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ARMED FORCES

MODERN MATERIEL MANAGEMENT

Colonel Thomas C. Keach, USAF

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Reviewed by: Colonel Thomas C. Keach, USAF

Date: 11 January 1961

INDUSTRIAL COLLEGE OF THE ARMED FORCES

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Reviewed By: Col Thomas C. Keach USAF Date 11 Jan 1961

Reporter: Ralph W. Bennett

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ADM. PATRICK: At this time we move into a new area of our college courses, and it's my pleasure to get the Chief of our Management Division up here now to start us off with a proper perspective for what is coming. Colonel Keach.

COL. KEACH: It's an unexpected pleasure to be introduced by the Admiral, I'll assure you.

Good morning, young lady. Good morning, gentlemen.

Where were you on the morning of 7 December 1941? I shall never forget that occasion, because I was in the bomb bay of a B-18 heavy bombardment aircraft, surrounded by fresh vegetables, fresh fruits, and buttermilk. We were en route from Miami to Borinquen Field, Puerto Rico, flying at about 6,000 feet, at the tremendous speed of 120 miles per hour; and I was reading and listening to the radio. ~~It~~ There happened to be a good music program on. Suddenly the program was interrupted and I heard these words: "Pearl Harbor has been bombed. It's war."

Not only did this mark the most destructive war that the world has ever known, but it also marked the beginning of a revolution in science and technology which is drastically reshaping the world today. There is hardly a field in the physical sciences or in the life and social sciences which is not changing. Every day we see evidence of the explosive growth of knowledge; and it challenges our imagination, our ability, and our judgment.

Contrast, if you will, the B-18 in which I was riding just a short nineteen years ago--and I might say, all too short at this point-- with a modern bomber today, which is capable of flying at altitudes of 50,000 feet or higher at supersonic speeds. Think of the transition from the 120-millimeter anti-aircraft gun to the modern ground-to-air missile which we have now. Or think of the evolution from the pig boat to the Polaris submarine.

As drastic and dramatic as these changes have been, all indications are that changes in weapons for war will continue at an accelerated rate. This revolution is characterized by fantastically increasing costs and extreme complexity in weapon systems and the logistical support which they require. Will management be able to keep pace with this revolution? Or are we creating a Frankenstein which may well lead to economic chaos?

During this period I am going to highlight some of the facets of materiel management to alert you to areas to explore in your research, your study, and in your questions to our guest lecturers and panelists who are expert in this field. It is my sincere hope that you will be inquisitive, alert for new ideas and methods for improving old ones as we progress through this ~~period~~ unit.

There will not be a question period following this lecture. However, Colonel Morgan wishes to talk to you for a few minutes relative to material in the classified library.

First, let's see why we study materiel management. The objectives

of this unit are: [redacted]

1, to give an insight into the principles, systems, and procedures involved in providing materiel support for our national security program;

2, to provide an appreciation of the role of industry in the economy and in national security; and,

3, to gain an understanding of the relationships between the problems involved in the management of military materiel programs and the management of industry and the national economy.

This study will provide you the opportunity to analyze and understand the functioning of industry. It will enable you to review the influences of our economic and other institutions that have a hearing on our military preparedness and our national security. Finally, it will enable you to learn something of the significance and relationship between research and development, technological progress, and the overall materiel management process.

An understanding of these areas is essential to a balanced study of the economics of national security, which, of course, is the purpose of your year's course here at the College. Speaking of this, let's see how Unit IV fits into your year's course. [redacted]

You will recall that in Unit I, which was titled "Foundations," you studied government organization and interagency relationships and received a refresher course in basic economics. In Unit II, "National Security Objectives, Requirements, and Programs," you studied the methods by which our policies, objectives, and requirements for national security are deter-

mined, and how our programs and budgets are developed. In the unit which you have just completed, Unit III, you studied our human and physical resources. There you considered our wealth in resources with respect to their availability for helping us to meet our requirements toward accomplishment of our objectives. Unit III did not, however, deal with the application of resources to our national security programs. In Unit IV, which you are now beginning, we do consider the application of our resources, efforts, material, and manpower toward meeting our objectives. In short, we will be concerned chiefly with managing all our resources required to give us national security.

Although we will concentrate on the military aspects, we will not overlook the other aspects of this as well. In fact, one of our key areas of interest in Unit IV, and our entire course, is our overall economic well being. I am sure that you recognize that there is a strong interrelationship between the civilian economy and our military materiel programs, as both are dependent upon the same industrial base.

In later units of the course, such as those dealing with economic stabilization, economic capability, and particularly in your final problem, I am sure that you will find the things which you have learned in Unit IV to be most helpful.

Let us now turn our attention to the magnitude of this task which we call materiel management. Mr. C. W. Borklund, Editor of "Armed Forces Management," puts it this way:

"It is hardly any secret that a new type of business executive

has come into being since World War II--the military man, usually with an eagle or some stars on his shoulders, or a high-level civil service rating in his pocket--who is charged with helping to manage the largest business operation ever known in this country."

These figures, which, of course, you won't remember, but which you will be seeing again as you go through your reference material, will give you some idea as to the size and complexity of the operations we are discussing: We are talking about management of over 150 billion dollars worth of real and personal property. We are talking about the 6.7 million procurement actions annually which are required for the procurement of from 22 to 25 billion dollars worth of supplies, equipment, and weapons, with lead times ranging to two to ten or more years. We are talking about the management of an annual one and one-half billion dollar military assistance program in more than forty countries throughout the world. We are talking about an inventory valued at more than 44 1/2 billion dollars, which contains more than 3 1/2 million items. We are talking about a supply inventory which requires 585 million square feet of storage space throughout the world. We are talking about an annual disposal of surpluses with an acquisition cost of from 8 to 10 billion dollars. Would you believe that the Department of Defense sells approximately 300 million dollars worth of junk each year? We are also talking about the 8 1/2 million people and their families that are directly affected by Defense Department policies and procedures, and the more than one half million people who devote their time, labor, and

thought to making the system operate.

It is our intention during the conduct of this unit to cover all facets of materiel management. However, it is most important that you approach this study with an open mind and that you be alert for improvements or changes which can be made.

Here are some basic considerations that must be taken into account in the development and employment of materiel management systems.

In connection with the development and production of items peculiar to military use, what is the best method for guaranteeing a proper production base which is most responsive to our need at the least overall cost to the Government? Is it better to maintain production lines turning out military items at just large enough rate to keep them running? Or is it better to produce in quantity, stockpile, close the production lines, and then retool them for the manufacture of other items?

Each one of these systems has its advantages and each has its disadvantages. The first method obviously brings on uneconomical procurement, although it does assure a production base in being. The second method will inevitably lead to a lot of obsolescence in our inventory. This can result in unacceptable waste and cost.

Thus far I have been talking about privately owned industry. Just where does our arsenal system, that we have under control of the military, fit into our production base?

Another consideration in the area of materiel management is the determination of whether we should manage through functional organiza-

tion or through item control. What factors enter into such determination for the various categories of items, weapons, and weapon systems? Is it inevitable that item control and functional control must work at cross purposes? How are decisions made in the Service as to which system to use for a particular item or weapon system? When in the life cycle of an item is it essential that functional control be subordinated to item control?

Another area, that we have heard so much about recently--and you can be sure that we're going to hear a lot more about it during the next session of Congress--is the question of overall centralized control in management, as opposed to decentralization. For instance, what is the real difference between the Air Force concept of systems management, as defined in its 375 series regulations, and that of the Army and Navy in their technical services and bureaus?

An effective materiel manager must orient his effort so that his provisioning action keeps closer account of items with a higher rate of obsolescence than on those of more stable items if he is going to do an economical job of management. What are the mechanics used in the services for policing such systems, and how effective are they? How does this contribute to our overall readiness posture within limited budgets?

In supply-control operations--the major elements of the task--such as requirements determination, requisitioning, procurement, issue, storage, salvage, and replacement, we often find that the low-cost items receive just as much management effort as do high-cost items. How

can the manager avoid this? And how does he assure that his supply system and his supply pipeline are so geared to the demands placed upon them that his system will respond automatically to the most pressing requirements?

In the distribution of materiel from producer to user there must be a very close relationship between all aspects of the logistical support operation. The rate of consumption, expenditure, attrition, or obsolescence of an item must be the basis for determining its level in reserve, its flow through the supply system, its plan of maintenance and rebuild, its method of movement through the system, that is, routine or premium transportation, and, finally, its replacement and elimination from the system. What are the criteria used by the services in the establishment and operation of these aspects of our logistical support?

Optimum use of premium transportation, such as long-distance and large-cargo lift by air, should result in dollar savings through reduced stock levels, reduced handling and rehandling of supplies and equipment, and a reduced need for packaging material. We must keep in mind, however, that there is a cutoff point on the economical use of this type of transportation. How do we manage and control this in the services? What do the factors of availability, high cost, and procedures for allocation of high-premium transportation have to do with the determination of how this capability is utilized in our overall management system?

What are the factors which make peacetime operation of our materiel management system so different from wartime operation?

The Secretary of the Army, in his 1954 plan for reorganization of the Army, made this significant statement about the insufficient recognition of logistics in the actual test of war: "For both major wars fought in this century the Army has had to change its organizational structure radically in order to perform under wartime conditions. Each time the primary weakness was in the logistics area." I wonder if we are really any better prepared today to handle this task under conditions of war.

In recent years there have been many developments which have assisted us materially in our materiel management program. I refer to such tools as cataloging, standardization, and various types of automatic data-processing systems. How are these and other tools of management being used; and what can we do to improve their effective utilization?

Now that I have raised many questions concerning the problems and considerations which are inherent in our organization and the functioning of our materiel management system, let us turn our attention to some of the complexities which arise from other sources.

In an article in the November issue of "Armed Forces Management" Defense Secretary Gates made this statement: "The most important fact, and the one most often forgotten, is that the Defense Department does not exist by itself, but is a part of the Executive Branch, which itself is in a government of checks and balances responsible to the people. Final military plans and programs cannot be arrived at just within the Pentagon. Plans and programs are affected by the stresses and strains existing in the larger framework."

One type of complication arises from congressional interest, which most certainly adds to the complexity of the materiel manager's task. I refer to such areas as weapon systems, forces, appropriations, procurement, establishment or disestablishment of posts, depots, hospitals, and regulatory legislation such as the Buy American Act, aid to small business, and aid to labor-depressed areas, to name but a few. Also I do not need to remind this audience that during our annual budget hearings, Congress gets completely into the details of our military programs.

Various committees of Congress too, such as the Government Operations Committee, spend a great deal of time examining our decisions, as well as our accomplishments. These examinations, particularly in the area of decision making, can be very embarrassing at times. It's often very hard to justify decisions made a few years back in the face of events that have taken place during the ensuing years.

Bureau of the Budget and Treasury interests add to the complexity of the task of the materiel manager. For example, in the apportionment process the services have a requirement to completely rejustify their programs to the Bureau of the Budget before they can get money that has already been appropriated by Congress. This one process might cause many of you to agree with Elbert Hubbard, who wrote many years ago: "The typical auditor is cold, passive, noncommittal, with eyes like codfish, minus bowels, passion, or a sense of humor." I would hasten to remind you, however, that the actions taken by the Bureau of

the Budget are an essential part of our system of checks and balances within the Federal Government.

Incidentally, I noted in a recent article in Fortune Magazine that the growing power of auditors in private business, particularly in the area of executive decision, is due to the increasing complexity of the modern industrial world and the need for greater emphasis on accountability so as to keep a growing list of stockholders informed. Certainly no business could be more complex than materiel management in the Department of Defense, or have more stockholders, the American public, who need to be kept informed. Your colleague, Bill Ziehl, will have more to say on this subject when he discusses the management role of the Bureau of the Budget in January.

The Office of the Secretary of Defense has an important influence on our service materiel management. The problem of roles and missions is very important in this area; and the services look to the Secretary of Defense for program guidance in all of their management.

The materiel manager, along with planners and operations personnel, is faced with such problems as what weapons systems to develop and procure, what projected forces to plan for, and what system of logistic support to develop. When and where is there an across-the-board look taken at the family of weapon systems to be employed in the services, say, in 1970 or '75? How does the material manager get the decisions he needs in this area? When he doesn't get them--and that's the rule rather than the exception, I would say--how does he plan without

them? because plan he must.

Finally, the Joint Chiefs of Staff are playing a constantly increasing role in actions having a bearing on military management. Chief among these is the balancing of missions and forces with the requirements and capabilities of all the services and all the operating commands toward arriving at an optimum military readiness posture. They are also being called on for budgetary advice more and more. And it won't matter, gentlemen, whether they are called the Joint Chiefs of Staff or the Joint Staff or something else, you can bet this is going to continue.

The complexities which I have cited during the past few minutes are all a part of our way of doing business, really. We can't get rid of these complexities; so we must learn to deal with them.

Now, let's look at some of the pressures from outside of Government. Pressures get very strong in the materiel management business. We have to contend with influences of industrial and trade associations in the areas of sales and advertising, and with various lobby groups eager to push certain weapons or weapon systems. All of you can cite examples of this, I'm sure. Let's be aware of these types of pressures and influences. Again, we can't eliminate them; so let's look at our systems and see if they are adequate to cope with the possible ill effects of these types of pressures and interests.

Thus far I have discussed the nature, magnitude, and complexity and importance of materiel management. This defines the subject rather well, I think, and sets the stage for further consideration.

During this unit we want to find out as much as possible about the current status and trends in materiel management, and to shed some light on how practices currently in effect can be improved.

In the face of advancing technology, changing strategic and tactical concepts, and increasing complexity and costs, the materiel manager is plagued constantly with three major obstacles: First, he must keep up with changes in qualitative needs. The planes, ships, tanks, vehicles, and ammunition that once did the job will no longer suffice. Second, he must keep the right quantity of modern and effective equipment in his inventory. And, third, he must contend with limited peacetime budgetary support.

When you develop items that you know are going to be effective, you can't buy enough to replace everything in your supply system. Nor can you dispose of the items which are still usable. Thus you have the problem of training personnel for maintenance of two or more different items, a requirement for different type supply items to support your old and new equipment, while at the same time you must be making plans for phasing in new materiel which will be coming into the system five and ten years in the future. Of course, during all this your daily problems of distribution, maintenance, storage, movement, supply control, and disposal cannot be neglected.

Obviously we cannot examine all the facets of materiel management in great detail during the period allotted to this unit. However, we will examine in fairly good depth some of the principles behind the systems

that encompass all of these functions. We will explore the management systemsfrom the viewpoint of the policy considerations which have influenced their development. This will include the systems in use in the military departments for managing their procurement, their programs for the emergency production of critical items, and some of their principal logistic systems. We will also analyze some of the systems employed in joint logistics, such as the single manager, the Armed Forces Supply Support Center, and management within our unified commands.

At this time I would like to make a few observations on the subject of procurement. Military procurement, as we view it here at the College, includes not only the purchase of materials and supplies, but also other important related functions, such as planning, programing, selection of contractors, placement, administration and termination of contracts, aid to contractors, and the coordination required to insure efficiency of operation.

It is in this area that many of the factors, which I previously mentioned, causing complexity in the task of the materiel manager come into play. One major problem in this area stems from the Armed Forces Procurement Act of 1947. This law requires that all contracts be awarded to the lowest responsible bidder. However, there are 17 conditions under which contracts may be negotiated. Over the years, using the exceptions as authority, the services have negotiated the bulk, dollarwise, of their contracts. The Congress has viewed this negotiation

with grave misgiving, in fact, open hostility. The services have stoutly defended their position, but the argument is far from concluded. You will hear more about this too as your course develops.

Another very troublesome area in procurement might be lumped under the general heading of cost principles. It is generated by the desire of the procurement agency to get as much as possible for its money, running head on into the contractor's desire to maximize his profit. The variations and ramifications of this debate are endless. Such issues as types of contracts, allowable costs, allowances for use of Government-furnished facilities, royalty payments, costs of change-overs, and countless others constantly plague the negotiators and contract administrators.

Even when these points are settled, there always remains the question, What is a fair profit? Most contractors contend that profit percentage should be higher because contracts can be terminated at the convenience of the Government. They point out that negotiations and the processing of contractual documents usually take far too much time, that they frequently lose commercial markets, that there is too much interference all along the line, with the threat always hanging over them that the Renegotiation Board at some later date may take away some of their profits. And so on it goes. Of course there is another side to this question, and you will have the opportunity to hear both sides during the next two months.

In our study of materiel management it is essential that we understand the industrial aspects of our national security. The economic

implications of our military programs and the budgetary support and time phasing which these programs require put our decision makers in the business of evaluating industry's capabilities and responsiveness to our programs. Those who handle national security programs should, therefore, have some idea as to the fundamentals of industrial management. Without such knowledge and appreciation, those responsible for making decisions in this area cannot be expected to make the right decisions. Further, the necessity for this knowledge and appreciation is not reserved solely for the materiel manager. Until all commanders, all planners, and all materiel managers accept this principle, we can't expect to have good management. It takes a long time to produce military goods, regardless of how capable industry may be, just as it takes a long time to run them through our system and put them into the hands of the user; and it is vital that we have an understanding of this process.

During the conduct of this unit we are going to study, in considerable detail, nine of our major industries. During your study, your talks with top management, and your visits I am sure that you will get a good idea of the capability and the functioning of industry.

One specific function of industry which we will study is the production process. This will include such factors as the impact of scientific and technological progress, advance production techniques, automation, quality control, lead time, and the implications of labor-management problems on productivity. We will also get an idea of how adaptable our current production base is to various conditions of emergency.

No study of materiel management would be complete without a consideration of the implications of space logistics on our military programs. Much of our effort, as well as an ever-increasing amount of our limited funds, is going into our missile and space programs. Under strict budget ceilings it is inevitable that increased effort in this area will cut into other programs of the services. What will the effect be? Perhaps some of our experts can tell us where we are headed in this direction. And I'm sure that just recently, in fact, the last day or two, you have read that the fiscal year 1962 space program will probably go up to one and one-half billion dollars; and as this goes up, something is going to have to give, believe me.

By way of summary, I would like to make a few general observations about the management situation in which we find ourselves today.

This revolution in the weapons of war during the past few years has created certain basic changes important to national security. Military organizations are now complex parts of our industrial society. Also the positions of the military and the civilian are no longer sharply defined in our national life. Both of them have responsibilities for our national security. I am sure that all of you know that the days of the philosophy of military plenty are over. It is our job to keep our country unconquered and unconquerable; but at the same time, this generation of Americans want to keep for their children something of the heritage that made it great in the first place. This brings to mind another basic change, that is, we can no longer go it alone, but we must have strong allies in

our struggle to preserve the peace.

Military programs have to take into account strategic situations, they have to take into account the economic situations throughout the entire world, and the programs have to change as the conditions in both of these areas change. A materiel manager on the one side has to listen to the strategist; on the other side he has to listen to the economist. He must decide which has the more legitimate claim at that particular time. When these factors don't fit into a satisfactory pattern, he must do what the strategist does in similar situations, that is, take a calculated or an acceptable risk.

If we in the military are going to retain control of our destiny, if we are going to enjoy the freedom of action and the confidence which we have had before, the materiel manager is going to have to rise to new heights. We must somehow find a more positive program than we have right now of just denying charges of mismanagement and waste. This is particularly important where we have a large military program superimposed on an economy that has to continue to operate in a normal manner, an economy that is now operating at high speed, and, so far as I know, must continue to operate in that manner indefinitely. The answer to all of this may well lie in research. I think that one of our troubles today is that we haven't researched administrative problems in the same way or to the same degree that we have researched scientific and operational problems. The actions which we take have a tremendous impact outside the services. If those actions are not based on sound

decisions, we will certainly hear from the civilian agencies of Government, from industry, from Congress, and from our people.

General Mundy in his welcoming address to you made this statement: "I am sure that all of you realize that if you put forth the necessary effort to get out of this course all that it is possible for you to get, you will return to your department better equipped to turn in a superior performance of duty. I think you realize the importance of this to your service, to your country, and, for that matter, to mankind." Certainly this is true in the area of materiel management, for the effort you put forth, the thought which you give to this subject, and the research which you do will play a vital part in the decisions which you make or help to make in the future.

As Francis Bacon in his famous essay titled "Of Studies" put it, "Reading maketh a full man; conference a ready man; and writing an exact man."

Thank you.