proportion of their capital needs.

<u>Sales category</u>	<u>Return on ECI</u>			
	<u>Defense-oriented contractors</u>			<u>13 commercially oriented contractors</u>
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
	<u>(percent)</u>			
DOD	21.4	21.9	21.5	18.4
Other defense agencies	31.6	10.3	29.6	21.8
Commercial	22.8	21.4	22.5	23.3
Overall	22.7	21.4	22.5	23.1

(For further details see sch. 8.)

Turnover rates of TCI and ECI

The average annual capital turnover rates, determined by dividing sales by capital, were higher for the defense-oriented contractors than for the commercially oriented contractors. Also the rates were higher for the high-volume defense contractors than for the medium-volume contractors. As mentioned before, this reflects the effect of Government-furnished capital in the form of progress payments, cost reimbursements, facilities, and equipment. A summary of the turnover rates for the various categories of contractors follows.

<u>Sales category</u>	<u>Defense-oriented contractors</u>			<u>13 commercially oriented contractors</u>
	<u>32 high volume</u>	<u>29 medium volume</u>	<u>All 61</u>	
Turnover of TCI:				
DOD	2.5	1.8	2.4	1.6
Other defense agencies	3.4	1.3	3.2	1.7
Commercial	1.4	1.3	1.4	1.3
Overall	1.7	1.4	1.7	1.3
Turnover of ECI:				
DOD	5.6	3.6	5.3	2.8
Other defense agencies	7.1	2.8	6.7	2.7
Commercial	2.8	2.5	2.7	2.0
Overall	3.6	2.7	3.4	2.1

(For further details see schs. 9 and 10.)

Summary of profits by type of contract

The types of negotiated contracts covered are those most commonly used in recent years by the Department of Defense: cost-plus-fixed-fee (CPFF), cost-plus-incentive-fee (CPIF), fixed-price incentive (FPI), and firm fixed-price (FFP) contracts. Formally advertised contracts are also covered.

Profit rates were about the same for prime contract and subcontract sales.

The bulk of the DOD sales fell in the FPI and FFP contract categories, while the sales to other defense agencies were concentrated in the CPFF and CPIF contract categories.

Advertised prime contracts appeared to be the least profitable in that contractors reported losses for 3 of the 4 years on DOD work and for 2 of the 4 years on other defense agency work. The dollar volume of such contracts is relatively small. It amounts to about 6 percent of total sales reported. It is probable that our data on formally advertised contracts are not representative, since certain industries that perform the bulk of their defense contracts under advertised contracts, such as petroleum companies and construction companies, were not included in our review.

Following is a summary of average profit data, by type of contracts, for the 74 large DOD contractors. Profit data for DOD work and work of the other defense agencies are shown separately.

Type of contract	DOD		Other defense agencies	
	Prime contractor	Subcontractor	Prime contractor	Subcontractor
CPFF:				
Sales	\$ 1,849	\$ 186	\$1,044	\$ 70
Profit	4.4	4.7	3.6	3.6
CPIF:				
Sales	2,738	299	1,182	236
Profit	5.3	5.5	5.2	3.8
FPI:				
Sales	6,564	533	71	12
Profit	3.9	0.7	8.7	6.5
FFP:				
Negotiated sales	7,234	2,132	241	145
Profit	5.3	5.0	10.1	6.0
Advertised:				
Sales	1,151	-	6	-
Profit	<u>-3.4</u>	<u>-</u>	<u>0.7</u>	<u>-</u>
Total sales	<u>\$19,536</u>	<u>\$3,150</u>	<u>\$2,544</u>	<u>\$463</u>
Profit	4.2	4.2	5.0	4.5

Notes:

1. Sales in millions of dollars.
2. Profit as percent of sales.

(For further details see schs. 11 and 12.)

Comparison of actual profit rates with going-in profit rates for DOD contracts for 74 large DOD contractors

The actual rates of profit reported by the DOD contractors for FPI contracts and for FFP negotiated contracts were substantially below the average going-in profit rates DOD has reported in recent years for these types of contracts. "Going in" rates are rates anticipated at the time of contract award and are based on estimated costs.

Following are the actual profit rates reported by contractors as a percent of sales compared with the average going-in profit rates DOD reported for the years 1966 through 1969 for the major types of negotiated DOD contracts. Since the actual profit rates are after deduction of all costs, we have added to the actual rates a percentage estimated to cover costs unallowable under DOD negotiated contracts as provided in section 15 of the Armed Services Procurement Regulations. Until June 30, 1970, it was not mandatory to apply section 15 in negotiating FPI and FFP negotiated contracts. For the purpose of this comparison, however, we assumed the provisions were applied to all negotiated contracts. The 1.4 percent adjustment that we added was developed during our review of individual contracts discussed in chapter 5 of this report.

Negotiated contract type	Profit as a percent of sales				Actual rate under going-in rate
	Average actual profit	Estimated adjustment for unallowable cost	Adjusted actual profit	Average DOD going-in rate	
CPIFF	4.4	1.4	5.8	6.3	-0.5
CPIF	5.3	1.4	6.7	7.0	-0.3
FPI	3.9	1.4	5.3	9.2	-3.9
FFP	5.3	1.4	6.7	9.8	-3.1

The small differences in the cost-type contracts are not significant and are probably due, in large part, to unallowable cost exceeding our estimated figure of 1.4 percent or to cost incurred above that on which the fee was based. The reductions in actual profit rates compared with going-in profit rates for the FFP and FPI types of contracts are significant.

We also recomputed the overall profits and rates of return, reported by the 74 large DOD contractors, on the basis of what they would have been if the contractors had realized the going-in profit rates on the prime contracts shown above. Following is a comparison of the results. The average actual commercial rates of profit of the 74 contractors are also included for comparison.

	<u>Profits</u>		
	<u>DOD</u>		<u>Commercial</u>
	<u>Actual</u>	<u>Revised</u>	
Profit as a percent of sales	4.3	6.3	9.9
Profit as a percent of total capital investment	11.2	15.8	14.0
Profit as a percent of equity capital investment	21.1	31.1	22.9

Profit data by product category

Most of the 74 large DOD contractors sell more than one product line to the Government, and many diversified companies sell a great variety of products. The sales and profit data we obtained from contractors were not broken down by product category. In analyzing contract awards to the 74 large DOD contractors, however, we noted that some had received a preponderance of their awards in one of two product categories: (1) ammunition and (2) aircraft, missile, and space work. Profit data for these contractors are discussed below.

Ammunition contractors

We identified nine major DOD contractors whose contract awards for ammunition averaged more than 80 percent of their total annual DOD contract awards for the period 1966 through 1969. These contractors accounted for about 24 percent of the total DOD contract awards for this commodity. Their total annual DOD sales averaged \$700 million a year for all products. The award and sales figures are not comparable, however, since there is a production time lag and since the sales figures, although primarily for ammunition, include some sales of other products. These contractors produce ammunition components, and the sales data presented here do not include any data relating to operation of GOCO ammunition load, assembly, and pack plants or other GOCO plants where the contractors were paid fees for operating the plants.

Average profit, as a percent of sales, for these nine contractors was about the same for their defense business and for their commercial business (10.3 percent and 10.1 percent, respectively). Profit as a percent of TCI and as a percent of ECI was considerably higher on defense business than on comparable commercial business. As shown on page 28, these nine contractors also had profits on their defense business that were substantially higher than the average profit for the balance of our total group of 74 large DOD contractors after the nine ammunition contractors and 12 aircraft missile and space contractors were excluded.

Aircraft, missile and space contractors

We identified 12 other major DOD contractors whose contract awards for aircraft, missile or space work averaged more than 80 percent of their total annual DOD contract awards for the period 1966 through 1969. Contract awards to these companies accounted for more than 55 percent of the total DOD contract awards for this product grouping during the years covered by our study. Their total annual average DOD sales amounted to over \$9 billion per year for all products.

The average profit on sales to DOD for these 12 contractors was the same as the average profit for the major DOD contractors--4.3 percent. However, the average 12.9 percent rate of return on TCI related to sales to DOD by these 12 contractors was about 34 percent higher than the average 9.6 percent for the 53 other major DOD contractors. This indicated that these 12 contractors had more Government financing than the average contractor in the total group. These 12 contractors had a rate of return on their defense business considerably better than on their commercial business. The following table presents comparative profit data for the nine ammunition contractors; the 12 aircraft, missile, and space contractors; and the 53 other large defense contractors. The data presented represents weighted average data for the 4 years, 1966 through 1969.

	Contractor groups		
	Ammunition	Aircraft, missile, and space	53 other large DOD contractors
Sales (in billions)			
DOD	\$.7	\$ 9.1	\$13.9
Other defense agencies	-	1.8	1.5
Commercial	1.9	9.0	55.9
Profit as percent of sales:			
DOD	10.3	4.3	4.0
Other defense agencies	-	5.0	4.8
Commercial	10.1	6.6	10.4
Profit as percent of TCI:			
DOD	28.3	12.9	9.6
Other defense agencies	-	20.8	11.5
Commercial	11.5	10.0	14.8
Profit as percent of ECI:			
DOD	54.4	28.0	16.9
Other defense agencies	-	43.2	19.3
Commercial	19.2	17.8	23.8
Total TCI turnover rate:			
DOD	2.6	2.7	2.0
Other defense agencies	-	4.0	2.1
Commercial	1.0	1.3	1.3
ECI turnover rate:			
DOD	5.3	6.5	4.2
Other defense agencies	-	8.7	4.0
Commercial	1.9	2.7	2.3

(For further details see schs. 13 and 14.)

Profit data for GOCO plants and
service contracts of 80 large DOD contractors

We obtained separate data pertaining to the operation of GOCO plants, contracts for operation and/or maintenance of Government facilities, and service contracts for DOD and the other defense agencies (NASA and AEC). The characteristic common to these contracts is that they require little or no investment of contractor capital. If we included data on these contracts, our overall profit data would be distorted.

Of the 80 large DOD contractors, six reported all, or practically all, their defense business in GOCO-type sales, and 38 others reported some sales of this type to DOD or other defense agencies. The volume of GOCO business reported was about 2-1/2 times greater for DOD than for the other defense agencies (\$2.1 billion and \$0.8 billion, respectively). The profit on sales for the other defense agency business was about 32 percent higher than for DOD business (4.1 percent and 3.1 percent, respectively).

The difference in profit between DOD and the other defense agencies on GOCO sales may be explained, in part, by the nature of the work performed. The bulk of GOCO sales to DOD were for the operation of Government-owned ammunition plants and to NASA were largely for technical services. GOCO sales to AEC were divided between support services and GOCO plant operations. Cost-type contracts were the contracts most widely used by both DOD and other defense agencies for this work.

(For further details see sch. 15.)

CHAPTER 3ANNUAL PROFIT DATA OF SELECTEDDEFENSE SUBCONTRACTORS

Data were obtained from 10 companies that perform about 80 percent of their defense work under subcontracts and only about 20 percent under prime contracts. Generally speaking, defense sales of these companies were for raw or semifinished materials rather than completed end products. Defense work accounted for about 9 percent of their sales; commercial work accounted for 91 percent. Their sales to other defense agencies were relatively insignificant.

The 10 companies, which we will refer to as subcontractors, earned a higher profit on sales (7.1 percent) on defense business than the 74 large DOD contractors earned (4.3 percent). The subcontractors, however, had a lower rate of return on total capital and equity capital assigned to both defense and commercial production than the major defense contractors. This was caused by the fact that the majority of these contractors provided raw materials to prime contractors and were reimbursed upon delivery of their products. Thus, their progress payments were relatively minor and they had very little in the way of Government-owned facilities. The relatively small amount of Government capital they had, however, resulted in a higher rate of return on their investment for defense work as compared with their commercial work. Their capital turnover rates were lower than those of the 74 large defense contractors but were higher for defense work than for commercial work.

<u>Average 4 years 1966-69</u>	<u>10 major defense subcontractors</u>	<u>74 large defense contractors</u>
Profit as percent of sales:		
DOD	7.1	4.3
Commercial	7.5	9.9
Profit as percent of TCI:		
DOD	9.4	11.2
Commercial	7.8	14.0
Profit as percent of ECI:		
DOD	15.4	21.1
Commercial	12.2	22.9
Turnover of TCI (Sales/TCI):		
DOD	1.1	2.3
Commercial	0.9	1.3
Turnover of ECI (Sales/ECI):		
DOD	2.2	4.9
Commercial	1.6	2.3

(For further details, see schs. 1 and 16.)

CHAPTER 4ANNUAL PROFIT DATA OF SMALLERDEFENSE CONTRACTORS

As discussed earlier in this report, our sample of smaller defense contractors represents a random selection of 61 defense contractors, exclusive of the 74 large DOD contractors, 10 subcontractors, and six GOCO contractors separately covered. The data presented should not be considered representative of all such contractors because over 180,000 procurement actions of \$10,000 or more were negotiated by DOD in each year covered by our study for hundreds of thousands of different items. The large sampling necessary to get representative profit data for the great number of industries involved precluded our attempting it in this study. Further, we felt that the cost was not justified since we had accounted for almost 60 percent of the DOD procurement dollars through our coverage of 80 of the largest DOD contractors.

The 61 smaller contractors were considered commercially oriented because only about 5 percent of their sales were to DOD. Their average profit rate on sales to DOD of 4 percent was 40 percent of the average profit rate they earned on commercial sales. It was, however, only slightly below the 4.3-percent profit rate on sales earned by the 74 major DOD contractors.

The rates of return on TCI and ECI on DOD sales for these contractors were less than rates they earned on commercial sales and the rates earned by 74 large DOD contractors on DOD sales. The fact that the capital turnover rates of these contractors for their DOD business were not much more than their rates for commercial sales indicates that they received little Government capital.

Following is a summary of profit data, before Federal income taxes, for the 61 smaller contractors compared with similar data for the larger contractors.

	4-year averages	
	<u>61 smaller</u> <u>contractors</u>	<u>74 large</u> <u>contractors</u>
Sales (in billions of dollars):		
DOD	\$ 0.7	\$23.7
Other defense agencies	.2	3.3
Commercial	<u>11.8</u>	<u>66.8</u>
Total	<u>\$12.7</u>	<u>\$93.8</u>
Profit as percent of sales:		
DOD	4.0	4.3
Other defense agencies	2.7	4.9
Commercial	10.0	9.9
Profit as percent of TCI:		
DOD	7.3	11.2
Other defense agencies	5.8	15.0
Commercial	13.0	14.0
Profit as percent of ECI:		
DOD	10.6	21.1
Other defense agencies	8.0	27.5
Commercial	20.9	22.9
TCI turnover (Sales/TCI):		
DOD	1.4	2.3
Other defense agencies	1.6	2.8
Commercial	1.2	1.3
ECI turnover (Sales/ECI):		
DOD	2.7	4.9
Other defense agencies	3.0	5.6
Commercial	2.1	2.3

(For further details, see schs. 17 and 1.)

CHAPTER 5NEED TO CONSIDER CONTRACTORS' CAPITAL REQUIREMENTSIN NEGOTIATING PROFIT FACTORS

Although not called for specifically in the legislation, we reviewed 146 negotiated Government contracts. We found that contractors' rates of return on capital employed in contract performance varied greatly. These contract rates varied from a loss of 78 percent to a profit of 240 percent of total capital investment. This wide range is due, to some degree, to the fact that, under present policies, Government procurement personnel give little consideration to contractors' capital requirements in developing profit rate objectives for negotiated contracts. Profit objectives are usually developed as percentages of various cost elements. Further, by relating profits to costs in noncompetitive situations, the higher the costs the higher the profits. Thus, in many cases, contractors are not provided with a positive incentive to invest in more efficient facilities because an investment in facilities that would lower unit costs would also result in lower profits.

In reviewing congressional hearings which led to this study, we noted some concern that contractor capital requirements were not considered in negotiating defense contract prices. To determine whether it was practical to develop investment data by contract and to see if there was a wide range in profits as a percent of invested capital, we selected 146 negotiated contracts for review at 37 contractor locations. The contracts totaled about \$4.3 billion in expenditures for such items as aircraft, missiles, space equipment, ship repairs, weapons, ammunition, electronics, and communications equipment. Contract types involved were those commonly used by DOD: CFFF, CPIF, FPI, and FFP contracts. Our selection was limited to recently completed negotiated contracts and was made without regard to profitability.

The selection of locations for contract reviews was made primarily from the top 80 defense contractors after considering such factors as significance of dollar value of awards and types of products being furnished. Consideration

was also given to obtaining coverage of some awards of each of the defense agencies. Certain contractors were excluded whose work was predominantly of a maintenance or service nature rather than manufacturing. Also, we excluded GOCO plant activities.

We computed profit as a percentage of sales and of costs for each contract. We also computed profit as a percentage of the contractor's capital employed in contract performance. We excluded consideration of Government-furnished capital and leased assets as we were interested in the rate of return on resources provided by the contractor. Our computation of total capital employed included provision for the following asset elements.

1. Cost of work in process, finished goods, and accounts receivable--On a monthly basis, we totaled costs incurred under the contract, deducting progress payments and cost or other reimbursements received from the Government. From these data, we computed the average amount the contractor had invested in work in process, finished goods, and accounts receivable.
2. Investment in fixed assets (including land)--In developing the contractor's average investment in fixed assets for the contract, we generally determined (1) depreciation charged to the contract and (2) the ratio between depreciation charged to the contract and total depreciation charges during the contract period. Using this ratio, we computed the approximate fixed-asset investment. We based the investment allocation on the contractor's net book value of assets.
3. Other assets--We used several methods to allocate assets such as cash, raw materials inventories, and prepaid expenses. For example, in some cases, investment in raw materials inventories was allocated by using the ratio of the value of material issued to the contract to total material issued during the period involved. Prepaid expenses were allocated in the same proportion as other more directly allocable items.

The assets discussed above were financed on an overall basis by current liabilities, long-term debt, and equity capital. We refer to this overall investment in assets as total capital invested (TCI). In computing rate of return on TCI, we added interest expense to net profit, since interest represents the return to the providers of debt capital.

After determining average contract TCI and computing the rate of annual profit, we computed the approximate contract ECI. This was done on the basis of the overall corporate relationship of equity capital to the total liabilities and capital. The rate of return on equity capital was based on net contract income before Federal income taxes but after deducting all contractor expenses allocable to the contract, including interest expense.

RATES OF PROFIT ON 146 CONTRACTS

Overall rates of return, before Federal income taxes, and other data on the 146 contracts follow.

Total value of contracts	\$ 4.3 billion
Profit as a percent of costs	6.9 ^a
Annual rate of return on total capital	28.3% ^a
" " " " " equity "	56.1% ^a

^aPercentages weighted by costs, TCI, or ECI, as appropriate.

The great range in return on TCI is shown in the following schedule of the average rates we developed for the 146 contracts.

<u>Return on TCI</u>	<u>Number of contracts</u>	<u>Percent of total</u>	
		<u>Contracts</u>	<u>Sales</u>
Loss contracts:			
78% to 0%	17	12	8.2
Return of:			
0.1% to 20%	46	32	17.7
20.1 to 40	43	29	23.1
40.1 to 60	19	13	16.2
60.1 to 80	9	6	27.2
80.1 to 100	4	3	1.9
100.1 to 240	<u>8</u>	<u>5</u>	<u>5.7</u>
Total	<u>146</u>	<u>100</u>	<u>100.0</u>

The range in profits is also indicated by the fact that the contractor who made 240 percent on his TCI on one contract suffered losses of about 14 percent and 25 percent of TCI on two other contracts we reviewed. This contractor had an overall loss on TCI of 4 percent on all contracts that we reviewed.

The average rates of return for individual contracts were substantially higher than the average annual profit rates developed from our questionnaires to 74 large DOD contractors. The 146 contracts examined cannot be considered as a representative sample, and it would have been pure

coincidence if similar rates had resulted in both phases of our study. The differences between the two were:

- The large number of DOD procurement actions, over 180,000 a year of \$10,000 or more, covering a large number of different items and industries involved and the work required to develop data for each made it impracticable to attempt to develop a representative sample.
- The data furnished by contractors in response to our questionnaire were on overall defense business not on an individual-contract basis.
- We considered only completed contracts where profits or losses were ascertainable and, as a result, probably avoided many loss contracts having large unsettled claims.

This phase of the study was not for the purpose of validating the profits as reported by the contractors in replying to the questionnaire. This was done, to the extent possible, by site verification of 40 questionnaires selected at random, as discussed earlier in this report. Our purpose was to determine (1) whether it was practicable to develop cost, profit, and invested capital data by contract and (2) whether any wide range in profits on DOD work existed. The work showed that cost, profit, and invested capital data could be developed by contract and that there was a wide range of profit rates on DOD contracts.

EFFECT OF GOVERNMENT PROGRESS PAYMENTS
ON INVESTMENT RETURN

Government progress payments significantly reduce the need for contractor capital.

Under defense contracts, there are usually provisions for reimbursing contractors periodically in whole or in part as costs are incurred. This reduces the working capital required for contract performance. Cost contracts generally provide for reimbursement of costs on a monthly or more frequent basis. Other types of defense contracts, involving predelivery or unbillable partial performance expenditures that will have material impact on the contractors' working capital, provide for periodic progress payments of 85 percent of total costs incurred for small business concerns and 80 percent for larger companies.

For 12 contracts involving eight different contractors, we computed the rates of return on TCI with progress payments and without progress payments. In all cases, the rates of return were substantially higher when progress payments were received. The overall average increase, weighted for TCI required for each contract, is shown below.

Annual rate of return on TCI with progress payments	45.3%
Annual rate of return on TCI if progress payments had not been received	<u>25.1%</u>
Increase in rate of return due to progress payments	<u>20.2%</u>

The increase in rate of return ($20.2\% \div 25.1\%$) because of the progress payments was 80 percent.

In one case, we noted that a contractor was selling the same item under a Government prime contract and under a subcontract. The Government, however, provided progress payments under the prime contract whereas the contractor did not receive progress payments from the prime contractor under the subcontract. Also, the Government paid for deliveries within an average of 29 days whereas the

subcontractor did not receive payments for deliveries under the subcontract until an average of 131 days after delivery.

Although this case is probably not representative, it does demonstrate the effect of progress payments and the time difference in payment for deliveries.

	<u>Prime</u> <u>contract</u>	<u>Subcontract</u>	<u>Difference</u>
	_____ (percent) _____		
Profit rate on costs, over or short (-)	10.9	14.2	-3.3
Annual return on TCI	29.7	16.6	13.1
" " " ECI	49.4	27.5	21.9

Return on TCI on the prime contract was substantially more than on the subcontract because of progress payments and more timely payments after delivery of the items ordered, even though profit as a percent of cost was 3.3 percent higher under the subcontract.

Government-furnished facilities, of course, have a similar effect in reducing the capital investment required of contractors.

GUIDELINES FOR DEVELOPMENT OF NEGOTIATED
CONTRACT PROFIT OBJECTIVES

Guidelines used by DOD procurement officials to develop profit objectives are set forth in section 3-808 of the Armed Services Procurement Regulation (ASPR). In the absence of price competition and where analysis of the contractor's proposed costs is required, a procedure known as the weighted guidelines method is used. Using this method, procurement officials prepare a systematic analysis of profit objectives before they begin negotiations. The factors and weights considered in developing the profit objective are:

<u>Factors</u>	Profit range (<u>note a</u>)	x	Estimate <u>cost</u>	=	Profit
Contractor's Input to Total Performance:					
Direct materials:					
Purchased parts	.1% to 4%	x		=	
Subcontracted items	1 to 5	x		=	
Other materials	1 to 4	x		=	
Engineering labor	9 to 15	x		=	
" overhead	6 to 9	x		=	
Manufacturing labor	5 to 9	x		=	
" overhead	4 to 7	x		=	
General and administrative expense	6 to 8	x		=	
Total				=	
				=	
Composite Rate on Cost Input (profit computed above divided by total estimated cost shown above)					

<u>Factors</u>	Profit range (note a)	<u>Profit</u> (percent)
ADD: Specific percentages assigned below:		
Contractor's Assumption of Contract Cost Risk:		0 to +7
By type of contract:		
CPFF	0 to 1	
CPIF (cost incentive)	1 to 2	
CPIF (cost-performance-delivery)	1-1/2 to 3	
FPI (cost incentive)	2 to 4	
FPI (cost-performance-delivery)	3 to 5	
Prospective price redetermination	4 to 5	
FFP	5 to 7	
Reasonableness of cost estimates	(a)	
Difficulty of task	(a)	
Record of Contractor's Performance:		-2 to +2
Considerations:		
1. Management	(a)	
2. Cost efficiency	(a)	
3. Reliability of cost estimates	(a)	
4. Cost reduction program accomplish- ments	(a)	
5. Value engineering accomplishments	(a)	
6. Timely deliveries	(a)	
7. Quality of product	(a)	
8. Inventive and development contri- butions	(a)	
9. Small business and labor surplus area participation	(a)	
Selected Factors:		-2 to +2
Source of resources	-2 to 0	
Special achievement	0 to +2	
Other	(a)	
Special Profit Consideration		<u>+1 to +4</u>
Total profit rate		<u>=====</u>
Profit Objective (total profit rate x total recognized costs)		\$ <u>=====</u>

^aNS--No specific weight range designated.

As shown above, there is no provision to consider the amount of contractor capital investment required during contract performance. Further, only minor consideration is given to the use of Government-owned facilities under the source of resources factor. This could amount to a penalty of as much as minus 2 percent for a contractor with Government facilities. We have found, however, that the penalty assessed usually has not exceeded 1 percent, even where all

facilities were Government owned. In the case of a contractor having no Government facilities, there is no provision for increasing his profit percentage to compensate him for adding privately owned facilities. In fact, since the acquisition of improved facilities should result in reduced costs, his profits on negotiated follow-on contracts would probably be reduced if such facilities were added.

ASPR states that normal progress payments shall not be weighted in developing profit objectives.

The other agencies included in our profit study generally follow profit negotiation policies similar to those of the Department of Defense. In fact, the Coast Guard uses the Department of Defense weighted guidelines to negotiate some contracts. Although NASA has not adopted the weighted guidelines method, NASA's procurement regulation calls for consideration of essentially the same profit factors covered in the guidelines. AEC provides in its procurement guidelines that contractor investment will be considered in determining profit objectives and has developed maximum fee curves which are based, in part, upon invested capital. There are, however, no formalized procedures for development and consideration of invested capital in negotiating individual contracts.

STUDIES AND REPORTS CONCERNING CONSIDERATION
OF CONTRACTOR-INVESTED CAPITAL REQUIRED
TO FULFILL GOVERNMENT CONTRACTS

Several studies have been made which conclude that some consideration should be given to contractor-invested capital requirements when negotiating the profit factor of noncompetitive Government contracts. These studies are summarized below.

Contractor incentives for acquiring private facilities

A study was completed by the Logistics Management Institute in September 1967 at the request of the Assistant Secretary of Defense (Installations and Logistics). Its objective was to develop and propose ways of improving the incentives for contractors to acquire and maintain efficient facilities. Some significant parts of the study are quoted below.

"Facility investments, soundly made, generally reduce total contract costs. Under the present ASPR, however, facilities investment tends to lower rather than increase profit dollars on negotiated contracts. Lower profits result from lower estimated costs for labor, materials, and overhead. This is the most significant deficiency in the incentives for defense contractors to acquire facilities."

"The acquisition of facilities that increase efficiency may affect the ability to obtain a contract. Under the present rules, however, if a contractor can get the business without additional facilities investment, he can expect more dollars, and a higher percentage of profit on invested capital by refraining from investment as much as possible and allowing or causing expected costs to be as high as will be acceptable."

"Other things being equal, a modern efficient plant can be expected to have lower labor and material costs than one with less up-to-date facilities. Therefore, the present Guidelines applied on individual contract negotiation tend to

establish a lower dollar profit objective for an efficient plant with a large investment in facilities than it would for a less efficient plant producing the same output."

"Most of the contractors stated frankly that they invest as little capital as possible in facilities for production on negotiated contracts in order to avoid reducing their return on invested capital. Since more than half of the defense procurement dollars are spent on contracts negotiated on the basis of cost analysis, it would appear that a change in profit policy giving greater consideration to invested capital would be equitable for defense industry and beneficial to the Department of Defense."

One of several recommendations made in the report was as follows:

"Percentages of profit on net book value of plant and operating capital (equity plus debt less facilities and outside investments) should be included in the Weighted Guidelines for determining profit objectives. The present percentages on labor, material and overhead costs and the percentages to be applied to the capital elements should be adjusted as necessary to accomplish overall DOD profit objective policies."

Prior GAO report on increased costs due to lease rather than purchase of fixed assets by contractors

In November 1967, GAO issued a draft report entitled "Effect on Cost to the Government of the Leasing of Land and Buildings by Contractors, Department of Defense" (B-156818).

The report concluded that contractors' decisions to lease land and buildings result in greater cost to the Government than if facilities were purchased. Defense policies do not offer an inducement to contractors to purchase facilities as opposed to leasing them. Defense and industry representatives should study possible methods of acquisition which would be most advantageous to industry and most economical to the Government.

We recommended that (1) DOD consider modifying the weighted guidelines profit factors to distinguish between contractors who purchase facilities and contractors who lease them and (2) Defense policies provide contractors with a financial incentive to acquire facilities in a manner which would be least costly to the Government.

Subsequently, the Department of Defense revised ASPR to provide that rental costs under long-term leases would be allowable only up to the amount that the contractor would be allowed had he purchased the building, unless the contractor could demonstrate that the leasing costs would result in less cost to the Government over the anticipated life of the property.

ASPR Special Subcommittee Report

A special subcommittee was established in December 1967 by the ASPR Committee to consider the Logistics Management Institute recommendation. The ASPR Committee is part of the Office of the Assistant Secretary of Defense (Installations and Logistics) and is responsible for developing any needed amendments to ASPR. The Special Subcommittee was given a specific task to (1) develop and test procedures for giving greater weight in prenegotiation profit objectives to capital employed, (2) evaluate the results of the test, and (3) if appropriate, recommend any needed changes to ASPR.

The Subcommittee issued a report, in March 1968, presenting a test plan and procedures for developing information on contractor capital employed in contract performance. After further study, in October 1968, the proposal was presented to a panel of the Defense Industry Advisory Council which was chartered to explore ways and means for fostering a healthy defense industrial base. (The Defense Industry Advisory Council was established in 1962 to provide a means for direct and regular contact between the Secretary of Defense and his assistants and industry representatives.)

Subsequently, in June 1969, the Defense Industry Advisory Council recommended to the Secretary of Defense that, in addition to costs, DOD profit policy should recognize and provide for adequate return on company capital employed. Since then progress has been slow. However, a new ASPR Subcommittee has been established and in October 1970 the subcommittee distributed for comment draft forms for gathering preliminary data.

In regard to DOD progress in this area, Dr. Robert N. Anthony, a former DOD comptroller, appearing before the Subcommittee on Economy in Government of the Joint Economic Committee on May 21, 1970, stated:

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

NASA report on an investment-oriented
profit analysis technique

NASA has developed a contract negotiation procedure that includes consideration of contractor investment required during contract performance. The procedure was developed in 1968 by George Washington University and presented to NASA procurement personnel during a 3-day course in profit and fee analysis. NASA then decided to conduct a test of the new procedure. Each NASA procurement office was asked to furnish data on new procurements over \$100,000, outlining the profit negotiated. In addition, the negotiators were asked to furnish an estimated profit objective using the return on investment analysis technique. The latter was not to be used, however, in actual contract negotiations.

NASA awarded a contract to George Washington University to monitor the test and to evaluate data. On June 29, 1970, we received a copy of an interim report on the test which concluded that (1) it was feasible to develop the requisite investment data from contractors and (2) NASA personnel were able to employ the new technique under operational conditions for research and development and hardware contracts. NASA cautioned, however, that the wisdom and practicableness of using a return on investment approach to determine profit compensation was still being explored and that NASA was not prepared, at the time, to endorse any particular return on investment technique.

The NASA and DOD proposed procedures for developing invested capital data differ. For example, to compute operating capital used, DOD uses accounting data from the most recent fiscal year in computing the estimated operating capital required for a new contract. In contrast, NASA uses a monthly forecast of the estimated costs to be incurred, less progress payments, during performance of the new contract.

BRITISH CONSIDER CAPITAL USED IN NEGOTIATING
PROFIT ON NONCOMPETITIVE GOVERNMENT CONTRACTS

The relationships between Government and industry are not the same in the United Kingdom as in the United States. It is of interest to note, however, that capital used has been considered for some time in negotiating profit rates for noncompetitive Government contracts. Their objective is to provide a rate of return on noncompetitive Government work that approximates the overall average return earned by British industry in the years 1960 to 1966.

Recently the British system was revised to provide that contracts involving an excessive realized profit or loss may be referred to a review board. The findings of the board are binding to both parties. It is still too early to determine how well the system will operate.

USE OF RETURN ON INVESTED CAPITAL
IN RENEGOTIATION

Capital employed is one of the factors specified in the Renegotiation Act to be taken into consideration in determining excessive profits. In view of the differences we found in proportionate amounts of contractor capital allocated to defense and commercial business, we met with Renegotiation Board representative to discuss this matter. Board representatives told us that capital allocations were made, for the most part, on a cost-of-sales basis. In a few instances, the Board had requested allocations from contractors on the basis of the extent that assets were used on defense work but had not been very successful in obtaining them.

In view of our findings, Board representatives said that further consideration would be given to obtaining better contractor capital allocations for defense work when Government resources were furnished.

CHAPTER 6CONTRACTOR ASSOCIATION COMMENTS

Comments were requested from five contractor associations on a draft of this report that was based on incomplete data. Two of the associations agreed with the conclusion that investment should be considered in determining profits; however, they and two other associations stated that the report grossly overemphasized the rate of return on investment and reflected a preoccupation with the need to consider contractors' capital requirements in negotiating profit factors. The fifth association did not furnish any comments on this point.

We agree that there are other factors that must be considered in negotiating contract profit rates. Such factors as the contractors' assumption of cost risk, difficulty of the task, and other management and performance factors must be evaluated and considered. In some cases, such as a GOCO plant, little or no contractor investment is involved, whereas in others the entire investment required for contract performance is provided by the contractor. Where the investment required from the contractor is insignificant, the other factors naturally would be the determining items in establishing profit objectives. In still other cases, however, to the degree that contractor capital is required, it should be considered.

Two of the contractor associations questioned GAO statements that contractors have little incentive to invest in more modern equipment to reduce costs relating to many negotiated procurements. The associations stated that GAO had failed to consider and recognize the "real world" competitive environment of today's defense business.

For competitive and other reasons, contractors make some investments in facilities and equipment for performance of negotiated defense contracts. Actually, however, little price competition is involved in much of the DOD procurement. For example, of the total dollar value of DOD procurement for fiscal year 1970, only 11 percent was formally advertised and an additional 27 percent was negotiated on the

basis of price competition. A total of 57 percent was placed on a sole-source basis, and the remaining 5 percent involved design or technical competition.

There is, of course, some incentive to reduce costs on negotiated firm fixed-price and fixed-price incentive contracts even if they are sole-source contracts. Such reductions in cost, however, could reduce profits on subsequent defense contracts. Such contracts would be priced on the basis of prior cost experience to a large extent, and the profits would be determined as a percentage of estimated costs.

The contractor associations almost unanimously questioned our data for the 146 individual contracts and stated that they felt that either there was an unfortunate selection of contracts involved or there were flaws in the method of ascertaining capital invested in such contracts.

For reasons stated earlier in this report, GAO agrees that no attempt was made to obtain a sample representative of all defense contracts. GAO was interested in determining (1) whether it was feasible to develop cost, profit, and invested capital data by contract and (2) if so, the range of the rate of return on invested capital realized for individual contracts. We believe that it is feasible to develop the desired data for most contracts, and we found that there was a great range in rates of return on investment for individual contracts.

In each case of developing data for individual contracts, we presented our data to the contractors involved and gave them an opportunity for review and comment. We carefully considered the comments received and believe that the final data are reasonably accurate. The number of cases involving factual disagreements was relatively small.

CHAPTER 7AGENCY COMMENTS

We provided a preliminary draft of this report to AEC, DOD, DOT, and NASA for review and comment.

All the agencies agreed that due consideration should be given to the TCI of contractors in negotiating Government contracts which do not involve price competition. DOD pointed out, however, that the solution of highly complex administrative problems was required before the policy could be put into effect. Also, AEC believes that there is no need for a uniform Government-wide fee policy stressing consideration of invested capital and feels that the development of detailed uniform guidelines could have a serious, disruptive effect on the existing overall fee policies of the various executive agencies.

We agree that there are serious administrative problems in providing for consideration of contractor TCI related to a particular contract in negotiating contract profit rates. DOD has been considering this matter since 1962 and we believe that it is time to move ahead.

We agree also that there are many advantages to permitting agencies to tailor their policies to their individual needs. Many companies, however, deal with numerous Government agencies. We believe that, where feasible, uniform policies should be established governing the relations between Government and industry. We believe further that it seems feasible and desirable to establish uniform Government-wide guidelines for establishing profit objectives for negotiating Government contracts where effective price competition is lacking.

CHAPTER 8.CONCLUSIONS AND RECOMMENDATIONCONCLUSIONS.

Profit measured as a percent of sales was significantly lower on defense work than on comparable commercial work for the 74 large DOD contractors included in our study. However, when we measured profit as a percent of the contractors' TCI used in generating the sales, the difference narrowed. Further, when we measured profit as a percent of ECI of the stockholders, we found very little difference in the rate of return for defense and commercial work.

The major factor involved in making the rates of return on contractor capital investment for defense and commercial work similar was the substantial amount of capital provided by the Government in the form of progress payments, cost reimbursements, equipment, and facilities. Government resources, of course, reduce the capital investment required of the contractor for defense work.

The 10 large companies that do the bulk of their defense business in the form of subcontracts earned a considerably higher rate of profit on defense sales than the 74 large DOD contractors. When profit was measured as a percent of TCI and of ECI, however, the subcontractors had a lower average rate of return than the 74 large DOD contractors. The subcontractors did realize a higher rate of return on capital for defense work than on their comparable commercial work. In our opinion, this was due to the effect of Government-furnished capital, even though the subcontractors have use of relatively fewer Government resources than the 74 large DOD contractors.

Under current defense contract negotiation procedures, little consideration is given to the amount of capital investment required from the contractor for contract performance. Instead, profit objectives are developed as a percentage of the anticipated costs of material, labor, and overhead. As a result, inequities can and do arise among contractors providing differing proportions of the capital

required for contract performance. Also, by relating profits to costs, contractors have little incentive to make investments in equipment which would increase efficiency and reduce costs. Such investments tend to lower rather than increase profits in the long run. Of course, other factors, such as whether or not the program will be continued, could be an overriding consideration in bringing about contractor investments to reduce costs.

We believe that it is essential to change the present system in order to motivate contractors to reduce costs under Government noncompetitive negotiated contracts. Where the acquisition of more efficient facilities by contractors will result in savings to the Government in the form of lower contract costs, contractors should be encouraged to make such investments. Proper consideration of contractor provided capital can cause a greater reliance on private capital to support defense production. To accomplish this, it is essential that capital investment be substituted for estimated costs as a basis for negotiating profit rates. We realize that other factors are also important, such as the specificity and life expectancy of a Government program. Most important, the present strong incentive for contractors to minimize their investments for Government work should be eliminated.

We believe that, in determining profit objectives for negotiated Government contracts where (1) effective price competition is lacking and (2) the amount of contractor capital required is a significant factor, consideration should be given to total contractor capital requirements. Consideration should, of course, continue to be given to such other factors as risk, complexity of the work, and other management and performance factors. Where contractor capital requirements are insignificant, such as in many service-type contracts or contracts to operate Government-owned plants, profit objectives would continue to be developed primarily through consideration of the other factors.

In our opinion, a system providing for consideration of capital requirements in negotiating profit rates would be fairer than the present system to both contractors and the Government.

We believe also that the system adopted should be used where applicable by all Government agencies to simplify industry participation.

RECOMMENDATION

Action required to establish uniform guidelines does not require legislation. Accordingly, we recommend that the Office of Management and Budget take the lead in interagency development of uniform Government-wide guidelines for determining profit objectives for negotiating Government contracts that will emphasize consideration of the total amount of contractor capital required when appropriate where effective price competition is lacking.

SCHEDULES

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 74 LARGE DOD CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted Average
<u>SALES</u> (in billions of dollars)					
1. DOD	10.1	24.1	25.8	25.8	23.7
2. Other defense agencies	4.3	3.2	3.1	2.6	3.3
3. Commercial	59.1	60.6	72.3	75.0	66.8
4. Totals	82.5	87.9	101.2	103.4	93.8
<u>PROFIT AS PERCENT OF SALES</u>					
5. DOD	4.7	4.7	4.5	3.4	4.3
6. Other defense agencies	4.6	5.0	5.1	5.0	4.9
7. Commercial	11.2	8.7	10.8	8.9	9.9
<u>PROFIT AS PERCENT OF TCI</u>					
8. DOD	11.3	12.1	11.9	9.5	11.2
9. Other defense agencies	15.8	14.7	15.5	14.0	15.0
10. Commercial	16.2	12.2	15.6	12.4	14.0
<u>PROFIT AS PERCENT OF ECI</u>					
11. DOD	21.4	22.9	22.6	17.4	21.1
12. Other defense agencies	28.7	27.1	28.9	24.8	27.5
13. Commercial	26.4	19.6	25.8	20.4	22.9
<u>TCI TURNOVER (sales/TCI)</u>					
14. DOD	2.2	2.3	2.4	2.3	2.3
15. Other defense agencies	3.2	2.7	2.8	2.5	2.8
16. Commercial	1.4	1.3	1.3	1.3	1.3
<u>ECI TURNOVER (sales/ECI)</u>					
17. DOD	4.6	4.8	5.1	5.1	4.9
18. Other defense agencies	6.3	5.5	5.7	4.9	5.6
19. Commercial	2.4	2.2	2.4	2.3	2.3

SUMMARY OF FINANCIAL DATA AFTER FEDERAL INCOME TAXES
FOR 74 LARGE DOD CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES</u> (in billions of dollars)					
1. DOD	19.1	24.1	25.8	25.8	23.7
2. Other defense agencies	4.3	3.2	3.1	2.6	3.3
3. Commercial	59.1	60.6	72.3	75.0	66.8
<u>PROFIT AS PERCENT OF SALES</u>					
4. DOD	2.5	2.5	2.3	1.8	2.3
5. Other defense agencies	2.4	2.6	2.5	2.5	2.5
6. Commercial	6.0	4.9	5.6	4.6	5.3
<u>PROFIT AS PERCENT OF TCI</u>					
7. DOD	6.5	7.0	6.8	5.8	6.5
8. Other defense agencies	8.8	8.3	8.4	7.7	8.3
9. Commercial	9.1	7.3	8.5	7.0	7.9
<u>PROFIT AS PERCENT OF ECI</u>					
10. DOD	11.4	12.0	11.6	9.2	11.0
11. Other defense agencies	15.3	14.3	14.4	12.5	14.2
12. Commercial	14.3	11.1	13.4	10.5	12.2
<u>TCI TURNOVER</u> (sales/TCI)					
13. DOD	2.2	2.3	2.4	2.3	2.3
14. Other defense agencies	3.2	2.7	2.8	2.5	2.8
15. Commercial	1.4	1.3	1.3	1.3	1.3
<u>ECI TURNOVER</u> (sales/ECI)					
16. DOD	4.6	4.8	5.1	5.1	4.9
17. Other defense agencies	6.3	5.5	5.7	4.9	5.6
18. Commercial	2.4	2.2	2.4	2.3	2.3

DISTRIBUTION OF RETURN ON TCI BEFORE FEDERAL INCOME TAXES
FOR DOD SALES OF 74 LARGE DOD CONTRACTORS

Return on TCI	1966		1967		1968		1969	
	Percent of total		Percent of total		Percent of total		Percent of total	
	Con-tractors	Sales	Con-tractors	Sales	Con-tractors	Sales	Con-tractors	Sales
LOSS (%)	5.4	0.5	5.4	2.4	6.8	3.0	13.5	19.5
<u>PROFIT (%)</u>								
0.1 to 5	17.6	11.1	10.8	8.0	8.1	15.3	10.8	10.4
5.1 to 10	13.5	13.5	16.2	26.1	17.5	22.2	17.6	14.1
10.1 to 15	39.2	46.2	27.0	26.5	25.7	17.9	25.7	25.7
15.1 to 20	9.5	6.7	25.7	20.8	23.0	20.5	13.5	12.1
20.1 to 25	13.5	21.8	5.4	6.8	8.1	16.9	9.5	13.9
25.1 to 30	-	-	1.4	0.4	2.7	0.5	4.0	2.8
30.1 to 50	-	-	2.7	7.8	5.4	2.8	2.7	0.8
50.1 to 100	1.3	0.2	5.4	1.2	2.7	0.9	2.7	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total sales (billions)	\$19.1		\$24.1		\$25.8		\$25.8	
Return on TCI spread by year	-27% to +60%		-6% to +85%		-22% to +81%		-12% to +96%	
Average return on TCI	11.3%		12.1%		11.9%		9.5%	

DISTRIBUTION OF RETURN ON TCI BEFORE FEDERAL INCOME TAXES
FOR COMMERCIAL SALES OF 74 LARGE DOD CONTRACTORS

Return on TCI	1966		1967		1968		1969	
	Percent of total		Percent of total		Percent of total		Percent of total	
	Con-tractors	Sales	Con-tractors	Sales	Con-tractors	Sales	Con-tractors	Sales
LOSS (%)	4.0	1.0	8.1	1.8	8.1	0.8	10.8	3.0
PROFIT (%)								
0.1 to 5	4.0	0.2	9.5	20.4	5.4	6.2	12.2	16.5
5.1 to 10	9.5	14.6	12.2	5.9	13.5	7.3	16.2	8.4
10.1 to 15	35.1	33.7	36.5	40.0	37.8	26.3	31.1	42.2
15.1 to 20	16.2	21.1	18.9	6.9	17.6	42.8	14.9	14.8
20.1 to 25	16.2	20.1	6.8	16.6	6.8	2.9	5.4	6.2
25.1 to 30	6.8	5.6	4.0	5.3	5.4	5.0	5.4	6.0
30.1 to 50	6.8	3.7	4.0	3.1	5.4	8.7	4.0	2.9
50.1 to 100	1.4	-	-	-	-	-	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total sales (billions)	\$59.0		\$60.6		\$72.3		\$75.0	
Return on TCI spread by year	-16% to +61%		-27% to +44%		-50% to +46%		-33% to +39%	
Average return on TCI	16.2%		12.2%		15.6%		12.4%	

SALES BY CATEGORY FOR 74 LARGE DOD CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
(billions)						
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	\$15.5	\$19.4	\$20.5	\$20.5	\$19.0
2.	Other defense agencies	3.6	2.7	2.6	2.2	2.8
3.	Commercial	23.4	25.7	29.7	31.1	27.5
4.	Total	\$42.5	\$47.8	\$52.8	\$53.8	\$49.3
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	\$ 1.9	\$ 2.6	\$ 3.0	\$ 3.2	\$ 2.6
6.	Other defense agencies	0.2	0.1	0.1	0.1	0.1
7.	Commercial	5.8	5.9	6.7	7.5	6.5
8.	Total	\$ 7.9	\$ 8.6	\$ 9.8	\$10.8	\$ 9.2
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	\$17.4	\$22.0	\$23.5	\$23.7	\$21.6
10.	Other defense agencies	3.8	2.8	2.7	2.3	2.9
11.	Commercial	29.1	31.7	36.4	38.6	34.0
12.	Total	\$50.3	\$56.5	\$62.6	\$64.6	\$58.5
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	\$ 1.7	\$ 2.0	\$ 2.2	\$ 2.1	\$ 2.0
14.	Other defense agencies	0.5	0.4	0.4	0.3	0.4
15.	Commercial	30.0	29.0	35.9	36.5	32.9
16.	Total	\$32.2	\$31.4	\$38.5	\$38.9	\$35.3
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	\$19.1	\$24.1	\$25.8	\$25.8	\$23.7
18.	Other defense agencies	4.3	3.2	3.1	2.6	3.3
19.	Commercial	59.1	60.6	72.3	75.0	66.8
20.	Total	\$82.5	\$87.9	\$101.2	\$103.4	\$93.8

Some columns do not add due to rounding.

PROFIT ON SALES BEFORE FEDERAL INCOME TAXES
FOR VARIOUS CATEGORIES OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	4.6%	4.4%	3.8%	2.6%	3.8%
2.	Other defense agencies	4.5	4.6	4.6	3.9	4.4
3.	Commercial	9.2	7.8	8.4	7.5	8.2
4.	Total	7.1	6.2	6.5	5.5	6.3
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	2.7	6.0	7.6	6.9	6.1
6.	Other defense agencies	0.3	2.7	8.0	6.7	3.7
7.	Commercial	10.5	8.6	8.3	7.5	8.6
8.	Total	8.4	7.7	8.1	7.3	7.8
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	4.4	4.6	4.3	3.2	4.1
10.	Other defense agencies	4.3	4.5	4.8	4.1	4.4
11.	Commercial	9.5	7.9	8.4	7.5	8.3
12.	Total	7.3	6.4	6.7	5.8	6.5
<u>13 COMMERCIALLY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	7.5	6.3	6.2	6.0	6.5
14.	Other defense agencies	6.5	8.1	7.2	11.4	8.1
15.	Commercial	12.9	9.6	13.2	10.4	11.6
16.	Total	12.5	9.4	12.7	10.2	11.2
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	4.7	4.7	4.5	3.4	4.3
18.	Other defense agencies	4.6	5.0	5.1	5.0	4.9
19.	Commercial	11.2	8.7	10.8	8.9	9.9
20.	Total	9.4	7.5	9.0	7.5	8.3

RETURN ON TCI BEFORE FEDERAL INCOME TAXES
FOR VARIOUS CATEGORIES OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	12.17	12.3%	11.3%	8.4%	11.0%
2.	Other defense agencies	18.1	16.1	16.6	13.7	16.3
3.	Commercial	14.1	12.2	13.5	11.3	12.6
4.	Total	13.7	12.3	13.0	10.6	12.3
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	5.6	11.9	15.0	14.2	12.2
6.	Other defense agencies	2.1	5.5	11.7	7.5	6.4
7.	Commercial	15.5	12.3	11.7	10.7	12.3
8.	Total	13.1	12.1	12.4	11.4	12.2
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	11.1	12.3	12.0	9.4	11.2
10.	Other defense agencies	16.5	15.1	16.2	12.9	15.3
11.	Commercial	14.4	12.2	13.1	11.2	12.6
12.	Total	13.6	12.3	12.9	10.8	12.3
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	12.3	10.8	11.4	10.0	11.1
14.	Other defense agencies	12.9	13.3	13.3	17.5	14.1
15.	Commercial	17.8	12.3	17.9	13.7	15.4
16.	Total	17.5	12.2	17.6	13.6	15.2
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	11.3	12.1	11.9	9.5	11.2
18.	Other defense agencies	15.8	14.7	15.5	14.0	15.0
19.	Commercial	16.2	12.2	15.6	12.4	14.0
20.	Total	15.3	12.2	15.0	12.0	13.5

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SCHEDULE 2

RETURN ON ECI BEFORE FEDERAL INCOME TAXES
FOR VARIOUS CATEGORIES OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	24.0%	24.4%	22.0%	15.7%	21.4%
2.	Other defense agencies	34.9	31.7	32.6	26.0	31.6
3.	Commercial	25.7	21.9	23.9	20.4	22.8
4.	Total	25.7	22.8	23.6	19.5	22.7
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	9.1	20.9	27.9	25.6	21.9
6.	Other defense agencies	1.1	8.5	23.5	11.1	10.3
7.	Commercial	29.0	20.9	20.2	18.0	21.4
8.	Total	24.3	20.7	22.0	19.5	21.4
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	21.6	23.8	23.1	17.7	21.5
10.	Other defense agencies	31.9	29.7	31.8	23.9	29.6
11.	Commercial	26.4	21.7	23.1	19.9	22.5
12.	Total	25.4	22.4	23.3	19.5	22.5
<u>13 COMMERCIALY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	20.1	18.0	19.6	16.2	18.4
14.	Other defense agencies	19.4	20.6	20.9	27.0	21.8
15.	Commercial	26.5	18.1	27.9	20.8	23.3
16.	Total	26.1	18.1	27.5	20.7	23.1
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	21.4	22.9	22.6	17.4	21.1
18.	Other defense agencies	28.7	27.1	28.9	24.8	27.5
19.	Commercial	26.4	19.6	25.8	20.4	22.9
20.	Total	25.8	20.3	25.4	20.1	22.8

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SCHEDULE 8

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TURNOVER OF TCI FOR VARIOUS CATEGORIES
OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	2.4	2.5	2.6	2.5	2.5
2.	Other defense agencies	3.8	3.3	3.3	3.1	3.4
3.	Commercial	1.4	1.4	1.4	1.3	1.4
4.	Total	1.8	1.8	1.8	1.6	1.7
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	1.6	1.8	1.8	1.8	1.8
6.	Other defense agencies	1.7	1.3	1.2	0.9	1.3
7.	Commercial	1.4	1.3	1.2	1.2	1.3
8.	Total	1.4	1.4	1.4	1.3	1.4
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	2.3	2.4	2.4	2.4	2.4
10.	Other defense agencies	3.6	3.1	3.1	2.8	3.2
11.	Commercial	1.4	1.4	1.4	1.3	1.4
12.	Total	1.7	1.7	1.7	1.6	1.7
<u>13 COMMERCIALLY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	1.5	1.6	1.7	1.5	1.6
14.	Other defense agencies	1.9	1.5	1.7	1.5	1.7
15.	Commercial	1.3	1.2	1.3	1.2	1.3
16.	Total	1.4	1.2	1.3	1.3	1.3
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	2.2	2.3	2.4	2.3	2.3
18.	Other defense agencies	3.2	2.7	2.8	2.5	2.8
19.	Commercial	1.4	1.3	1.3	1.3	1.3
20.	Total	1.6	1.5	1.5	1.4	1.5

TURNOVER OF ECI FOR VARIOUS CATEGORIES
OF LARGE DEFENSE CONTRACTORS

Line No.	Description	1966	1967	1968	1969	Weighted average
<u>32 HIGH-VOLUME DEFENSE CONTRACTORS</u>						
1.	DOD	5.2	5.5	5.8	5.9	
2.	Other defense agencies	7.8	7.0	7.0	6.6	5.6
3.	Commercial	2.8	2.8	2.8	2.7	7.1
4.	Total	3.6	3.7	3.7	3.5	2.8
<u>29 MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
5.	DOD	3.3	3.5	3.7	3.7	
6.	Other defense agencies	3.9	3.1	2.9	1.7	3.6
7.	Commercial	2.8	2.4	2.4	2.4	2.8
8.	Total	2.9	2.7	2.7	2.7	2.5
<u>TOTALS FOR 61 HIGH- AND MEDIUM-VOLUME DEFENSE CONTRACTORS</u>						
9.	DOD	4.9	5.2	5.4	5.5	
10.	Other defense agencies	7.4	6.6	6.7	5.9	5.3
11.	Commercial	2.8	2.7	2.7	2.6	6.7
12.	Total	3.5	3.5	3.5	3.3	2.7
<u>13 COMMERCIALLY ORIENTED DEFENSE CONTRACTORS</u>						
13.	DOD	2.7	2.8	3.2	2.7	
14.	Other defense agencies	3.0	2.5	2.9	2.4	2.8
15.	Commercial	2.1	1.9	2.1	2.0	2.7
16.	Total	2.1	1.9	2.2	2.0	2.0
<u>TOTALS FOR ALL 74 CONTRACTORS</u>						
17.	DOD	4.6	4.8	5.1	5.1	
18.	Other defense agencies	6.3	5.5	5.7	4.9	4.9
19.	Commercial	2.4	2.2	2.4	2.3	5.6
20.	Total	2.8	2.7	2.8	2.7	2.3
						2.7

SUMMARY OF PROFITS BEFORE FEDERAL INCOME TAXES
ON DOD SALES BY TYPE OF CONTRACT FOR 74 LARGE DOD CONTRACTORS

(sales in millions of dollars)

	1966		1967		1968		1969		Average	
	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor
<u>CPFF</u>										
Sales	\$ 1,443.7	\$ 123.8	\$ 1,716.4	\$ 142.0	\$ 1,909.4	\$ 197.0	\$ 2,327.0	\$ 282.9	\$ 1,849	\$ 186
Profit (%)	5.2	4.1	4.4	5.0	4.2	4.8	4.1	4.9	4.4	4.7
<u>CPIF</u>										
Sales	2,295.9	258.1	2,835.9	351.8	3,055.2	302.0	2,763.0	283.7	2,738	299
Profit (%)	4.9	4.6	5.0	6.4	5.2	5.9	6.0	4.5	5.3	5.5
<u>FPI</u>										
Sales	5,072.0	333.9	6,923.7	449.0	6,845.4	659.3	7,413.8	687.9	6,564	533
Profit (%)	5.4	6.1	4.4	2.2	3.9	2.3	2.4	-4.3	3.9	0.7
<u>FFP-NEG.</u>										
Sales	6,094.6	1,778.4	7,040.5	2,123.8	8,229.9	2,274.6	7,572.9	2,350.2	7,234	2,132
Profit (%)	4.0	7.0	5.6	4.9	5.9	4.6	5.3	4.0	5.3	5.0
<u>ADVERTISED</u>										
Sales	938.1	-	1,367.0	-	1,252.0	-	1,047.6	-	1,151	-
Profit (%)	-0.1	-	0.9	-	-5.8	-	-9.0	-	-3.4	-
<u>TOTAL</u>										
Sales	15,844.3	2,494.2	19,883.5	3,066.6	21,291.9	3,432.9	21,124.3	3,604.7	19,536	3,150
Profit (%)	4.4	6.1	4.7	4.3	4.4	4.6	3.6	2.5	4.2	4.2

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SCHEDULE 11

SUMMARY OF PROFITS BEFORE FEDERAL INCOME TAXES
ON OTHER DEFENSE AGENCIES SALES
BY TYPE OF CONTRACT FOR 74 LARGE DOD CONTRACTORS

(sales in millions of dollars)

SCHEDULE 12

	1966		1967		1968		1969		Average	
	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor	Prime contractor	Sub-contractor
<u>CPFF</u>										
Sales	\$ 880.0	\$ 89.6	\$1,034.2	\$ 64.6	\$1,175.0	\$ 64.9	\$1,084.6	\$ 59.4	\$1,043.4	\$ 69.6
Profit (%)	2.9	4.0	3.3	3.9	4.0	3.6	3.9	3.0	3.6	3.6
<u>CPIF</u>										
Sales	2,149.6	434.9	1,161.6	222.7	893.0	178.8	524.6	109.0	1,182.2	236.4
Profit (%)	5.6	2.3	5.6	4.6	4.9	5.4	3.1	5.9	5.2	3.8
<u>FPI</u>										
Sales	77.6	16.5	73.7	7.7	72.1	12.9	59.5	12.1	70.7	12.3
Profit (%)	7.1	10.7	12.4	7.2	7.9	4.0	7.2	3.0	8.7	6.5
<u>FFP-NEG.</u>										
Sales	248.7	130.5	258.7	140.7	244.6	129.1	211.9	179.1	241.0	144.8
Profit (%)	6.6	4.4	9.4	5.6	11.0	7.3	14.1	6.4	10.1	6.0
<u>ADVERTISED</u>										
Sales	7.8	-	5.2	-	4.2	-	8.3	-	6.4	-
Profit (%)	-1.4	-	7.7	-	-6.8	-	2.2	-	0.7	-
<u>TOTAL</u>										
Sales	3,363.7	671.5	2,533.4	435.7	2,388.9	385.7	1,888.9	359.6	2,543.7	463.1
Profit (%)	4.9	3.4	5.2	4.6	5.1	5.4	4.8	5.5	5.0	4.5

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SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR NINE DOD AMMUNITION CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES (in billions of dollars)</u>					
1. DOD	0.4	0.7	0.8	0.8	0.7
2. Commercial	1.8	1.8	2.0	2.2	1.9
<u>PROFIT AS PERCENT OF SALES</u>					
3. DOD	5.5	12.2	11.6	9.7	10.3
4. Commercial	13.0	10.7	7.9	9.2	10.1
<u>PROFIT AS PERCENT OF TCI</u>					
5. DOD	11.8	36.3	33.5	28.7	28.3
6. Commercial	14.8	11.4	9.1	11.1	11.5
<u>PROFIT AS PERCENT OF ECI</u>					
7. DOD	21.6	71.3	66.7	51.9	54.4
8. Commercial	27.1	18.5	14.5	18.1	19.2
<u>TURNOVER OF TCI</u>					
9. DOD	1.9	2.8	2.8	2.8	2.6
10. Commercial	1.0	.9	1.0	1.0	1.0
<u>TURNOVER OF ECI</u>					
11. DOD	3.9	5.8	5.8	5.4	5.3
12. Commercial	2.1	1.7	1.8	2.0	1.9

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 12 AIRCRAFT, MISSILE, AND SPACE CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES</u> (in billions of dollars)					
1. DOD	7.8	9.6	9.5	9.5	9.1
2. Other defense agencies	2.4	1.7	1.7	1.3	1.8
3. Commercial	6.9	8.2	10.4	10.4	9.0
<u>PROFIT AS PERCENT OF SALES</u>					
4. DOD	4.9	5.2	4.6	2.6	4.3
5. Other defense agencies	5.2	5.2	5.1	4.0	5.0
6. Commercial	7.6	4.4	7.3	7.2	6.6
<u>PROFIT AS PERCENT OF TCI</u>					
7. DOD	13.8	15.9	13.8	8.5	12.9
8. Other defense agencies	24.7	20.0	20.5	16.4	20.8
9. Commercial	11.0	7.0	11.9	9.9	10.0
<u>PROFIT AS PERCENT OF ECI</u>					
10. DOD	28.7	34.6	29.8	18.4	28.0
11. Other defense agencies	48.8	42.0	44.3	34.1	43.2
12. Commercial	19.4	11.6	20.9	18.7	17.8
<u>TCI TURNOVER</u> (sales/TCI)					
13. DOD	2.6	2.8	2.7	2.7	2.7
14. Other defense agencies	4.6	3.6	3.8	3.7	4.0
15. Commercial	1.3	1.3	1.5	1.2	1.3
<u>ECI TURNOVER</u> (sales/ECI)					
16. DOD	5.8	6.7	6.5	7.0	6.5
17. Other defense agencies	9.3	8.1	8.7	8.5	8.7
18. Commercial	2.6	2.7	2.9	2.6	2.7

SUMMARY OF SALES AND PROFITS BEFORE FEDERAL INCOME TAXES
FOR GOCO PLANTS AND SERVICE CONTRACTS
OF LARGE DOD CONTRACTORS

	1966	1967	1968	1969	Weighted average
<u>GOCO SALES</u>					
(in billions)					
DOD	\$1.7	\$1.9	\$2.3	\$2.5	\$2.1
Other defense agencies	0.7	0.8	0.8	0.8	0.8
<u>PROFIT AS PERCENT OF SALES</u>					
DOD	2.5%	3.1%	3.3%	3.3%	3.1%
Other defense agencies	4.3	4.6	4.2	3.3	4.1

SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 10 DOD SUBCONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES (in billions of dollars)</u>					
1. DOD	0.5	0.7	0.7	0.5	0.6
2. Commercial	5.7	5.4	6.0	6.4	5.9
<u>PROFIT AS PERCENT OF SALES</u>					
3. DOD	9.3	9.0	6.0	3.5	7.1
4. Commercial	9.7	7.6	6.8	6.3	7.5
<u>PROFIT AS PERCENT OF TCI</u>					
5. DOD	12.1	11.3	8.4	5.4	9.4
6. Commercial	10.6	7.3	7.1	6.8	7.8
<u>PROFIT AS PERCENT OF ECI</u>					
7. DOD	20.7	19.2	13.5	7.5	15.4
8. Commercial	16.2	11.6	11.0	10.2	12.2
<u>TURNOVER OF TCI (sales/TCI)</u>					
9. DOD	1.2	1.1	1.2	1.1	1.1
10. Commercial	1.0	.8	.9	.9	0.9
<u>TURNOVER OF ECI (sales/ECI)</u>					
11. DOD	2.2	2.1	2.2	2.1	2.2
12. Commercial	1.7	1.5	1.6	1.6	1.6

SCHEDULE 16

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SUMMARY OF FINANCIAL DATA BEFORE FEDERAL INCOME TAXES
FOR 61 SMALLER DEFENSE AGENCY CONTRACTORS

Line No.	1966	1967	1968	1969	Weighted average
<u>SALES, (in billions of dollars)</u>					
1. DOD	0.6	0.8	0.8	0.8	0.7
2. Other defense agencies	0.1	0.1	0.2	0.2	0.2
3. Commercial	11.0	11.4	12.0	12.9	11.8
<u>PROFIT AS PERCENT OF SALES</u>					
4. DOD	6.4	4.7	3.4	1.7	4.0
5. Other defense agencies	1.9	0.1	2.5	5.5	2.7
6. Commercial	12.3	9.9	9.5	8.2	10.0
<u>PROFIT AS PERCENT OF TCI</u>					
7. DOD	10.3	8.3	6.5	4.6	7.3
8. Other defense agencies	4.1	1.3	5.2	11.8	5.8
9. Commercial	16.2	13.0	12.4	11.1	13.0
<u>PROFIT AS PERCENT OF ECI</u>					
10. DOD	16.4	12.6	9.0	5.0	10.6
11. Other defense agencies	5.1	0.1	7.0	20.3	8.0
12. Commercial	26.2	20.5	19.6	17.9	20.9
<u>TCI TURNOVER (sales/TCI)</u>					
13. DOD	1.4	1.4	1.4	1.4	1.4
14. Other defense agencies	1.6	1.6	1.6	1.8	1.6
15. Commercial	1.2	1.2	1.2	1.2	1.2
<u>ECI TURNOVER (sales/ECI)</u>					
16. DOD	2.5	2.7	2.6	2.9	2.7
17. Other defense agencies	2.7	2.7	2.8	3.7	3.0
18. Commercial	2.1	2.1	2.1	2.2	2.1

EXCERPTS FROM SECTION 408 OF PUBLIC LAW 91-121

"(a) The Comptroller General of the United States (hereinafter in this section referred to as the "Comptroller General") is authorized and directed, as soon as practicable after the date of enactment of this section, to conduct a study and review on a selective representative basis of the profits made by contractors and subcontractors on contracts on which there is no formally advertised competitive bidding entered into by the Department of the Army, the Department of the Navy, the Department of the Air Force, the Coast Guard, and the National Aeronautics and Space Administration under the authority of chapter 137 of title 10, United States Code, and on contracts entered into by the Atomic Energy Commission to meet requirements of the Department of Defense. The results of such study and review shall be submitted to the Congress as soon as practicable, but in no event later than December 31, 1970.

"(b) Any contractor or subcontractor referred to in subsection (a) of this section shall, upon the request of the Comptroller General, prepare and submit to the General Accounting Office such information maintained in the normal course of business by such contractor as the Comptroller General determines necessary or appropriate in conducting any study and review authorized by subsection (a) of this section. Information required under this subsection shall be submitted by a contractor or subcontractor in response to a written request made by the Comptroller General and shall be submitted in such form and detail as the Comptroller General may prescribe and shall be submitted within a reasonable period of time.

"(c) In order to determine the costs, including all types of direct and indirect costs, of performing any contract or subcontract referred to in subsection (a) of this section, and to determine the profit, if any, realized under any such contract or subcontract, either on a percentage of the cost basis, percentage of sales basis, or a return on private capital employed basis, the Comptroller General and authorized representatives of the General Accounting Office are authorized to audit and inspect and to make copies of any books, accounts, or other records of any such contractor or subcontractor.

APPENDIX I
Page 2

"(d) Upon the request of the Comptroller General, or any officer or employee designated by him, the Committee on Armed Services of the House of Representatives or the Committee on Armed Services of the Senate may sign and issue subpoenas requiring the production of such books, accounts, or other records as may be material to the study and review carried out by the Comptroller General under this section.

"(e) Any disobedience to a subpoena issued by the Committee on Armed Services of the House of Representatives or the Committee on Armed Services of the Senate to carry out the provisions of this section shall be punishable as provided in section 102 of the Revised Statutes.

"(f) No book, account, or other record, or copy of any book, account, or record, of any contractor or subcontractor obtained by or for the Comptroller General under authority of this section which is not necessary for determining the profitability of any contract, as defined in subsection (a) of this section, between such contractor or subcontractor and the Department of Defense shall be available for examination, without the consent of such contractor or subcontractor, by any individual other than a duly authorized officer or employee of the General Accounting Office; and no officer or employee of the General Accounting Office shall disclose, to any person not authorized by the Comptroller General to receive such information, any information obtained under authority of this section relating to cost, expense, or profitability on any nondefense business transaction of any contractor or subcontractor.

"(g) The Comptroller General shall not disclose in any report made by him to the Congress or to either Committee on Armed Services under authority of this section any confidential information relating to the cost, expense, or profit of any contractor or subcontractor on any nondefense business transaction of such contractor or subcontractor."

ON-SITE INSPECTION OF 146 CONTRACTS

Chairman PROXMIRE. You maintain, Mr. Staats, that the study of the 146 contracts was not based on a representative sample. Would it be feasible at all for the GAO to do a profit study employing onsite inspection and based on a representative sample?

What would be required in the way of time and manpower in order to do such a study?

Mr. STAATS. I recognize there has been some confusion in the past as to what the relationship has been between these two separate analyses. Obviously, we would not have tried to make two separate analyses to allow the Congress to make up its mind which one is right and which one is wrong.

What we were sensitive to is this issue on return on investment. You recall Admiral Rickover made quite a bit of the issue when he testified on the legislation. So did Mr. Robert Anthony. We made studies going back to 1967 which raised this question in our mind. We knew that Defense had been considering this matter, and we, therefore, decided that while we were making this study we would also make an analysis designed for two purposes.

One was to see whether or not we could, in fact—and this was a matter of dispute—allocate capital to individual contracts. The other was the question of what would this reveal, what difference would it show in terms of spread in the range of profit on contracts.

We would not have needed to take 146 contracts to establish the first point. We could probably have done a good study with 25 or so, but in order to get the needed range of situations and different kinds of industries, we felt it would be necessary to go to a larger number to establish the range, the high and the low, in return on total capital invested.

We did give some consideration to the alternatives of using a statistical contract sample, instead of getting total contract or profits year by year.

One problem was that no one has any record as to the total number of defense contracts that are completed year by year. We know roughly that there are about 180,000 negotiated procurement actions each year above \$10,000. If you make the cutoff at \$1 million, you still have something in the nature of 5,000 procurement actions a year. For the 6-year period covered by our 146-contract analysis, this would have meant some 30,000 contract actions even if you established a million-dollar cutoff.

Since the universe was uncertain and unknown, we would have had to go out and establish that, in the first instance. Our estimate is that in order to be able to have a sample-size that would have been anywhere near valid, even for 1 year, we would have had to review something like 1,600 contracts to cover the various types of contractual situations and different industries.

Obviously, we did not have the manpower available to do this either in terms of expertise or in terms of numbers. It took us something like 75 mandays on every contract to develop data for the original list of 146.

Chairman PROXMIRE. And you went to the 146 among the big ones, the more complicated ones?

Mr. STAATS. They were among the more complicated.

Chairman PROXMIRE. They were the biggest?

Mr. STAATS. That does not necessarily mean the more complicated, though; some of them were large, yes, but not all of them.

Even if we had had the manpower, this would have been a very long-term project. We estimated that, assuming the manpower had been available and the time would have been available, it would still have ended up costing us somewhere between \$12 million and \$14 million to reform the study in this manner. That leaves a question, then—

Chairman PROXMIRE. When you say \$12 million or \$14 million, you are talking about a study for 1 year, 1,600 contracts?

Mr. STAATS. This still would not have provided trend figures, year by year.

Chairman PROXMIRE. You wanted a study of 4 years, 1966 to 1969.

Mr. STAATS. Yes; at least in an aggregate term for a 4-year period.

Chairman PROXMIRE. Four times that?

Mr. STAATS. If you wanted it year by year, it would also have cost that for each year covered. If we could have found the manpower to have done the job.

Chairman PROXMIRE. Do you have to have 1,600 contracts to give you a complete sample?

I understand the Gallup Poll is supposed to give you a result on the entire country on a smaller sample than that, for 200 million Americans.

Mr. STAATS. Well, I don't quite see how you can compare the Gallup Poll to this, if I may say so.

This has been the subject of a lot of discussion all through this whole study. We discarded the idea of a statistical sample very early, because it was plain that it would not be feasible to do it.

Chairman PROXMIRE. What you are really saying is, unless the Congress is willing to spend \$10 million to \$15 million or \$12 million to \$15 million, there is no way of getting a comprehensive, reliable study, based completely on audits?

Mr. STAATS. I frankly do not know where you get the manpower to go in and make that kind of audit. Even assuming you could get a good sample, assuming you have the manpower and the money to do it, I am still not certain in my own mind that that is the best way to do it. For one thing, part of the objective here was to be able to compare commercial and defense profits. Defense contractors' commercial business is not necessarily done on the same basis as they do business with the Government. Government work is by contract. As you know, in many cases, commercial business is not on that basis. You may have a dealer or commercial consignment or some other arrangement. I would not say it is completely impossible, because we did not even consider this alternative the best one on other grounds.

But I do not know how you could get comparable figures for the defense side of their contract work to compare with the commercial, unless you took the total business, year by year. Then I think what we have is comparable to our questionnaire analysis.

Chairman PROXMIRE. Would it be fair to conclude that while not representative of all contractors, the results of the 146 onsite inspections were representative of contracts covering the major areas and products where defense dollars are spent for the largest defense contracts?

Mr. STAATS. I would not agree, and I think it would be a mistake to generalize from this 146, except on the point we have been trying to make here in our statement today. You can get the range, even if you look at our questionnaire data, Mr. Chairman.

Chairman PROXMIRE. Then you feel the over-50-percent return on equity capital that was shown by this 146-on-site audit really does not indicate anything?

Mr. STAATS. No; it does not prove a thing. All that analysis proves is that we ought to be giving more attention to total invested capital as a criterion in establishing profit objectives.

Chairman PROXMIRE. It is very hard to accept that, because this is the only group that we are thoroughly and completely auditing, and it seems to me there is a basis for full reliance.

VERIFICATION OF QUESTIONNAIRE DATA

Mr. STAATS. That is not correct either. In our questionnaire analysis, we audited a random, statistical sample. I can give you—

Chairman PROXMIRE. How many of those did you make?

Mr. STAATS. There were 40 that were reviewed at the contractors' plants and the rest of them were reviewed under the same criteria in Washington, with any field checks that were found necessary.

Chairman PROXMIRE. You made one of 40, and you rely on that, but you do not rely on one three times as big?

Mr. STAATS. You are not talking about something three times as big. You are lumping apples and something else together. Frankly, I do not wish to be critical of the witness that preceded us this morning, but he has never visited our office. He has no knowledge at all of the analysis that went behind the study.

Frankly, I was quite surprised that a person would volunteer as a witness on a matter of this type and know so little about it.

Chairman PROXMIRE. We asked him. He is a widely recognized statistician, as I indicated. He has been cited as an outstanding—let me give you an idea of what his background is: He has a Ph. D. in mathematical statistics; he has held professional executive positions in statistical, mathematical, and other technical work for the Department of Defense, the Department of the Air Force, and the Department of Commerce. He has been awarded the Legion of Merit, the Air Force Medal for Exceptional Civilian Service, and the NSA award for Exceptional Civilian Service. He is the author of numerous publications.

That does not mean he is right; he could be completely wrong. But he has an impressive background.

Mr. STAATS. We have an individual in our office with an equally impressive background. If you care to have him comment on this statement in writing, I would be glad to have him do that.

Chairman PROXMIRE. Yes; we would like to have him do that. That is on Mr. Jacobs' testimony?

Mr. STAATS. Yes; indeed.

Chairman PROXMIRE. That would be most helpful.

Mr. STAATS. I think you will find that his credentials are equally good.

(The material referred to follows:)

GAO'S RESPONSE TO JACOBS

RESPONSE TO PROFESSOR JACOBS' STATEMENT ON THE GAO DEFENSE PROFIT STUDY
BY THE GAO

It is very difficult to understand Professor Jacobs' statistical appraisal and conclusions about profit ratios in the GAO study. The statistical question posed by the divergent set of profit ratios boils down to this: With differing measures of a universe parameter, do we accept results based on a judgment sample or do we accept results based on a 100 percent review of the same universe? The answer to this question must be readily apparent to statistician and non-statistician alike. The statistical limitations of judgment sampling are too well known to warrant repetition here.

Further, the 146 individual contract sample was judgmentally restricted to completed contracts of one million dollars or more and in some instances the contract time period differed from the time period represented by the 100 percent review. The two universes, therefore, cannot be considered comparable. That there is a significant upward bias in profitability based on the individual contracts in the judgment sample is adequately demonstrated by items 1 through 5 beginning on page 33 of the Comptroller General's statement to the committee.

The GAO elected the 100 percent analysis to insure accuracy of the profit ratios. Sampling at the company level would have introduced the risk of misrepresenting defense expenditures by type of contract and/or product class. Stratification would have been next to impossible because of the wide diversification of top defense contractor companies. The 100 percent coverage assures actual representation of all defense expenditures and avoids the type of bias that could have been inadvertently introduced by subjecting companies to random sampling.

Specific points of disagreement with Professor Jacobs' statement follow:

STATEMENT

"... the sample data suggests that had all contracts on defense work in the four-year period when examined by the GAO and profit ratios obtained on that basis, the resulting figures would have shown much higher returns on defense business."

RESPONSE

Statistically speaking, results of the 146 contract judgment sample show no such thing. There is no question but that the two sets of profit ratios are significantly different. This demonstrates statistically the extreme unlikelihood that the two sets of ratios came from the same universe. Statistical theory compels us to believe that had a universe of individual contracts been available and properly sampled, the results obtained should *not* have been statistically significantly different than results from the 100 percent review.

STATEMENT

"Further, it is only to be expected that contractors would keep their books in such a fashion as to keep down their indicated returns on defense contracts. The treatment of such items as depreciation, inventory valuation, and contingency reserves makes it possible to show smaller profits on such work, and it is simply prudent practice to take advantage of such techniques, because of the risk of review and renegotiation of defense contracts. It would be surprising, therefore, if total profits figures based on individual contracts came out no higher than those based on the firms' financial statements."

RESPONSE

Professor Jacobs is apparently questioning the annual profit data obtained by questionnaire. Actually, the profit data developed for the individual contracts was based on data taken from the contractors' records and any criticism of accounting practices would be equally applicable to contract and questionnaire data.

STATEMENT

"Thus, it is the size, rather than the direction, of the indicated differences that is at issue. The profit ratios obtained in the sample are more than twice as large as those obtained from the contractors' figures, and a discrepancy of this

size would throw out the stated conclusions of the study. This is why the study rejects the sample as a basis for estimating overall profits on defense work."

RESPONSE

We agree that the two sets of ratios are significantly different. However, profit ratios based on the judgment sample of individual contracts are not "rejected" because they conflict with stated conclusions but rather because they are not typical or reflective of overall defense profits.

STATEMENT

"My remaining comments deal with the three reasons offered in the study for this rejection. The first reason was the smallness of the sample. But the sample was small only in number. It covered half of the large firms, and the contracts it includes accounted for 6 percent of the total defense work done by the 37 firms during the period of the study. Certainly this is not too small to provide reliable estimates of the profit ratios that would have been obtained had all contracts of the large firms been reviewed."

RESPONSE

Whether individual contracts accounted for 6, 10, 20, or 50 percent of total defense business of 37 firms has no bearing on the representativeness or non-representativeness of the sample. The 37 firm locations were selected judgementally. Contracts were selected judgementally and limited to those of one million dollars or more and have a demonstrable upward bias. These facts simply cannot be overlooked in judging which of the two sets of profit ratios more accurately reflect overall defense profits.

STATEMENT

"The third objection was that the sample could have overstated profits because only completed contracts were reviewed. But the study's own data make it unlikely that bias of this type could account for more than a minor part of the large discrepancy observed. On page 37 it appears that loss contracts accounted for about 8 percent of the sales covered in the sample. This is in line with what is shown on page 61, where it can be calculated that large DOD contractors experiencing losses during a year represented about 7 percent of their total DOD sales."

RESPONSE

Page 37 does report that loss contracts account for 8.2 percent of sales and from the report data on pages 59 and 61 one could arrive at 7 percent of total DOD sales for loss contractors as follows:

Year:	DOD sales (in billions)	Loss sales (percent)	Loss sales (in billions)
1966.....	\$19.1	0.5	\$0.0955
1967.....	24.1	2.4	.5784
1968.....	25.8	3.0	.7740
1969.....	25.8	19.5	5.0310
Total.....	94.8		6.4789

and, loss sales of 6.4789 billion are 6.8 percent or about 7 percent of total DOD sales of 94.8 billion.

However, the 8.2 and 7 percent figures are not comparable. There is no basis for arriving at the total sales value of loss contracts included in the annual DOD sales of the 74 large contractors *since* contractors with an annual overall loss had profitable contracts and those with an annual overall profit had loss contracts.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., July 14, 1971.

HON. WILLIAM PROXMIER,
*Chairman, Subcommittee on Priorities and Economy in Government, Joint
 Economic Committee, Congress of the United States.*

DEAR MR. CHAIRMAN: During the hearings in April of this year on military procurement matters, there was some discussion concerning our study of return on investment under 146 contracts, the results of which were included in our report to the Congress, entitled "Defense Industry Profit Study," dated March 17, 1971.

The questions related to whether the study of individual contract profits reflected the more accurate picture as to the level of defense profits than profits developed on a company-wide basis by the use of questionnaires. As indicated in our report, and in testimony, the 146 contract study was not for the purpose of developing defense industry profit levels but was prepared for an entirely different purpose, namely, to shed light on the question as to whether it was possible to develop cost, profit, and capital investment for individual contracts and whether any wide range in profits on defense contracts existed. It was certainly not our intention to present alternative analyses designed to carry out the statutory directive and at no time had anyone in the General Accounting Office considered the 146 contracts as representing a valid statistical sample.

We have previously furnished as an insert for the hearings transcript some comments upon the statement of Dr. Walter W. Jacobs, Chairman of the Department of Mathematics and Statistics of the American University. The material for this insert was prepared by Mr. Frank Gentile, Assistant Director in our Office's Division of Financial and General Management Studies.

Mr. Gentile graduated from the City University of New York in 1940 with a BBA degree in economics and statistics. In 1940 and 1941 he was with the Department of City Planning, Bureau of Research and Statistics, New York City. After military Service in World War II, Mr. Gentile pursued graduate study of economics and statistics at Denver University in 1946.

During the period 1947 to 1959, he was Research Supervisor for market sample surveys for the Cowles Publishing Company. From 1960 to 1967, he was Analytical Statistician and Supervisory Survey Statistician for the Bureau of Labor Statistics, Department of Labor. In 1964 he received a superior performance award from the Bureau of Labor Statistics, and in 1967 he was awarded a quality promotion for consistent high quality performance.

Since 1967, Mr. Gentile has been employed by the General Accounting Office; from 1967 on, he has had prime responsibility within the Office with regard to matters requiring statistical expertise. In 1970 he received the GAO Meritorious Service Award. He has received training in computer applications to the field of statistics, and he has also taught several seminars designed to acquaint GAO auditors with the usefulness of statistical sampling techniques in connection with our audit activities.

Mr. Gentile has had long and active involvement in the field of statistics, particularly extensive practical experience with statistical sampling techniques, both before and since employment with the General Accounting Office. I consider him highly qualified as an expert in the field.

In addition, during the hearing you raised a question concerning the divergencies between the individual contract profit figures and the annual profit data for the 37 contractors covered by the questionnaire who also had contracts covered by the individual contract study. I am enclosing a statement of explanation of these differences.

Sincerely yours,

(Signed) ELMER B. STAATS,
Comptroller General of the United States.

Enclosure.

REASONS FOR THE DIFFERENCES BETWEEN THE AVERAGE RATE OF RETURN ON
 TOTAL CAPITAL INVESTMENT (TCI) OBTAINED FOR THE INDIVIDUAL CON-
 TRACTS AND THAT OBTAINED FOR THE COMPANIES' ENTIRE DEFENSE SALES

In performing individual contract reviews, we evaluated to the extent practicable, the reasons for any significantly different rates of return on total capital

between the individual contracts we reviewed and for the company as a whole or for the segment of the company that performed the contracts. In some instances we did not have available the annual rates of return on total defense business reported in the questionnaires since many of the latter were not completed until late in 1970. As a result, the reasons for the differences are incomplete in some cases.

The limited verification of the matters discussed below was determined by our auditors at the contractors' plants based upon their appraisals of the reasonableness of the explanations furnished by the contractors involved. Nine of the 37 companies that were included in the individual contract reviews had average contract rates of return that were less than their average annual rates of return on defense work. Another contractor's average contract rate was about the same as his average annual rate of return on defense work. Therefore, these companies are not discussed further. Explanations pertaining to five of the contractors were furnished in the GAO testimony. At three other contractor plants we made no effort to develop the causes of differences in individual contracts and overall company profit rates on defense work due to time restrictions. Information pertaining to the remaining 19 companies represents facts or judgment developed by our auditors.

1. At one corporation contracts reviewed were for aircraft. The average rate of return on TCI for these contracts was about 70 percent greater than the average rate of return on defense business for the corporation as a whole over the four years (27.4 percent and 16.2 percent, respectively). The difference in rate of return appears to be largely attributable to a low contractor capital investment with respect to the contracts examined because of the use of Government-furnished equipment and leased assets as well as progress payments. The average rate of profit on sales for the contracts was comparable to the average profit on sales on the company's defense sales over the four-year period.

2. A subcontract examined at another company was for metal parts of an aircraft. The rate of return of TCI for the subcontract was about three times the average rate of return for the company's entire defense business for the four years (6.7 percent and 2.3 percent respectively). However, it was reasonably comparable to the company wide rate for the first three years. In the fourth year the company incurred substantial losses on defense business which reduced the average rate of return for the four years. Losses in fourth year resulted from start up problems at one location, abandonment of another facility and a general slowdown in major DOD programs.

3. Contracts examined at another company were primarily for military vehicles and ammunition. The average rate of return on TCI for the contracts was about 4½ times the average rate of return on DOD sales company wide (55.9 percent and 12.0 percent respectively). The high rate of return was typical of the division that produces vehicles, however, the division had a higher average rate of return than the average of other contractor divisions on DOD work. The ammunition contract was very profitable due largely to cost underruns (profit on sales was about 12 percent) and incentive fee provisions of the contract.

4. Contracts examined at another company were for overhaul, refueling, and testing of vessels. Rate of return of TCI for contracts averaged about 3½ times the average company rate of return on DOD work (19.8 percent and 5.8 percent respectively). The contracts we examined were not typical of the work at the division which was largely new construction and vessel design. During the four years the division never earned an annual rate of return on TCI higher than 8.8 percent. The company is diversified and manufactures many unrelated products for DOD.

5. Contracts reviewed at another company were for aircraft. The average rate of return on TCI was about twice the corporate wide rate for DOD sales (38.5 percent and 19.2 percent respectively). Contractor officials stated that the contracts selected (3 firms fixed-price and 1 cost-plus-fixed-fee) were not representative of their overall business which includes a different mix of contract types. Two of the contracts were firm fixed-price follow-on contracts.

6. Contracts reviewed at another contractor were for aircraft tow targets, ammunition and other items. The average rate of return on TCI for the contracts was about 5 times the average corporate wide rate on DOD sales (78.5 and 15.4 percent respectively). The high rate of return on contracts was attributable largely to cost underruns on the tow target contract which was awarded without actual prior cost data being available. Also, the ammunition contracts benefitted from the contractor maintaining a higher production

rate than required by the contract. In addition this conglomerate corporation sold many other products lines to the Government and the contracts examined were not necessarily representative of other segments of the company.

7. The contracts reviewed at an aerospace division of an electronic company had an average rate of return on TCI about 3 times the average rate of return on the contractor's business with DOD company wide (59.6 percent and 21.2 percent respectively). The contractor stated that rates of return on TCI for all selected contracts were higher than the divisional average because of fast payment terms on cost-type contracts and fixed-price contracts with progress payments. He stated that these fast payment terms minimized investment in inventories. He further stated that only 20 percent of the contracts in this division had such fast payment terms, indicating that our selection was not representative.

8. Contracts reviewed at an aerospace segment of another aircraft company had an average rate of return on TCI about $2\frac{1}{2}$ times the average corporate rate on TCI for DOD business (15.7 percent and 5.9 percent respectively). The results of the contracts were only slightly higher than the average for the aerospace segment of the company, however, the aerospace segment has an average rate of return over 3 times the corporate rate. In part, these higher rates of return were due to the much higher sales turnover rate caused by low contractor investment and high percentage of Government-owned facilities. Also, 2 of the 4 contracts had above average profits on sales and two had faster than normal progress payments.

9. Contracts examined at a vehicle manufacturing segment of a diversified company had an average rate of return on TCI almost 3 times the average rate of return for the company as a whole on DOD sales (40.3 percent and 15.1 percent respectively). The vehicle manufacturing segment accounts for the bulk of the DOD sales and 2 of the 3 contracts showed rates of return that were comparable to the vehicle segment's overall rate. However, the third contract earned about 4 to 5 times the rate experienced on the other two for the following reasons.

- (a) Profit on sales was about twice as high as normal.
- (b) The value of contractor assets was substantially lower during the period of production and subsequently increased about 200 percent.
- (c) Tooling expenditures were relatively low.
- (d) Progress payments and final payment were received faster than usual.

10. Contracts at another contractor were for naval electronic items. The average rate of return on TCI for the contracts was about twice the average company-wide rate for DOD sales (19.0 percent and 8.8 percent respectively). The higher rate of return was explained for the most part as being due to substantially higher than average profits on sales in 3 of the 4 contracts examined.

11. Contracts were reviewed at an aerospace group of a diversified corporation. The average rate of return on TCI for the 5 contracts was about twice the average rate of return on defense business (34.6 percent and 15.6 percent respectively). However, one of the contracts had a substantial loss. The high average rate of return was in major part explained by a relatively low contractor investment and a substantial amount of Government furnished and leased facilities.

12. Contracts were examined at a plant of an aircraft manufacturer. The average rate of return on TCI for the contracts was more than twice the average rate on all defense business (63.0 percent and 28.0 percent respectively). One contract accounted for the high average rate of return. This contract had a profit on sales at twice the average rate.

13. Contracts were reviewed at a plant producing missiles. The average rate of return on TCI for the contracts was about twice the average rate of return for the company overall on defense business (31.6 percent and 17.5 percent respectively). The higher rate of return is characteristic of the part of the company that produces missiles. In part this is due to the comparatively low net book value of company owned assets in the division that produces missiles which serves to provide a reduced base on which to measure return on investment.

14. Contracts at another contractor were reviewed at the defense division of an electronics company. The average rate of return on TCI for the contracts was about 5 times the average rate of return on defense business for the company (17.9 percent and 3.6 percent respectively). The rate of return on the contracts was not characteristic of average rates of return for the defense division which averages almost 8 percent. The contractor stated the following reasons for the high rates on the contracts.

- (a) Actual indirect costs lower than estimated.
- (b) Allowances in the contract price for contingencies that did not materialize.
- (c) Reliability of product was high, thus avoiding redesign and reinstallation.
- (d) Low contractor capital investment because 40 percent of the contract was performed by subcontractors.
- (e) The contractor obtained quick approvals from agency on plans, procedures and specifications.
- (f) The contract was completed ahead of schedule due to efficient manpower.

15. Contracts reviewed at another contractor were for ammunition which showed losses on 3 of the 4 contracts and a moderate rate of return on the fourth. Contract rates of return on TCI averaged about $\frac{2}{3}$ of the loss shown for the whole company (-6.9 percent and -11.5 percent respectively). We understand that the greater loss reported on the annual basis was caused by losses on advertised contracts during 1967 and 1968.

16. Contracts reviewed at another contractor were for ammunition. The average rate of return on TCI for the contracts was about $1\frac{1}{2}$ times the average rate of return for the annual defense business (12.9 percent and 8.8 percent respectively). The increased rate of return on the contracts we examined was due almost entirely to the higher profit on sales obtained for these contracts. The contractor advised that this occurred because of the less competitive nature of the product and the fact that fewer processing operations were required than for most of his products.

17. Contracts were reviewed at another contractor location producing navigational equipment. The average rate of return on TCI was about twice the rate of return on defense business for the company as a whole (22.6 percent and 10.2 percent respectively). The contractor stated that the contracts we selected were uncharacteristic since it was incurring losses or doing poorly on most of his defense business. The contract that showed the highest rate of return, about 50 percent, as caused by a lower investment in working capital for the contract and high utilization of Government furnished equipment.

18. Contracts reviewed at another space and missile system manufacturer had an average rate of return on TCI about twice the rate of return on TCI for defense sales of the company as a whole (33.8 percent and 17.7 percent respectively). The rates of return for the division that performed the contracts that were comparable to those earned companywide on defense business. Reasons given for the high rates of return on 3 of the 5 contracts (2 were at or below average) were (a) high award fees and rapid progress payments that reduced working capital, (b) earning of delivery incentives and other bonus profits, and (c) a small cost overrun.

19. Ammunition contracts reviewed at another contractor had average rates of return on TCI about 4 times the average rate of return on defense sales for the company as a whole (57.3 percent and 13.5 percent respectively). The major cause of the high returns on the contracts was that most of the equipment used by the contractor to produce the ammunition was Government furnished as well as the unusually high turnover rate of inventory. This company is in a capital intensive industry and its normal production produces a lower return on capital than it does on sales.

JACOBS' REPLY TO GAO RESPONSE

RESPONSE BY PROFESSOR JACOBS TO GAO'S STATEMENT ON THE GAO DEFENSE PROFIT STUDY

The GAO response to my statement persists in ignoring the fact that *annual profit ratios* for defense business are affected by accounting choices that do not affect the figures on *individual contracts*. Therefore, the GAO's "100 percent review" was made on a universe entirely different from that measured by the "judgment sample," and the profit ratios from the former are therefore more subjective than those from the latter study. Neither of these approaches offers a completely accurate basis for comparing the profitability of defense and commercial business.

The very large differences shown in the sample data between the ratios for defense and other business are not easily explained away as sampling bias, even

in a judgment sample of the kind that was taken. I know of no easy way to estimate how much standard accounting decisions could affect annual profit ratios by type of business, but the results from the sample strongly suggest that the effect of such treatment was to hide the higher profitability of defense business.

I repeat that the analysis that accepted without any reservation the reported profit ratios, and rejected the contradicting evidence of the sample data, seems invalid to me.

Mr. STAATS. Mr. Chairman, the thing that surprises me about this is that even back when we first initiated the study, I thought it was clear to everybody why we were making the study. Obviously, we were not going to make two studies on two different bases and let the reader take his choice between them. That would have been a waste of money and not responsive.

If I were making the study today, I would do it the way we did it. I would do it with questionnaires, and I would do it year by year, and I would do it so you could get trends and compare commercial with defense profits.

Chairman PROXMIRE. There are, of course, statistical techniques for establishing the correct size of a sample, if you use a statistical sample. You apparently did not use a statistical sample. On what, then, do you base your statement that 1,600 firms would be the correct sample size?

Mr. STAATS. This is on the basis of the analysis that our statistical sampling staff made, taking into account the different kinds of factual situations which would be necessary.

Chairman PROXMIRE. Would you give us a copy of that analysis?

Mr. STAATS. A competent level which would be necessary.

Chairman PROXMIRE. I say, would you give us a copy of your analysis?

Mr. STAATS. Yes, we will make it a part of the response to the testimony this morning.

(The material referred to follows:)

POSSIBILITY OF USING A STATISTICAL SAMPLE OF INDIVIDUAL CONTRACTS IN LIEU OF QUESTIONNAIRES AS A MEANS OF ASSESSING THE LEVEL OF DEFENSE PROFITS

JUDGMENT SAMPLE—STATISTICAL CONSIDERATIONS

The 146 contract sample used in the GAO report is a judgment sample. The 37 contractor locations and individual completed contracts were selected on the basis of judgment alone.

A judgment sample cannot be objectively evaluated by statistical methods. This precludes determination of representativeness and any basis for measuring and quantitatively expressing the sampling error (precision) and associated degree of confidence in the sample estimates.

STATISTICAL SAMPLING OF INDIVIDUAL CONTRACTS

Statistical sampling of individual contracts was not seriously considered because of the lack of a readily available identification of the universe from which a random sample could be selected. The development of such a universe by the GAO would have been prohibitive within the constraints of time, cost, and available manpower. The attachment covers this aspect in detail.

Statistical sampling cannot be accomplished without a well defined and readily accessible universe. This fact alone is sufficient reason for not approaching defense profits on an individual contract basis. However, the question of how large a sample would be required to provide reliable estimates of profit ratios assuming the availability of a proper universe, still remains.

Unfortunately, there is no valid statistical basis for using the judgmentally selected 146 contract sample for addressing the question of required sample

size. However, the profit study does include a valid statistical sample of 47 smaller companies that can be statistically evaluated and used to shed a great deal of light on sample size requirements.

ANALYSIS—THE SAMPLE OF COMPANIES SMALLER THAN THE TOP 100 DOD CONTRACTORS

This sample was developed by taking every 72nd contractor from an alphabetical listing of contractors receiving awards of \$10,000 or more and totaling \$500,000 or more in fiscal year 1968.

The overall profit/TCI ratio for the 47 company sample was found to be 6.2 percent. The calculated sampling error of this ratio is plus or minus 7.0 percent at the 95 percent level of confidence. Statistically, the best we can say about this result is that there is a 95 percent chance that the true universe profit/TCI ratio lies somewhere between—0.8 percent and 13.2 percent (6.2% plus or minus 7.0%).

It is apparent that the sample size of 47 does not provide sufficient reliability to permit a meaningful estimate of universe profitability. The sampling error, on a relative basis, exceeds 100 percent (i.e., the absolute sampling error of plus or minus 7.0 percent is more than 100 percent of 6.2 percent, the estimated profit/TCI ratio).

Using the standard deviation calculated from the sample as an estimate of universe variability, it is an easy matter to compute the sample sizes required to reduce the plus or minus 7.0 percent sampling error to any level deemed acceptable. The table below shows the required sample sizes for various acceptable sampling errors at the 95 percent level of confidence.

	Absolute sampling error must be reduced to (percent)—	Sample size required is—
For a relative error of—		
50 percent.....	13.1	240
40 percent.....	2.5	372
30 percent.....	1.9	642
20 percent.....	1.2	1590

¹ The sample size of 240 would reduce the sampling error to plus or minus 3.1 percent which would provide a 50-percent relative sampling error of the estimated 6.2-percent ratio.

(Due to the relatively small dollar value of defense procurement involved in the smaller companies, we decided that the cost and manpower required to get a sample that provided an acceptable degree of accuracy was not justified.)

SAMPLE SIZE REQUIREMENTS FOR AN INDIVIDUAL CONTRACT SAMPLE

From the 47 company sample evaluated above we can infer sample size requirements for an individual contract sample.

The 47 companies had a range in profit/TCI ratio of -83 percent to +37 percent. The range is a quick indication of universe variability and the amount of variability determines sample size.

The 146 contract judgment sample had a considerably greater range in profit/TCI ratios of -78 percent to +240 percent. Therefore, we can reasonably infer that sample sizes shown above are indicative of sample size requirement for individual contracts.

ATTACHMENT A

PROBLEMS IDENTIFIED IN DEVELOPING A UNIVERSE OF CONTRACTS FROM WHICH A RELIABLE STATISTICAL SAMPLE COULD HAVE BEEN DRAWN WHICH MIGHT HAVE SERVED AS AN ALTERNATIVE BASIS FOR ASSESSING THE LEVEL OF DEFENSE PROFITS

The population of Defense contracts of \$10,000 or more completed during any period is unknown. Such a population might be constructed by querying every contractor that had received contract awards. About 180,000 contract actions of \$10,000 or more are consummated each year.

Even if the population was limited to contracts over \$1 million we estimate that the number of contractors receiving such awards would be about 800 in a

single year. The quantity of such contracts exceeds 5,000 per year or about 30,000 for our 6-year period. The six years cover the period 1964-1969 after the weighted guidelines method of negotiating profit were put in use by DOD. The sample size required from any of the possible universes, as indicated previously, would have to be substantially greater than the 146 contracts covered in our study in order to produce reliable results.

To obtain reliable data by contract type, and commodity would require additional sampling of contracts in similarly large proportions after the development of data as to the universe of each contract type and each commodity.

FEASIBILITY OF USING DATA IN THE DOD PROFIT REPORTING SYSTEM

DOD initiated a system in January 1964 for reporting actual profits earned as a percent of costs on negotiated contracts other than firm fixed price. Firm fixed price negotiated contracts represent about 55 percent of dollar value of contract awards. Data obtained by DOD on completed contracts in any of the years after 1965 was limited to contracts over \$200,000 and was obtained from selected locations only. As a result DOD has accumulated only limited data on completed fixed price redeterminable, fixed price incentive, cost plus incentive fee and cost plus fixed fee negotiated prime contracts for the period January 1964 through June 1969.

Since the data accumulated by DOD was very incomplete and because the bulk of the dollar values of the contracts were awarded before 1964, it was not possible to use this source for obtaining a representative selection of contracts to review.

PROBABILITY OF AN OVERREPRESENTATION OF PROFITABLE CONTRACTS IN GAO'S SAMPLE OF 146 CONTRACTS

We said on page 38 of our profit study report that

"We considered only completed contracts where profits or losses were ascertainable and, as a result, probably avoided many loss contracts having large unsettled claims."

We believe that contracts that involve claims or litigation are not of average profitability but are likely to involve either a low profit or a loss which the contractor is seeking to mitigate.

A question which might be asked about this point is, wouldn't the 146 contracts that we reviewed include a representative number of contracts on which claims had been filed and adjudicated?

DOD has advised us that, based on a very limited analysis, it had determined the average execution period of large dollar value contracts to be from 3-4½ years for the various types of contracts. If a contract goes into formal litigation before the Armed Services Board of Contract Appeals, an additional 15 months on average is consumed. If an appeal is subsequently taken to Court of Claims additional time is required. Thus, on average, a period of about 5 to 6 years is required for contracts involving appeals to the Board or Court of Claims.

In our sample we selected the most recently completed contracts and, with a few exceptions, only those started after Jan. 1, 1964, the date DOD adopted the weighted guidelines system for establishing profit objectives for negotiated contracts. This meant that we were looking at contracts that could have been awarded for a maximum of 6 years. Of the 146 contracts we reviewed, 138 were less than 6 years old at the time of completion, indicating that relatively few involved claims. A further check disclosed that none of the contracts included in our sample was appealed to the ASBCA or the Court of Claims. Two had small claims not considered by the auditors of such significance as to warrant exclusion from the study.

FEASIBILITY OF OBTAINING COMPLETED CONTRACT DATA FROM THE 74 LARGE DOD CONTRACTORS

One possible approach to obtaining a viable population could have been to obtain a listing from each of the 74 large DOD contractors of all contracts completed during a four year period, regardless of when they were awarded. Conceivably this could include contracts awarded in the mid 1950's and these would have had to be considered in order to avoid or minimize the bias discussed above. This in itself would have been a formidable job since many of the 74 contractors have numerous subsidiary organizations. For example, one contractor consisted

of more than 100 subsidiary companies as well as numerous organizational points below the subsidiary company level that would have had to report on completed contracts.

Once these listings were obtained it would have been necessary for each to be checked at the site to determine whether it was accurate and complete prior to inclusion in a population from which selections might be made. We have no real way of estimating how many contracts would be included in this population except to say that it should approximate the award statistics of about 60 percent of DOD procurement dollars.

Once such a population was accumulated it would then be necessary to take a random sample to determine the final sample size necessary to produce statistics that would be of an acceptable level of statistical reliability.

Mr. STAATS. I want to make it clear the 1,600 would be only 1 year.

Chairman PROXMIRE. That is right. I understand that.

I note in your statement a variety of explanations for the differences between the contract and annual profit data of the 37 contractors whose books and records were examined.

When and in what form were these explanations obtained?

Can you provide copies of them for the record?

Mr. STAATS. I am not sure I get your question.

Chairman PROXMIRE. You have a variety of explanations for the differences between the contracts and the annual profit data, the 37 contractors whose books and records were examined. When and in what form were the explanations obtained, and can you supply these companies for the record?

I am referring to attachment V to your statement where you say: "We obtained numerous explanations for differences between contract and annual profit data of the 37 contractors."

Mr. STAATS. Yes.

Chairman PROXMIRE. I am asking if you can supply copies of the explanations for the record.

Mr. STAATS. Yes. I think these listed here were most of them, but we may be able to elaborate on them for the record.

Mr. FLYNN. I might mention, Mr. Staats, that as a part of our review, in looking at the individual contracts, we were concerned with identifying any major differences between the contract results and the overall results of the companies involved. So, in each case, we asked our auditors at the sites to check on the overall results of the company for that particular site. Also, when we mention that we went to 37 contractors that is only 37 locations. Some of these contractors may have had hundreds of production sites.

So, as part of the work of checking out their own individual contract reviews, we had the auditors try to get an explanation of unusual results, do any additional work necessary, and in general make sure we had adequate data.

These explanations are in our work papers and it was from our work papers that these few samples were drawn.

Chairman PROXMIRE. How large a sample for the top 100 contractors?

Mr. STAATS. The questionnaire list?

Chairman PROXMIRE. Yes.

Mr. STAATS. We took 81 and we dropped out one of those—

Chairman PROXMIRE. You took 80 of the—

Mr. STAATS. Eighty-one, wasn't it?

Mr. FLYNN. We dropped out one. We also dropped out certain contractors—oil companies that were more competitive.

Mr. STAATS. We ended up with 74. We started with 81. One of these had such a heavy commercial portion of his business that we dropped it out because it would have distorted the picture. Then, we took out six who were predominantly involved in operating Government-owned facilities. We reported on the latter operations separately.

Chairman PROXMIRE. Supposing Congress asked you to give us a report on the profits of the top 100 defense contractors. How large a sample would you have to have of the group, 100 or 80 or what number? How many would you have to have to do an audit?

Mr. STAATS. I would probably want to take all of them.

If you wanted audited results then I would take all. I would not do it on a sample basis.

Chairman PROXMIRE. Could you get a reliable sample short of taking all; would you have to have 100?

Mr. STAATS. I would like to think about that.

Chairman PROXMIRE. When you think of it, would you give us an estimate as to the cost?

Mr. STAATS. I would not necessarily audit in detail everyone of them. But I would take their figures and check them against their audit and financial statements, and I would audit in detail a certain number.

Of the 152 questionnaires, we audited 40 on a random-sample basis. On those we made the 10-percent profit adjustment. Then, we audited the rest on a central basis, looking at the financial data and looking at the contractors' statements of procedures.

Chairman PROXMIRE. You did not audit the contract, just the financial statement?

Mr. STAATS. We audited the way they allocated their costs, overheads, and so forth.

COST OF AUDITING TOPS 100 CONTRACTORS

Chairman PROXMIRE. Our question is: What will it cost to give us this kind of a study of the profits of the top 100 defense contractors?

Mr. STAATS. I would have to think about that.

Chairman PROXMIRE. On the basis of onsite audits.

Mr. STAATS. I could not give you an answer offhand.

Chairman PROXMIRE. Could you, for the record, give us that?

Mr. STAATS. Yes, sir.

(The following was subsequently supplied:)

In our study we obtained questionnaire data from 81 of the top 100 companies accounting for about 63 percent of DOD procurement in fiscal year 1969. In selecting the 81 we excluded 7 oil companies on the basis that petroleum contracts were generally awarded by DOD on the basis of price competition. We also excluded 2 nonprofit contractors. The remaining 10 companies in the top 100 that were not selected account for only about 1.4 percent of the DOD procurement in fiscal year 1969.

We found that the defense work of 6 of the 81 companies consisted almost exclusively of service type contracts or the operation of Government owned facilities. We summarized profit data pertaining to these types of operations separately. In summarizing data for the remaining companies, data for one company was excluded because its great volume of commercial sales would have substantially altered our commercial data and the result would not have been representative of most of the companies included in the study.

All 20 of the top 100 DOD companies excluded from our study accounted for less than 7 percent of DOD procurement in fiscal year 1969.

We received 152 completed questionnaires—81 from the top 100 DOD contractors and 71 from smaller defense contractors or subcontractors. We selected 40 of the questionnaires for verification at the contractors' offices where they were prepared. In addition, we carefully reviewed each of the remaining questionnaires and as a result of this work we also made visits to contractors' offices as we deemed necessary for checking any apparently questionable data. We did not, of course, completely verify all the data because it was not practicable to do so. We did the work we considered reasonable in the circumstances. In this connection we made use of the contractors' financial statements which had been audited by their certified public accountants.

As a result of our 40 site reviews and careful checking of the remaining 112 questionnaires, the profit data was revised to some extent. As an indication of the extent of change, the return on total capital investment (TCI) changed as follows:

40 Questionnaires reviewed at the sites.—Return on TCI for DOD work increased 1.2 percent from 9.7 to 10.9 percent, a 12.4 percent increase. Return on TCI for commercial work decreased 0.4 percent from 13.6 to 13.2 percent, a decrease of 2.9 percent.

112 Questionnaires reviewed largely in Washington.—Return on TCI for DOD work increased 0.5 percent from 10.3 to 10.8 percent, an increase of 4.9 percent.

Return on TCI for commercial work decreased 0.1 percent from 13.4 to 13.3 percent, a decrease of 0.7 percent.

We believe we did the verification work necessary to see that the questionnaire data was reasonably accurate. The questionnaire verification work we performed cost about \$1 million. To obtain and verify on a limited basis questionnaire data of all of the top 100 companies in the same manner that we reviewed the 40 questionnaires would have cost \$2 to \$3 million without appreciably increasing the coverage of defense procurement. To do fairly complete audits at all of the top 100 contractors would have been prohibitive as these contractors are made up of several hundred subsidiaries including many major companies. It would have been very costly and further, we would not have had the manpower to conduct such reviews in the time available.

TABLE COMPARING GAO WITH LMI QUESTIONNAIRE DATA

Chairman PROXMIRE. One of the items left out of the final version of the profits study was a table comparing GAO's questionnaire data with LMI's.

I wonder if you could tell us why this table was left out?

And isn't it true that the table does reflect a significantly higher rate of profits in the GAO questionnaire than in LMI's questionnaire?

How would you explain the variances?

Mr. STAATS. We have that information. We use it as a handout. The reason we left it out is that the LMI data is on a different basis and you can get confused in comparing it with our data. We had to convert our data to their basis to make a comparison. Mr. Flynn can give you that. We have the handout available. The data was confusing, so we dropped it out.

Mr. FLYNN. As Mr. Staats said, there were differences.

LMI included, in their definition of total capital, just long-term debt and equity capital; we included all capital regardless of the source. (The following was subsequently supplied:)

U.S. GENERAL ACCOUNTING OFFICE COMPARISON OF GAO AND LMI PROFIT DATA FOR LARGE DOD CONTRACTORS

Under a contract, awarded by the Department of Defense, the Logistics Management Institute (LMI) had conducted a review of defense industry profits covering the years 1958 through 1968. For the year 1968 LMI stated that it had included in its review all contractors with over \$200 million in annual defense

sales (high volume) and a representative sample of companies whose annual defense sales were between \$25 million and \$200 million (medium volume). In prior years about 10 percent of the high volume contractors did not participate. LMI's review was performed with the voluntary participation of contractors and LMI did not have any legal right of access to the participant's records, other than published financial statements. LMI, therefore, used other means in an attempt to confirm the statistical validity of its findings.

Most of GAO's profit data for the large defense contractors compares very closely with similar data developed by LMI. Certain adjustments were necessary to compare the data, however. The main differences in our studies were as follows:

1. LMI defined total capital investment as equity capital plus long term debt. We included the investment in all assets used by the company in producing and selling material, regardless of whether the investment was financed by current liabilities, long term debt, equity capital, or other items on the liability and capital side of the balance sheet.

2. In computing return on total capital investment we added interest expense to profit since we considered the related liabilities as part of total capital. LMI did not add interest on the basis that it wanted to compare its data with data published by the Federal Trade and Securities and Exchange Commission. The data of the Commission was after deduction of interest. LMI also made a special study and concluded that the relationships between defense and commercial profits were not affected significantly by not adding interest for computation of return on total capital investment.

3. LMI's criteria for including companies in its studies provided for including most companies with over \$200 million in annual DOD sales and a sample of companies having annual DOD sales of between \$25 million and \$200 million. A further specification was that the companies do at least 10 percent of their business with DOD. As mentioned previously, some of the larger companies we included did not have 10 percent of their business with DOD.

We reviewed our 74 large defense contractors and selected all companies with over \$200 million in annual sales doing at least 10 percent of their business with DOD. We found 32 such companies. Through screening and discussions with LMI representatives we narrowed down our list of 74 contractors to a total of 44 that we believe could have been included in LMI's sample of 43 companies. We then revised our profit data for the 44 companies in accordance with LMI's criteria. LMI had completed data for the years 1966 through 1968 that were also covered in our study. The following is a comparison of the data, averaged on a weighted basis for the three year period.

	GAO	LMI
Sales (billions):		
DOD.....	\$18.9	\$17.8
Commercial.....	\$27.7	\$18.4
Profit as percent of sales:		
DOD.....	4.3	4.1
Commercial.....	8.2	7.6
Profit as percent of total capital investment:		
DOD.....	17.2	13.4
Commercial.....	17.6	16.4
Profit as percent of equity capital investment:		
DOD.....	23.2	18.7
Commercial.....	23.9	23.3
Turnover of total capital investment:		
DOD.....	4.0	3.2
Commercial.....	2.1	2.2
Turnover of equity capital investment:		
DOD.....	5.4	4.5
Commercial.....	2.9	3.1

Note: For more detailed data see schedule attached.

Our DOD sales dollars compare very closely with LMI but we show significantly more commercial sales. This may be due to the fact that LMI used data from a defense division of some contractors while we requested data for total operations of each company included in our study.

Our profit data as a percent of sales appears very comparable to LMI's for both DOD and commercial business. The rate of return on total capital investment for DOD sales, however, we show a rate of 17.2 percent, compared to LMI's rate of 13.4 percent. We also show a slightly higher rate for commercial business

than LMI so that our difference does not appear to be the result of an overall shift in allocation of capital between defense and commercial sales. As a result of our reviews of the data initially reported by the contractors, the average rate of return on total capital investment relating to DOD business increased about 1.0 percentage point. This could account for a portion difference in our data and LMI's, assuming that the data furnished to us was the same as that furnished to, and used by LMI. It is difficult to explain the remaining 7.8 percent difference without making a company by company comparison of data with LMI and this did not seem feasible since much of the data was provided to both GAO and LMI on the basis that individual company results would not be disclosed. We and LMI used an "other" category of business where the contractors reported sales, and related capital data that was not comparable with DOD sales. LMI's data for this category was not published and it is possible that some portion of the capital allocated to DOD and commercial sales for LMI's study was allocated to the "other" category for our study.

The difference in capital allocation also results in our having higher rates of return on equity capital and higher rates of capital turnover than LMI for DOD business.

COMPARISON OF GAO PROFIT DATA (BEFORE FEDERAL INCOME TAXES) WITH LMI PROFIT DATA FOR 44 DOD CONTRACTORS MEETING LMI STUDY CRITERIA

Description	1966		1967		1968		3-year weighted average	
	GAO	LMI	GAO	LMI	GAO	LMI	GAO	LMI
Sales (billions):								
DOD.....	\$15.8	\$14.7	\$19.8	\$17.9	\$21.1	\$20.8	\$18.9	\$17.8
Commercial.....	\$24.7	\$13.5	\$27.2	\$17.6	\$31.2	\$24.2	\$27.7	\$18.4
Profit and sales (percent):								
DOD.....	4.4	4.5	4.4	4.2	4.0	3.9	4.3	4.1
Commercial.....	9.3	9.2	7.5	6.4	8.0	7.6	8.2	7.6
Profit and T.C.I. (percent):								
DOD.....	17.2	13.0	17.9	13.0	16.7	12.8	17.2	13.4
Commercial.....	20.4	19.7	15.8	13.4	17.1	16.3	17.6	16.4
Profit and E.C.I. (percent):								
DOD.....	22.4	17.4	24.2	18.9	22.9	18.5	23.2	18.7
Commercial.....	27.1	27.5	21.8	19.5	23.3	23.8	23.9	23.3
Turnover of T.C.I. sales/T.C.I.:								
DOD.....	3.9	2.9	4.0	3.1	4.1	3.3	4.0	3.2
Commercial.....	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2
Turnover of E.C.I. sales/E.C.I.:								
DOD.....	5.1	3.9	5.4	4.5	5.7	4.8	5.4	4.5
Commercial.....	2.9	3.0	2.9	3.1	2.9	3.1	2.9	3.1

Chairman PROXMIRE. Then, I would think that your return would be less rather than more, since your capital is greater. But it was reversed. You showed a higher return.

Mr. FLYNN. We adjusted our data to get it on the same basis, to make a comparison. Therefore, the comparison we show is on the same basis, but it gets confusing when we use one basis in our report and we recast to compare with LMI. As a result, we decided to leave it out.

As you mentioned, there is a difference, particularly when you get to return on total capital and return on equity capital investment.

For defense business, on total capital investment, we had a rate of return of 17.2 percent. LMI had a rate of 13.4 percent. So it is a fairly significant difference, I would say.

Chairman PROXMIRE. What is the reason for the difference?

Mr. FLYNN. That we could not tell. We did not have the complete company-by-company data that LMI developed. We tried to do it on an overall basis, sir, picking companies we thought met LMI's criteria, but we do not have a detailed explanation. LMI's data was furnished to them on the basis it would only be used for their study. It was a voluntary submission by the contractors, so LMI felt they were re-

stricted as to the use that they could make of the data and they did not feel it proper to disclose it to us.

Chairman PROXMIRE. Why didn't you show the table?
Why did you not include that in your report?

Mr. FLYNN. As I say, it gets confusing when you have two different rates for the same thing, really three rates: LMI's rate, our recomputed rate, and the rate we reported.

Chairman PROXMIRE. But you adjusted it to make them comparable. Why didn't you include that?

Mr. FLYNN. We could have included that. But we thought it was more confusing to put it in.

DOD PROFIT REVIEW TABLE

Chairman PROXMIRE. I would like to show you a table from DOD's profit review of defense contracts for fiscal year 1970.

Without objection, that will be inserted in the record at this point.
(The table referred to follows:)

PROFIT RATES ON COMPLETED CONTRACTS, BEFORE AND AFTER WEIGHTED GUIDELINES (CONTRACTS COMPLETED IN FISCAL YEARS 1959-70)

[Dollar amounts in millions]

Department and type of contract	Awarded before January 1964						Awarded after December 1963					
	Initially negotiated			Adjusted profit (percent)	Final		Initially negotiated			Adjusted profit (percent)	Final	
	Number of contracts	Cost	Profit (percent)		Cost	Profit (percent)	Number of contracts	Cost	Profit (percent)		Cost	Profit (percent)
Army:												
FPR.....	191	\$1,467	8.8	8.9	\$1,838	8.3	4	\$114	9.7	9.9	\$215	9.9
FPI.....	47	452	9.3	9.3	495	9.6	189	896	10.0	10.1	1,050	7.6
CPIF.....	55	220	7.3	7.4	237	8.4	210	332	7.8	7.8	462	7.1
CPFF.....	678	1,259	6.8	6.4	2,882	6.3	676	487	7.2	7.1	752	7.2
Army total.....	971	3,398	8.1	7.6	5,452	7.4	1,079	1,829	8.9	8.7	2,479	7.6
Navy:												
FPR.....	115	613	10.4	10.0	628	9.7	5	24	9.2	9.2	24	8.7
FPI.....	107	1,569	9.4	9.4	1,656	9.7	48	208	10.1	9.2	237	7.5
CPIF.....	17	97	5.4	6.3	92	6.1	46	84	8.3	8.3	127	7.4
CPFF.....	591	1,464	6.1	5.6	3,365	5.4	383	320	7.7	7.5	423	7.7
Navy total.....	830	3,743	8.1	7.2	5,741	7.1	482	636	8.6	8.1	811	7.6
Air Force:												
FPR.....	62	692	9.5	10.3	667	10.4	8	830	10.5	10.5	892	8.7
FPI.....	266	5,036	8.9	8.9	5,676	9.1	208	1,119	9.4	9.1	1,345	10.5
CPIF.....	164	2,250	6.7	6.4	3,104	6.8	158	842	7.0	6.5	1,133	7.2
CPFF.....	876	4,619	6.3	6.3	7,881	6.0	853	1,070	7.0	6.8	1,500	6.8
Air Force total.....	1,368	12,597	7.6	7.3	17,328	7.3	1,227	3,861	8.4	8.1	4,870	8.2
DOD:												
FPR.....	368	2,772	9.3	9.4	3,133	9.0	17	968	10.3	10.3	1,131	8.9
FPI.....	420	7,057	9.0	9.0	7,827	9.3	445	2,223	9.7	9.5	2,632	9.1
CPIF.....	236	2,567	6.7	6.5	3,433	6.9	414	1,258	7.3	7.0	1,722	7.2
CPFF.....	2,145	7,342	6.3	6.1	14,128	5.9	1,912	1,877	7.2	7.0	2,675	7.1
DOD total.....	3,169	19,738	7.8	7.4	28,521	7.3	2,788	6,326	8.6	8.3	8,160	8.0

Chairman PROXMIRE. What the table shows is an 8-percent return based on costs. The significance of it is that in GAO's study, the return on sales was only 4.2 percent, about half the rate in the DOD study. How do you explain this variance?

Mr. STAATS. I have never seen the table before, Mr. Chairman. I am afraid I cannot comment on it.

Chairman PROXMIRE. Mr. Flynn, have you seen this table?

Mr. FLYNN. Yes; I have seen their report. This table is based on profit as a percent of cost. Ours is based on a profit as a percent of sales.

Chairman PROXMIRE. Does that account for that much difference?

Mr. FLYNN. No; it wouldn't. There are a couple of other factors; ours is based on total costs including unallowable costs. I believe the DOD's is exclusive of unallowable costs.

Chairman PROXMIRE. Why wouldn't DOD's then be more accurate?

If they excluded unallowable, which would seem to be a logical exclusion—

Mr. FLYNN. Well, DOD's is also based on completed contracts for specific years. Ours is based on total business for a contractor for the particular year. So, DOD's is a relatively small amount of the total contract business for the years that are covered; whereas, ours is 100 percent for the particular contractor for those years. There are these many differences that would account for it.

Chairman PROXMIRE. Are you confident, Mr. Flynn, this would support the entire difference, because there is a big difference, as you can see?

Mr. FLYNN. When you get them computed on the same basis, the difference comes down quite a bit, but there is still a difference.

Chairman PROXMIRE. The staff points out the 8 percent they have is consistent with what you found in your 146-onsite audits.

Mr. STAATS. I think we will have to supply something for the record on this, Mr. Chairman.

I can't comment on something I have not seen.

Chairman PROXMIRE. Fine.

(The following was subsequently supplied:)

COMPARISON OF GAO PROFIT DATA WITH PROFIT RATES REPORTED TO DOD FOR
NEGOTIATED PRIME CONTRACTS

The Department of Defense obtains actual realized profit data on selected negotiated prime contracts. The DOD report for fiscal year 1970 shows overall profit rates as a percent of costs, of 7.3 percent on contracts awarded before January 1, 1964, and 8.0 percent for contracts awarded after December 31, 1963, a weighted average rate of about 7.5 percent. In contrast for the years 1966 through 1969 GAO reported an average profit rate, as a percent of sales, of 4.3 percent for 74 large DOD contractors covered in our study.

There are a number of reasons for the differences including the following.

1. The GAO profit data was after deduction of all costs while the DOD data excludes consideration of costs unallowable as provided in section 15 of the Armed Services Procurement Regulation. In a review of a limited number of contracts we found that these costs amounted to about 1.4 percent of sales. The Logistics Management Institute reported unallowable costs as a percent of sales ranged from 1.4 to 1.8 percent over an 11 year period. Thus, to place the GAO rate of 4.3 percent on a comparable basis with the DOD rate we would have to add from 1.4 to 1.8 percent for this factor resulting in a GAO rate of 5.7 to 6.1 percent.

2. The GAO data is reported as a percentage of sales while the DOD data is reported as a percentage of costs. Rates based on cost are higher than if based

on sales (cost plus profit). Converting the 5.7-6.1 percent GAO rate to a cost basis would increase it to 6.0-6.5 percent.

This is still below the average DOD rate of 7.5 percent but there are several other factors which could account for this difference. For example, the DOD data is not all inclusive. It is limited to negotiated prime contracts and contains no data on subcontracts. It excludes all contracts under \$200,000, and all firm fixed-price contracts. Also, while it covers contracts awarded by the major military commands involved in the procurement of defense supplies and equipment, all procurement activities are not included. The GAO data is based on all defense work accomplished by the 74 contractors in each of the years 1966 through 1969. The DOD data, on the other hand, is based on completed contracts only. The DOD report covers contract costs totaling \$36.6 billion for contracts completed in fiscal years 1959 through 1970. In contrast for the 4-year period 1966 through 1969 GAO reported on DOD business totaling \$94.8 billion for 74 contractors.

INTERCHANGE OF PERSONNEL BETWEEN DOD AND CONTRACTORS

Chairman PROXMIRE. A final matter, Mr. Staats, about which the committee has been deeply concerned is the constant interchange of personnel between the Department of Defense and private corporations doing a substantial amount of defense contracting. I understand that the Defense Department has made some effort to implement the reporting requirement of section 410 of the Public Law 91-121. What, specifically, has DOD done to comply with section 410?

Mr. STAATS. The Department of Defense has indeed fashioned a reporting system which should provide information on the extent of the exchange of personnel between defense contractors and the Department.

On October 20, 1970, DOD Directive No. 7700.15 was issued to establish reporting procedures on defense-related employment, implementing section 410 of the law. The directive establishes criteria and prescribes the procedures to be followed by certain former and retired military officers and former civilian officers and employees of the Department of Defense presently employed by defense contractors, and former civilian officers and employees of defense contractors presently employed by the Department of Defense in submitting employment reports in compliance with another DOD directive.

The provisions of DOD Directive 7700.15 apply to all elements of the Department of Defense, including the Office of the Secretary of Defense, the military departments, and the defense agencies, and to certain present and former military and civilian personnel of the Department of Defense, including employees of nonappropriated fund activities. Under those provisions, the Assistant Secretary of Defense-Comptroller is required to prepare a listing of defense contractors who received \$10 million or more in negotiated contracts awarded in each fiscal year and to have that listing published in the Federal Register no later than September 15 following the end of the fiscal year. In addition a similar listing was also required to be published covering fiscal years 1968 and 1969.

Our inquiries to the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs) developed the following information. No report has been prepared by the Department of Defense and forwarded to the President of the Senate and the Speaker of the House of Representatives, because the law is construed not to require

such a report until December 1971. This construction flows from that subsection which states that "No person shall be required to file a report pursuant to this section for any fiscal year prior to the fiscal year 1971." The instructions issued by the Department of Defense have asked that individuals who are required to file under this statute submit a report no later than November 15 of this year.

The Office of the Assistant Secretary of Defense (Comptroller) advises that they have taken a number of measures to give widespread publicity to the requirements of the act. These measures include the annual listing in the Federal Register of those firms doing business with the Department of Defense in amounts of \$10 million or more a year. In addition the Department has sent letters to approximately 350 such corporations calling specific attention to the requirements of the statute and requesting these corporations as employers to disseminate the information to their employees.

The Department of Defense has also had inserted in Retired Military Personnel Newsletters the substance of section 410 with a request that individuals falling within the purview of this act take the necessary steps in filing reports.

In addition those individuals currently separating from the Department of Defense in the military grades of major or higher (and equal in the Naval services) and civilian employees in the grades of GS-13 and higher are being advised in exit interviews of their obligations to report under the act if they accept employment with contractors who appear on the list published in the Federal Register.

Chairman PROXMIRE. All right, sir. Thank you very, very much.

And once again, Mr. Staats, I want to express my admiration for the really great job you have done. I know how strongly you feel about applying complete honesty and competence, and I think you do an outstanding job in every respect. I do not mean, by my questions, to indicate any hostility or any kind of questioning of your competence. Thank you very, very much.

The subcommittee will stand in recess until later next month.

(Whereupon, 12:20 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.)

