SERVICE INFLUENCE ON CONTRACT PERFORMANCE

15 December 1959

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

Major General William T. Thurman, USAF, Assistant for Production Programing, Office of the Deputy Chief of Staff for Materiel, was born in Atlanta, Georgia, 6 June 1909. He was graduated from the University of Georgia with an LL. B. in 1932, and subsequently admitted to the bar in Georgia, Florida, the U. S. District Court, and the U. S. Supreme Court. He practiced law in Atlanta until January 1941, when he went on active duty as a captain with the Judge Advocate General's Department, Fourth Corps Area Headquarters at Atlanta. The following August, he was assigned to the Military Affairs Division, Office, JAG, U. S. Army, Washington, D. C. In March 1945, he was transferred to the Mediterranean Theater as Judge Advocate of the 92nd I Infantry Division; the following September he returned to the United States and was assigned to the Office of the Procurement Judge Advocate, Army Service Forces Headquarters in Washington, D. C. A month later he was assigned as legal adviser to the Special Representative to the Under Secretary of War for Property Disposal and Termination. In January 1947, he was assigned to the Office, Assistant Secretary of the Army, and the following October became Associate General Counsel, Office, Secretary of the Air Force, and in December 1949, became General Counsel of the Air Force. In August 1950, he became Deputy Assistant for Programing, Office, Deputy Chief of Staff for Operations; January 1951, was appointed Deputy Chief of Staff, U. S. Air Forces, Europe, with station at Wiesbaden, Germany; in May 1951, he became Deputy Chief of Staff for Administration, Allied Air Forces in Central Europe; was appointed Director of Procurement Inspection, Inspector General, stationed at Norton Air Force Base, California in November 1952, and in August 1954, became Deputy Director/Procurement, Directorate of Procurement and Production, Headquarters, AMC, and in June 1957 became Deputy Director for Procurement and Production. General Thurman was assigned to his present position in August 1958. This is his second lecture at the Industrial College.

SERVICE INFLUENCE ON CONTRACT PERFORMANCE

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ADMIRAL PATRICK: The subject of today's lecture, "Service Influence on Contract Performance," is very important in the field of procurement. When Congress meets next year, we will hear a great deal more on this subject. It appears to be reasonably good business for us to look closely at a contractor's operations and costs, to insure that he is equally concerned with fund austerity, service quality, requirements, and other specifications.

Needless to say, corporation managers do not always concur in this view. We are often accused of usurping some of industry's prerogatives.

We are indeed fortunate today in having as our speaker an officer who is well qualified to discuss and appraise questions in this field. It gives me great pleasure to welcome Major General William T. Thurman, Assistant for Production Programing, Headquarters, U.S. Air Force, for his second lecture at the Industrial College.

GENERAL THURMAN: General Mundy, Gentlemen: Those who are responsible for setting up your agenda were kind enough to give me some latitude in selecting a subject for this discussion, and I selected the one announced for several reasons. For one thing, a lot of money is involved. Even in those instances where we are not following a single prime route, i.e., the complete weapon system in a package, other prime contracts run into huge sums of money these days. Indeed, the prospect is that as weapons become even more complex and numbers of systems decrease, the concentration of dollars on single contracts will increase. Some of these prime contracts amount to figures in excess of $1 billion over the life of a program. Reasonably, some subcontracts will run into hundreds of millions on a program basis. Management of these dollars is important to the defense of the country and and to its basic economy.

Because of this, the subject is one which currently is intensively debated in the press, congressional circles, and in industry forums. The views of industry and Government are so widely divergent, it is relatively certain that the matter will be brought to an issue in the Congress during the next session and become the subject of legislation.

It ties in with geographical dispersal of procurement dollars, as well as small business and other economic and political considerations.

To illustrate how far apart people can get on the subject, I would like to quote two statements. The first was made this fall by the United States Senator in the course of a hearing on proposed legislation. It goes like this:

"Let us take for example Corporation A, and award it a $10 million contract, and let us also assume that Corporation A is a huge multi-million dollar outfit. There is nothing to stop Corporation A from subcontracting to Corporation B, which is also a huge multimillion dollar outfit. The prime contractor has a free hand to subcontract to whomever and wherever he wants. With a little mutual backscratching, several huge corporations can cut up a whole industry and keep the lion's share of the work divided up among themselves in one particular area of the country. This is not good for small business, nor does it give an equitable geographical distribution of the contracts, nor does it provide for a dispersal of defense plants.

"I have disucssed this problem with officials in the Department of Defense, and they assure me that under the present laws they have practically no control over the awarding of subcontracts. The prime contractors, not the Defense Department, are the people who really have the biggest say in military procurement, for in the case of a multimillion dollar order there might be several hundred subcontracts. Yet, when it comes to saying who shall get them, the Department of Defense is left completely out of the decision. This should be corrected."

Thus, on the part of Government external to the services, we have a position that the services must exercise greater control over the activities of prime contractors than they presently are doing.

At the other end of the spectrum, an industrialist made the following statement recently, in speaking on the subject of single prime contracting:

"Having taken the step to concentrate responsibility, it is anomalous to whittle away at the authority needed to carry out the responsibility. Resort to it should be avoided whenever possible. It should be obvious that control over the choice of subcontractors, review of make-or-buy decisions i.e., whether something shall be made in-plant or subcontracted prior approval of pricing, and comparable actions each dimminish, and in total can destroy, a prime contractor's ability to accept

total responsibility for price, quality, and performance. This is a fact of life which the Air Force must recognize, just as industry has to recognize the practical impacts on the Air Force of political pressures. It is not based merely upon business customs, traditions, and habits, but, rather, that customs and habits have evolved, over more than a century, as a result of the lessons experience has taught American businessmen. Thus, we know authority must accompany responsibility; and this fact cannot be legislated away."

Some of my friends in industry have expressed the same thought more bluntly to me, to this effect: "You folks in the service have gone too far in controlling management in the performance of contracts. If you would keep your cotton-picking fingers out of our business, we could give you better weapons at less cost in a shorter time, and make more profit."

Where, between the extremes involved, does the course of national interest lie? Rather than try to answer this question, I would like to lay out for you some of the pros and cons and let you draw your own conclusions. There is some variation in degree of practice among the services; so I will try to phrase my comments in such a way as to avoid overstating or understating any individual service position.

First, let me consider the broad question whether the services are warranted in exercising any degree of influence after a contract is signed. Then I would like to mention some specific problems in the course of contract performance and discuss them.

The substance of the quote from industry which I read runs something like this: It is axiomatic that authority and responsibility must run together. If the services are to rely on industry to produce their hardware, they should tell industry what they want, agree on a price and delivery schedule, and leave industry alone to fulfill its contract.

The inscription on the other side of this coin is bottomed on two factors: (1) the inherent difficulty in arriving at a proper description, price, and delivery schedule in the case of those items which claim the preponderance of the military budget, and (2) the absence or inadequacy of any measure of damages in the event of failure to perform by the contractor.

With reference to the first point, I participated in a congressional hearing one time at which General Haugen was asked about the process

by which a specification is evolved. He began his answer by stating: "The first thing we have to decide is whether we know what we want." The members of the committee went into a deep shock at this statement and required a lot of explanation to recover.

However anomalous it may sound, the fact is that the services usually don't know what they want when they embark on a new weapon system program. They think they know what they want to accomplish with it, but if they knew enough about the state of the art of all the systems and subsystems involved to describe them with particularity, they would be buying the wrong weapon system, because it would not be obsolescent, at best.

The services take the position that they can't get requirements for performance beyond that which already has been achieved and expect to be able to specify what it will look like and how it will operate in such detail as to make definitive pricing and delivery schedules possible. In summary, then, the service position is that it is virtually impossible to meet the conditions set if you must modernize a combat force.

Let's assume, however, for the sake of analysis, that it were possible to agree on a description, price, and a delivery schedule, what would be the measure of damages in the event of failure to perform? What damages do you ask of a contractor when you have to fight a war without the missile X he failed to deliver on time? Indeed, if you lose the war, where are you going to find a tribunal in which to sue him?

Let's suppose, however, that you didn't have a war. If we ignore the prior work done on the Atlas and take 1954 as the beginning date of the program, it took five years, with the highest priority, to deliver the first operational missile into inventory.

If you make the contract for the delivery of a missile five years hence, go off and wait for the time specified, and then find that the missile won't perform as promised, what do you do? How do you make up in development for the five years lost? How do you pin down the costs of all the internal phasing actions required to activate the units for which you then have no weapons? How do you assess the deterrence value lost because you don't have the missiles? And, even if you could answer these questions, what contractor has the financial capability to respond in damages to the astronomical sums involved?

Of course, in presenting the service viewpoint, I have oversimplified the matter; but this is one of those cases, perhaps, when oversimplification is justified in order to point up the issue.

Having looked at some of the broad aspects of the question whether the services should exercise some influence over contract performance, let's look at a few of the specifics involved.

There are many specific areas where service influence can be brought to bear on contract performance. Rather than list them and discuss them one at a time, I would like to lump them into two categories: those which are essentially in-plant actions and those which involve subcontracting. Such a categorization may not stand up to an academic analysis, but I believe it will suffice for this purpose.

Let me illustrate in-plant actions with make-or-buy decisions, and configuration or design control. The other category is illustrated by selection of subcontract source, either as a part of a so-called "team proposal" or subsequent to contract award, and also by pricing of subcontracts.

Industry has many arguments in support of its position of nonintervention by the services in make-or-buy decisions. Let me list a few of them.

The contractor bids on the basis of his total resources to do the job; he knows his own capabilities and methods much better than the service involved does; he can control costs in his own plant better than in that of a subcontractor; and the same is true of integration of components into subsystems. Lines of business which he will pursue are matters of management prerogative under a democratic form of government; and if he wants to risk his stockholders' money in a field which is outside his prior experience, that is a matter between management and the company board of directors. He is perfectly capable of ascertaining the extent of open capacity in subcontract industries and evaluating it against his own capabilities. If the services think they have more information on open capacity than he has, let them supply it to him; but the fact that he is still in business is pretty good evidence that he doesn't need their help in evaluating the information.

On the question of design control, industry points out that the contractor's staff has put thousands, and sometimes millions, of engineering hours into the design. Obviously, they reason, no one else can have the detailed familiarity necessary to determine when and how it should

be changed. The contractor feels that service representatives, for a variety of reasons, traditionally are overcautious and a requirement for review by them limits the flexibility of industry engineers. Further, such reviews require an unjustifiable amount of unproductive time in explaining details, result in delays in making decisions, and thereby increase the time span between design and inventory. To be brutally frank, industry avers that the service representatives do not have the competence to pass on such questions and they cite as the best evidence of that the fact that they have not been hired oy industry at much higher rates of pay.

So go the arguments in support of the industry basic position "Let me alone to do my work."

In general, services accept the validity of most of the arguments on make-or-buy decisions. They have a number of "buts" to add to them, however. Recognizing the capabilities and legitimate aspirations of a contractor, the fact remains that specialized facilities frequently are required to produce components and subsystems. Where a potential subcontractor has demonstrated capability to produce, and has such facilities, for which the Government already has paid, either directly or indirectly, the serivces argue that there should be some very strong reason present to warrant duplication of capital investment in new facilities at the contractor's plant.

The military believe that another consideration beyond that of facilities enters into the picture. As basic war concepts advance, industrial mobilization considerations necessarily change; but regardless of the degree, some consideration for post-D-day production must be retained. It, therefore, follows that the services cannot completely ignore individual actions in peacetime which, in their aggregate, long-term operation, might tend to destroy an existing industrial capability.

More immediate than that, however, is the indicated fact that a prolonged cold war situation will continue for a long period the present relatively high level of defense production. Without reference, therefore, to mobilization considerations, the services feel that they must take cognizance of proposed actions by one segment of industry which may affect the continued availability of another existing segment for competition in projected current defense development and production.

Granting the ability of the contractor to evaluate his own capabilities, including those of his separate divisions and subdivisions, the objectivity of that evaluation versus those of potential subs is not always completely

self-evident to those in uniform--particularly when the contractor has embarked on a program of diversification of effort, or when one of his corporate divisions engaged in commercial production needs some volume to absorb some of its overhead and thus permit him to operate the division at an overall profit.

As far as cost control is concerned, it sometimes happens that service experience indicates that a potential sub has been a low-cost producer, whereas the prime has evidenced a result quite to the contrary.

On the subject of integration of components into subsystems, so long as the prime controls specifications, methods, and practices, it is difficult for the military buyer to see why integration constitutes more of a problem when fabrication is accomplished at the plant of a sub than it does at another division of the contractor.

There is nothing, perhaps, which generates as much emotion as the matter of design control. When one considers that he has created something, it becomes his baby; and, as in the case of natural children, the father does not take kindly to correction of his creation by others. When you have people in industry and in the services who have participated in creation and this feeling of paternity on both sides which is often the case, you naturally are going to have troubles.

Many reasons are assigned for the position on this question taken by the services, of which I will mention only two. First and foremost is the belief that the only purpose of buying a weapon is to satisfy an operational requirement. The user, quite naturally, feels that he is the best judge whether a change is responsive to his operational requirement. The second is also a pretty fundamental one--money. Weapons usually are not bought on a fixed-price basis, and it seems to the services pretty reasonable that he who pays the piper shall call the tune.

Now let me turn to the second category, i.e., subcontract considerations. Once it is decided that work will not be done in-plant, the problem of source selection and the corollary one of pricing of subcontracts come to the forefront. The prime contractor points out that he has relationship problems with whoever is selected to do subcontract work. Again, he is responsible not only for quality of the subsystem or component, but also for integration into the end item and for its delivery on schedule. How can you expect him to discharge those responsibilities, he asks, unless he has a completely free hand in selecting those with whom he is to work?

On team proposals, the prime selects his prospective subsystem subcontractor, and that part of his submission is integrated into the whole. It costs money to produce proposals and if the services are going to accept his bid, he feels that they should accept all of it and not specifically reject one part or require that part to be put out for competitive bids. Such a practice, he says, will have the effect of killing team efforts in working up proposals on complex weapons systems. All things considered, industry feels that its right to select its own subcontractors should be unfettered.

On the subject of pricing subcontracts, industry alleges that there is a vast difference between industrial purchasing and Government procurement, because of the competitive situation which exists between the prime and sub in an industry where there is much cross subcontracting. An example of this would be where Company A is a sub to Company B on one contract, but the reverse is true on another contract where Company A is the prime. Even where competitive pricing cannot be obtained for a given item, in this environment, Company A feels that it can't ask for a cost breakdown from Company B, followed by an audit, because B may ask the same thing tomorrow when their roles are reversed; and he certainly isn't going to give B information which will enable B to underbid him when they both are bidding on a new job next week. In addition, such an exchange of information could have anti-trust implications.

Anyhow, they assert, renegotiation results of subcontractor industries, (which is a review of gross profits on defense work within a fiscal year) do not indicate that any overall excessive profits are being made. It is normal to expect a company to make more money on some jobs than on others; and, so long as the overall result is reasonable, the Government has no basis for complaint.

The services do recognize that there are differences between industrial and Government buying, but they find it hard to accept the proposition that individual bad procurements are not important so long as the overall operation of the sub does not produce an excessive profit picture. In the first place, so far as renegotiation is concerned, those in uniform point out that subcontracts and prime contracts are considered together; and where there is a substantial amount of cross subcontracting involved, the fact that excessive profits are not found by renegotiation is not meaningful with relation to subcontract profits.

Even more important, however, in the opinion of the services, is the fact that a tight profit margin probably is the greatest incentive to efficiency which exists. Eliminate that incentive and you have a breeding

ground for inefficiency. In a normal plant you don't have inefficiency on one contract and efficiency on another. The disease of inefficiency spreads throughout the whole fabric and the result is high-cost production even though the profits attained are not great. If the buyer's cost is higher than it should be, and the seller isn't making an undue profit, we have a good example of economic waste.

How valid is the industry position on obtaining cost breakdowns from subcontractors and use of auditors working for the prime" Granting it a prima facie validity, the services take the position that they have Government auditors who can be made available in cases where either party does not want the prime to utilize his own staff. Further, certification by the sub's auditor may provide answers in unusual cases. In any event, they feel that repeated examination of pricing of subcontracts by the GAO and other Government agencies within the past couple of years indicates that poor pricing may be the rule, rather than the exception, and that something must give in order to produce better results.

In this connection, I think you will be interested in an excerpt from an inspector general's report which was released just a few days ago. I am sure that this is not considered typical by anyone, but the I. G. has this to say:

"Some purchasing agents reported that many companies were unwilling to submit comprehensive and detailed cost breakdowns and that other companies refused to furnish any type of cost breakdown. The following paragraph taken from a contractor's letter to the Air Force, although not related in any way to this survey, is quoted because it is indicative of the attitude of some contractors on cost analysis.

"'Over the years, we have been supplying cost breakdowns, when requested, that were actually no more than an arbitrary breakdown of costs so as to total our established price. Most of these "got by," but now and then we would go crazy with visiting cost analysts who tried to find confirmation for these figures. Recently, there have been so many requests . . . for cost breakdowns that we thought it was time that you and ourselves face the fact that we simply (1) have no cost system, and (2) see no reason for one, and (3) would not trust it if we had it.'"

Coming back to source selection, there are many instances when, in the opinion of the services, the extent of their information exceeds that available to the prime contractor. Existence of open capacity involving facility investment frequently is as important in a choice between subs as it is in make-or-buy decisions. Instances exist where

extensive development work has been done on subsystems, either Government or privately supported, before the weapon system project is initiated. From a time and money standpoint, it seems to the military only sensible that this development effort should be utilized.

Differences in engineering approach may strike different responsive chords as between the contractor and the service involved. Particularly in the case where the prime contract includes subsystem types which previously have been Government-furnished, the service may feel that its background of experience in the field gives it a broader basis for evaluation than that of the contractor.

The question whether to accept a team proposal in toto or to reject a part sometimes produces a knotty problem. Once in a while a clearly superior overall proposal will contain a facet which apparently is inferior to the corresponding solution in another less attractive total proposal. Another situation which has occurred is that in which the team member involved does not appear to have anticipated a problem believed by the evaluator to exist or, if so, has not included sufficient information to warrant belief that he can lick it. Requiring the prime to throw that particular segment open to competition is one of the ways of filling gaps in information and determining whether something that looked real good against the background of one system proposal looks equally promising in the context of another.

Now let me attempt to summarize the two sices to this question. From an industry viewpoint, a contractor normally goes through some kind of competition--design, price, or otherwise--and wins the contract award on the basis of a superior proposal. Having been given the responsibility to perform, he feels that his authority to carry out the contract should be untrammeled, subject to the rules governing ordinary business transactions, in the commercial community. He views anything beyond this as a threat to free enterprise management prerogatives and characterizes it as "creeping socialism."

On the other hand, the services take this position:

"The things we are buying with the preponderance of our procurement budget are not off the shelf in their nature and usually have no commercial counterpart. Therefore they are not subject to the same economic and other restraints in development and manufacture as are found when there are multiple sources, each of which is seeking to sell products which each has produced at his own risk to a broad market."

In this framework, the services feel that they must reserve a right to look at what the contractor proposes to do and to provide an input if it seems warranted. They recognize that different situations involving various individuals may produce divergent results; but, in general practice, the position of the military is that they are a looker-over-the-shoulder of industry rather than a director, and that is why I have chosen to refer to influence over contract performance rather than control.

Thank you very much.

CAPTAIN FIKE: General Thurman is ready for your questions.

QUESTION: It seems that the weapon system concept, which is a prime budgetary tool, I suppose, has caused not only this big problem of subcontracting, but in issuing a contract on a whole weapon system basis it seems that the services themselves lose contact and the technical ability to tie these things together both from a technical and a military viewpoint, and they get into this fight with the prime contractor too as a result of it. So, to some extent we have a chicken-and-egg deal, where they say the services don't know how to handle this stuff technically, and they don't get the facts, because they issue contracts on this whole weapon system basis. It seems that primarily one of the most important things the services can do is to be the tier-together of the subjects, be the uniter of these things, and know how they can use parts of systems in other military uses; and they can't do this unless they are right in the middle of the thing.

GENERAL THURMAN: You've got half a dozen questions there; not just one. Let me attempt to correlate them; and, if I don't, please jog me.

First, on this question of single prime procurement--that's what I think it ought to be called rather than the weapon system concept, because that's completely different--it has not produced the subcontracting problem, it has accentuated the problem.

By that I mean this: Let's take the B-70 contract that we aren't going forward with right now, as hoped, as a case in point. The difference between the B-70 on this question and the B-52, for example--which was done under weapons system management but not under single prime--is that something on the order of six or eight equipment items are being bought, or were being bought, from North American that would have been bought ordinarily from six other companies. But each one of those six or eight different companies would have presented the same

subcontract problems that are represented today on the second tier level. The only difference is that, instead of being first tier, they are second tier. You have the additional half dozen, or thereabouts, of your major subsystems in your prime subcontract picture that you otherwise would not have.

So basically the problem always has existed. It is accentuated in part by single-prime contracting. It is accentuated in part by the factor that I mentioned--that, regardless of how you are doing it, you are getting greater concentration of dollars on individual contracts.

Now, that's not a matter of policy. That's something that is happening because of economic and technical forces; and where you have that greater concentration of dollars in individual contracts, they become economically important, and things of that sort.

Now, to go back to your inhouse capability. The progress of technology in the course of the last 10 to 15 years has been so great that it probably would not have been possible to develop a complete capability in Government to provide all of the technical know-how that was necessary to the building of these new weapons. I think that is true right straight across the board with respect to all the services.

Now, it is one thing to recognize that you couldn't have created this total capability. It's quite another thing to assert that there is no capability in the services, because I think there is a substantial capability in each of the services, which has grown up as these states of the art have progressed. But they have grown up sizewise, as a capability to monitor the terrific numbers of engineers and scientists who must be working on this thing throughout the country. And, with respect to the Army, Navy, and Air Force personnel, my own experience and observation have been that they are second to none.

This business of tying together the activities of all the people involved--that is really one of the basic necessities which require the services to interject themselves into the performance of contracts. You can't turn Company A loose to puruse one weapons system and Company B completely loose to do another one. If for no other reason, it's because there are a lot of things that are common to the two or sufficiently similar that somebody should be able to tie them together.

Now, I think the answer to this aspect of your question is that it is being done. Basically, I have no hesitation in saying that such is a

categorical fact. How well is a question on which, perhaps, reasonable men could differ.

You must also remember that this weapon system management business involves an awful lot of internal activities within the service, to get itself ready to utilize a weapon system when the hardware is made available. You have different mechanics in the different services. In the Air Force we use the Weapon System Project Office as the overall manager of industry participants, service participants, and everybody else involved.

QUESTION: A little bit more on the same subject: It would seem to me that the position of the service managers and the serivce people connected with weapons systems would be enhanced if we don't have one prime contractor, but, rather, a number of primes for the different facets of the system, even though you certainly don't get around the subcontracting problem that way. It would also seem to me that the general tendency that has been working lately to have one prime is somewhat going the other way--toward getting a minimum of having one prime.

GENERAL THURMAN: What do you mean by "enhance the services"?

STUDENT: I think it could increase the position of the service to influence the contract, in that you could say that because you've got to tie the launcher to the missile and the fire control to navigation, and that has got to be done by the service, you have a right to know this information, in fact, you've got to know it, in order to do things, whereas if one company is responsible, you have a right to an argument about finding out more of the details than you really need to know.

GENERAL THURMAN: I think that's probably true. If you could have an adequate number of qualified people in the services, in these days when they are chopping off your manpower every evening, you might do a better job of integration than you otherwise could. I think you've got to say "might" because I think there's room for another view there. There are some who believe that the stultifying effect of Government service will not produce the courage that leads into the future which you find in industrial organizations. And that's alleged to be true not only of individual pieces of hardware, but also in terms of how you put them together.

Granting it to be theoretically true that a better job could be done by service personnel, manpower and other limitations on the services

make it impossible, as a practical matter, to assemble the required people inside Government. In these days of terrifically complex things that have to be integrated, I think the only way it can be done is to have the large numbers of people trained available in industry who are monitored and managed by the services.

Now, on the point of whether our fashions have changed, I think the answer to that is "No." I'm drawing on the Air Force in saying that--because it has not been the fashion, contrary to public impression, that the Air Force has gone all-out for the single-prime route or put any great emphasis on it. We have followed, or attempted to follow, and for the most part, I think, have followed, the course of trying to choose the best method of management in a given situation. Again, adverting to the B-70, we used one type of management setup for that. We used a completely different kind of setup for the ballistic missiles--and the Minuteman is following the same basic pattern as the other ballistic missiles--because we had an entirely different kind of situation.

Back in 1954, when the ballistic missile business was really put on a top priority basis, it was the consensus of a lot of informed people, that the technical capability to direct such a program as that did not exist either in Government or in private industry. It was believed that such a capability had to be created. The particular device employed was considered to be the best way of creating it in the shortest time. You can argue as to whether it was good, bad, or indifferent for these missiles.

To use a recent example, in our DYNASOAR program, we for the first time in history are taking a big rocket and putting an airplane on top of it and are going to send a man skyrocketing toward space. We have never had the problem of marrying a missle to an airplane before. Nobody has ever had it, in this country at any rate. And, therefore, we have felt that again we have to create a specially tailored kind of management system to handle it.

So you get variations in degree; and I hope that we will never come to any firm, one way of doing things, because when we do, we're going to fall flat on our faces.

QUESTION: Are there any new approaches on the profit matter as far as the contract performance is concerned? I am thinking maybe along the lines of a sliding scale of profits. You mentioned that contractors could not pay the penalties that could be involved, but then there's this profit thing to be juggled with. Are there any new approaches to that?

GENERAL THURMAN: Yes. We get a new approach to profit every time we get a proposal, because that's the only reason a company exists.

I think the answer to your question is "yes." The services--and again let me use the Air Force because I'm familiar with it--are doing some research and development work in this field too.

Back during World War II the great majority of large contracts for all services were on a cost-reimbursement basis of some type or other. Those cost-reimbursement contracts produced a lot of difficulties in many different ways. One of the main things was that some people felt, and still feel, that it gives the least incentive of any possible arrangement to reduce the overall cost of a contract.

During the war, to some extent, but especially after the war, various and sundry things were attempted to give an incentive to a contractor to reduce overall costs. We must remember that, while from a seller's standpoint there is a difference between cost and profit, from a buyer's standpoint there is none. The overall sum total that he pays is important, and it is less important to him how much of it is profit and how much is cost. So what he is going to try to do is to reduce the overall thing.

We have developed various types of so-called incentive contracts. One type that is used where the estimating process is not considered to be sufficiently reliable, is a cost-plus-incentive-fee contract, where you have an open end to cost and agree to pay whatever it costs, but you set the fee; and if the cost is less than the amount that was estimated, he gets a greater fee. If it's more, he gets a lesser fee. He incurs a penalty one way and an increase in another way and this produces a very direct incentive to reduce cost.

Now, one of the things that we are experimenting with is the performance incentive, in terms of how high, how fast, and how good a CEP we'll get for the missile or an airplane, or delivery schedule--tying an incentive to a critical aspect of the performance of the contract.

We found that you can get in trouble real quick on that if you don't also put in a counterincentive costwise, because when you are giving a performance incentive, you are putting the accent on engineering, or if it's delivery, you are putting the accent on other things, and your cost tends to skyrocket. So what we are trying to do in those instances

is to couple a performance incentive with a cost incentive; and its a matter of judgment as to how much weight each one of them gets in order to get an optimum distribution of impetus.

The first one we tried on a large scale was the B-58. I certainly would not go so far as to say that this was responsible for the clearly good performance we have had from the B-58, but I also don't think it should be completely ignored.

Incidentally, the first performance incentive contract that was ever written was the purchase of an airplane, the one that was bought from the Wright brothers. It set a target speed of 40 miles an hour and gave them additional dollars if the aircraft went faster and cut off the price if it went slower. That was the first airplane contract ever written. I didn't know that until a couple of years ago.

QUESTION: General, there seems to be a growing number of service representatives in the field of weapon systems, as you have stated. Does the method of contracting have any direct bearing on that?

GENERAL THURMAN: Do you mean representatives of the services, or service representatives of the plants?

STUDENT: Contractors' representatives in the field with the weapon systems, technical representatives.

GENERAL THURMAN: No, I don't think so. I think the reason for that is the fact that we are all moving from research and development into production so fast that a great many of the bugs that should have been cleaned out in the development process simply aren't cleaned out. Everybody recognizes that, and takes risks on that basis. Joe Deaks, who's an airman first and a good maintenance man, simply is not able to do the kind of correcting that is required when these bugs turn up. More than anything else, I think that is responsible.

QUESTION: You commented at length about the resistance of business to influence of the military in what they consider their prerogatives or their area of operation. Would you care to turn that coin and give us some of your observations on the manner in which business by conducting public relations puts pressure on the military services to either continue or put a product in production in which there may be some question as to whether the military performance is what you want?

GENERAL THURMAN: I don't know quite how to answer that. You have the instinct for self-preservation, where you have a contractor whose major effort is directed toward a particular program and who sees his whole capability and his stockholders' interest jeopardized, and the future looks bleak. By and large I think that sort of thing hampers the service rather than helps, because, even when they put on a completely unbiased campaign, which doesn't happen often, it can produce some conflicting pressures andmake it difficult for the services to do what they really think is the best thing to do.

QUESTION: General, I'd like to get back to this matter of incentives. The first question is: Is this incentive passed on to the subs? The second question is: If Government-furnished equipment holds up delivery where your incentive is on delivery, what do you do about that?

GENERAL THURMAN: As such, the incentive is not passed on to the subs, because the subs are not a party to the contract between the Government and the prime. On the other hand, frequently, where the prime has an incentive contract with Government of any kind, he will make a comparable type of contract with his subs; so that in effect you do get it passed out and the penalties that go with it.

What was the second part of your question?

STUDENT: If you have Government-furnished equipment and you have an incentive on delivery.

GENERAL THURMAN: You must in the final analysis provide in the contract for a negotiated settlement of that incentive question. We have never, in the case of something that is not tied directly to a dollar sign, attempted to settle one of these things on a straight formula basis. We agree on guidelines and standards for establishing the extent, if any, to which an incentive or penalty has been incurred or has been earned, and negotiate it out.

QUESTION: You have spoken pretty much on the viewpoint, you might say, of industry and the Government on this matter of influencing the contract and so forth. What I am wondering is: How much is the Government able to get into these areas of design control, make or buy decisions, and that sort of thing in some of our existing contracts? Are we able to get what we want in our existing contracts? In the way of influencing them?

GENERAL THURMAN: By and large I think the answer is "Yes." You have got to build up red tape in order to accomplish that. And that's what we're talking about--the red tape. Depending on how you look at it, it's good red tape or bad red tape.

But in order to insure that the inhouse capability that you have from a technical standpoint is brought to bear on a problem which occurs at the plant of the prime or one of his subs, you've got to have a mechanics for getting it out. In the Air Force the mechanics that we use is called an engineering change proposal and a procedure for that.

I think that kind of a thing--and on administrative things there are other similar set-ups--can be made to work quite effectively. It's in the operation of these systems that these arguments come up. By and large, it has been my experience and observation with respect to all the services that they are capable of making an input and doing something. And most of the time it's pretty good; not always.

QUESTION: General, you made reference to shortage of personnel having something to do with the service representatives being on the job. In that same context, there has been a move to enter into contracts with prime manufacturers for both the maintenance and supply support of weapons. I wonder if you would care to comment on to what extent the Air Force has embarked on such programs.

GENERAL THURMAN: We are doing it, I think, on an exploratory basis--and manpower capabilities may have something to do with it. But, I don't think that's the primary reason.

We are moving into the utilization of weapons that we have had no experience on. It's true, we had no experience on our B-70 or F-108, but we had experience on air frames and you get the continuation of that kind of thing as you go forward.

We have built up over the years facilities for the overhaul of jet engines, for example. You have facilities existing all over the country that have been in the past tied toward the maintenance of aircraft. Now you come along with these vehicles that don't have jet engines; they have rockets. You've got to have facilities to do that.

Now, we don't know at this time what sort of maintenance is going to be required for this rocket engine that's sitting out there on the pad ready to go. It was necessary to create facilities to build the thing. So they are available, to some extent, to do the maintenance. Of course

you can't use exactly the same quantity, but you may be able to add on to that available capacity cheaper than you can go down to Oklahoma City and build a brand new capability.

I think that we are doing this on an exploratory basis to try to find out what sort of maintenance problems we are going to have, what kind of facilities we are going to have to create; and I'm sure this is true of the other services--before we get into the expenditure of tremendous sums of money in converting existing Government-owned operations. I think that's sensible. I thoroughly approve of it personally. I think that we would be wasting taxpayers' money at this point in the Titan program, for example, to go out and create a complete depot capability to support that thing. It makes a lot more sense to haltingly do it by contractor support until we can find out a lot more than we know about the size and quality of the requirements. There may be situations, of course, where it makes more sense to do it the other way.

CAPTAIN FIKE: General Thurman, on behalf of the Commandant and the members of the Industrial College, I want to thank you for a very fine probing into this problem. I hope that if we heed your signs and guideposts we will not suffer from the same pitfalls that befell the boy and his grandfather.