

## PROCUREMENT BY THE UNITED STATES AIR FORCE

10 January 1958

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Major General William T. Thurman, USAF, Deputy Director for Procurement and Production, Headquarters, Air Materiel Command, 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 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 Programming, 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, 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 assumed his present position. This is his first lecture at the Industrial College.

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**ADMIRAL CLARK:** From what we have heard so far from this platform, I think that most of us have come to the conclusion that the year of 1957 was one of the most extraordinary in the history of most types of procurement. The year began with a relatively high and orderly level of procurement; but by midyear the budgetary crisis in the Federal Government caused the Defense Department to start a series of directives ordering cutbacks, stretchouts of contracts, complete cancellations of some programs, restrictions on overtime, delay in payments, and other fiscal gimmicks. Later in the year the success of the Russian satellite program caused a public reaction which in turn caused a reversal. Some of the restraints were eased, and there was an emphasis on acceleration in the fields of technology, research and development, missiles, and so on.

Our speaker today, Major General William T. Thurman, has been serving in a position where he has experienced the full impact of this series of events. He has to deal with the many problems which they have added to what was undoubtedly already one of the most difficult and complex of all military tasks. General Thurman is Deputy Director for Procurement and Production of the Air Materiel Command, the command in which the Air Force has vested worldwide responsibilities for procurement. He therefore is very well qualified to talk to us on the subject of Procurement by the United States Air Force.

General Thurman, it's a great pleasure for me to welcome you to the College and to introduce you to the Class of 1958.

**GENERAL THURMAN:** Thank you very much, General Mundy and Admiral Clark, for inviting me to come to talk to this group. It's a pleasure to be able to do so.

The procurement business has so many ramifications that it is difficult to select one of them which is likely to be of interest to all of such a group as this. Having given a lot of study to the subject myself, and having talked to a number of people, including your Colonel Pike, I came to the conclusion that, rather than dwell at length on any subject, I would talk about several things. So I am going to talk about some procurement

problems, and I am going to confine my discussion largely to talking about what the problems are instead of talking about what their solutions may be. I hope that when we do get around to the discussion, perhaps you can give me some of the solutions to some of the problems that I will outline.

Actually we don't have but three kinds of problems in the procurement business. One of them is time, the second is money, and the third is people. But since each of these usually is involved in each individual perplexity with which we have to deal, I will treat them collaterally in relation to specific subjects, instead of attempting to probe the ramifications of each one, as such.

I think that almost anyone would agree that our largest area of concern today is the whole business of weapon system integration and management, which is fraught with a great many arguments and complexities. Unfortunately, you will find almost as many definitions of this concept as you will find people who discuss it. Where such is the case, you naturally are going to find a lot of basic disagreements over fundamental purposes. Without giving you either my own definition or that contained in regulations which are available to you, I first would like to give some of the genesis of the concept.

We always have had a weapon system concept of some sort, beginning with the Wright brothers; but in the early stages of the development of manned aircraft the matter of integrating and managing the various systems and subsystems involved in the weapon itself was relatively simple, because the systems and subsystems were relatively simple in themselves. The Air Corps was able to accomplish the integration and management job on procured materiel and Air Corps functions; and it did so with a marked degree of success, I think. With the advent of high-performance weapons, however, the job of combining a host of complex component capabilities into a single capability to achieve the most effective results came to be a problem of such magnitude that the resources of the Air Force were inadequate for its resolution. The notion of a weapon system contractor began to emerge, and the necessity for an internal Air Force management device became readily apparent.

We have tried many internal management devices as time has progressed. Our current one is the Weapon System Project Office, aided by the Weapon System Phasing Group. Without attempting to detail all of the complications in integrating and managing weapon systems, I would like to point out that the development and production of a complete

weapon system involve practically all of the engineering resources of the Air Research and Development Command. They involve not only the buying functions but the supply and maintenance functions of the Air Materiel Command. They involve the requirements of the Training Command, and, above all, the participation of the using command.

The job of tying together all of the functional elements of the Air Force is a major one; but when you add to that all of the industry complications involved, you have a task of the first order of magnitude.

The Weapon System Project Office, consisting of personnel from the Air Research and Development Command, and buying personnel of the Air Materiel Command, acting in concert, backed up by the Weapons System Phasing Group, having representation from the other affected functions of the Air Materiel Command and other concerned commands, have the chore of coordinating and phasing within their own commands and others. In addition, under the American way of doing business, they must negotiate on a bilateral basis with industry for the materiel involved. Without pursuing this facet of the matter further, I think that the enormity of our integration and management problems for weapon systems is obvious.

But our weapon systems problems are not confined to integration and management ones. We are living in a time when we must push faster and farther in order to keep pace with our adversaries, much less get ahead of them. This means that we are usually buying things which don't exist. Most of the time we cannot wait for anything more than a feasibility study on a general operational requirement; and when you try to write a binding contract for something as nebulous as this, you have troubles. When you try to price the item, your troubles go up in geometric instead of arithmetical progression.

Variations in lead times of components are such that we must lay out our development and buying program in a manner which is comparable to fitting together the pieces of a jigsaw puzzle. When you attempt to relate the lead time on one undeveloped item to the lead time on another undeveloped item in such a way that you will get deliveries to the weapon system contractor in an orderly progression for installation, you have troubles on top of troubles.

Program instability tends to complicate the proposition. With a change in the production rate of missiles, the procurement program for propulsion, guidance, control, ground-support, and many other systems

must be realigned across the board. We are constantly in the process of juggling things in an effort to insure that we have enough, but not too many, for the purpose intended.

I probably have talked enough about the Air Force problems of procuring weapon systems to get my point across, but I would like to emphasize the importance of the supply and maintenance aspects of weapon system procurement. The old story, "For want of a nail a shoe was lost," has just as much application to utilization of a modern weapon system as it did in the context from which the story came. Unless we can buy spares and ground-support equipment and provide adequate maintenance capabilities, we might as well never have begun on the program to acquire the weapon system in the first place. Particularly in the field of missiles, ground-support equipment is just as complex and just as necessary as the missiles themselves.

The funding situation under which we operate makes an appropriation distinction between those two which may have been valid years ago, but which now fails to recognize the truth of what I just stated. The business of matching appropriate amounts of weapons money with support money presents one of our major problems. Inability to surmount this funding hurdle can put us in a position where we have birds and manned aircraft which are totally incapable of performing their combat mission because of inadequate ground support.

Not only does the weapon system approach have a substantial impact on the Air Force, but it also has many varying effects on industry. The complexity of the weapons involved has placed a burden on industry to accumulate the degree of skills which the subject matters involve. But the impact goes much deeper than that. For one thing, the weapon system contractor has had to develop new kinds of management skills in dealing with other members of the same industry and with other segments of American industry. He has had to develop a new way of dealing technically, industrially, and diplomatically with other companies so as to bring about the result which he is seeking. He is faced with proprietary problems, not only with respect to his own operations, but with respect to his subcontractors and associate weapon system contractors. A company which has no hesitation in disclosing its proprietary know-how to the Government has serious problems involved when it deals with another company which may be in the same competitive field with respect to other products. This is particularly so in the case of those aircraft prime contractors who, as a result of their venture into the missile field, have for variety of reasons built up a capability within their own companies in

those areas which have long been considered to be the exclusive province of the components industry.

We even run into such touchy things as managerial pride. I heard one very large contractor object to taking on a contract on an associate weapon system contractor basis on the ground that an associate weapon system contractor is a second-class citizen, and he wanted to have no part in being a second-class citizen.

With multimach missiles and aircraft, needs have developed for many new kinds of materials to take stresses and conditions not heretofore encountered. As many of you know, with the Air Research and Development Command laboratories and the Air Materiel Command manufacturing methods operation, the Air Force is providing some assistance to industry in this field; but the preponderance of the development of new materials and new methods must come from industry.

Not the least of the impacts on industry is the old question of large business versus small business. With the growing responsibility placed on weapon system contractors, there is a tendency for large businesses to grow larger. One has only to look at the statistics of the growth of the individual airframe and missile companies over the years since the last war to realize the truth of this. With increasing congressional pressure on the Air Force and on large industry to channel more business to small businesses, we develop complications within industry itself.

All in all, the terrific increase in the requirement for high-performance weapons has produced a corresponding increase in complexity. Complexity has produced the weapon system method of procurement; and the weapon system method of procurement has produced a lot of headaches, some of which we have licked, some of which we are in the process of licking, and some of which are still without an answer.

The second area about which I would like to talk is competition. Let me make it clear that I am not talking about advertising versus negotiation, because advertising is only one form of competition. I do not want to minimize the importance of the advertising question, but I understand that you have had seminars and several lectures on the subject. I would like to point out, however, that there are all kinds of competition and that in one form or another we get some kind of competition in most of our procurements, at least in the development stage. Even in our major weapon systems, through the medium of the Source Selection Board we have very intensive competition on design, management capabilities, and other things which are very much a part of the end item which we buy.

Let me sketch for you some of the pressures that militate against widespread competition. One of the most significant is the pressure of the development source. Rarely do we have the luxury of being able to complete development and tests on any complex item before the first production order is placed. This means that usually we find ourselves pushed in the direction of sole-sourcing the first production run regardless of what we might wish to do.

Allied to this is our physical inability to produce up-to-date specifications suitable for completion. Judicious use of available manpower frequently makes that prohibitive.

Another source of pressure to avoid competition is the difficulty inherent in the evaluation of proposals on a cost-plus-a-fixed-fee basis. Many of the items and services which we buy are necessarily cost-plus-a-fixed-fee types of operation. Our machine tool storage and vehicle storage sites are a good example. Under a CPFF contract we undertake to pay whatever the costs are; so an estimate of cost does not mean much unless it is related to the demonstrated capability of a company in a comparable situation. It is much easier to stay with a demonstrated good operation than to open for competition one which should be competed.

As a matter of fact, the attitudes of our own people--buyers, engineers, supply people, and users--have a great influence on the competitive situation. Where development considerations have forced us into sole source for the first production run, we frequently find ourselves in the situation of being able to compete a follow-on order. If the experience of our people with the developer has been good, it's amazing how many reasons can be generated for continuing to go sole source. And such an attitude is understandable. After all, it is our job to get quality items delivered into Air Force inventories. To award the contract to a new source means to take some risks with delivery and quality, and you can understand a reluctance to run the risk of default in either area. It is sort of like Shakespeare's comment: "And make us rather bear those ills we have than to fly to those we know not of."

There are many forces in addition to those I have enumerated which make it difficult for us to compete any individual procurement, but our management effort is always in that direction.

Related to the problem of competition is the matter of pricing in non-competitive areas so as to get the most for the resources that are made available to us. I am not talking about squeezing profits. I am talking

about pricing things on the basis of what they should cost, including a reasonable increment for profit. Before amplifying on this statement, let me sketch for you some of the obstacles we face in pricing in a non-competitive situation, which is the one into which most of our dollars go.

To begin with, as I said before, we are very much in the business of buying things that do not exist and, therefore, being faced with the necessity of pricing without the kind of cost experience which is the best guide to a reasonable price. Furthermore, we are over a barrel from time pressures. The race for technical supremacy is constantly forcing us into the taking of all sorts of short cuts for development and production. This means that production of a new weapon system usually starts out with a letter contract without pricing being specified. From that point on, the contractor has time on his side, because he has the business and can afford to hold out for the highest possible price. On top of that, the same urgencies for production are constantly gnawing at our people charged with the negotiation of price in order to avoid holding up production.

These and many other things lend emphasis to the type of contract which is selected for pricing purposes. It is relatively simple to write a cost-plus-a-fixed-fee type of contract, and it is the only proper type of contract in some situations. To the extent, however, that other types of contracts can be utilized, a cost-reimbursement operation is the worst that can be used, because it has the least incentive to produce for the lowest overall cost. It isn't the amount of profit a company makes or doesn't make that gives me gray hair. It is the amount of money which things cost which is over and above what they should cost which is the true economic loss to the Nation.

Let me illustrate what I mean by a specific example. Not long ago one of our buyers received a cost proposal on a follow-on manned aircraft contract which appeared to be a good, sound proposal based on the experience of that company and a projection of that experience into the future in terms of cost. We have available to our buyers a lot of information which they can utilize for the purpose of locating the "ball park" of a proper price. Utilizing some of this information, the buyer concluded that the proposal was not a good one despite the apparent validity of its bases. Using industry averages and factors experienced with several other manufacturers producing comparable aircraft, he was able to develop what the buying team considered should be the target cost. This figure was considerably lower than the proposal made by the contractor.

The team finally sold a figure very close to its own to the contractor as a target, and worked out a profit-sharing arrangement which assured the contractor a marginal return on the basis of his original proposal, but gave him an opportunity for considerably increased profits if his costs were brought down to the figure arrived at by the team. Within less than a week that contractor had discharged 2,000 employees. His final costs were actually a little bit less than those negotiated as a target. He received more dollars of profit than he would have received had we accepted his original proposal, but the Government saved many millions of dollars as a result of the efficient operation into which this opportunity for increased profit had forced him. In my opinion, the difference between the final overall cost to the Government and that which would have resulted had the incentive for efficiency not been applied is a true economic gain. Those are the pricing gains we should and do seek.

How to arrive at what that cost should be in the face of some of the uncertainties I have described above is one of our major difficulties. As complex as that is, it is further complicated by the fact that we cannot afford to emphasize cost to the extent that we discourage quality of production in terms of performance, delivery, design excellence, reliability, and general quality considerations. If you put a squeeze on cost, you run a risk of degradation of performance. If you put pressure on performance, you run the risk of skyrocketing costs.

We presently are experimenting--and I'd like to accent the "experimenting"--with a relatively new type of contract designed to help us in this dilemma. In this contract, we put some incentives that work against each other. We tie an opportunity for increased profit to excellence in performance and delivery. At the same time we tie an opportunity for increased profit to lowered cost. In each instance we provide for penalties in the event that the contractor fails to meet the target on any of the factors involved.

We have not accumulated enough experience to know the extent of the worthiness of this type of contract. On the other hand, the fact that the B-58 looks as good as it does today certainly is no basis for claiming that the type of contract had no connection with the result brought about.

There is another problem which we consider to be most serious, and that is the necessity for maintaining public confidence in the integrity of Government procurement processes and methods. This is something which is very much affected by many kinds of pressures. In the first place, our striving for competition in our procurement has a tendency to

defeat our purpose in this area of discussion. I do not know what is the average number of bidders that we have on our competitive procurement, but it runs to at least a half dozen. Normally the award can go to only one; so you have five potentially dissatisfied taxpayers.

People usually bid because they want the business. Bidders are usually sold on their own capabilities and tend to disparage the capabilities of others. So we have a whole host of people who are dissatisfied with our awards because in each case the bidder concerned did not get the job. Human nature being what it is, there is a tendency of some bidders to blame their failure on something about the Air Force procurement methods, or the people in the Air Force, or anything except their own shortcomings. So we have a problem of public confidence generated from selfish interests of our suppliers, who are members of the public.

Another area of difficulty on public confidence is a lack of understanding of what the problem is. I am not sure we have been too smart over the years in our public relations in this area.

Most of our contacts with the taxpayer, either individually or collectively, are in terms of a given procurement situation in which the individual or group has an interest. It is always difficult to appraise a situation objectively when you have a monetary advantage if it is handled in a particular way. Consequently, we find ourselves in the position of trying to create understanding with respect to a specific problem when the cards are stacked against us to begin with.

Recently we have undertaken to explain some of our problems to representatives of the public in an academic atmosphere instead of that of an individual case. For example, recognizing the importance of understanding by the newspapers in Dayton, where the Air Materiel Command is located, we recently set up a discussion of the advertising-negotiating problem with the publishers and editors of the Dayton newspapers at a time when the matter was not in issue. We were not seeking any particular publicity. We were not seeking to get across any particular point. What we were seeking was an understanding of the problem on the part of the people who would write on the subject when and if again it becomes a matter of public controversy.

Along a similar line, we usually find ourselves presenting our position to a congressional committee in an atmosphere of an individual case, where prejudices already have been built up. In an effort to offset that, we have invited the subcommittee of the House Armed Services Committee

known as the Hebert committee on several occasions to spend some time with us at Dayton, during which time we could discuss with them the generality of our problems instead of specific cases. Thus far the committee has not been able to accept our invitation, but I feel quite strongly that this kind of approach is the only way we can ever get an understanding of our problems by the general public. If we can create understanding, we will get more sympathetic evaluation of our shortcomings than otherwise.

A very serious problem of maintaining public confidence is our relationships with the industries who serve as our suppliers. We are under constant pressure from congressional committees and other public bodies to follow up the expenditure of public money, not only through Air Force procurement offices, but also through the subcontract operations of our prime contractors and through the in-House activities of the primes themselves. Some of you may remember the Hebert committee hearings on the Ford-Boeing subcontract a year or so ago. The General Accounting Office constantly takes the position in individual cases that we have not adequately protected the Government's interest in surveilling the utilization by our prime manufacturers of what they consider to be Government funds.

The other side of this picture is the position of the primes themselves--that we interfere too much in their business. They take the position that they are employed to accomplish a purpose, and that they can accomplish that purpose much better without meddling from Air Force personnel. This is a matter in which we must tread a narrow line and attempt to use the greatest degree of judgment as between defeating the purpose of employing the contractor in the first place and giving adequate safeguards to the public interest in the second place. This becomes particularly difficult when you recognize the fact mentioned above--that we frequently are buying things which do not exist. In such situations actually the Air Force and industry are in a partnership relationship, and we must work together to accomplish the desired results.

I have purposely talked about things for which there is no pat solution, for two reasons: First, I am trying to do here a little bit of the business of creating an understanding of procurement problems on the part of those of you who have not been, and may never be, directly involved in the buying function. Secondly, some of you probably will become immediately involved in the procurement business as soon as this course is over. For the benefit of those, perhaps some of these matters I have discussed will furnish a basis for reflection before you get into the middle of the stream.

During the discussion period to follow, I will be very pleased to attempt to respond to any questions which you may raise, whether on the subjects I have covered or otherwise. I also hope that you will give me the benefit of any comments that you may have on the subjects that I have mentioned or otherwise.

Thank you very much.

**COLONEL PIKE:** Gentlemen, General Thurman is ready for your questions.

**QUESTION:** General, industry representatives have mentioned to us on a couple of occasions the problems that they are experiencing from the growing list of disallowances, and also from the growing number of regulations, directives, controls, audits, investigations, and so forth. Would you care to comment on that?

**GENERAL THURMAN:** I could comment for hours on that subject.

Basically, I think the position is well taken from an industry point of view. I think it is well taken to some extent from a completely objective point of view.

One of the things that I think is very much the base of this is the last thing I mentioned in my remarks a bit ago. You've got so many fingers in the pie of public procurement, you have got so many members of the board of directors, you have got so many inputs from the stockholders of the corporation that I think it's inevitable that all of these things should come about--particularly when you remember that we are charged with the biggest chunk of the resources of the American people on a yearly basis.

Now, let me say just a word in defense of some of them. We in the Air Force--I know perhaps not as much about the others as I do about the Air Force--are constantly working with industry to try to do things together, because we have an operational requirement. We don't know what is needed to fulfill that requirement sometimes, because the state of the art is not sufficiently advanced to permit us to do it. Industry necessarily, to some extent, uses the cut-and-try process. We have got to restrict their operations in the sense, I think, that we have got to look over the shoulder of industry.

Now, a lot of this business of reserving the right to look over the shoulder of industry is interpreted by industry--and maybe justly so--as restrictive. Briefly those are the two sides, as I see them.

**QUESTION:** General, I am interested in the area that you mentioned you are in today, the experimental area, where you have the two types of contracts that you mentioned--with incentive and performance clauses to counteract each other--because, especially in the weapons systems procurement, we are writing specifications that are very difficult; and I presume that you write a great many performance-type specs on those articles. It would seem to me that you would have to consider the overall economy of these contracts as well; and that if you can inject a performance type of clause in the contract, especially a service performance clause, we could get out of a lot of our so-called looking over the shoulder technicalwise on these contracts. I wonder if we don't have a great loss of technical manpower in this review of somebody else's technical work in a very developmental area type of problem. Have you had any experience with this type of service guarantee clause? Do you think it would cost appreciably more contractwise?

**GENERAL THURMAN:** There are two or three things that I think enter into that. By way of preface let me point out something that sort of shocked me when I learned of it, that I think may be of interest.

The first contract ever written for an airplane had such a device in it as you are talking about. The first Wright brothers contract established a base of speed--that was the only thing that was involved--and then offered an incentive for every additional mile per hour that it went above that 40 miles per hour, which, incidentally, is the figure I've been given, and a penalty if it went below it. You've got a time factor involved in that thing and you've got an overall cost factor.

Now, let me take the case of the weapon system 110, as it is known, that we are in the process of developing today. The original studies on the 110 began wayback in the late forties. The first two parallel contracts on that were let in 1955. We have just completed the business of selecting between those two. It will be a couple of years before there is any hardware, if we are lucky.

Now, if the Government representatives stay out of the thing until that is done, and the animal flies or it doesn't fly, and we say it either worked or it didn't work, the penalties for it not working are too great against the public, because anywhere from three to six or seven or eight

years will have elapsed. We can't afford that sort of risk of a man making good or falling flat on his face.

That doesn't mean that the Air Force can do a better job than industry. But when you put the capabilities of the two together, as is normally the case, I think you can do something that's better.

The second thing involved--and my friends in the Navy may take a different view of this, because they have a slightly different philosophy --is this: We have always felt that the warranty situation, other than as concerns latent defects and things that are normal, in the kind of thing that we buy is comparable to the position of the Government as a self-insurer. The premium in terms of insurance cost that a contractor must ask for and receive if he is going to be held financially liable for warranty on something that he has been working on for seven years and he falls flat on his face--and we are talking in terms of hundreds of millions of dollars sometimes--the contingency cost is just so great that we have felt that we would make more money for the Government in the long run by being self-insured than by making the contractor insure us. The Navy has, I think, a slightly different view on that, but that's the way we look at it; and I personally feel that it's right.

**QUESTION:** In the case of the weapon system prime contractor management system, have you had any problems with, say, the prime contractor designing a good subsystem, the ultimate weapon system, and the Air Force designing another subsystem? How have these problems been resolved to maintain the prime contractor's attitude, where he loses out, towards giving you the system that you ultimately want?

**GENERAL THURMAN:** The answer to the first part of your question is a categorical "Yes." We have had such instances.

Actually, that's a part of this business of restrictions and interferences that we are talking about, because we have got not only the question of the excellence or adaptability for this particular aircraft that is involved, but we have also got considerations of standardization and our whole logistics picture in our Government-furnished aeronautical equipment category. We have instances of putting the "A" type of equipment into this particular weapon system instead of "B" type because the "A" type of equipment will in our opinion do the job. We already have the "A" type of equipment in our inventory. We know how to maintain it. We have a spares system set up to take care of it. We want it to be in there. Your contractor--particularly in one of these cases where we have a performance incentive

built into the subsystem wants to get the very best performance that he possibly can out of his aircraft. He's not going to have to support it. We're going to have the primary responsibility. He'll help us, but we have the primary responsibility.

We resolve those things in this partnership relation that I talked to you about. Sometimes we give; sometimes the contractor gives. It's the age-old problem of working in a partnership. I don't think it has any more ramifications than that, or any fewer, except in the sense that the two partners in this case sometimes have different considerations to bring to bear on the question.

**QUESTION:** A few years ago AMC headquarters decentralized quite a number of procurement functions out to the Air Materiel Command depots. On the procurement of a weapon system can you tell us at what point one or more of these depots begins any procurement activity, and whether or not it has any responsibility for the Weapon System Project Office Phasing Group?

**GENERAL THURMAN:** Under our system what we call the lead AMA, the Air Materiel Area, is the weapon system manager from a support standpoint from the very inception of the weapon system. So your AMA is in the picture from the very beginning. Your AMA is a member of the Weapons System Phasing Group from the very beginning.

As to what they buy, the AMA has the responsibility for computing the spares backup, provisioning the ground-support equipment, and other things of that sort. The ground-support equipment is sometimes, depending on circumstances, bought out of the Project Office through the prime contractor. It sometimes is bought directly by the AMA involved. Sometimes it is bought by a special organization--of which one of the members of your class was the head prior to the time he came here--because of engineering considerations.

As time goes along, and at about the time when we have committed the Air Force to the last production order of this group, when it's in the inventory and it is still coming in but we see sufficiently ahead of time that something specific is coming in sometime or other to replace it, then whole responsibility for handling the weapon system passes from Headquarters AMC and the Joint Project Office to the AMA involved. But it is still a joint operation at the AMA.

**QUESTION:** General, I recall that on the occasion of one of your appearances before the Hebert committee last year the committee proposed

to you a relatively, I think they called it, new method of procurement called, for lack of any other title, a two-phase advertising proposal, where in the first phase the contractors would be called in and their technical proposals would be gone over in detail, and some contractors would be kept in and some eliminated; and thereafter you would have formally advertised contracting among those technically qualified. I recall that you indicated that the Air Force would conduct a test on that. I believe that the time for arriving at the results of the test is fairly close at hand. I wonder if you would give us an idea of the Air Force's evaluation of that method.

GENERAL THURMAN: I would be glad to.

People have more to do with this than anything else--people in the Air Force as well as external to the Air Force--but primarily in the Air Force. We have people who for years have been accustomed to either advertising or negotiating. We come up here with a gimmick that is midway between the two, that incorporates some of the features of both. I personally believe very strongly in this thing. I have had one whale of a job in selling it to the buying people in the Air Force.

But the buying people are not the only ones involved, because the engineering people have also been hard to convince. And believe you me, when you are dealing with an organization that involves several thousand people and you have decentralized authority, you don't get things done by just saying "Do it." You've got to persuade and cajole; you've got to manage it into operation. And when you are revolutionizing thinking, as is done to some extent in this case, I think, it is a hard job.

Now, from the standpoint of the engineering people, they have been very much afraid of a terrifically increased workload. They can see that AMC buyer going out on a wholesale basis, and getting hundreds of technical proposals and from a manpower standpoint they are'nt going to be able to control that. They won't be able to evaluate. They see themselves appearing before the Hebert committee and other agencies in response to questions about the competence of their evaluation. Those are some of the troubles that we have had.

Now, with that kind of a background, we have had very good luck with it. We have gotten very few cases through, but we have had an extraordinary absence of some of the difficulties that we foresaw.

Despite the fact that we have a rather small sample to report on, I think we have had very good luck with it. I personally believe in it. I think that it has a lot of value within a relatively narrow area. We never are going to make very much money through that one, but I think that we are going to save some money. I think we are going to get better design in many instances as a result of this or some modification of it. But a lot of my people don't agree with me on it.

**QUESTION:** You emphasized the problems involved in contracting for new weapon systems. I think those problems are fairly common to the three services. I think there are a very limited number of industries that are technically qualified to accept these complex weapon system contracts. According to news accounts, Defense is opening still a fourth agency. Is there a danger of four agencies contracting with a limited number of industries for weapon systems posing a problem?

**GENERAL THURMAN:** I don't know.

Let me say one thing, though, that is a corollary to that. I think a very interesting thing that has occurred in the last few years --the last two or three actually--is the decision that has been reached on the part of some of the major corporations of this country that they are no longer going to follow a path of being in the defense business only in the event of war; but that they are going to be in the defense business as a permanent part of their business. That has meant that we have potential new weapon system contractors coming into the fore.

Let me cite you a case in point. It's the Ford Motor Company. They have created a special division on the west coast and have taken on what I consider and have told them to be the very ambitious task of getting into the weapon system contractor field.

Now, with the advent of the guided missile and the ballistic missile, and with the movement in radar development, for example, to have systems there as well as systems in aircraft, you are bringing a new bunch of industry into the overall weapon system picture. A large part of a weapon system contractor's job is management, it's integration; and a relatively small part of it, as compared to the other, is the technical know-how in the particular field involved. So I think that as our technology goes farther along, without reference to this fourth buying agency, we are going to have more and more weapon system contractor capability available to the country.

QUESTION: I'd like to ask a question on people, possibly a continuation of your remarks of a moment ago, particularly in procurement, and particularly in procurement that has complications of advertising and negotiating, where you hesitate to have military procurement purchasing people buck up against industry negotiators. And yet these industry people, as in Ford and otherwise, are most of the time skilled and capable people. Could you discuss this and analyze your personal feeling on the personnel problem that the military does or does not have, or any actions that may be required?

GENERAL THURMAN: Yes, sir. We have poor people and we have good people, like any other organization. Let's concede that at the outset. There are a lot of motivations that keep people working for the Government, whether they have on a military suit or a civilian suit. Where the motivation involved is more than patriotism and security put together, people usually move out of the Government and into industry, because working conditions usually are better in industry and the pay is usually better. So we have a movement of good people from the Government into industry which is not offset by a movement from industry into the Government. So I think that if you look at it from an overall standpoint over a long period of time, you would be bound to conclude that the general level of capability of industry in the buying function is going to be higher than the general level of capability in the Government in the buying function.

Now, there is one modification of that which tends to prevent that happening. Your really first-class people in industry sometimes get out of the buying function and into the management function. So all in all I don't think there's too much difference. But what difference there is I think is probably on industry's side.

On the other hand, as a result of a lot of these restrictions, and as a result of purposeful things, on our large procurement, on our complex procurement, we can frequently, I think, probably bring to bear more capabilities and more diverse capabilities into a given procurement than industry does.

Now, industry usually has a team to make up and take its position. We have a team to make up and take our position. So I think that whatever deficiency there is on the part of personnel in the Government over a long period of time is at least adequately made up for by the team effort that we exercise.

Furthermore, there are some things about the peculiarities of a lot of our business wherein our people, particularly in the pricing area, for

example, are infinitely more competent than any industry group that you can find. The use of learning curves, and the manipulation of them, is a beautiful example of that. We have some people at Dayton who not only, I think, are the best people in the country on learning curves, but everybody I have ever talked to in industry thinks the same thing.

So in some areas we have a terrific competence beyond that of industry. In others, in the area, for example, of value analysis, we are just beginning to have an awareness of it so far as the Air Force is concerned. There are other areas--production engineering is one of them--where we probably don't have the competence of industry.

But if you line the two up and take all of these things and others that occur to you, and stack them side by side. I'll pick up the Air Force tab any day. And I'm sure the same thing is true of the Army and Navy judging from the people I know.

**QUESTION:** You touched briefly on the problem of the close relationship between the basic weapon system and the support that goes with it. Would you elaborate a little bit on that and tell us this: Is that thing getting worse, or getting better, and what is being done about it?

**GENERAL THURMAN:** From the trend standpoint it is getting better. From the standpoint of things like those that Admiral Clark mentioned, it's getting worse--from the short-range standpoint.

Going back to a period where you had a gadget that went up in the air and did something or other and came back, you had really two kinds of things involved. You had the weapon itself and the things that went in it. Then you had those things that the supply and maintenance people used to support the thing and keep it operational.

Well, as time has gone on--and this is epitomized in your ballistic missile, for example--even with your guided missile of the Matador type of the Bomarc or something of that sort, your launcher is a piece of ground-support equipment; but it is an integral part of the weapon itself in the sense that the weapon can never begin to operate unless it has a launcher.

Now, because of this separation of really two separate functions, when our original budget structure was set up, I don't know what the other services had, but we had what we call a 100 series, which is aircraft and related equipment, and then a 200 series, which is our major procurement other than aircraft.

Now, traditionally our ground-support equipment has come out of the 200, and our aircraft and missiles and so forth have come out of the 100. They are defended separately because of the fact that you have to get part of the way down the development cycle on your aircraft or your missile before you know too much about what your support requirements are. We have been in the position of being able to defend specifically in the aircraft area. We have to defend in bulk to a large extent, because we don't know at that time, in the support area. The result is that we have had those funds chopped more in the 200 area than we have had in the 100 area.

Now, we secured the year before last, I think it was, effective with fiscal 1957, some revision of this. We brought some support equipment and some provisioning items other than support equipment into the weapons money. To the extent that we can do that sort of thing, and as we can move more of it into a single appropriation, I think we will have fewer troubles. So we are moving in that direction, but we haven't gone very far.

In addition to that--I didn't want to talk about short-range problems, but this is such a good example--during this period of the calendar year 1957, and particularly the latter part of the year, we, like the other services, were spoon-fed on projects that had to be kept going. We had production lines that were set up in such a way that to stop them would from a cost standpoint alone, much less availability, be catastrophic. We had these other things in the way of spares, provision for ground equipment, and so forth, that also had to be done concurrently. If we had a spoonful of money, we kept that production line going. Now, next year and the year after, we are going to pay for that, because we won't have the support equipment available on the concurrent basis as it should have been.

But overall I think it's improving from a long-range trend standpoint. I think General Mundy might agree with that. He's had a little experience in the supply business.

QUESTION: I'd like to ask a question about restrictions. A previous industry speaker has mentioned section XV as listing elements of cost which cannot be included in the contract and said that they affect companies to such an extent that some companies may want to get out of defense business. Is this a trend that you have discovered in the Air Force?

GENERAL THURMAN: At one of my rather frequent appearances before the Hebert committee, Mr. Gavin made virtually the same allegation. I went back and had a statistical run made over the last several years of suppliers who bid on things. The number for the twelve months preceding that--I don't remember exactly when it was--was slightly less than the year before, from which you could gather support for an argument that that is true.

Well, now, you must consider this: There are a lot of things that go into the fact whether you have a hundred people interested this year and ninety-eight next year, or vice versa. But I don't know of any instance where anybody has gotten out of the business because of these so-called restrictions.

Now, I hurry to say that that doesn't mean that there aren't any. But I don't think that there could be very many without my knowing it as far as the Air Force is concerned, because I receive most of the complaints that people want to make about the Air Force.

QUESTION: You mentioned that the Air Force has let several profit-sharing incentive-type contracts. What does the GAO or any other reviewing authority have to say about that type of contract?

GENERAL THURMAN: I don't know of any comment that they have ever made on it. From a legal standpoint--I have some legal background, but I don't use it much these days--I think it's unassailable. There is very definite backup in the legislative history of the Armed Services Procurement Act--I know because I helped to put it there--to justify the use of a cost-plus-incentive-fee contract. And that's exactly what this is. So I don't think that there is any legal question.

Now, members of our Procurement Committee, who are the review people who review our large contracts, have protested vigorously from time to time on this on the ground that we are encouraging people to spend money by putting an incentive on performance. We are talking here about a cost-reimbursement type of operation. There's just no question about it. We are. You've got to recognize that force.

But also I think there is some validity to this counteracting force that I mentioned, where you put an incentive if the contractor saves money. We use these things primarily in development situations. We haven't gotten around to using them in production, that is, in a real production situation, follow on.

After all, the reason we are given money is that we have the job of creating the best Air Force that we can, or the best Army or the best Navy that we can. I think we've got to spend some money to get the best in terms of performance sometimes.

We have been sold brochure airplanes over the years, with many disappointments. These companies come in and on the basis of a brochure of performance they'll sell you. But when it gets around to fulfilling it, it doesn't quite make it. Now, our war plans are based on the assumption that the materiel we buy will deliver according to the GOR, the General Operational Plan. Where the item does not deliver what it was intended to, then our war plan is faulty to that extent.

QUESTION: Getting back to this business of spares support, supply and maintenance support, particularly for an aircraft, has the Air Force given any thought to contracting out the support over a period of time to the prime contractor, particularly, as you mentioned a moment ago, when he is also the designer? We've had a little experience with that in the Navy, to relieve ourselves of the procurement problem on spares.

GENERAL THURMAN: Yes, sir. That has been given serious consideration. From time to time, including the present, there are various service tests of one kind or another run on the thing. You've got some very fundamental considerations there.

Now, we have in the Air Force--and I'm talking only about the Air Force, because I am not too familiar with the arsenal system or the yard system in the Navy--a depot system which among other reasons exists because of mobilization considerations. We've got to have a capability from the mobilization standpoint, among others. If you have that capability and you have the same capability in a contractor's plant, you have a duplication of a lot of costs.

And also, if you're going to give the whole job to the contractor, you have people computing requirements who aren't flying these gadgets and who aren't having the day-to-day experience on the bases involved, because that's where your requirements generate for support.

Then in addition to that, you've got this thing, which is very much in the forefront of consideration right now: These missiles that we are building are the most complex things that anybody ever dreamed of. I use the ballistic missile as an example. They are going to have to be set up on launching pads. And they're going to stay there. You don't fly

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a missile into the depot to get a modification on it. It stays there. That means that to a very large extent our maintenance and supply contracts have got to be varied as time goes along to accommodate to the physical and technical differences between our missile and manned aircraft.

Now, at the outset at any rate, most of that has got to be done by the contractor, because the gadget is so new that we just don't have any know-how in the Air Force. How it will finally turn out I don't know. We are proceeding on the assumption that we will create a capability to handle this in the Air Force. But I think the future will have to determine the answer to that question.

COLONEL PIKE: General Thurman, on behalf of the Industrial College, I certainly want to thank you for a very interesting and very valuable presentation and discussion.

GENERAL THURMAN: Thank you. It's been a real pleasure.