939

DEPARTMENT OF DEFENSE CONTRACT PROFIT POLICY

HEARING

BEFORE THE

SENATE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS

JOINTLY WITH THE

SUBCOMMITTEE ON PRIORITIES AND ECONOMY IN GOVERNMENT

OF THE

JOINT ECONOMIC COMMITTEE

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WEDNESDAY, MARCH 21, 1979

U.S. SENATE, COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS, AND SUBCOMMITTEE ON PRIORITIES AND ECONOMY IN GOVERNMENT OF THE JOINT ECONOMIC COMMITTEE,

Washington, D.C.

The committee and subcommittee met jointly at 10:45 a.m., in room 5302 of the Dirksen Senate Office Building; Senator William Proxmire, chairman of the Senate Committee on Banking, Housing and Urban Affairs, presiding.

Present: Senators Proxmire, Stewart, Javits, and Jepsen.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

The CHAIRMAN. The committees will come to order.

The purpose of this hearing is to review the defense profit policy put into effect by the Defense Department in 1976. It seems like an appropriate time in view of the fact that just this morning, we were alerted by the papers that we had an extraordinary increase in corporate profits, generally, up something like 40 percent over last year, less, of course, from quarter to quarter but, nevertheless, a very large increase.

Defense contractors are entitled to reasonable rates of return on their investment. The problem is that in the past, the Defense Department computed profits almost without reference to investment. Instead, a weighted guidelines system virtually excluding investment was used to determine profit rates on negotiated contracts. Under this system, profits were based primarily on the contractor's costs.

This meant that the higher the costs, the higher the profits. Contractors were motivated to maintain high production costs. The policy encouraged inefficient, high-cost production methods. This meant the cost to the taxpayer was higher. The higher the cost, the higher the profits.

Look out the window and see the Hart Senate Office Building, being erected, it seems to me, under similar circumstances. If it costs $100 million, the architect will get $6 million. $200 million, he gets a $12 million fee. The incentive to keep costs down is not there, which is the kind of incentive we usually have in the free enterprise system.

The new policy was established in partial recognition of this problem. Under the new policy, capital investment was assigned a 10 percent weight in the weighted guidelines.

In explaining the new policy before the Joint Defense Production Committee in 1976, spokesmen for the Defense Department stated that the goal was to encourage contractors to invest in new facilities and equipment. This, it was hoped, would increase productivity and lower costs of production. The Defense Department also said it would take 2 or 3 years to know whether the new policy is successful.

The General Accounting Office has just completed its review and according to GAO's assessment, the new profit policy has been ineffective. Of course, the 3 years have lapsed since 1976.

The GAO found that contractors did not increase their capital investment as a result of the new profit policy. There is no evidence of improvements in productivity or reductions in costs.

GAO estimates the increase in defense contract profits amounted to $200 million for fiscal year 1977 entirely owing to the new profit policy. These profits might have been justified if they were accompanied by increased capital investment, greater efficiency and reduced costs.

The full costs of the new policy should include the foregone reduction in costs as well as the increased profits. Just a 2-percent increase in productivity in 1 year would have reduced costs by $400 million. The taxpayer is apparently paying about $200 million more per year for a new profit policy that is resulting in no additional capital investment, no improvement in productivity and no reduction in costs. We hope to review the evidence and make our own judgment about the new policy.

I might add that this matter has important implications for the economy as a whole. A major objective of economic policy is to improve productivity by stimulating capital formation. A conclusion that contractors cannot be motivated to make new investments by improving their profits on investments would be very discouraging.

We will hear first from Hon. Elmer Staats, who is the Comptroller General of the United States, and is also one of the Government's top experts on productivity. Mr. Staats will discuss the review his agency recently completed of the profit policy.

Later we will hear from witnesses representing the Department of Defense and Aerospace Industries Association.

STATEMENT OF ELMER B. STAATS, COMPTROLLER GENERAL OF THE UNITED STATES, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY JOHN F. FLYNN AND JACOB CANTOR

Mr. STAATS. Thank you very much, Mr. Chairman. We appreciate the opportunity to appear today to present our views on the DOD's new policy for determining profit objectives for most negotiated contracts.

We know your interest in defense industry profits goes back many years. In 1969 when you were chairman of the Joint Economic Committee, we testified before you and pointed out that there was a need to revise the weighted guidelines used by the Defense Department for establishing profit objectives for negotiated contracts.

We were concerned with the inadequacy of the factor relating to recognition of contractors' investments in facilities and operating capital used in the performance of Government contracts. The need for a study of defense industry profits was also developed during those hearings; and, as a result of your amendment to the Armed Forces Appropriation Authorization Act of 1970, we were directed to make such a study. In our report on defense industry profits in March 1971, we stated:

> 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.

On October 1, 1976, the Department revised its profit policy in an attempt to deal with this problem and give recognition to contractor capital investment in determining contract prenegotiation profit objectives. The weight given to investment, however, was relatively small, a maximum of 10 percent. Ninety percent of the profit was still based on estimated costs. Unfortunately, the effort has not been successful in promoting capital investments that would result in future cost reductions.

In its new procedures, the Department also provided for treating the imputed interest cost of contractors' facility investments as a cost of performance under most negotiated contracts in accordance with Cost Accounting Standard 414. We have some reservations, however, about the way this change was applied. I will now address these two points in some detail.

In the first year after the new profit policies went into effect, DOD negotiated an undetermined number of noncompetitive contract pricing actions totaling about $22 billion. To determine the effect the new policy was having, we selected and analyzed 142 negotiated contracts of the Army, Navy, and Air Force.

Seventy-one of these contracts were negotiated before and 71 were negotiated after the effective date of the new profit policy, with each pair of contracts involving the acquisition of the same or similar items. Total negotiated contract amounts were about $1.7 billion under the former policy and about $1.8 billion under the new policy.

We also sent questionnaires to 66 contractors to identify the impact of DOD's profit policy on decisions the companies made relative to investments in new plant and equipment and received 47 written responses—71 percent. Most of the contractors we sent questionnaires to performed one or more of the contracts that we reviewed.

On March 8, 1979, we issued our report entitled "Recent Changes in the Defense Department's Profit Policy—Intended Results Not Achieved"—PSAD-79-38.

As the title indicates, we concluded that higher aggregate profits were negotiated without any demonstrable reduction in costs to the Government. We found little indication that contractors responded positively to DOD's attempts to encourage greater investment in new or upgraded plant and equipment which would lower produc-

tion costs. Although some added investments were identified, the reasons for making them were unrelated to DOD's profit policy. Replies to the 66 questionnaires we sent to contractors confirmed that the chief motivating factor influencing decisions to make capital investments was the desire to expand production capabilities rather than to reduce production costs.

While we recognize that it may take a longer time period for the new policy to become effective, contractors said that the new profit policy, as presently structured, was not a significant factor in their investment decisions nor would it be in the future. We believe the lack of success in meeting DOD's objective is attributable primarily to the limited emphasis given to facility investments in establishing the Government's prenegotiation profit objectives.

When the new policy was published, DOD recognized that the 10 percent relationship to total profit objective was a modest beginning and that the weight might have to be increased. We believe that the lack of progress confirms that the emphasis given to investments must be substantially increased if the desired results are to be achieved.

Although the new profit policy has not encouraged contractors to increase their investments in cost-reducing facilities, it has resulted in the negotiation of higher profit rates on an overall basis. For the 71 contracts we reviewed that were negotiated after the new policy went into effect, the average negotiated profit rate increased about nine-tenths of 1 percent over an 11.5 percent average for the comparable group of contracts that had been awarded prior to the new profit policy. This represented a 7.8 percent increase. The higher profit rates negotiated on these contracts increased the Government's price by about $14.5 million.

If the increase we found in our sample were projected to all noncompetitive contracts negotiated in fiscal year 1977, the additional profit to contractors would approximate $200 million.

DOD, in its monitoring of a larger sample of 811 contract negotiations in fiscal year 1977, found an aggregate profit increase of a little more than half the increase we found, which would result in about $100 million if its sample were more representative of the entire universe. In any event, both samples reveal significant profit increases.

We also identified several other problem areas which we believe contributed to the profit increases. Imputed interest on contractors' facilities capital, allowed as a cost, was not fully offset from profit. Formerly, this cost was implicitly included as a part of the profit objective because interest was not an allowable cost under Government contracts. To conform to Cost Accounting Standard 414 and to prevent double counting of facilities capital in computing contract cost and profit, DOD constructed a reduction factor believed to represent the average imputed interest allowed as a cost. The Department believed that the use of an average offset would be preferable to having a dollar-for-dollar offset on each contract. While we do not take issue with the averaging method used, we believe that the DOD offset factor probably needs to be increased.

We found that a contributing factor to the profit increase was a lack of definitive criteria for contracting officers use in determining the profit dollars to be allowed for facilities investment and

other profit determinants. In many cases, we found that contracting officers allowed more than the minimum weight for different factors without adequate explanation.

Profits on some contracts were also higher than DOD objectives because contractors in relatively strong negotiating positions would not accept the lower profit objectives developed in accordance with DOD's new profit policy.

DOD is aware of problems associated with implementing its profit policy. By July 1978, the Office of the Secretary of Defense's (OSD) monitoring efforts had identified needed improvements to correct numerous errors in the weighted guidelines computations, to avoid continued use of the former policy, and to document and review negotiated profits which substantially exceed the prenegotiation objectives. Preliminary results also indicated unexpected profit increases.

OSD had taken or proposed limited action to correct some of the problems it identified. A July 1978 memorandum sent to the Army, Navy, and Air Force identified the problems noted and suggested corrective action be achieved by improving some contract review procedures.

In September 1978, OSD circulated its proposal for two policy changes, based on an analysis of the first year's experience, to industry and government agencies for comment. The first change was not relevant to the problems we identified, since it involves an exception to the weighted guidelines method. However, the second proposed change alters profit weights for the risk element. OSD believes this change will result in lowering profit objectives to a level that approximates those that would have been established under the former profit policy. OSD stated that the average profit increase for the cost-plus-fixed-fee contracts was not attributable to the level of facilities investment.

Thus, it is considering reducing the maximum allowable cost risk for these contracts. OSD also proposed reductions in maximum profit allowances for the risk element for the cost-plus-incentive-fee and fixed-price-incentive contracts with cost incentives only.

The OSD proposed action may not be adequate, in our opinion, to correct all of the problems and to offset many of the profit increases we identified. We, therefore, recommended in our report that the Secretary of Defense:

Substantially increase the emphasis on facilities capital investment and further reduce the portion of the prenegotiation profit objectives that is based on estimated costs.

Perform additional analyses to determine more precisely the impact of the new profit policy on overall negotiated profit rates and the need to increase the offset factor to more closely approximate the amount of imputed interest on facilities capital.

Establish more definitive criteria and procedures to enable contracting officers to determine the appropriate profit allowances for contractors' facilities capital investments, cost risk, and productivity improvements subject to special profit rewards.

Develop safeguards to prevent negotiating profits significantly greater than Government objectives without a complete explanation and review of the rationale and consideration of possible alternatives, such as the development of another source of supply.

Even though a portion of the profit rate might still be based on cost, for each contract compute the rate of return on facilities investment considering the total negotiated profit amount. This should be of assistance in identifying any potentially excessive profits. A very important point.

Monitor more extensively the implementation of the new profit policy and revisions made thereto to provide greater assurance that the desired results are achieved.

While we did not obtain written comments on our report, through discussions with DOD representatives, we were pleased to learn that they basically agreed with all of our recommendations. We look forward to a number of actions by defense personnel to improve the implementation of the new profit policy and help attain the intended objectives.

Also, in regard to our recommendation to substantially increase the portion of the profit factor that is based on return on capital, the Logistics Management Institute recently completed a study for the Office of Federal Procurement Policy and recommended that this portion of the factor be increased from 10 percent to about 70 percent of the total profit objective.

As you know, LMI is a research center funded by the Department of Defense and, therefore, I think, has unusual capability to render an opinion of this type.

This concludes our statement, Mr. Chairman. We would be happy to respond to any questions you may have.

[Complete statement of Mr. Staats follows:]

STATEMENT OF ELMER B. STAATS, COMPTROLLER GENERAL OF THE UNITED STATES

Mr. Chairman and members of the subcommittee: We appreciate the opportunity to appear today to present our views on the Department of Defense's (DOD) new policy for determining profit objectives for most negotiated contracts.

We know your interest in defense industry profits goes back many years. In 1962 when you were Chairman of the Joint Economic Committee, we testified before you and pointed out that there was a need to revise the weighted guidelines used by the Defense Department for establishing profit objectives for negotiated contracts. We were concerned with the inadequacy of the factor relating to recognition of contractors' investments in facilities and operating capital used in the performance of Government contracts. The need for a study of Defense industry profits was also developed during those hearings; and, as a result of your amendment to the Armed Forces Appropriation Authorization Act of 1970, we were directed to make such a study. In our report on Defense Industry Profits in March 1971, we stated: "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."

On October 1, 1976, the Department revised its profit policy in an attempt to deal with this problem and give recognition to contractor capital investment in determining contract prenegotiation profit objectives. The weight given to investment, however, was relatively small, a maximum of 10 percent. Ninety percent of the profit was still based on estimated costs. Unfortunately, the effort has not been successful in promoting capital investments that would result in future cost reductions.

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While we recognize that it may take a longer time period for the new policy to become effective, contractors said that the new profit policy, as presently structured, was not a significant factor in their investment decisions nor would it be in the future. We believe the lack of success in meeting DOD's objective is attributable primarily to the limited emphasis given to facility investments in establishing the Government's prenegotiation profit objectives. When the new policy was published, DOD recognized that the 10 percent relationship to total profit objective was a modest beginning and that the weight might have to be increased. We believe that the lack of progress confirms that the emphasis given to investments must be substantially increased if the desired results are to be achieved.

Although the new profit policy has not encouraged contractors to increase their investments in cost-reducing facilities, it has resulted in the negotiation of higher profit rates on an overall basis. For the 71 contracts we reviewed that were negotiated after the new policy went into effect, the average negotiated profit rate increased about nine-tenths of 1 percent over an 11.5 percent average for the comparable group of contracts that had been awarded prior to the new profit policy. This represented a 7.8 percent increases. The higher profit rates negotiated on these contracts increased the Government's price by about $14.5 million.

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We also identified several other problem areas which we believe contributed to the profit increases. Imputed interest on contractors' facilities capital, allowed as a cost, was not fully offset from profit. Formerly, this cost was implicitly included as a part of the profit objective because interest was not an allowable cost under Government contracts. To conform to Cost Accounting Standard 414 and to prevent double counting of facilities capital in computing contract cost and profit, DOD constructed a reduction factor believed to represent the average imputed interest allowed as a cost. The Department believed that the use of an average offset would be preferable to having a dollar for dollar offset on each contract. While we do not take issue with the averaging method used, we believe that the DOD offset factor probably needs to be increased.

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Profits on some contracts were also higher than DOD objectives because contractors in relatively strong negotiating positions would not accept the lower profit objectives developed in accordance with DOD's new profit policy.

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While we did not obtain written comments on our report, through discussions with DOD representatives, we were pleased to learn that they basically agreed with all of our recommendations. We look forward to a number of actions by Defense personnel to improve the implementation of the new profit policy and help attain the intended objectives. Also, in regard to our recommendation to substantially increase the portion of the profit factor that is based on return on capital, the Logistics Management Institute recently completed a study for the office of Federal Procurement Policy and recommended that this portion of the factor be increased from 10 percent to about 70 percent of the total profit objective.

In conclusion, Mr. Chairman, we believe the Defense Department is going in the right direction, but a great deal remains to be done. This completes our statement, and we will be glad to respond to any questions.

The CHAIRMAN. Thank you very much. It's good to hear you expect this cooperation from the Department of Defense. In your study, did you see any evidence that the new policies resulted in increased contractor productivity and do you think they will motivate new contractors to invest in facilities and improve productivity in the foreseeable future?

Mr. STAATS. Of course we recognize that investment decisions made by contractors are based on a number of factors. The interest costs and the possibility of follow-on contracts, the percent of which he may have commercial ventures which could fit into that investment and many other factors. We do feel 10 percent is not a very

strong incentive to invest in labor saving and higher productivity equipment.

The CHAIRMAN. So the fact that the investment factor is increased from 5 to 10 percent—was it 5 percent before? Was there a number?

Mr. STAATS. Before the 10 percent? It's my understanding, subject to correction by Mr. Flynn, it was only 1 or 2 percent.

Mr. FLYNN. That's right. There was a factor in the old weighted guidelines that would consider contractor furnished facilities in a relatively negative way that went from a zero to minus 2-percent penalty depending on how much the contractor relied on the Government for facilities and other resources. For all practical purposes, there was no real investment incentive in the old weighted guidelines.

The CHAIRMAN. So you feel the principal reasons why the new policy, though it goes from zero to 10-percent emphasis on investment, that still is not a sufficient incentive to encourage the acquisition of new investments that would improve productivity.

Mr. STAATS. In our 1971 study we didn't specify a particular figure. What we had in mind was a very substantial factor should be the contractor's own capital investment. We certainly had in mind something much more than 10 percent.

The CHAIRMAN. Has GAO done any studies of productivity in defense industries? If so, what has the study shown?

Mr. STAATS. We have done a number of studies, Mr. Chairman, relating to what we call should cost which is a preanalysis of what could be done if you introduced laborsaving equipment and take other measures to reduce the cost of the end product. This has been something we have done over several years. I would like to mention, though, in connection with your question a current effort which we have in process, which we will be providing to the Congress, I hope, before too long entitled "Impediments to Increasing Productivity and Reducing Costs in Defense Production." In this effort, we are looking at a comparison of what it costs in the private sector to produce a similar item to what it costs the Government, comparisons of similar or identical types of production. We would be taking a further look at profit policies.

The CHAIRMAN. You're prospectively doing this?

Mr. STAATS. We have it in process today.

The CHAIRMAN. Have you done enough to give us any tentative conclusions as to the comparative productivity or efficiency in the defense sector and nondefense sector?

Mr. STAATS. We have a preliminary report which I personally think needs to be expanded upon in much more detail than it has today. I don't believe we can give you any quantitative figures from this, but we would like to see more emphasis given at the OSD level to ways in which you can increase productivity and lower the costs of the end products. We don't see any central point in OSD now looking at all these as a package.

The CHAIRMAN. It seemed to me here is a golden opportunity for the Government to improve productivity by example throughout the economy. We all know the economy as a whole is suffering from a failure to improve in the last few years. It was very discouraging. One of the principal reasons inflation is so serious. If it

continues to be as bad as it is we will continue to have serious inflation and very difficult times. It seems to me the defense industries, of all industries, should be productive and should indicate ability to improve their productivity because these are high technology industries. There is a great deal of Federal research and development that have gone into these industries. They should be setting the pace. Isn't that generally true? It's certainly true in many areas that come to mind. I am sure not in all of them because of course the Defense Department requires—but certainly in the weapons area, for example, the technology is changing very rapidly and ought to result in improvement in productivity.

Mr. STAATS. In the economy as a whole, the growth in productivity rates have been almost entirely in the high technology areas. Had it not been for the rate of growth in productivity in those areas our overall rate would be even more depressing than it is today, where we are now—our rate of growth, as you know, is the lowest of any industrial nation in the world. And it has been on a steady decline for 10 years. This is a matter of great concern to anyone who looked at those figures. I would hope that the Defense Department could work with the contracting industry and find ways to improve the technology and the productivity. I'm convinced personally there are a lot of ways this can be done that really haven't been seriously explored.

The CHAIRMAN. I would think one of the best ways would be to put more stress on reducing costs rather than increasing them. Obviously if I am a defense contractor and I am a sole source and don't have to worry too much about competition and my profit depends upon how high my costs are, I wouldn't be interested in being productive and improving productivity and efficiency.

Mr. STAATS. That was the essential message we tried to present in the 1971 report.

The CHAIRMAN. It's apparently a matter of shifting as much as you can to a fixed price basis instead of a cost plus basis.

Mr. STAATS. We recognize you can't do this across the board 100 percent but certainly where you have industrial type items and manufacturing, you can go almost 100 percent. I think the LMI figure certainly would be a great step forward. We recognize in the case of service contracts and R. & D. contracts and other contracts of that type where capital investment is not really a substantial factor, you can't rely exclusively or even in very large part on return on capital, but for many, many items, this should be the primary basis for determining profit objectives.

The CHAIRMAN. Your report recommends a substantial increase in the investment factor and reduction in the cost factor. What is the proper mix or ultimate goal? Is it to consider only investment and not consider cost at all? Would that be practical?

Mr. STAATS. I will ask Mr. Flynn to respond.

Mr. FLYNN. We think probably in many areas that are comparable to commercial type activities it would be possible to go to a 100-percent factor with appropriate controls to make sure excessive assets wouldn't be allocated to defense work. Certainly the LMI recommendation is a step in the right direction.

The CHAIRMAN. Those controls are not easy. It would be nice to have them, but I recall the hearings we had some years ago in

which we had a problem of defense contractors using Government-owned equipment to produce their commercial work. That was pretty revealing. There is a temptation on the part of every defense contractor to do that. After all, he has excellent equipment there. If he can use it for his own purposes, he will. So those controls weren't working very well, it seemed.

Mr. FLYNN. No question they broke down frequently in the past. But certainly, to the extent you can really make the investment factor the major factor, you do bring in the incentive to reduce costs, which, as you pointed out, isn't there today. That is the only way we think there will be a meaningful reduction in defense costs, getting it up to 70, 80 or more percent with a very small weighting on costs, if any.

The CHAIRMAN. Deputy Secretary Clements, now the Governor of Texas, testified in 1976 that it would take 2 or 3 years to learn whether the new policy is successful. That was 1976, nearly 3 years ago. Do you feel we have enough experience to make a judgment or is more time necessary?

Mr. STAATS. I will let Mr. Flynn answer that question.

Mr. FLYNN. I think certainly it's early to judge the policy completely, but the indications are there that at the present level of consideration of capital, it isn't working. We think the LMI study substantially supports that and we saw the results of that after we completed our review. We think there is sufficient evidence available now for a change to make the policy work.

Mr. STAATS. We are on record, Mr. Chairman, going back to the time the new profit policy decision was made, of saying we don't think the 10-percent factor would provide an adequate test.

The CHAIRMAN. You won't get an adequate test out of it with 10 percent. You need more.

Mr. STAATS. We pointed out that we doubted if 10 percent would provide an adequate test.

The CHAIRMAN. In your report you cite an example where one contractor demanded a 20-percent profit on all Government contracts. It's hard to evaluate that because we don't know if it's 20 percent on costs, investment or equity. Is that on sales?

Mr. FLYNN. I believe that was 20 percent on costs.

The CHAIRMAN. 20 percent on cost. That is a marvelous profit in any line.

Mr. FLYNN. Right.

The CHAIRMAN. Because it was a sole source procurement on a major program the Government was apparently forced to negotiate virtually the same, an 18.8 percent profit rate, though the initial objective was 10.6 percent.

Is that a rare or common occurrence?

Mr. FLYNN. We can't say whether it's rare or common, Mr. Chairman. We know in a few instances in the 1971 contracts we looked at, I am sure it occurs but we can't say how often it occurs. Defense might be able to give you a better idea on that than we can.

The CHAIRMAN. Suppose a sole source contractor demanded and received a 20 percent profit rate when the contract was negotiated but ended up realizing a 50 percent rate in profits? Would the Defense Department have any recourse on grounds that the profit

was excessive or would such a case have to be examined by the Renegotiation Board?

Mr. STAATS. The only recourse we know of would be to try to develop a second source for any follow-on contracts.

The CHAIRMAN. The Renegotiation Board is about to die. It has a couple of days left. It will be replaced by the Vinson-Trammell Act which almost everybody realizes will be a nightmare for everybody concerned.

I expect that will be repealed. If the Renegotiation Board dies and the Vinson-Trammell Act is repealed, will the Government have any authority to do anything about excessive profits?

Mr. STAATS. As you know, the Vinson-Trammell Act applies only to shipbuilding and aircraft. Therefore, it would leave it with the provision of a 10-percent limit on profits.

Mr. FLYNN. Ten or twelve, something like that.

Mr. STAATS. Something on the order of 10 to 12 percent.

The CHAIRMAN. Almost everybody acknowledges that would have to go. It was replaced by the Renegotiation Board.

I understand the percent limitation is one problem. Another problem is the fantastic amount of paperwork. That is my understanding.

How would you feel? Maybe I misjudge the Vinson-Trammell Act. What is your expert opinion? Do you think we could live with the Vinson-Trammell Act absent the Renegotiation Board as it affects shipbuilding?

Mr. STAATS. That is not a substitute for the Renegotiation Board. I don't know of anyone who would argue it is.

What seems to me, though, to be involved here is that with the Renegotiation Board out of the picture, it will place a lot more emphasis upon relating profits to capital investment than we had before.

It will place more emphasis upon the importance of good cost accounting standards.

The CHAIRMAN. That's right but we are all human and make mistakes from time to time.

I come back to my original question. Suppose the sole-source contractor demanded and received the 20 percent contract rate when the contract was negotiated and ended up with 50 percent profit.

If not covered by Vinson-Trammell and if the Renegotiation Board is dead, what recourse would the Government have? Would we have to let them take it?

Mr. STAATS. I don't know of any recourse.

Mr. FLYNN. The Government would have no basis for adjustment. The contractor would make that profit. Even the Truth in Negotiations Act, Public Law 87-653, only provides for furnishing accurate, complete and current data.

As long as the contractor provided that data, he could still demand a very high profit. If he were in the driver's seat, he could probably get a good portion of that.

The answer is there is no substitute for the Renegotiation Board in existence.

The CHAIRMAN. Senator Jepsen, I have a number of other questions, but I would be happy to yield to you at this time if you would like.

Senator JEPSEN. Thank you, Mr. Chairman.

I don't have any questions. I am savoring this exchange here. We have a subcommittee assigned to the Armed Services called Procurement Management, I believe, which is trying to see how we can save money in procurement in the defense area and I was anxious just to sit here.

The CHAIRMAN. We are delighted to have you. Senator Jepsen is a valued member of the Joint Economic Committee also. Of course, this is a joint hearing of the two committees.

You estimated DOD paid about $200 million in additional profits in fiscal 1977 as a result of the new policy. How did you arrive at that estimate?

Mr. FLYNN. Basically we came up with about a 1 percent increase in the profit rate. From figures we got, rough figures from the Department of Defense, we estimated about $20 billion of the contracts would come under the new profit policy for negotiations, so simply taking that 1 percent, we came up with the $200 million.

The CHAIRMAN. You said in the course of your remarks, the Defense Department estimate was $100 million, about half. They agreed there would be a substantial increased in cost to Government and in profit, however.

Mr. STAATS. That's right.

The CHAIRMAN. Are the additional profits likely to be the same or different for fiscal 1978 and 1979?

Mr. FLYNN. I don't think we can say basically. It depends, you know, on how tough the negotiators are, how good a job they do.

I don't think we could project that into the future. It will depend on how good a job they do.

The CHAIRMAN. Why would that vary? You have such a variety of negotiators. I think the intention is always to be as effective and tough as possible.

Why would you expect it to be any different?

Mr. FLYNN. I thought possibly as they work more and more with the new procedure, they will do a better job. As I say——

The CHAIRMAN. What is there in the new procedure that would enable them to do that? You said it's not adequate with only a 10 percent emphasis on investment.

Mr. FLYNN. That's correct, but we noticed some instances where the contracting officers who were good negotiators managed to cut some of the profits back on some of the prior contracts.

The CHAIRMAN. That's always true. You have good negotiators and some who are not as good. I assume in any agency the size of the Defense Department, with the variety of negotiators they have to have, you probably have pretty much the same degree of competence.

Mr. FLYNN. I don't think there is any doubt, probably, that the profit rate will be higher in the future unless the corrective actions are taken that we have outlined.

The CHAIRMAN. The contractors didn't increase their investment, didn't improve productivity, didn't accomplish reductions in cost.

What did the government get in exchange for the higher profits paid out, if anything?

Mr. STAATS. This gets back to the question of judgment as to what is a reasonable level of return, reasonable profit.

Whether that level should be the same as prevailed in the commercial area, the private sector. There are many differences. This is one of the issues, you recall, that we pointed up in our 1971 report.

The CHAIRMAN. The difficulty is this: I think that all of us recognize that profits are vital in the free enterprise system. They are the engine that makes the economy go. High profits are good news, not bad news. But the profits ought to be earned on the basis of efficiency and reducing costs, not on the basis of having a situation in which higher costs are rewarded.

It seems that's the crux of it.

Mr. STAATS. I agree, that is the crux of it. As long as you have only 10-percent factor, I think it will still be a continuing problem.

The CHAIRMAN. It has been generally conceded the old profit policy encouraged contractors to maximize their profits. If we increase the emphasis on investment, might we wind up in a situation where contractors maximize their investment in order to keep their profits up without any regard to the need for their investment?

Mr. FLYNN. I don't think so, really. As you know, many of the Defense programs are rather tenuous. You never know from year to year whether they are going on, to be continued or cut back.

I don't think many contractors would invest in assets in the hope that they will just increase their rate of return. They have to see a possibility of getting back the investment they make over 4 to 7 years.

I don't think they would make that type of investment just to get an increased return on investment. They can get that from many other sources.

I think they would only make those investments where they saw a good potential for recovering the cost of that equipment and where it would reduce costs and increase their profits through that mechanism.

The CHAIRMAN. You point out the productivity in this country is lower than any other industrial country.

I assume it's much higher in Germany and Japan. I realize they have very limited defense industries but they have something. France, too.

Is there anything we can learn from them? Do they have a procurement policy? France, Germany, Japan?

Mr. STAATS. You are making a very interesting suggestion. I think it's something we could look at. We have not looked at it.

The CHAIRMAN. Their productivity is so clearly superior to ours and has been increasing at such a rate. Suppose I write you, Mr. Comptroller, and request a study in this area and you could tell us what would be practical.

I don't want to ask you to do a study that would be too consuming, but one that would be limited and——

Mr. STAATS. I think Germany would be particularly attractive as an area to look at.

The CHAIRMAN. The formula for determining target profit level sounds formidably complex. Do you believe the average DOD contracting officer has the expertise and resources to implement that formula?

Mr. FLYNN. There is no question, Mr. Chairman, that the new system is more complex than the old one of simply basing profits on costs. But much of the data required is already available, since Cost Accounting Standard 414 went into effect allowing imputed interest on facilities investments. This data is readily available now. So we don't think it's really an impossible job to compute profits in this manner.

We believe the new procedure can be effectively used.

It's so important, Mr. Chairman, to eliminate the currently existing incentive for contractors to maximize costs, that we think the change has got to be made.

The CHAIRMAN. Many of the predictions you made in your February 1977 review of the Profit '76 program were borne out in your recent review. You said in 1977 that the policy provided too little incentive to increase capital investment. You said profits would increase unreasonably if contractors refused to accept lower guidelines. You said the instructions governing use of the productivity award were insufficient.

Has DOD generally ignored your suggestions in the profit policy?

Mr. FLYNN. Jack, what would you say?

The CHAIRMAN. Would you identify yourself?

Mr. CANTOR. My name is Jack Cantor.

With regard to the first recommendation concerning the increase in invested capital as a profit determinant, their statement was that they would want to wait approximately 3 years before they moved in any direction. However, they also stated there would be a good possibility that the factor relating to invested capital would have to be increased.

As far as the other two suggestions that we had, or two conclusions that we came to, I don't believe any definitive action was taken by the Department to act in any positive direction.

The CHAIRMAN. Let me go over these and make sure I understand your response. Where you say the new policy provided too little incentive to encourage increased capital investment, what was their response?

Mr. CANTOR. DOD said that it's too early to tell. They said they were moving in the right direction, and in a matter of time they would be able to judge a little better.

The CHAIRMAN. Then you say profits would increase unreasonably if contractors refused to accept the lower guidelines.

Mr. CANTOR. Their answer to that was they have inherent in their management procedures a methodology to prevent that.

That was their verbal answer. But as we found out, the verbal response did not coincide with the facts that we developed and that they developed.

The CHAIRMAN. Then you say the instructions governing use of the productivity reward were insufficient.

Mr. CANTOR. That was our opinion then and it's still our opinion. There is some dispute in that regard.

The CHAIRMAN. They disagree with you on that.

Mr. CANTOR. They disagree to some extent.

The CHAIRMAN. Have they changed the instructions, tried to clarify them?

Mr. CANTOR. They said they will change them. We are interested in seeing the extent of the change and the method they use and how soon they will implement the change.

The CHAIRMAN. Thank you.

You strongly suggest that few, if any, companies have accepted diminished profits under the new policy. In their prepared statement DOD says:

> We have also achieved our objective to restrict profits in recognition of risk and investment; negotiating profits for contractors heavily dependent on government facilities has decreased.

How do you resolve this apparent contradiction?

Mr. FLYNN. I think Defense also pointed out or has found that their profit rate has gone up. They estimate one-half of 1 percent against our 1 percent. On an overall basis they agree with us profits increased rather substantially. They have a sample of 811 contracts and it's substantially larger than ours, but it still may not be representative of the total universe.

The data they have shows the same thing we have. Profits have gone up. I don't think there has been any offset that would balance it out.

The CHAIRMAN. Now the DOD/OMB aircraft capacity study found unnecessary overhead, engineering, marketing, and administrative personnel added hundreds of millions to defense costs every year—unnecessary overhead.

Do you think the type of facility investments encouraged by the profit policy would affect these categories of unnecessary or redundant labor?

Mr. FLYNN. Well, I think again if you switch away from a policy that as a result of increasing costs you get more profits, if you eliminate the incentive to increase costs, it should result in a reduction in those costs.

It would no longer pay them to increase costs just to get higher profits. So I think it would help to cut back on those unnecessary costs.

The CHAIRMAN. Then you would have to eliminate cost as a factor. As long as it's there, even if it would be 30 percent or 20 percent, it would still provide an incentive for having unnecessary overhead.

Mr. FLYNN. I think that is the way to go. Eliminate it entirely if at all possible.

The CHAIRMAN. I want to thank you very much for a very useful statement.

We have a number of questions for the record that we would appreciate very much if you would respond to.

[Answers to subsequent written questions from Senator Proxmire follows:]

RESPONSES TO SENATOR PROXMIRE'S ADDITIONAL QUESTIONS FOR THE RECORD

Question 1. In your report on implementation of the profit policy, you suggested that the Department of Defense has not established any real guidelines for the cmputation of profit on facilities capital employed. Can you discuss the short-

comings of their guidance to contracting officers, and the effect that this can have on profit calculations?

Answer. In establishing contract profit objectives, the Defense Department's new profit policy directs contracting officers to consider a number of factors relating to contractors' investments in facilities. Three key factors for consideration are: the overall cost effectiveness of facilities to be employed in contract performance, whether the facilities are general purpose or special purpose, and the age of the facilities. There are, however, no instructions on how to evaluate the cost effectiveness of the facilities. No examples are furnished. No rating scale is offered regarding the profit to be allowed if the facilities are special purpose rather than general purpose. There is no specific guidance for giving consideration to the age of the facilities.

Different contracting officers reach significantly different conclusions in considering these factors and other general guidelines. Additional guidance is necessary to permit more consistent computation of profit objectives. The range for this profit determinant is 6 to 10 percent of the facilities capital employed, and we found that 8 percent was generally used. We found no adequate explanations for using this midpoint of he range. As a minimum, we believe that the Department should develop and distribute to contracting officers specific examples of the establishment of profit allowances for such facilities. Such examples would give necessary insight regarding profit allowances under varying situations.

A Defense Department official told us that a manual for contract pricing, which offers additional guidance to contracting officials, will be updated to assist Government contracting officials in deciding on an appropriate profit allowance for this element.

Question 2. One of the original purposes of the new profit policy was to compensate for the effect of Cost Accounting Standard 414 which had allowed a significant increase in contractor costs. Your report states that the DOD offset has not compensated for this increase in cost, while DOD argues that the offset has been adequate. Do you have any response to their statement?

Answer. We found that the DOD factor designed to offset the imputed interest (or cost of money) of facilities capital in the aggregate was insufficient both in our selected 71 contract actions and in a DOD sample of 811 contract actions. An undated internal DOD memorandum supplied detailed computations and explanations of the derivation of this factor.

Rather than evaluate the offset factor by itself, DOD made an overall evaluation of three elements (the portion of profit based on costs, the cost of money, and profit on facilities investment). This was done by comparing profit objectives on a sample of contract actions awarded both before and after the establishment of the new profit policy. This comparison disclosed an overall .11 percent increase in profit objectives. Since the .11 percent increase was considered insignificant by DOD, it was concluded that the imputed interest offset factor was adequate.

We recommended that the Secretary of Defense perform additional analysis to determine more precisely the possible need for an adjustment in the offset factor to more closely approximate the amount of imputed interest on facilities capital.

Question 3. Do you believe that the profit policy is the most effective way to encourage productivity and cost reductions, or are there more effective means of accomplishing this goal?

Answer. There are several ways to encourage greater productivity and cost reductions. One approach is for the Government to purchase more productive equipment and permit contractors to use this equipment on Government contracts. A more desirable view, according to many, is to encourage contractors to purchase their own equipment by limiting their risk of loss due to program cancellations. The limitation of risk can be accomplished by the Government's agreement to buy back the equipment at depreciated value if the applicable program is terminated prior to the contractor's recovering its costs. These approaches are currently being used by DOD in a limited number of cases.

Also, since 1963, DOD has had a value engineering program to stimulate contractors to search for new methods and less costly alternatives in producing military hardware. Another important program is one that DOD has carried on since the early 1950s to develop new or improved manufacturing technology. An early success of this program was the development of numerically controlled machines. Almost $120 million has been budgeted for this program in fiscal year 1979, and increases are planned for the future. "Should cost" reviews and the development of improved work measurement systems are other means used by DOD to reduce production costs.

While all of these approaches are effective in particular situations, we continue to believe it is also most important to eliminate the builtin disincentive to cost reduction that results from basing the major portion of contract profits on estimated contract costs.

Question 4. Your report was quite critical of the productivity improvement reward. Do you think this system can be made to work, or should it be eliminated? What changes do you recommend? Do you have any comments on DOD's plans, announced in their letter to the committee of January 31, to "simplify the methodology" for making awards and changing the system to a "cost reduction reward?"

Answer. Because currently a major portion of contract profit rates are based on cost and thus do not encourage cost reductions, DOD has attempted to provide an incentive to reduce costs through additional profit allowances for increases in productivity. Special productivity increases over and above those that come about through the normal learning curve from repetitive performance of the same task, are difficult to identify. In our recent report to DOD, we pointed out that improved guidelines are needed for determining such allowances and that in some of the cases we reviewed, awards had not been properly justified or evaluated.

In DOD's letter of January 31, 1979, to the Committee, it stated that the use of the productivity clause was to reduce contract prices and that DOD is willing to reward cost improvement when it yields lower prices. DOD proposes to "simplify the methodology" by changing the regulations to have contractors "reduce cost on our contracts by any method that does not violate law or reduce the quality of the product." DOD told us that this means that the Government negotiator would subtract a current proposed cost from a previously negotiated contract cost for the same or similar item, with the difference considered "cost improvement." We think it vital to go one step further and determine whether such reduced costs result from productivity improvements above the normal improvement resulting from experience in performing prior contracts.

We believe that DOD should improve its instructions for determining productivity awards by including specific examples showing the influence and consideration of prior actual costs and the learing factor in contract performance. In addition, if DOD substantially reduces the portion of the profit objective that is based on costs, the need for a special productivity profit provision would would be greatly reduced if not eliminated.

Senator Jepsen?

Senator JEPSEN. In following, just for my understanding, do you indicate that the weight given to investment, however, as a maximum of 10 percent, 90 percent of profits still based on estimated costs—page 2 of your testimony? You said unfortunately the effort has not been successful in promoting capital investments that result in future cost reductions. As I heard you say, you are not quite sure that you—how did you ascertain that if, in fact, other than your testimony here or your check where you had 71 samples of 142 negotiated contracts, where you sampled 71 negotiated after the effective date, 71 prior, and you had approximately $100 million difference, could you give an example, without naming a comany—call it XYZ Corp.—could you give an example of how you arrived at saying that this has not been successful?

Mr. FLYNN. We went to 66 contractors with a questionnaire asking them to what extent they had made additional investments and their reasons and whether the new policy was a significant factor. The results we got back from these questionnaires indicated that it was not a significant factor. They said they made some for reasons as to expand production, but they said the new profit policy, with very few exceptions, was not a significant factor.

Senator JEPSEN. In the defense contract area generally, compared to other segments of our industry, and so on, are these—do you consider these or classify these as high risk, low risk or medium risk?

Mr. FLYNN. It varies substantially, depending on the the type of contract that is involved, whether it's a fixed-price contract or cost type, incentive type.

It varies by the product. There really isn't a single defense industry. There are probably 100 defense industries. You have tank manufacturers, clothing manufacturers, car manufacturers, and all kinds of products that are produced for the Defense Department.

So it really isn't one industry. Essentially the risk does vary by type of contract. For very high technology products there is more risk, but generally, these are financed on a type of contract where a contractor doesn't have a great deal of risk in the initial development of the item. It's usually some form of cost-type contract.

So the risk is eliminated to a good extent in the initial development contract.

A follow-on production contract of the firm fixed-price type is usually used only when the risks have been pretty well eliminated.

Senator JEPSEN. I hear a lot of talk about defense spending. On the defense contracts, if we can just take those, assume they run the risk, no-risk, sweetheart contracts, what have you, put them all together, defense contracts as a group, that sector, would you say that profit basis of equity or investment is higher, than or lower, or about the same as with respect to anything else?

Mr. FLYNN. We did a study on that back in 1970, and at that time, when you considered return on capital, as I recall it, it was very close to being the same on both the defense work and the commercial work. Now the Defense Department has completed a study "Profit '76," and when it came down to return on capital investment, the return for defense work was slightly higher than for commercial work.

For this reason, they decided there was no basis to increase defense industry profits. That is why they tried to hold the line on overall defense profits but to increase the profits of firms that made bigger investments and to reduce costs and cut back on the profits of those that were not capital-intensive. So the answer basically is, I think, on a capital investment basis, defense work is just as profitable, if not more profitable, than commercial work.

Mr. STAATS. The issue here, and Senator Proxmire stated it very well, is not whether the profits overall are too high or too low or just right. The question is how can you maximize the incentive on the part of the contractor to put in new capital investments which are going to reduce the cost of producing the item for the Government?

Second, to minimize incentives to increase his costs in order to increase his profits. You can negotiate the profit level at any level that can be agreed upon between the Government and the contractor, but it still leaves aside the question of how you will overcome those two problems.

That is what we are essentially trying to do, the message we are trying to convey in our report.

Senator JEPSEN. Being neither an attorney nor an economist, without having that type of sophistication, in its most simple form, could the approach be on simply a cost-plus basis when you define contracts——

Mr. FLYNN. That is probably the worst type of contract. There is absolutely no incentive to reduce costs.

Whatever costs you incur, you get your profit in addition.

Senator JEPSEN. That's one side of it. At the same time, he might go ahead and invest if he had that type of situation.

Mr. FLYNN. He won't have much incentive. He is getting a profit percentage, generally a fixed fee, over and above those costs. We think that would be just a real bad way to go.

There is also the problem that when you go that way on an initial contract, there is a lack of incentive to reduce costs for the first contract because in any follow-on contract, you might have incentives to reduce costs and might make substantially greater profits by having higher costs on the initial contract.

There are all types of combinations.

Senator JEPSEN. Well, I appreciate that. I am not trying to defend or oppose this. I am trying to get some information. In the whole area of defense spending, especially in this nuclear age we live in with this degree of sophistication, programs that are planned out over a period of time—let's take, just for the sake of this conversation, a company building the B-1 bomber. Had they gone ahead and invested and geared up in that and proceeded, wouldn't they have been left—hasn't that happened, in fact—holding the bag so to speak?

Mr. FLYNN. I am sure that happened in some cases, but in the B-1 case, Defense had another program underway. Where a contractor has a substantial risk, Defense can guarantee that they will buy back equipment from him at the depreciated book value if the program is canceled.

I believe that happened in the case of Rockwell, the B-1 contractor. There are other programs where you can try to eliminate such a great risk.

Senator JEPSEN. That same principle has been applied to missile development, where we proceed and then back off and say, "We shelf this," and start something here, is that generally how they handle that? I am not trying to single out an issue.

I only want to get the economic points.

Mr. FLYNN. This procedure was used in a limited number of cases. I don't know exactly how many. But it has been used in several. I am sure it doesn't apply in every instance but I am not positive about just which ones.

Senator JEPSEN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Jepsen.

Thank you very much, gentlemen. We appreciate your testimony so much, Mr. Staats. As usual, it's most reassuring that you have the job you have and are doing the outstanding job you are doing.

Our next witness is the Honorable Dale Church, who testified before this committee on several occasions. I testified, kind of, before him the other day on national stockpile policy.

We are delighted to have you. You have a brief statement. Go right ahead, and we will have some questions.

STATEMENT OF DALE W. CHURCH, DEPUTY UNDER SECRETARY OF DEFENSE FOR ACQUISITIONS POLICY, DEPARTMENT OF DEFENSE

Mr. CHURCH. Good morning. I have with me today Mr. David Koonce, my staff member who specialized in the profit policy area and will be available also to answer questions if needed.

It's indeed a pleasure always to come back and appear before this committee because profit is of great importance. It's the life blood of any contractor and is necessary for his continued existence and innovation and ability to further reduce the overall price we pay for our goods and services.

Profit '76 was a policy that was developed during the past administration. Although we don't feel any legal commitment to be bound by the details of the policy, we do feel a moral commitment to move ahead rather slowly unless there are things that are clearly wrong or pushing us clearly in the wrong direction.

Our contractors depend highly upon profits for their continued existence, and certainly it becomes a risk factor if we continue to oscillate profit levels in a too widely moving direction up and down.

So we want to approach this matter with a great amount of analysis and assurance; if we do make any changes, they are in the nature of this type of fine tuning. As we go about doing this, it's important to review the breadth with which the Defense Department operates.

We buy probably the widest variety of products and services of any organization in the world. As a matter of fact, one can almost say that the goods and services we buy are almost infinite in number. Because there are so many products that we require, our suppliers are numerous. We find everything from a mom-and-pop operation up to the largest international corporate giants in the world.

As we view profits, we can't view it as what is good for one is good for all. We must be careful to tailor our needs to each of our businesses so we in fact create an atmosphere for each of them that insures that they are selling at a price, that is a total compensation which is the lowest we should have to pay and requires them to be most efficient.

Most of the statistics we are talking about here today are what most of the learned writers refer to as markup. That is, profit is really a function after a period of performance and all goods and services are delivered and we finally find out what the contractor actually made between what he spent and what we paid.

Today we are looking at things that will happen in the future. That is, a number of questions were asked regarding the length of time necessary to evaluate how our profit policy is going.

Because many of those contracts are not yet complete, we really don't know where profits are going. We do know where markups are going. It's our feeling and belief that as we looked at the data to date that the profit policy is a step moving in the direction of adding productive contractor investment to their plants.

I heard some discussion this morning of what we had in the past and I would like to clarify for the record. We had a minus 2 percent where a contractor could lose as much as two points in the weighted guidelines for using Government plant and equipment.

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If he had a heavy amount of Government-owned properties, he could receive up to a minus 2 percentage point deduction in his profit.

Going back and looking at the "Profit '76 Study," as we formulated the policy, it was designed to offset in the prenegotiation profit objective the average cost of money measured by Cost Accounting Standard 414. We have analyzed cost and profit data on over 800 contracts which exceeded $500,000. We believe the offset of CAS 414 has been achieved. The cost of money averages 0.79 percent of the prenegotiation cost objective. The profit on investment averaged another 0.77 percent.

The total increase for these factors averaged 1.56 percent. Our offset was about 1.45 percent. So we had a net figure of about 0.11 percent in the prenegotiation profit objective.

Let me point out again this is indeed markup rather than profit in and of itself.

We have also compared the prenegotiation profit objectives between fiscal years 1976 and 1977. We did show an overall profit objective increase of 0.49 percent.

We have looked at that carefully and felt as though the instructions we put out with respect to assumption of risk were inadequate and we are planning to revise them.

We believe this revision would have reduced the prenegotiation profit objective by about three-tenths of 1 percent. We consider the remaining minimal overall increase in the profit objective of 0.19 to be prudent and acceptable.

The reason I say prudent is that it's our analysis that if we attempted to offset it even more, we would cut into the profits of the most valued companies we have.

That is, our small R. & D. companies that we use heavily in DOD to get the technology we need for our weapons tomorrow.

Those companies typically don't have a lot of investment. They have a lot of bright engineers and scientists, sometimes in associate types of companies whose main investment is a computer. They often work on a time share basis since they can't afford the size of computer power they would need to run all their calculations. The arrangements of those companies often involve the sharing of profits.

That is, part of the compensation of those employees is their share of profits.

The last thing in the world we would want to do is cut back on the profits these companies obtained in the past.

About two-thirds of the negotiations that we have reviewed have been under the new weighted guidelines. One-third are either exceptions or under the old profit policy.

With respect to the time period that elapsed, I think the full implementation of the profit policy didn't take place until the spring of 1977. That is, although the policy was published in September 1976, there were delays until December, and when people finally were able to understand what it was all about and begin to implement it, it was more like spring of 1977.

Effectively, we have seen only 2 years to date. Investment decisions are made after considering a broad range of issues. These include expected net return, availability of funds and cost of capi-

tal, expected savings in operating costs, present utilization of plant and equipment, perceptions of risk, and tax laws.

We think that the influence of our Profit '76 policy can be compared to that of the investment tax credit.

Although neither the new profit policy nor the investment tax credit affect the need for investment, they both make investment decisions easier to make because they improve the rate of return and shorten the payback period.

In summary, I would like to say that we don't think we have the perfect policy. As a matter of fact, we probably will never achieve the perfect policy because we are constantly dealing in a changing world with changing environments.

We will continue to work on it and to fine tune it to achieve what we believe is very important to DOD—That is, reduction in the overall total price that we pay for our goods and services, considering the quality and sophistication we must have.

So we thank you for this opportunity and will be happy to answer questions.

[The complete statement follows.]

STATEMENT OF DALE W. CHURCH, DEPUTY UNDER SECRETARY OF DEFENSE, ACQUISITION POLICY

Senator Proxmire and members of your Committee, thank you for the opportunity to discuss with you the implementation of the Department of Defense (DOD) profit policy.

On January 31, 1979, we responded to your letter of December 18, 1978 and furnished you with a complete analysis of the results of the first year's implementation of our new profit policy and answers to a number of specific questions. Today I would like to summarize that information.

In developing the profit policy during the Profit '76 Study, we wanted to accomplish a key objective of the DOD, to strengthen the defense industrial base. We found that the industrial base was suffering from a low level of private investment which was traceable to the relatively low level of profitability.

The intent of the new profit policy was to shift the emphasis from profit based on estimated cost to profit based on estimated cost and capital investment. By doing so, the policy would help remove obstacles to contractor investment in cost reducing plant and equipment. Although anticipated profit using the new profit policy is only one of many considerations that must be evaluated by defense contractors before reaching an investment decision, we are convinced that the policy is a step in the right direction.

When we formulated the new profit policy, it was designed to offset, in the prenegotiation profit objective, the average cost of money measured by Cost Accounting Standard (CAS) 414. We have analyzed the cost and profit data on over 800 contracts over $500,000 each that were negotiated using the the new weighed guidelines in fiscal year 1977, the first year of policy implementation. We believe that the offset of CAS 414 has been achieved. The cost of money averaged 0.79 percent of the prenegotiation cost objective. The profit on investment averaged another 0.77 percent. The total increase for these factors averaged 1.56 percent. Offsetting these increases was a 1.45 percent decrease in the average profit objective based on cost. Thus, on the average, our prenegotiation profit objectives increased by the insignifcant amount of only 0.11 percent.

We have also compared the total prenegotiation profit objectives between the fiscal year 1976 rate using the old profit policy and the fiscal year 1977 rate using the new profit policy. This comparison showed that the overall profit objective increased by 0.49 percent between 1976 and 1977. The major element of profit that increased was recognition of the contractor's assumption of contract cost risk. We are planning to reduce the amount of risk that can be assigned in the profit objective. This policy change will reduce the average prenegotiation profit objective by 0.3 percent. We consider the remaining minimal overall increase in the profit objective of 0.19 percent to be acceptable.

In addition to the analysis of the prenegotiation profit objectives, we have also analyzed the negotiated profit rates under the new policy. About two-thirds of the

negotiations were under the new weighted guidelines and the other one-third were under either exceptions to the weighted guidelines or under the old profit policy. Fiscal year 1977 was a year of transition when the new policy was used on new contracts but the old policy was used on many modifications to contracts awarded prior to 1977. In addition, service contracts, such as R. & D. studies, architect engineering and other professional services that do not require a significant amount of facilities for efficient contract performance are excepted from the application of the new weighted guidelines. It is our intent to preserve the profit levels experienced for these high technology firms prior to the policy changes made in September 1976. As a consequence, this may cause a slight increase in the overall level of profit on defense contracts.

Further analysis of the data shows that we have also achieved our objective to redistribute profits in recognition of risk and investment. For example, the negotiated profit rates on contracts for naval vessels has increased. On the other hand, the negotiated profits for contractors heavily dependent on government facilities have decreased.

Although we cannot correlate any changes in contractor investment patterns to the implementation of the profit policy, defense contractor representatives have informally indicated that the policy will make it easier to obtain corporate funds for capital investment on defense programs. They have also asked us to increase the profit on investment over the current level. If contractor investment patterns do change over the years, it may not be possible to directly relate these changes to the profit policy. Investment decisions are made after considering a broad range of issues. These include the expected net return (which is influenced by the new profit policy), availability of funds and the cost of capital, expected savings in operating cost, present utilization of plant and equipment, the perception of risk, and tax laws. Some capital expenditures are required by legislation, such as those related to OSHA and EPA requirements. The influence of the profit policy can be compared to the investment tax credit. Although neither the new profit policy nor the investment tax credit affect the need for investment, they both make investment decisions easier to make because they improve the rate of return and shorten the payback period. For these reasons, we have taken a conservative approach toward increasing profit to stimulate investment.

In summary, we believe that we have achieved our initial objective of removing obstacles to cost reducing investment decisions by defense contractors. However, we realize that there is still work to be done in this area and we will continue to monitor the implementation of the profit policy to make further inprovements as they become appropriate.

The CHAIRMAN. Thank you very much.

I will ask Dr. Karl Harr to follow you. He is the man sitting on your left, if you will pass the microphone over to him.

We are honored to have you. You were a big man on the campus at Princeton: President of the senior class in 1943; member of the football team; magna cum laude, Phi Beta Kappa. Then you went to Yale Law School and became a Rhodes Scholar in 1948. You have a brilliant academic background and a fine background in the law.

We are honored to have you before us today. Go right ahead with your statement and then we would like to question both you and Mr. Church.

STATEMENT OF KARL G. HARR, JR., PRESIDENT, AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC., ACCOMPANIED BY STEPHEN W. ROWEN, DIRECTOR, GOVERNMENT CONTRACTS, RAYTHEON CO., AND CHAIRMAN OF THE PROCUREMENT AND FINANCIAL COUNCIL OF AIA; AND FRANZ O. OHLSON, JR., VICE PRESIDENT, PROCUREMENT AND FINANCE, AIA

Mr. HARR. Thank you very much. I am Karl Harr, president of the Aerospace Industries Association of America, Inc., testifying on

behalf of the Nation's major producers of aircraft, spacecraft, missiles, their components and related equipment and services.

With me are Stephen W. Rowen, director of Government contracts for the Raytheon Co., who appears here today as chairman of the Procurement and Finance Council of the AIA, and Franz Ohlson, Jr., vice president for Procurement and Finance of the AIA.

We are appearing at your invitation, Mr. Chairman. Your letter of invitation asked us to respond to three questions concerning the new profit policy of the Department of Defense which grew out of the "Profit '76 Study."

Before addressing the specific questions, I would however like to make a few general observations. By giving appropriate recognition to a contractor's capital investments, the DOD's new profit policy was intended to maintain a relatively stable profit level while redistributing profits between the various sectors of the defense industry. Thus, the new policy was intended to allocate a higher profit to the capital-intensive defense contracts.

In addition, the new profit policy was not promulgated until the latter part of 1976. Therefore, we do not have enough experience to measure with any degree of certainty the effect that the new policy may have had either on decisions of contractors in making capital investments or the effect that any such capital asset investments may have had on contractor operations.

Finally, in considering profit policy it must be borne in mind that under our competitive economic system, companies necessarily make investments in those areas where there is the greatest opportunity for a high rate of return.

The short period of time between the invitation of the chairman and the hearing date did not permit AIA to poll its entire membership. However, a representative sample of some 12 companies engaged in defense activities was taken and the following is a consensus of their views on each of the three questions:

The first question:

Has the new profit policy encouraged contractor investment?

In our view it has, at least to some extent. However, it must be understood that the new profit policy is but one of many factors, and not necessarily the most important, that are considered in a company's decision to invest in capital equipment. Capital investment decisions are very complex and many other factors must also be taken into consideration, for example, obsolescence of existing equipment due to significant advances in technology; the impact of Government regulations such as those promulgated under the Occupational Safety and Health Act which require modification or replacement of equipment; and perhaps the most important, the necessity of investing in new and improved capital equipment to achieve efficiencies and increased productivity in order to maintain the company's position in the competitive marketplace.

The new profit policy has also had an influence on capital investment decisions in multidivision firms where only one or more of the divisions are engaged in defense business. Here, the new policy has assisted such defense divisions in competing within the company for a share of the capital investment budget.

The second question:

If so, has this increased investment promoted more efficient contractor practices?

As stated above, one of the principal purposes of capital investment is to improve operations and hence productivity. Therefore, to the extent that capital investments traceable to some extent to the new policy can be identified, and this may be extremely difficult, contractor practices promoting increased efficiencies have been achieved.

The third question:

Has the productivity improvement reward clause promoted more efficient contractor operating methods?

It is our experience that the clause has not been utilized to an extent which would permit any significant comment thereon. There is some indication of a reluctance on the part of DOD components to use it.

This concludes my statement. We shall be pleased to try to answer any questions you may have or provide an answer for the record.

The CHAIRMAN. Mr. Harr, that was a very limited response. I understand it's difficult but you heard Mr. Staats testify that they surveyed defense contracts and found it was their opinion the new profit policy had almost nothing to do with investment. You say it's hard to tell. It may or may not. He was—particularly Mr. Flynn—was much more emphatic here in indicating their survey at least indicated the defense contractors, didn't feel the new policy was effective in getting them to make more investment.

Mr. HARR. I think there are several answers to that. One is that we are not sure. It's very hard to trace. Despite the fact it looks like it has been 2½ or 3 years in terms of impact, evaluatable impact, the time frame has been actually much shorter. We have to remember that most of the capital investment decisions that we're now living under were made well before 1976. I don't think that we are taking into consideration that an investment decision, particularly in our kind of business, is a very complicated one. We're talking about a business without a fixed market, on the whole, in terms of capital investment decisions. When you make a decision to invest a substantial amount of capital, you don't know whether next year you will still be in that business or not, whether the business will still exist in terms of the decisions of the customer, or whether you will get competitive follow-on contracts and such. There is a myriad of situations in which you have risks not present in the normal commercial marketplace. These put a heavy premium on quick payback. Depreciation policies let you be exposed over a shorter period of time and reduce the impact of profit standing by itself. Obviously profit is very important. These companies have to compete in the same marketplace as do totally commercial companies in terms of attracting capital, stockholders, and employees and so forth. We are not free from either discipline, the discipline of supplying the Government, or of the free enterprise system in general.

The CHAIRMAN. Some seem to feel it would be desirable for the Federal Government to provide more incentive for investment on the part of defense contractors and you say appropriate recognition for investment in seeming to approve of the new profit policy—does

10 percent really represent a sufficient component under these circumstances you so well described to encourage a significant investment on the part of defense contracts? You point out it's a short-term situation very often. They may have a contract that only lasts a few years or even less and therefore to acquire new equipment is risky. But if you only put 10 percent emphasis on it, it seems to me to be almost insignificant.

Mr. HARR. I would think the trend discussed here would be favorable in order to come to a true appreciation of the best ways of creating incentives for capital investments, yes. It should be said that there are two very different kinds of private institutions involved in supplying the Government in terms of the effect of this kind of breakdown. One is capital intensive and the other is labor intensive. I'm not talking unskilled labor. I'm talking about a fellow who comes in with an Einstein on his payroll. He has no capital investment. Your question was well founded—as one of the GAO witnesses said, you could produce a situation where the incentive to invest in facilities was excessive. There is a balance that should exist.

The CHAIRMAN. Let me say either Senator Javits or Senator Jepsen are invited to come in at any time. I know most of you gentlemen have other obligations, too, and I'm delighted to yield to you any time.

Senator JAVITS. I came to see what was going on. If I want to break in, I will ask you.

The CHAIRMAN. Mr. Church, Profit '76 Director General J. W. Stansberry testified before the Joint Committee on Defense Production and I quote, "The defense profit policy seems to be too heavily oriented toward costs and may carry a message to contractors that the way you keep your profit potential high is to keep your cost high." One primary aim of the new profit policy was to reduce the incentive for contractors to maximize costs and yet cost is still the major component of the profit formula. Doesn't that still give contractors a substantial profit reward if they keep their cost as high as possible? Cost did make up as I understand 65 percent. It's still the largest component of the formula.

Mr. CHURCH. Let me say first that our calculations are slightly different from that of the GAO. We believe the cost of money which is dependent on investment should be added to the profit on investment to obtain the true measure of the importance of investment. They show that 14.9 percent of our profit policy is based on investment. There is no question we're always concerned——

The CHAIRMAN. Instead of the investment being a 10-percent factor, you say it's a 15-percent factor.

Mr. CHURCH. Yes, sir. We're always concerned in the Defense Department about the indications that occur from time to time that our contractors may be disincentivised to be efficient. We think they are more in the area of occasional than the general rule. That is, we still have an overall defense budget we must live in and certain priorities will throw out programs that no longer can qualify in terms of competing within the overall defense budget to get dollars.

So contractors know full well if they jack their costs up too high they better have a product which is the No. 1 priority in the

Defense Department or they will get lopped off. The subtleties within the complexity of the profit policy and what motivates contractors to reduce the total price is what we are concerned about here. Obviously if you went to the complete extreme of rewarding nothing but investment you would want to emphasize new investment. Likely, as old investment is becoming less productive you're looking for him to invest in new, more productive items. Carried to its extreme you might have a contractor literally making investments for investments' sake. That is, if he made more investment and got higher profits because of it, he may do so rather than because he is getting more productivity. Somewhere we are trying to balance the equation.

The CHAIRMAN. I get your point. But I wondered if, as long as you give any significant—particularly when you give 50 percent of the formula to cost—if there isn't an incentive to increase costs and profit, which is the opposite way we want them to go. Mr. Harr, in your 1978 yearend message of the AIA you said one of the 2 principal reasons for the industry's improved profit was "a different attitude within DOD on profit allowability resulting from the profit study undertaken by DOD two years ago" and by this should I assume you feel the profit policy has had a positive impact in aerospace industry earnings, for example?

Mr. HARR. Well, I would include the profit policy, yes. I think recognition of the importance of profits, which has been stated by every witness here and the chairman himself today, had been present in the calculations of DOD in a way that is sensible.

The CHAIRMAN. Does that mean the fears you expressed 2 years ago have not come to pass? At that time AIA predicted new policy would cause substantial reduction in aerospace industry profits.

Mr. HARR. I don't recall. Profit '76?

The CHAIRMAN. Yes, sir.

Mr. HARR. I don't recall that.

The CHAIRMAN. That was a statement you submitted to the joint committee.

Mr. HARR. Yes, it was.

[The following was subsequently submitted for the record:]

Question. In its 1976 statement to the Joint Committee on Defense Production, the Aerospace Industries Association stated that "The implied conclusion of Profit '76 is that current overall profits are appropriate but that a redistribution of those profits is desired. DOD data indicated that a leveling of earnings rates between industries is expected to result from the new policies, e.g., shipbuilders (with "before" earnings approximating 2.9 percent of sales) are expected to experience a 1.7 percent profit increase; while aircraft manufacturers (with "before" earnings approximating 3.7 percent are expected to experience a 0.4 percent decrease." Do you believe that this projected effect of the profit policy has been realized?

Answer. We have reviewed Profit '76 data and find that the 2.9 percent figure for shipbuilders and the 3.7 percent figure for aircraft were five year (1970–1974) averages of "Profit Before Taxes" realized as a percentage of sales. We pointed out in our statement to the Committee that the new profit policy was not promulgated until the latter part of 1976 and, therefore, there is not enough experience to measure the effect that the new policy may have had on decisions of contractors to invest, or the effect of capital asset investment on contractor operations. Many of the contracts that were negotiated using the revised policy to develop pre-negotiation profit objectives are still incomplete. We believe that much more experience and data will have to be available before it can be ascertained if the DOD intention of leveling "realized" earnings between industries has been realized.

We have been informed that DOD has provided figures which compare 1976 and 1977 negotiated profit rates by commodity. These figures show an increase in

negotiated rates for aircraft, missiles, and ships and a decrease for aircraft engines. We do not know, however, whether the changes are the result of DOD revising its guidance to contracting officers on developing before negotiation profit objectives or from other factors such as an increase in firm fixed price contracts which call for higher profit rates as compared with other types of contracts.

The CHAIRMAN. Mr. Church, GAO concluded one reason for the recent increase in profits was simply that contractors have refused to accept lower profits called for by the guidelines. What can the Department do to control this tendency of contractors to dig in their heels and refuse to accept anything below their former profit levels?

Mr. CHURCH. What we are in fact doing is insuring or attempting to insure in all cases where it's possible to not get locked into a sole source position.

The CHAIRMAN. How often has DOD refused to award a sole source contract because the company demanded too high a profit?

Mr. CHURCH. We haven't analyzed it from that standpoint. We never ran an analysis or questionnaire on that basis.

The CHAIRMAN. Do you recall any instances where you said no go, you're asking too much?

Mr. CHURCH. I know instances where negotiations have gone on for a good long time because the Government refused to give in to a contractor's demand and there finally were settlements achieved, though sometimes they have dragged out over months, on the profit issues. Usually what we do in cases where we find a contractor who is continuously demanding profits beyond what we consider to be prudent and acceptable for what he is selling us, we go out and attempt to develop a second source so we no longer have to rely strictly on him. We buy a good number of data packages that have that purpose in mind. We do have other means available to us although on any given instance it's difficult other than to just hang in there and negotiate hard.

The CHAIRMAN. I have some other questions but I will yield at this point to Senator Jepsen.

Senator JEPSEN. I have nothing.

The CHAIRMAN Senator Javits?

Senator JAVITS. I have no questions. I am just getting oriented. I think it's a very interesting and useful inquiry, Mr. Chairman, may I say, and is made specially vivid by the sensational discussions about the bulge in profits in the last quarter, as if this was, you know, some monumental discovery that makes or unmakes the whole economic system of the United States.

From listening to the commentators, you immediately have to investigate everybody and pass an excess profits tax and do something drastic.

As a matter of fact, an exporter may even be taking a loss.

The CHAIRMAN. That's right. As a matter of fact, profits in our system are good news. Like lower unemployment, lower interest rates and higher profits. That is what makes the system go.

It's good news. Also there is an explanation in view of the effect that inflation has on inventories, the effect it has on future costs. You can make a very strong argument that those profits weren't excessive.

Senator JAVITS. I think it's so relevant an inquiry, specially as our depreciation policies are still based upon the fixed time based on cost instead of on replacement.

The CHAIRMAN. Mr. Church, you say that negotiated profit for contractors which are heavily dependent on Government facilities have decreased since the original profit study. The aerospace industry was identified as one of the most lightly invested industries and was considered a prime candidate to suffer profit erosion under the new policy. Yet profits have risen steadily since the new policy. The president of the Aerospace Industries Association said the new policy was one of the two major factors contributing to this increase.

Where have the decreases in profit been?

Mr. CHURCH. Aircraft engines decreased 1 percent. Combat vehicles about 2.4 percent.

The CHAIRMAN. Is this because of the new policy? Have you isolated that factor?

Mr. CHURCH. Again we are talking about negotiated going-in profits as opposed to realized profits here.

There is in fact a comparison of 1976 and 1977, using the old weighted guidelines and the new weighted guidelines, looking at the amounts negotiated. So we have to presume at least at this point that these are the reasons they decreased.

The CHAIRMAN. More than 2 years ago the GAO prepared a review of Profit '76. They predicted:

> Policy would not provide sufficient encouragement for new investment. Overall profit levels could increase if contractors refused to accept the lower-profit guidelines and that the guidelines for application of the productivity award were insufficiently clear.

All these seem to have been borne out in their recent report. Why has the Department ignored these suggestions for 2 years?

Mr. CHURCH. We have not ignored the suggestion for 2 years.

As a matter of fact, we have been putting out guidance and have been in constant contact with the field regarding such things as documenting the reasons for significant differences between prenegotiation objective and negotiated profit levels.

As I mentioned earlier, we are planning to put out a new direction to reduce the amount of profit that is being assessed for contract-cost risk in those situations where we didn't intend for it to rise.

The policy was always intended to increase profits for those contractors willing to assume more of the risk, particularly where they are willing to go to firm fixed price contracts over cost reimbursible or other forms of contracts.

In fact, that happened. These profits have risen and we note that particularly in aircraft where we had a switch from fixed price incentive and sometimes cost plus incentive fee contracts to firm fixed price. We have seen a 1 percent change between 1976 and 1977.

The CHAIRMAN. LMI, I understand, which is your own think-tank think we should raise the investment factor from 10 percent to 70 percent. GAO suggests 100 percent may be appropriate.

The issue here is that you say that would be too much. I think you make a pretty strong case. Will you raise it from 10 percent?

Doesn't 10 percent seem to be pretty ineffectual? Wouldn't it be desirable from every standpoint to increase the investment factor?

Mr. CHURCH. As I stated earlier——

The CHAIRMAN. You say 15, I beg your pardon.

Mr. CHURCH. One of the problems with Profit '76 is it tried to sweep too large a community in under the same profit policy. I think there are segments where we need productivity, serial production of large defense systems, and we are re-evaluating the policy to see if we ought to move more heavily in the direction of rewarding more productivity investment.

However, we have to be careful we don't sweep up the kind of contractor that Mr. Harr mentioned, the guy who is a bright young Albert Einstein-type Ph. D. with his slide rule—that we don't cut his profits to offset those of the heavily invested corporate giants.

It's an area we have to move carefully in. The LMI study you referenced is just out. We haven't had a chance to review it in depth. Preliminary indications would be if we moved as far as they suggest, literally we would cut the profits in half.

I don't think anybody would intend we suddenly move in a direction to cut the profits in half. I think there needs to be some additional analysis done by LMI to understand what they would accomplish with their suggested policy.

The CHAIRMAN. Well, both you and Mr. Harr have made an excellent point, that we don't want a policy that discourages, as you say, a very competent young firm headed by people of real genius who are contributing primarily their capacity rather than big investment.

But doesn't that suggest we ought to have different criteria? You also made the point you have a whole variety of different industries.

The 10 percent would be clearly inadequate in many areas where you require big investment and it might be appropriate in industries where what you need are research capability that requires very little investment.

Is this something you might be thinking about?

Mr. CHURCH. In fact, that is what I asked my staff to do, to move carefully but decisively in that direction.

The CHAIRMAN. It was called to my attention—Dick Kaufman just put it—the new policy already excluded Albert Einstein. Effective October 1, 1976, the Department of Defense made significant changes to its profit and pricing policy for the most production-efficient type contracts. The policy didn't apply to labor-intensive contracts, for example, but I would reiterate, I think it would be a good idea to consider the possibility which you say you are going to of having it apply at different levels for different industries.

Mr. CHURCH. R. & D. firms are not as clearly culled out as I believe they should be. It's a broad sweeping term that is ambiguous. We indeed need to clarify that better than it has been.

The CHAIRMAN. Has the aircraft industry undertaken efforts to try and reduce unnecessary labor expenses, Mr. Harr?

Mr. HARR. You say labor expenses?

The CHAIRMAN. Yes, sir.

Mr. HARR. Well——

The CHAIRMAN. Let me pursue this a bit so it makes it clearer.

The DOD/OMB aircraft capacity study concluded that unnecessary overhead charges were adding hundreds of millions of dollars annually to defense costs and recommended limits on overhead charges. Is your association disputing those findings?

Mr. HARR. Yes.

The CHAIRMAN. Why and how?

Mr. HARR. We could certainly dispute the conclusions of them. It seems to me the figures then shown were in terms of what was described as excess capacity—not just personnel. It was also plant and equipment, which were totally pulled out of context in the way they were presented. I believe that you can't have the best high-technology industry in the world unless you have teams of able people competing with one another.

I call your attention again to Elmer Staats' statement that the only place for improving your productivity at a comparative rate to your competitors abroad is in the high technology industry. One of the costs of that is keeping teams together. You can't tear teams down and build them up again overnight. It's true there is a price, a nonwinning competitor and a contract has a team of talent, some of whom will leave him, many of whom will stay if he remains competitive.

The CHAIRMAN. That is a good argument. We went through this before. There is such a strong temptation on the part of defense contractors to cover in their overhead costs and to apply them to their defense operations, and thereby to reduce their costs for their commercial operations. It is fascinating that the highest returns on sales and investment are in the commercial operations of defense contractors.

One explanation might be there is a tendency, understandably, to apply your overhead rather generously to your defense business, since your costs are covered and then you are in a much stronger position to pick up your commercial business.

Mr. HARR. You have to fight about seven of the toughest adversaries that exist to do that. Maybe I should put you in there and make it eight. In the course of the auditing procedures of the Government, in the course of the internal auditing procedures, intradivisional competition within a company, in terms of the external auditors and everything else, any misapplication of overhead would require the greatest conspiracy I can imagine. It's just too hot an issue. It's too well scrutinized and too well audited.

Without giving a long harangue on the subject, there are lots of good cases where the Government gets a free ride off commercial business.

The CHAIRMAN. Would you do this for the record—I agree it's a complex situation that would take a long answer, but when you correct your remarks could you add any justification or any detail to document your argument? I would be very grateful. That would be very helpful.

[The following information was received from Mr. Harr:]

Many of the ordinary and necessary costs incurred by a prudent businessman in conducting his business are not recoverable, i.e., are disallowed under a contract with the Department of Defense. These include independent research and development costs in excess of ceilings, contributions, advertising and many others. These disallowed costs, occasioned by the preferred status of the Government as a buyer, may be as high as 3 percent of sales.

The CHAIRMAN. Mr. Church, what does the Defense Department intend to do to improve productivity in the aerospace industry? The present policy doesn't seem to be working. GAO and others have been calling attention to their productivity problem for 10 years. What will you do and when will you do it?

Mr. CHURCH. We have a number of management initiatives at all times. It's interesting that we should look at that issue, because it's beginning to look like our industry, particularly our major weapons system manufacturers, who we know are the best in the world—is doing better every year, which tends to run counter to some popular opinion.

A recent preliminary result of a Rand study in progress at the present time is that the average overrun of contracts from the original expected cost to the final cost has been halved every decade for the last three decades and the average cost in the last decade——

The CHAIRMAN. Will you make that study available? I would like to see it.

Mr. CHURCH. Yes, sir.

As a matter of fact, the average cost——

The CHAIRMAN. When was that Rand study completed?

Mr. CHURCH. I just got the preliminary briefing yesterday. It's a very timely——

The CHAIRMAN. We would like to have the preliminary briefing, if we could, and then the full study when available.

Mr. CHURCH. I would be more than happy to do so. All evidence is that we have cut the average overrun down from 40 percent in the last decade to 20 percent in this decade and the trend is lower. [See p. 39 for Rand report.]

As was mentioned earlier, the productivity area of investment specifically, we have an extensive manufacturing technology program and the termination protection buy-back provision, which was discussed earlier regarding the B-1 program, where literally we guarantee the contractor so he gets his undepreciated amount of investment, if there is a termination.

The CHAIRMAN. I have some data from Bureau of Labor Statistics—I don't think it was published—which indicates the output per employee hour, which is productivity, for a whole series of industries—starts off with aircraft and parts and it points out that the rate of productivity growth has been declining steadily. It's a little higher now than it was in 1975, because that was a major—well, it's down in the last few years. 3.0, 2.4, 2.40, 1.2, 1.5, so it has been a steady decline. You have the same kind of thing in aircraft by itself. 6.7, 3.2, 3.4, −1.2. That is through 1975.

So the data we have indicates that you have that—you don't have that good a productivity record as of 1976.

Mr. HARR. I would like to see that and have a chance to analyze it.

[The following information was received from Mr. Harr:]

Question. Please provide for the record your comments on the productivity figures discussed on p. 33.

Answer. It is our understanding that there is no direct measurement of output for SIC 372 (aircraft and parts) and SIC 376 (guided missiles and space vehicles) and that, instead, a proxy for output has been developed. The proxy is composed of material inputs such as fabricated structures, metalworking machinery, electrical

machinery and diesel engines. While such industrial sectors comprise major suppliers to SICs 372 and 376, they obviously are subject to different variables than those which affect the aerospace industry.

The available data bearing on this situation end with the year 1976. The year 1976 represented a period of stagnant activity in the aerospace industry and, indeed, when measured in GNP constant dollars, was the low point in the value of aerospace shipments since 1968. Since 1976, the industry has enjoyed an increasing level of shipments (GNP constant dollars) and an accelerating level of new orders. Industry employment, as reported to AIA by its member companies, is not expected to climb as rapidly as the value of aerospace shipments, thereby indicating an expected increase in industry productivity.

Question. The DOD/OMB Aircraft Capacity Study concluded that aircraft industry production capacity far exceeded any foreseeable DOD demands, and that it was unlikely that even "one-shift" capacity could be utilized by DOD. The study also concluded that additional unnecessary costs were added by unnecessary administrative, marketing, and administrative costs absorbed by DOD. The Project ACE study, prepared several years ago by the Air Force Systems Command, reached similar conclusions about industry capacity and efficiency. Do you have any comments on these conclusions?

Answer. With respect to the DOD/OMB Aircraft Capacity Study, January 1977, and Project ACE of the Air Force Systems Command (AFSC), November 1973, we have carefully reexamined each of these studies, but do not find them supportive of the conclusion that the "aircraft industry production capacity far exceeds any foreseeable DOD demands" and that there were unnecessary costs absorbed by DOD. We would invite attention, however, to certain statements in the DOD/OMB Study on capacity. Thus, on page 38, the study observes "projections of capacity and demand are subject to a great deal of uncertainty" and on page 39, it says, "historically the demand for military aircraft has been subject to wide and large unpredictable variations as military technology and strategy changes and national priorities adjust to changes in international tensions."

The DOD/OMB Study also describes the benefits of extra capacity. Thus, on page 36 it states "If extra capacity reflects associated design and engineering resources, then one benefit of having extra capacity is a larger technological base. The benefits to the aircraft industry of competition and technological superiority that result from extra capacity are substantial but not easily quantifiable. Extra capacity provides flexibility in plant layout and in alleviating production problems. The existence of multiple firms, at least two or three in each sector, provides competition during the R. & D. phase. Competition fosters better system performance in meeting the mission as well as new and improved operation and maintenance features which may reduce life cycle costs."

The CHAIRMAN. Very good.

Now Mr. Church, in 1977 you testified that 75 percent of the additional costs of excess capacity in the aircraft industry were due to redundant overhead charges, that is administrative, engineering and marketing personnel. What steps have you taken to cut down on these overhead charges?

Mr. CHURCH. You have seen a couple of things that happen in the economy. You are referring to the aircraft study and the so-called extra capacity of the aircraft industry.

The CHAIRMAN. Yes, sir.

Mr. CHURCH. First, those projections of extra capacity were based on the commercial airlines—airplane business I should say—not picking up until at least the mid-eighties. In fact, anybody that witnessed the sales of Boeing in the last 2 years realizes that the surge in commercial airplane business is hitting us now, some 6 years ahead of what the study predicted.

We feel that so much of the extra capacity has been absorbed already.

Additionally, through just the natural events that occurred relative to the increase in business, we set out to do a number of extensive audits to insure the overhead on defense contracts was

both allowable and reasonable and put particular emphasis on the effect of commercial business.

I believe in many cases we have been able to cut back overhead costs. The only way we could validate that would be to run a complete new study and because of the dynamic state of the aircraft industry at this time, I think it's premature to run that study. Maybe in 2 years after it had a chance to level out, we can get a better reading.

The CHAIRMAN. Gentlemen, I want to thank you very much. I want to conclude by making a short statement.

This concludes today's hearings on defense profit policy.

Today we have heard that the new policy announced with such fanfare 2½ years ago is not working.

The GAO report, which has the only real facts and figures, argues that investment has not increased as a result of the new policy. No productivity improvements have been realized. DOD and the Aerospace Industries Association argue that the program may be working, but that they don't really know for sure.

On the other hand, everyone appears to agree that profits have increased as a result of the new profit policy. This would not necessarily be bad. Profits, after all, are normally the motivating force for efficiency in the business world.

However, under negotiated defense contracts, profits appear to reward inefficiency.

DOD acknowledges that this was the case under the old profit policy, which awarded 65 percent of profits on the basis of costs.

The new policy still makes cost the most significant factor in awarding profits.

The contractor is still being given an incentive to increase costs at the bargaining table. The same situation that DOD acknowledges formerly exists still does exist. Any contractor reducing costs would find his profits going down as well.

If I were a defense contractor under the current system, I would go out and hire the most inefficient people I could find, and I would tell them to take their time building the product I was supposed to provide to the Government, because that would be the way that I would insure a high profit.

And I would know my competitors, if I had any, would be doing the same thing.

We have also heard that there are enormous problems with the implementaton of the new profit system. The Government contracting officers have not been given clear guidelines as to how they should interpret provisions, and they have not been given the authority to insure that contractors adhere to the targets.

In short, the new profit system appears to be as defective as the old one.

It is not motivating contractors to invest in new equipment, in order to reduce costs. Profits are the bottom line for the contractors. But costs are the bottom line for the Government and the taxpayer.

By this measure the new policy is failing. We regret that very much.

We have some questions for you for the record and, in responding to those questions, if you want to respond to my last statement,

we would be glad to have you do it. You can do it orally or for the record. Either one.

Be my guest.

Mr. Church, did you have anything you would like to say?

Mr. CHURCH. Well, Mr. Chairman, I think it's appropriate on your committee that you get the last word in. [Laughter.]

So just to repeat we think the amount of profit that increased has been a very minimal amount that has been due primarily to increased cost risk on fixed-price contracts. Of course, this shifts the risk from the Government over to industry on these contracts. We have seen some increase in the profit policy that could not be offset against R. & D. firms. We do believe that the major increase has been offset within those that have less capital, but we have isolated the labor-intensive R. & D. firms as we mentioned earlier.

Naturally, we would expect that their profit, though not increased, would not be decreased and thus not offset.

Mr. HARR. I would say one word, Senator. Somebody had better watch the referee because, instead of going out and hiring the least efficient, most costly equipment and people, quite the reverse is universal within this industry for a lot of other reasons not involved in the discussion here today.

The CHAIRMAN. That's right. I think the situation I hypothesized would be if the only consideration were this policy. But this policy does seem to reward inefficiency. There are other countervailing forces that certainly play on the defense contractors.

For one, most of them also operate in the commercial area where they have to be efficient.

Mr. HARR. You said part of what I was going to say. Thank you. Also, the defense business itself, even in negotiated contracts, is viciously competitive. It is probably more competitive than a lot of commercial business, which constitutes a self-policing mechanism which boosts efficiency as high as possible.

Third, there are numerous controls over the cost elements. Maybe the policy is helpful to the situation and maybe it's not.

The CHAIRMAN. At any rate, thank you for your excellent testimony. You made a good record.

[Whereupon, at 12:30 p.m., the hearing was adjourned.]

OFFICE OF THE UNDER SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

RESEARCH AND
ENGINEERING

9 MAY 1979

Honorable William Proxmire
Chairman, Committee on Banking,
Housing, and Urban Affairs
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

This is in reply to your letter of April 30, 1979, requesting our answers to additional questions for the record to be included with our recent testimony on Department of Defense (DoD) profit policy. The additional questions are addressed in the following paragraphs:

> "Please describe efforts besides the contractor profit policy undertaken by the Department to improve contractor productivity."

As we noted in our letter to you of January 31, 1979, there are several other methods available through the acquisition process to motivate contractors to improve productivity through additional investment in cost reducing plant and equipment. These are used as warranted by the particular situation. They include termination protection clauses, multi-year procurement, award fee arrangements, shared savings programs, and the rapid depreciation provision of Cost Accounting Standard 409. Our manufacturing technology program, which is funded at $125 million for the current year, is used to develop new manufacturing methods and equipment to reduce the cost of needed items or make it possible to manufacture items that are beyond the present state of the art. We estimate the payback of this program to be $5 for each $1 of expenditure.

> "The General Accounting Office testified that 'we would like to see more emphasis given at the OSD level to ways in which you can increase productivity and lower the costs of the end products. We don't see any central point in OSD now looking at this as a package.' Do you agree with this statement by the GAO? If so, are you considering establishing such a central coordinating function?"

My office is the central point within the OSD for emphasis on ways to increase productivity and lower the cost of end products. In addition

to the efforts noted above, we are also addressing the broad issue of affordability of major weapon systems.

> "In 1977, you testified that the Department of Defense was bearing a significant cost for excess capacity in the aircraft manufacturing industry. On p. 70 of the transcript, you suggested that this problem had been corrected, to some extent, by the surge in orders for commercial aircraft. This appears to confirm the conclusion of the aircraft capacity study that the Department was absorbing costs unrelated to defense production. Does the DoD absorb a portion of the costs associated with non-defense business?"

The recent testimony was made in the context of the excess capacity for all of the aircraft manufacturing industry, including both defense and commercial business. It was not intended to indicate that the DoD is paying for non-defense cost. We are paying only those costs that are properly chargeable to defense contracts.

Your letter requested a copy of the Rand study mentioned in the testimony. The attached study, which is preliminary and unpublished, notes on page 34 that the average overrun for all of our major acquisition programs in the 1970s is only half that of the 1960s.

I hope this information is adequate for your request. If we can be of further assistance please let us know.

Sincerely,

R. F. Trimble

ROBERT F. TRIMBLE
Acting Deputy Under Secretary
(Acquisition Policy)

Attachment
As stated

RAND PRELIMINARY RESEARCH STUDY

Contract No. MDA903-78-C-0188

RAND/WN-10435-DR&E

February 1979

AN OVERVIEW OF ACQUISITION POLICY EFFECTIVENESS IN THE 1970s

G. K. Smith

A WORKING NOTE
prepared for the
OFFICE OF THE UNDER SECRETARY OF DEFENSE
FOR RESEARCH AND ENGINEERING

PREFACE

This Working Note contains the charts and text of a briefing presented in early February 1979 to several officials in the Office of the Under Secretary of Defense for Research and Engineering. This interim documentation is intended for distribution principally to those who have heard the briefing. A full report on the findings of the study is in preparation and will be available later in the spring of 1979.

INTRODUCTION

This study grew from a series of discussions between Rand and OSD regarding the effects of previous changes in the policy governing the acquisition of major weapon systems and the relevance of such experience to proposals for further changes. One widely recognized difficulty impeding the formulation of new policy is the lack of any comprehensive, quantitative record of the strengths and limitations of present policy as demonstrated in the outcomes of current acquisition programs. As part of a continuing program of acquisition policy studies, Rand undertook a one-year examination and analysis of the effectiveness of acquisition policies that have been in effect during the 1970s. The briefing summarized here details the central findings of that study.

OBJECTIVE

- EVALUATE EFFECTS OF POLICIES AND PROCEDURES ON SYSTEM ACQUISITION OUTCOMES DURING THE 1970s

STUDY PRODUCTS

- RECOMMENDATIONS FOR CHANGES IN ACQUISITION POLICY AND PROCEDURES
- DATA BASE
  - ACQUISITION OUTCOMES
  - POLICY AND PROCEDURE IMPACTS

Chart 1

The ultimate objective of the study has been to produce recommendations for changes in the current acquisition policy. However, one must first understand how the current policy works. One of the significant products of this study is, therefore, a data base summarizing the cost, schedule, and performance outcomes of major DOD acquisition programs of the 1970s, and the extent to which formal policies have been implemented.

STUDY APPROACH

- EMPHASIZE QUANTITATIVE EVIDENCE
- FOCUS ON MAJOR WEAPON SYSTEMS
- ADDRESS BROAD ISSUES LIKELY TO HAVE BEEN AFFECTED BY CHANGES IN POLICY AND MANAGEMENT STYLE
  - PRE-1968: DODD 3200.9
  - 1969-1971: PACKARD INITIATIVES
  - 1972-NOW: DODD 5000.1, ETC.

Chart 2

Our approach emphasizes three elements: The first is quantitative evidence of acquisition outcomes, as contrasted with the more subjective interpretations frequently used in studies of the acquisition process. During the initial stages of this study we surveyed a number of studies conducted during the past few years by the Defense Science Board and by various groups within the military services, observing that the conventional approach was to assemble a panel of experts, to record their viewpoints and judgments, and to propose "remedies" without much concern for the quantitative basis of the findings. We recognize that expert advice has unique value. But we also concluded that Rand might make its greatest contribution by assembling quantitative evidence of policy effects and program outcomes. It is conceivable, even probable, that our evidence may be variously interpreted. Nevertheless, we have proceeded from evidence to assessment, and thence (in several, but not all, instances) to suggestions, conclusions, and recommendations.

A second characteristic of this study is a concentration on major weapon systems. For simplicity we define a major weapon system as any system covered by the SAR process.

Third, we have been principally concerned with elements of acquisition policy that seemed to have changed significantly during the 1970s. Formal DOD acquisition policy is really quite young, having been first enunciated in the 1960s under the administration of Defense Secretary Robert McNamara. Although formal policy directives were not issued until near the middle of the decade, the practices called for were reflected in most of the acquisitions that started during the 1960s. From 1969 to 1971 Deputy Secretary of Defense David Packard made major changes in acquisition practices, and those were subsequently codified in the now-current DOD directives 5000.1, 5000.2, and associated documents.

Several important differences distinguish these two generations of policy. During the 1960s the DOD behaved as though choices between technical alternatives could reasonably be made solely on the basis of analysis and design studies, and that once program approval had been granted, the actual development and production of the system would proceed more or less smoothly and according to plan. The policy approach of the 1970s stems from more conservative assumptions. Prototyping and other hardware tests were encouraged as the basis for selecting among competing approaches, and a multiphase review process was instituted to provide a continuing overview of the development and initial production of the system. Given such a fundamental change in the philosophical basis behind the policy, it seemed appropriate to concentrate on understanding the effects of that change.

DATA SOURCES

- DCP REVIEWS
- DISCUSSIONS WITH PROGRAM MANAGERS AND STAFFS
- SARs
  - 32 SYSTEMS WITH DSARC II BETWEEN 1969 AND 1977
  - SHIPS EXCLUDED

UH-60*	• AEGIS*	•F-15*
M-198*	CAPTOR*	B-1*
MICV/IFV	AIM-7F*	AWACS*
•PATRIOT	AIM-9L*	•A-10*
•ROLAND	• HARPOON*	•F-16*
COPPERHEAD	• CONDOR*	DSCS III
•HELLFIRE	LAMPS	ALCM/GLCM
•AH-64	SURTASS	•PLSS
•XM-1	•F-18	
DIVAD GUN	TACTASS	
	TOMAHAWK	
	5", 8" PROJECTILES	

* PASSED DSARC III
• PROGRAM OFFICE INTERVIEW

Chart 3

Given these general study objectives and the approach just described, the product of the study came to depend on the data available to describe the activities and outcomes of recent acquisition programs. We used three general data sources.* First, we studied the Decision Coordination Papers (DCPs) for several programs. Those DCPs did not provide much information useful to this study. Our second source was a series of interviews with the program managers and program office staff members for thirteen sample programs. These interviews did not provide very much quantitative evidence, but they did give us some useful insights into the sorts of things we should consider when examining the data.

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* Several other data sources were used for special aspects of the study, as noted throughout the text.

Our principal data source was the SAR. Of the 50 some SARs that were current in mid-1978, we excluded those dealing with major ship programs, and all that had started full-scale development before 1969. Our basic data set therefore consisted of 32 programs that represented the management policies and practices of the 1970s. Together, they total about $100 billion of DOD investment in acquisition; research, development, production, and initial support.

ISSUES

I SELECTED ASPECTS OF CURRENT PRACTICE
- USE OF TEST RESULTS
- USE OF COMPETITION
- PROGRAM MANAGER CAREERS
- PROGRAM STABILITY

II EFFECTS ON PROGRAM OUTCOMES
- CONTRIBUTION TO FORCE COST AND EFFECTIVENESS
- ACTUAL VS. PREDICTED OUTCOMES
  - 1970s programs
  - 1960s vs. 1970s
- TIME REQUIRED FOR ACQUISITION

III ACQUISITION EXPERIENCE DATA

MAJOR EXCLUDED ISSUES
- DSARC/PPB INTEGRATION
- FMS
- DSARC O/MENS (REQUIREMENTS PROCESS)

Chart 4

The results of the research fall into three topical areas. First, we were able to collect data that touched on four different aspects of the current policy or management procedures: the use of test results, the use of competition, program management as a military career, and the funding and schedule stability of programs.

The second major category of findings concerns the aggregate effects of these (and other) detailed policy and procedural changes on the overall outcomes of the acquisition programs of the 1970s. Any attempt to evaluate programs in terms of their overall outcomes raises some thorny procedural questions. One problem is that any interpretation of such results requires the analyst to make distinctions between "good" and "bad" outcomes. Such distinctions should be made on the basis of hard evidence concerning the cost/benefit contribution that a system made to the total force. Because nobody knows how to make that sort of judgment, we resorted to a somewhat

more modest goal; a comparison of how well the actual outcome of the program compared with the planned outcome. We made two such comparisons. First, we looked at individual programs that were conducted during the 1970s, and then we aggregated the 1970s outcomes and compared them with a roughly similar sample of programs of the 1960s. Finally, we attempted to determine what changes had occured over 3 decades in the time required for a system to move through the acquisition process after passing the DSARC II milestone.

Our third set of results consists of comments and recommendations regarding the availability of data for a study of this sort. That factor has important consequences for the corporate learning that occurs over an extended period of time.

Before proceeding, we should specify some issues not dealt with in this study. First, we did not examine the integration of the DSARC process and the budget process. We recognize that as an important issue, but it was the subject of several other studies concurrent with ours and we decided that our attention would be better devoted to other matters. (We do touch on this topic in some findings although we did not study it in detail.) Second, we did not address any of the policy questions arising in foreign military sales. That was (again) the subject of several other studies, and there is little quantitative evidence yet available. Probably the most important exclusion from this study is that we did not consider the topic of DSARC 0, the Mission Element Need Statement (MENS), and the set of system acquisition activities that precede DSARC II. Selecting what to develop is almost certainly as important as managing the actual development of that system. However, that stage of the acquisition cycle is almost completely undocumented. Our focus on quantitative evidence made it impossible to produce substantive findings on the outcomes of that phase

of the acquisition cycle. That important (and rather considerable) task should, of course, be undertaken as promptly as possible.

Now, to what we did, rather than what we did not, or could not, do. First, let's look at the availability of test results at the major decision points in the acquisition process.

HARDWARE DEMONSTRATION PRIOR TO DSARC II

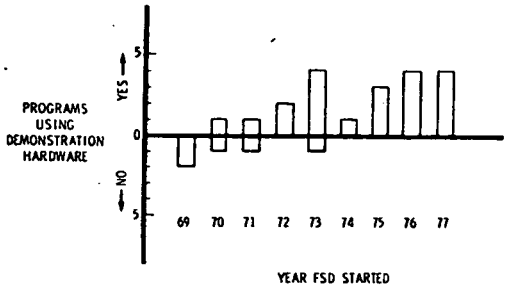

Chart 5

One of the major innovations introduced by Mr. Packard was to emphasize the availability and use of actual hardware test results, rather than rely on analysis and "paper studies." Our question; has there been any significant change in the availability and use of test results during the 1970s?

We examined our sample in terms of whether there had been a significant hardware demonstration of at least a major element of the system before DSARC II. There is a steady trend toward greater availability of such information. Indeed, every major program in our sample that started after 1974 included some hardware testing before DSARC II.

PERFORMANCE DEMONSTRATION

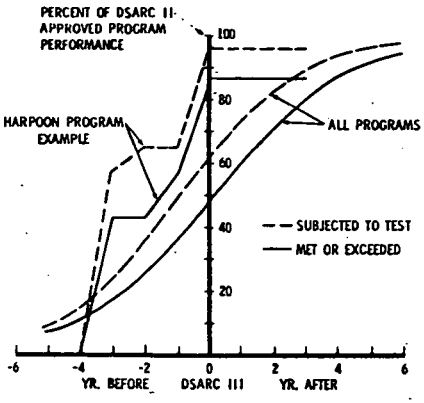

Chart 6

A similar question can be asked about the availability of test data at DSARC III. Here the question was not simply whether data were available, but how much data were available at the decision point. To measure this, we examined the set of performance goals identified in the SAR for each of the weapon systems. We then determined the time history of test results (as they appeared in the SAR) for each of those performance items, measuring the first date when some test result appeared and the first date when the SAR "Approved Program" goal was met or exceeded in a test. To illustrate this process, the time history of test results on the Harpoon program is shown in Chart 6. Those test results began to appear four years before DSARC III. At the time of DSARC III, about 95 percent of the performance items had been subject to some sort of a test, and over 85 percent of them had met or exceeded the goals established in the SAR. In the three years following DSARC III, the Harpoon program SAR shows no

additional information inputs from a test program. This may illustrate either the true status of the program or a limitation of the SAR and, consequently, a possible limitation on the results of this study.*

We aggregated all performance measures identified in the SARs of the programs covered in this study, and fitted a curve to that data (the set labeled "all programs" in Chart 6). On the average, at the time of DSARC III, only about 60 percent of the performance items mentioned in the SAR had apparently been tested, and not quite 50 percent had met or exceeded their stated performance goals. It was not until three to four years after DSARC III that something like 90 percent of the performance measures were tested or achieved. During the 1970s a typical program passed DSARC III with some (but by no means all) of its performance goals verified through hardware test. The great majority of performance objectives identified in the SAR tended to be technical goals: maximum speed or range or, occasionally, even a weight or dimension. Only rarely does the performance measure relate in some direct way to weapon effectiveness or operability. An example of such a performance measure would be missile accuracy or component reliability.

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* Throughout this study we took the information as presented in the SAR without attempting to develop more detailed data by going directly to the program office (for example) or by uzing any other data sources. This seemed reasonable, as the SAR is supposed to be an authoritative document. Also, checking 30 programs for several different measures would have been well beyond the resources available for this study.

EVOLUTION OF TEST RESULTS USAGE

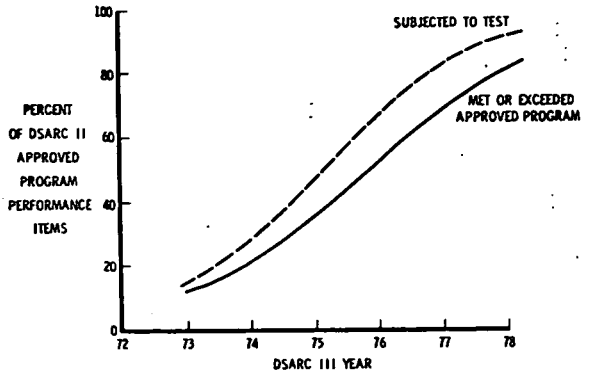

Chart 7

The data shown in the previous chart aggregated all systems that passed DSARC III during the 1970s. To determine any temporal trend in the availability of test data at DSARC III, we examined the extent of performance verification depending on the year in which the system passed DSARC III. Here we see a clear trend toward increased availability of test results at the time of DSARC III.

The data in Charts 5 through 7 show that during the 1970s more test data were available at major decision points during the weapon system acquisition cycle than was typical in the 1960s. The extent to which such test data were actually used in the decision process is, of course, impossible to assess. However, it seems reasonable to conclude that the actual practice is tending strongly in the direction enunciated in the current policy.

USE OF COMPETITIVE HARDWARE BEFORE OR DURING FSD

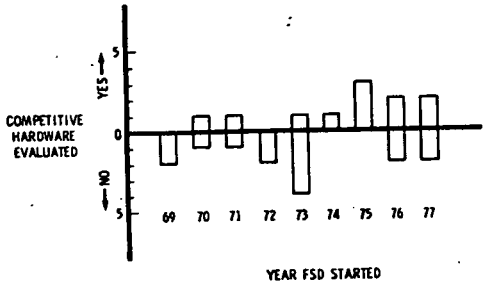

Chart 8

Now let us turn to the use of competition in acquisition. The increased use of such competition, more specifically hardware competition, was another of the major initiatives introduced by Mr. Packard during the early 1970s. To examine this parameter we separated our sample into two sets, depending on whether there had been a significant degree of hardware competition before or during full-scale development. Such a distinction is admittedly subjective, and in a few cases the determination was quite difficult. The results, shown graphically in the above chart, reveal that there is no discernable change over time, at least during the 1970s. In fact, less than half of the programs in our sample that started full scale development during the 1970s used any significant degree of hardware competition.

EFFECTS OF HARDWARE COMPETITION (AVERAGE OVER PROGRAMS PAST DSARC III)

	ACTUAL OUTCOME/APPROVED PROGRAM	
	COMPETITIVE	NON-COMPETITIVE
TOTAL ACQUISITION COST	1.16	1.53
DEVELOPMENT SCHEDULE (MONTHS FROM DSARC II TO MILESTONE)	1.08	1.22
SYSTEM PERFORMANCE	1.03	1.00
SYSTEMS IN SAMPLE	AWACS A-10 F-16 UH-60	F-15 AEGIS HARPOON AIM-9L CAPTOR M-198

Chart 9

The results shown in Chart 8 immediately raise the question of the potential value of such competition. Our data base permitted one limited measure of such value. We separated those programs in our sample that had passed DSARC III according to whether there had been significant competition during the development phase. For each of the two samples, we compared the actual program outcome with the program goals defined at DSARC II to examine how much the program had deviated from its stated objectives. The comparison is shown for total acquisition cost, development schedule, and system performance. The competitive programs experienced substantially less cost growth and a noticeable reduction in schedule slip, compared with noncompetitive programs. In all cases performance objectives were satisfied. These results must be treated cautiously in view of the small sample, but the implications are provocative.

HARDWARE COMPETITION DURING DEVELOPMENT

- LESS THAN HALF OF THE 1970s PROGRAMS EMPLOYED SIGNIFIGANT HARDWARE COMPETITION BEFORE OR DURING FSD
- SOME EVIDENCE COMPETITION IMPROVES OUTCOME PREDICTABILITY
- HAS HAD MAJOR EFFECT ON SOURCE SELECTION
  - F-16
  - A-10
  - AH-64
- PRACTICE SEEMS INCONSISTENT WITH POLICY

Chart 10

Our assessment of the use of competition in acquisition is summarized in Chart 10. Here we also note another effect of hardware competition drawn from a recent study conducted by Rand for the Air Force. That study examined a series of programs in which full-scale prototype hardware had been tested before or during full-scale development. In three of those programs (the A-10, the F-16, and the Advanced Attack Helicopter) there is a widespread opinion that, for various reasons, the design selected for final development after prototype hardware tests was not the one that would almost certainly have been selected if only paper designs had been evaluated. Although the effects of such a shift cannot be quantified, it is reasonable to conclude that a "better" weapon system resulted from the development of competitive hardware before full-scale development began.

Although it is the stated intent of the Congress, and the defined goal of the DOD, to use competitive hardware in the early stages of development, and notwithstanding evidence that such use has salutory effects, hardware competition is still the exception rather than the rule.

PROGRAM MANAGER TENURE

ALL SERVICES

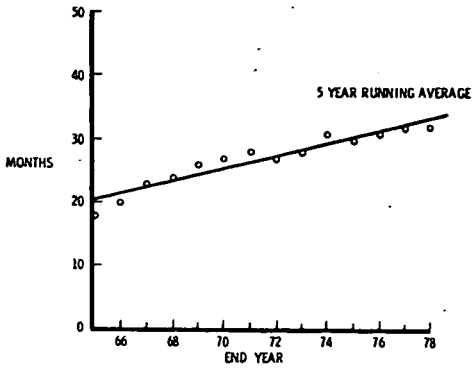

Chart 11

Let us now turn to the third of our policy aspects, the development of program management as a military career. Another of Mr. Packard's management initiatives was to extend the tenure of the managers of major system acquisitions so that those managers could stay in office long enough to learn their jobs and have some significant influence on program outcomes. A pronounced increase in tenure occurred in all SAR-level acquisition programs over the past 15 years. However, the steady increase in tenure dates back at least to the early part of the 1960s and apparently was not much affected by policy changes enunciated at the beginning of this decade. The trend noted in the chart may in fact simply reflect a DoD-wide effort to increase the tenure of all duty posts. Whatever the reason, the current practice is consistent with stated policy.

PROGRAM MANAGER PROMOTIONS

	O-6 IN 1972	SAME OFFICERS, MARCH 1978	
		SAME GRADE OR LEFT SERVICE %	IN SERVICE, FLAG RANK %
PROGRAM MANAGERS	18	61	39
TOTAL	15,602	95	5
EXECUTIVE/R&D	1,784	95	5

Chart 12

We asked program managers about their perceptions of the effects of their assignments on their military careers. Although the response was hardly unanimous, we were surprised at the extent to which such duty was perceived to be a negative influence on the career opportunities of ambitious officers.

We also observed that such perceptions seemed to be based on hearsay rather than on any identifiable body of data. We therefore attemped to determine what effect (if any) a tour of duty as program manager actually had on the subsequent promotion of officers. With the assistance of the Defense Manpower Data Center in Monterey, California, we were able to track the careers of all Colonels (Air Force, Army, Marine Corps) and Captains (Navy) who were managers of SAR-level acquisition programs in 1972. By 1978, more than one-third of them had been promoted to flag rank. The others were still at the same rank or had left the service. By comparison, only 5 percent of all officers who were Colonels (or Navy Captains) in 1972 had achieved flag rank by 1978. A subset of the entire sample, namely all who were classed as executive or R&D officers, yielded exactly the same

results: 5 percent had reached flag rank by 1978. Thus, this admittedly limited sample indicates that a tour of duty as program manager of a major weapon system acquisition certainly does not injure an officer's career opportunities.

It is always possible, of course, that officers selected to manage major DOD acquisition programs were from a very select population and had a high probability of being promoted to flag rank regardless of whether they served tours as program managers. To examine this possibility, and again with the help of the Defense Manpower Data Center, we compared program managers with all other officers of the same rank in terms of their age, their education level, their years of service, and how long they had been in service when they were promoted to their present rank. Although slightly ambiguous, the results of that survey yielded no strong evidence that program managers were selected from a sample noticeably different--in such terms, at least--from other officers of comparable rank.

PROGRAM MANAGEMENT CAREERS

- PRACTICE GENERALLY CONSISTENT WITH POLICY
  - POSITIVE TRENDS
- CAREER PERCEPTIONS NOT UNIFORMLY FAVORABLE
  - INTERVIEW RESULTS MIXED
- RECOMMENDATION: ACTUAL CAREER PATTERNS SHOULD BE DOCUMENTED AND DISTRIBUTED TO COUNTER UNFAVORABLE IMAGE

Chart 13

There appears to be some discrepancy between the perceptions of a number of officers in the field and the actual promotion histories of officers who have served a tour of duty as program manager. We suggest that the actual career patterns of all program managers should be documented and distributed to prospective program managers to counter the unfavorable image that many have of this particular duty.

PROCUREMENT FUNDING

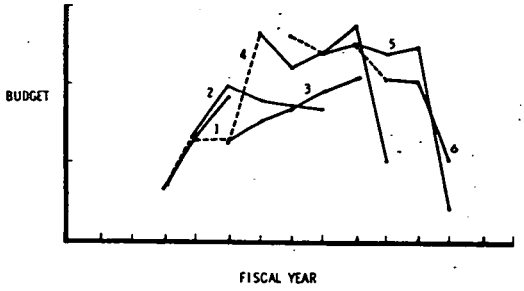

Chart 14

Another issue that arose from discussions with program managers concerns the stability of their programs. Many observed that their jobs were complicated because projections for future program funding tended to change rather substantially from year to year. To gauge the magnitude of this problem, we assembled funding profile histories for several programs. Chart 14 shows the production-phase funding for one major acquisition program (values are deleted for security reasons). The curves show successive 5-year (plus current year) funding profiles, taken from the F&FP.

We found enough other major programs with similar histories to assure ourselves that the one shown in Chart 14 is not an exception. The funding expectations that the program manager had to work with did change a lot from year to year. Conversations with the program managers also suggested that similar funding changes were at least considered and explored several times during each year.

Chart 14 also shows that the Department of Defense is the source of most of the program fluctuations. The left-most end of the dotted segment of each curve shows the amount of the money being spent during the current fiscal year. The dot at the right-hand end of the dashed segment represents the amount of money being requested for the next fiscal year. A comparison of lines for successive fiscal years shows that in almost all cases the Service received substantially what it requested from the Congress. Most of the variation comes from what the Service is asking for in subsequent years. We thus conclude that this problem is substantially under the control of the Department of Defense.

We believe that such program and funding instability is a significant contributor to the cost growth experienced by many acquisition programs. The cost growth reasons outlined in the SARs suggest that roughly one-fourth of the total cost growth experienced by the various systems was due to so-called schedule changes. This suggests that even a modest reduction in the sort of instability demonstrated in Chart 14 might lead to substantial dollar savings in major programs.

PROGRAM STABILITY

- SIGNIFICANT INSTABILITY IS COMMON IN MAJOR ACQUISITION PROGRAM
  - DT&E AND PROCUREMENT
  - WITHIN AND BETWEEN BUDGET YEARS
- FUNDING INSTABILITY NOT DUE ONLY TO CONGRESSIONAL MANDATE
  - CAUSED BY BOTH OSD AND SERVICE BUDGET DECISIONS
- FUNDING/SCHEDULE CHANGES CONTRIBUTE 1/4 OF TOTAL ACQUISITION COST GROWTH
- OSD POLICY SILENT

RECOMMENDATION: ISSUE POLICY NOTING COST CONSEQUENCES OF INSTABILITY, INTENT OF IMPROVING STABILITY OF MAJOR PROGRAMS

Chart 15

At present, the value of program stability is not mentioned anywhere in DoD acquisition policy. The Army (in AR1000-1) specifically calls for "full funding for priority programs" and notes that top priority projects should be fully funded even though it means lesser funding for lower priority projects.

We recommend that a clause be added to DoD acquisition policy noting the cost consequences of funding instability and the desirability of improving the stability of major programs. We appreciate the complexity of the problem and the need to retain program flexibility; nevertheless, somewhat more orderly planning for a set of high priority programs conceivably could yield substantial cost savings.

SUMMARY OF OBSERVATIONS

- SOME CHANGES OCCURRING
  - MORE, EARLIER TESTING OF HARDWARE (BUT DSARC III STILL PASSED WITH SOME ITEMS NOT TESTED)
  - INCREASED TENURE OF PROGRAM MANAGERS
- OTHER CHANGES RECOMMENDED
  - MORE USE OF HARDWARE COMPETITION
  - IMPROVED PROGRAM STABILITY
  - CORRECT THE PERCEPTIONS RE P.M. CAREERS

Chart 16

Before we examine the effect of such individual acquisition policies on the aggregate outcomes of the programs, we will summarize the results of our survey so far. There have definitely been some changes in acquisition practice during the 1970s. The most pronounced is the increase in availability of hardware test and evaluation information for DSARC II and III reviews. The average tenure of program managers has also lengthened, but there is little evidence that the change is particularly due to acquisition policy or that it is peculiar to acquisition management duty posts.

It is also clear, however, that some other aspects of acquisition practice should have changed in response to policy guidance but did not. Most significant is the use of competition during development. Despite apparent benefits, such competition was used in less than half the programs of the 1970s, and there is no apparent trend toward increased use.

It is recommended that steps be taken to improve the funding and scheduling stability of acquisition programs and that information regarding the true effect of program management duty on officer career prospects be widely distributed.

ACTUAL vs. PREDICTED ACQUISITION OUTCOMES

- SAR KEY DATA SOURCE FOR THIS STUDY
- "PREDICTION" = "APPROVED PROGRAM" IN FIRST SAR PUBLISHED AFTER DSARC II
  - NO ADJUSTMENT MADE FOR SUBSEQUENT CHANGES
- "ACTUAL" TAKEN FROM MARCH 1978 SAR
  - COST: CURRENT ESTIMATE TO COMPLETE ORIGINAL QUANTITY IN CONSTANT DOLLARS
  - PERFORMANCE: TEST RESULTS
  - SCHEDULE: MILESTONES ACHIEVED

Chart 17

The foregoing discussion has touched on a number of individual aspects of current acquisition policy and practice. Let us now examine the aggregate outcome of these acquisition programs in an attempt to determine whether these, and other, individual practices have been beneficial.

To evaluate an acquisition policy in terms of how it affects the outcome of the program, it is necessary to evaluate the program outcome itself. That is, was the outcome "good," or "bad?" In the best of all possible worlds, one would like to evaluate program outcomes in terms of how much a particular acquisition program contributed to the cost and capability of the force. Unfortunately, there is no satisfactory way of making such an evaluation today. Therefore, we have used a secondary but still not inconsequential metric: we have examined the extent to which a program outcome, expressed in terms of its cost, schedule, and system performance, matches the goals and objectives that were stated at the beginning of the full-scale development phase. Thus we are comparing the actual program outcomes with the program goals.

The data for this comparison were drawn from the SARs. Two important definitions are necessary. First, the predicted program outcome was that stated in the "approved program" column in the first SAR published after DSARC II. The data therefore are presumed to represent the program as defined and agreed upon during DSARC II. We made no subsequent adjustments to this set of approved program projections (except for production quantity), even though the actual SARs may list subsequent changes in the "approved program" column stemming from reviews made after DSARC II.

We determined the "actual" outcomes in the following manner. The actual cost was taken to be the current estimate of total acquisition cost, after removing all effects of inflation and adjusting for any subsequent quantity changes so that the current estimate-to-complete would match, in terms of program quantity, the original program projection. The actual performance outcomes were taken from the test data shown in the SAR, as were schedule outcomes.

ACQUISITION COST CHANGE

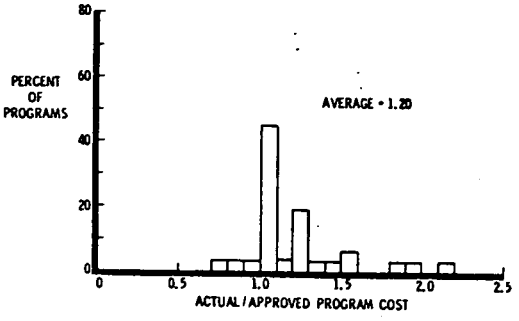

Chart 18

Changes in acquisition cost are shown in Chart 18. Here the ratio of actual to approved program costs for all of the programs is presented in histogram form. A few of the programs experienced a slight underrun but most exceeded the original approved program cost goals. Although a few programs overran by a factor of two, the entire sample had an average total cost growth of 20 percent.

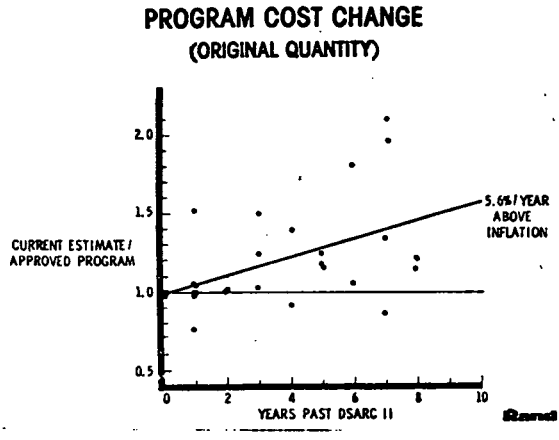

Chart 19

One difficulty with the presentation on cost growth shown in Chart 18 is that we are taking a snapshot of all programs at one time, thereby mixing relatively young programs with older programs. To examine the effects of any time trends that may exist in cost growth, the data are plotted in Chart 19 as a function of elapsed time since DSARC II. Predictably, older programs on the average exhibit more cost growth than younger programs. A least-squares linear fit suggests an average cost growth of 5.6 percent per year. These data have already been corrected for inflation, so the 5.6 percent annual growth is real growth over and above any inflationary trends.

There are at least two possible explanations for the trend shown in Chart 19. One is that programs simply tend to grow in cost as they progress through the acquisition cycle, as the inevitable changes are made in the program, as difficulties are corrected, as the consequences of schedule changes are accommodated, etc. Another plausible explanation is that the more recent programs reflect a more rigorous management control of cost growth. The available records do not permit any ready separation of those two effects.

PROGRAM COST CHANGE

CONSTANT QUANTITY

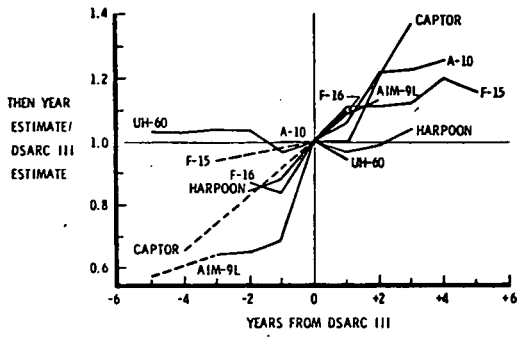

Chart 20

Another interesting question about cost growth concerns whether the growth occurs principally during the development phase or extends into the production phase. To examine this question, we selected seven of the programs that have extended well into the production phase and plotted a time history of their ratio of actual to estimated cost. As can be seen from this sample, most of the programs exhibited growth in both the development and the production phases. The most obvious exception to that rule, the UH-60 helicopter, is the only program in the entire sample in which direct competition between two contractors was maintained throughout the full-scale development phase. In view of the earlier sketchy indications about the net value of competition (see discussion on pg 15), this is a provocative indicator.

PROGRAM SCHEDULE CHANGE
ACHIEVED EVENTS ONLY

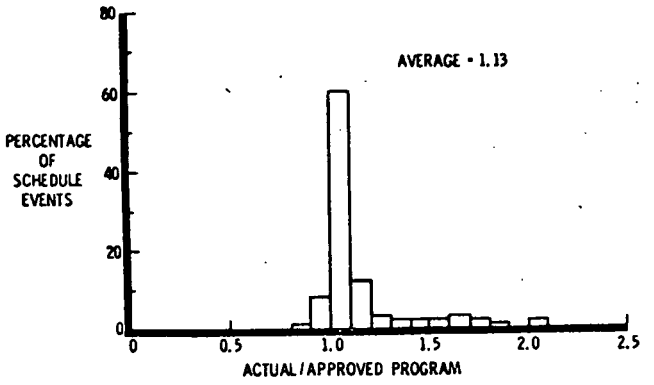

Chart 21

SYSTEM PERFORMANCE CHANGE
TEST RESULTS AS OF MARCH 1978

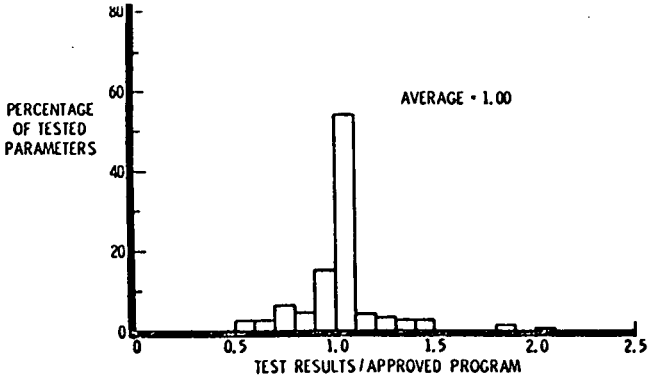

Chart 22

The distribution of program schedule changes and of performance outcomes as compared with original predictions is shown in Charts 21 and 22. Chart 22, showing how actual performance compared with approved program performance, is the only histogram that presents a symmetrical pattern: the cost and schedule histograms were clearly skewed to the right. This appears to be a first-order validation of the conventional wisdom which holds that when programs begin to experience difficulties, cost is the first constraint to be relaxed, and schedule is the second, but that performance goals are not often compromised. Even so, we observe that the actual performance of the system may vary by a factor of two from its original estimate, either "better" or "worse." This seems to be further evidence that a substantial degree of risk and uncertainty persists when the program estimates are defined at DSARC II.

PROJECTS SURVEYED IN 1969

ARMY	NAVY	AIR FORCE
PERSHING I	MK-48 TORPEDO	MINUTEMAN II AIRBORNE COMMAND POST
PERSHING IA	MK-48 MOD I	MINUTEMAN II GUIDANCE AND CONTROL
SHERIDAN	DIFAR	TITAN III-C
SPRINT	SQS-26	SRAM
LANCE	A-7A	C-141
LOH	OV-10	C-5A
CHEYENNE		F-111
		XC-142

Chart 23

In 1969, Rand compared the actual and predicted outcomes of 24 DOD acquisition programs of the 1960s. The programs included in the 1969 survey are listed in Chart 23. Our sample at that time was somewhat smaller than the present sample but it contained a mix of different kinds of weapon systems, and the programs were uniformly distributed across three services. We believe, therefore, that it can reasonably be compared to the present sample in terms of outcomes.

PROBLEMS IN SAMPLE COMPARISONS

- PROGRAMS OF VARYING MATURITY
- DIFFERENCES IN TECHNICAL DIFFICULTY
- CHANGES IN ESTIMATING ACCURACY VS. MANAGEMENT EFFECTIVENESS
- EXTERNAL INFLUENCES
  - THREAT CHANGES
  - VARIATIONS IN FUNDING

Chart 24

Before trying to compare program outcomes of the two decades we need to state several caveats. First, the samples combine programs with different levels of maturity, thus possibly skewing the results toward older or younger programs in one sample. Second, programs in the 1970s may have had either a higher or a lower degree of technical difficulty than those of the 1960s, thereby distorting a comparison of cost growth, schedule slip, etc. Finally, it is important to remember that we are comparing the ratio of actual to predicted outcomes; thus, any change in that ratio may be due to a change in the numerator, the denominator, or both. That is, if we see a reduction in typical cost growth we cannot be sure whether it is a product of improved accuracy in program cost estimation or of improvements in management effectiveness in controlling cost growth, or perhaps something of both.

INTER-DECADE COMPARISONS

	ACTUAL OUTCOME/APPROVED PROGRAM (AVERAGE OF COMPLETE SAMPLES)	
	1960s	1970s
TOTAL ACQUISITION COST	1.40	1.20
(WITH "YOUNG" PROGRAMS DELETED)	1.40	1.34
DEVELOPMENT SCHEDULE (MONTHS FROM DSARC II TO MILESTONE)	1.15	1.13
SYSTEM PERFORMANCE	1.05	1.00
ANNUAL COST GROWTH RATE	7.4%	5.6%

Chart 25

With those caveats in mind, the interdecade comparisons are shown in Chart 25. On the average the cost growth of the 1970s was only half that of the 1960s (20 percent rather than 40 percent cost growth). Relatively insignificant changes occurred in the degree of schedule slip and system performance. However small the differences, it is encouraging to observe that at least all of the changes from the 1960s to the 1970s are in a "desirable" direction.

As noted earlier, one difficulty with this comparison is that the sample from the 1960s contained no programs less than three years into full-scale development. When we adjust the 1970s sample to remove such "young" programs, the average cost growth increases to a factor of 1.34, not much less than the 1.40 characteristic of the 1960s. However, those values are simple numerical averages of the cost growths of the various individual programs. When we ratio the actual to estimated value of the total cost for all programs in the sample (thus, in effect, weighting the average to account for program size), we find the 1970s sample (even with

"young" programs removed) showed a growth ratio of 1.20, and the 1960s sample a ratio of about 1.47. Finally, when we plot both samples (again with "young" programs removed) according to program age as we did in Chart 19, and fit a line to the points, we find an annual cost growth of 7.4 percent for the 1960s and only 5.6 percent for the 1970s. Thus, some improvement has been made in the predictability or the control of program costs, or both, but the range depends on the method of comparison. In any event, the raw sum of cost growth being considered is in the billions, perhaps the tens of billions, of dollars for the 32 systems in the sample.

AIRCRAFT ACQUISITION INTERVALS

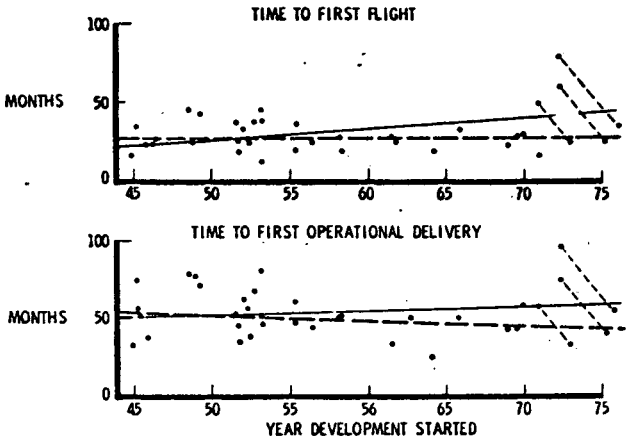

Chart 26

AIRCRAFT ACQUISITION INTERVALS

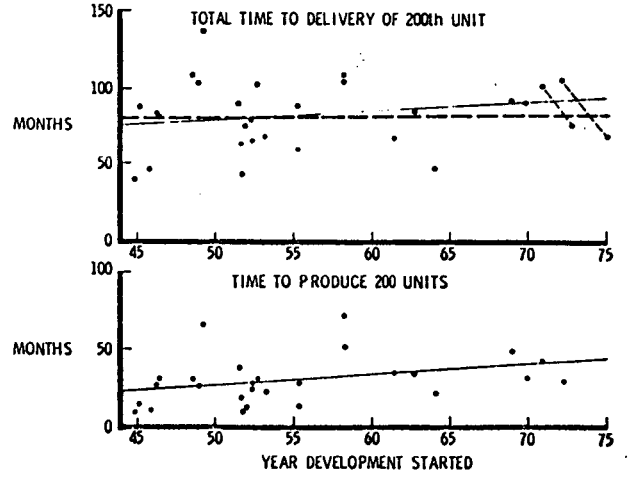

Chart 27

Another issue prominent in current discussions of acquisition policy is the length of time it takes to complete an acquisition program. A recent study by the Defense Science Board highlighted the lengthy acquisition process as a critical issue. Drawing on some data from other Rand studies, we were able to examine one aspect of this issue: whether the length of time required to develop and deliver aircraft systems has changed appreciably during the last 30 years. Two caveats need to be emphasized before we examine these data. First, we considered only aircraft systems. A comparably adequate set of data on missiles or spacecraft or other significant pieces of military hardware apparently does not exist. Second, we examined only that portion of the acquisition cycle that occurs after the beginning of full scale development (as currently defined by DSARC II). We are aware that several recent studies have concluded that acquisition programs lengthened in the 1970s because of delays in action and decisions before DSARC II. It would be desirable to examine the effects of changes during that planning and concept formulation stage of acquisition. Unfortunately, that period is not well documented, and without substantially supplementing the readily available data it is not possible for us to assess whether significant changes have occured in the time required to carry a weapon system program from inception to the beginning of (formal) full-scale development.

The acquisition time histories of 37 aircraft are shown in Charts 26 and 27. In Chart 26, two intervals are shown, each beginning at the start of full scale development. The top figure shows time to first flight of the first airplane model produced under the development contract. The lower figure shows the total time required to reach delivery of the first operational item to an operational squadron. Note that the second figure does not refer to the delivery of operational test aircraft, but rather to the initial equipage of the first operational squadron.

Prototype programs present a problem in defining the date of program initiation. Three such programs (A-10, F-16, and F-18) are each shown by double entries on the charts, with each set joined by a short dashed line. The uppermost points represent start of the prototype development, while the lower points reflect the interpretation generally used for all other programs in the sample: that development did not really start until DSARC II, which was after the prototype demonstration and final source selection.

Two simple least-squares linear fits were made to the data. The solid line in each figure includes the early start dates for the three prototype programs. With this pessimistic interpretation, the time to first flight has increased significantly, while the total development time (reflected in time to first delivery of an operational aircraft) has increased only slightly over the past 30 years. The other fit (represented by the dotted line) used the DSARC II dates as program start points for the three recent prototype programs, and suggests that average total development time actually may have decreased slightly over the three decades.

Chart 27 extends the time measurement to include delivery of the first 200 operational aircraft. (Here the F-18 is omitted because no date is yet scheduled for delivery of the 200th item.) Again the two linear least-squares fits are shown, based on alternative interpretations of the start dates for the recent prototype aircraft programs. This suggests that under the pessimistic interpretation of the data, total acquisition times (including a substantial production phase) have increased about 25 percent for aircraft systems. Using DSARC II start dates for the two recent prototype programs yields a flat trend line.

The bottom part of Chart 27 shows the production phase alone, and there some decrease in average production rates is clearly evident. That is not surprising, considering that current aircraft are as much as ten

times more expensive (in terms of unit cost as a fraction of acquisition budget) as were the airplanes of the 1940s and early 1950s. Thus, budget considerations alone probably dictate the observed reduction in typical production rates.

The net conclusion from this set of figures is that for aircraft at least, the total acquisition interval has been somewhat extended since the end of World War II, and that the change is mostly due to lower production rates. This evidence suggests that unless some major changes are made in the acquisition strategy for aircraft, it is unlikely that the total acquisition interval after the beginning of full-scale development will be much reduced from its present values.

LEARNING FROM EXPERIENCE

- ACQUISITION POLICY IS KEY MECHANISM FOR INSTITUTIONAL LEARNING
  - ARCANE PROCESS
  - SHORT TENURE OF SENIOR (APPOINTED) OFFICIALS
- INFORMATION NEEDED FOR SYSTEMATIC LEARNING
  - RATIONALE FOR MAJOR MANAGEMENT DECISIONS
  - LONG-TERM CAUSE-EFFECT RELATIONSHIPS
  - PROGRAM TRACKING AGAINST ORIGINAL PLAN
  - FIELD EXPERIENCE
  - AGGREGATED COMPARISONS
- PRESENT SYSTEM INADEQUATE
  - SAR, DSARC MILESTONES ARE IMPROVEMENTS

Chart 28

The third section of this briefing addresses the problems of learning from experience, and of translating that learning into some enduring form.

One of the functions served by acquisition policy is to preserve the lessons of past programs so that they can be applied to future ones. This is especially important in agencies such as the Department of Defense because senior (appointed) officials typically spend only two to three years in office, thereby losing the opportunity to apply their own accumulated experience to new programs. Thus, the policy takes on particular importance.

Our experience in this study, and similar experiences in other studies of defense system acquisition, support the observation that the present process for collecting and saving acquisition experience data is inadequate. While some improvements have been made in recent years (the SAR being the most notable and useful), several crucial deficiencies still

exist. For example, the reasons for program decisions are rarely recorded, thereby making it almost impossible to develop a useful set of historical cause-effect relationships. Another important problem is that development frequently extends into the production phase (the "maturation" period), yet existing acquisition records do not include the cost of, or reasons for, actions like Class IV modifications. The cumulative effect of such data limitations is that maximum benefit is not being extracted from on-going experience.

DATA COLLECTION RECOMMENDATIONS

- STRENGTHEN SAR
  - DISPLAY ORIGINAL (DSARC II) PROGRAM GOALS IN CURRENT ISSUE
  - DOCUMENT ALL CHANGES IN APPROVED PROGRAM
  - INSURE TIMELY REPORTING
- EXTEND TRACKING TO OPERATIONS PHASE
  - RECORD PERFORMANCE, RELIABILITY IN CONSISTENT TERMS
  - CLASS IV, V MODIFICATIONS (WHAT, WHEN, COST)
- DOCUMENT PRE-DSARC II PHASES
  - MENS WILL HELP
- RECORD REASONS FOR MAJOR DECISIONS
  - VITAL FOR CAUSE-EFFECT UNDERSTANDING
- ESTABLISH SPECIAL "ACQUISITION EXPERIENCE" FUNCTION
  - SEPARATE FROM MANAGEMENT INFORMATION SYSTEM
  - CONDUCT ANALYSIS, RECOMMEND CHANGES IN POLICY
  - LOCATE AT DEFENSE SYSTEMS MANAGEMENT COLLEGE?

Chart 29

Some suggestions for improving the data collection and analysis process are summarized on Chart 29. These are obviously not sufficiently detailed to permit direct implementation, and for good reason; the design and implementation of an improved data collection system should be closely integrated with a continuing process of analyzing that data. This will probably require the establishment of a special "acquisition experience" function, because the kinds of data and analysis needed for learning are different from those needed for on-going management of current programs. One possibility would be to locate such a function at the Defense Systems Management College. That seems attractive for at least three reasons; it would be out of the line-management organization, it would put responsibility for data collection on those who have a direct interest in

using the data, and it would likely be subject to less organizational fluctuation than is typical of most headquarters staff offices.

The more careful and complete delineation of such a data collection and analysis process should be the subject of additional study.

OBSERVATIONS

- BETTER DATA NEEDED TO UNDERSTAND AND PRESERVE ACQUISITION EXPERIENCE
- SOME CHANGES OBSERVED
  - MORE, EARLIER TESTING OF HARDWARE
  - INCREASED TENURE OF P.M.
  - IMPROVED PREDICTABILITY/CONTROL OF PROGRAMS
  - ACQUISITION INTERVALS INCREASING?
- SOME CHANGES RECOMMENDED
  - MORE USE OF HARDWARE COMPETITION
  - POLICY ON IMPROVED PROGRAM STABILITY
  - PUBLICITY ON P.M. CAREERS

Chart 30

A brief summary of the study results is contained in Chart 30. It is especially gratifying to note that the changes in acquisition practice that were observed are all in a desirable direction, with the possible exception of a slight increase in the time required to develop and deliver completed systems.

There are, however, several areas revealed by our analysis where additional changes would, we believe, strengthen the acquisition process. In addition to the problem of collecting better acquisition experience data as discussed on the previous two charts, we offer three recommendations. First, greater use of true hardware competition throughout the acquisition cycle should be strongly encouraged. We recognize that competition, like any other acquisition tactic, must be used selectively, but the cumulative evidence of this and other studies indicates that present useage levels are less than desirable.

Our second recommendation is that strong steps be taken to reduce the year-to-year fluctuations in the schedule and funding profile imposed on a major acquisition program. While such variations can certainly not be totally eliminated, the present levels seem unnecessarily large. Furthermore, improvements in program stability should yield significant and real cost savings.

Finally, it seems likely that capable officers are avoiding the program management field, partly because of mistaken impressions that such duty is not good for their career. A modest amount of additional research is needed to flesh out the preliminary results developed in the present study, and if that research confirms our findings and conclusions, the facts should be widely disseminated.

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