EFFECT OF LEAD TIME ON REQUIREMENTS DETERMINATION

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Publication No. L53-75

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

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Colonel Irvin L. Allen, Assistant Chief, Requirements Division, Assistant Chief of Staff, G-4, Department of the Army, was born in Cadiz, Kentucky, 2 September 1907. He received a B.S. degree from the University of Kentucky in 1929, and was graduated from the Command and General Staff College in 1941 and the British Joint Service Staff College in 1950. In civilian life prior to World War II, he was a mining engineer and a claims executive in a large casualty insurance company. He was commissioned a second lieutenant of Infantry, ORC in 1929. He was ordered to active duty as a captain and served with the 26th Infantry Division from January 1941 until March 1943 when he was assigned to OPD, WDGS. He was chief, Supply Branch, G-4, AFHQ, in North Africa and Italy from June 1943 until World War II ended. He was commissioned in the Regular Army in July 1946 and was chief, Supply Branch and assistant deputy director, Logistics, European Command from September 1946 to 1 January 1950. After a tour in one of the Army General Depots, he was assigned to his present duty. Among his decorations are the Legion of Merit, Oak Leaf Cluster to the Legion of Merit, the French Medal of Recognition, and the Brazilian Medal of War.

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EFFECTS OF LEAD TIME ON REQUIREMENTS DETERMINATION

17 December 1952

MR. HENKEL: Admiral Hague, gentlemen: The accurate determination of material requirements sufficiently in advance of need, so as to insure adequate supply, is one of the continuing headaches of logistic planning. In essence this is an adequate consideration of lead time. An understanding of this problem is paramount in the study of material requirements.

Our speaker this morning is well-qualified to present this subject, as he has been connected with both logistics and requirements problems, for approximately the last 10 years. From June 1943 until the close of World War II, he was chief of the Supply Branch, G-4 Allied Force Headquarters, in both Africa and Italy. From September 1946 to January 1950 he was chief of the Supply Branch and assistant deputy director of Logistics, European Command. After a tour in an Army General Depot, he was assigned to his present duty as Assistant Chief, Requirements Division, Office of the Assistant Chief of Staff, G-4, Department of Army.

The subject of this discussion this morning is "Effects of Lead Time on Requirements Determination."

It gives me great pleasure to present to you Colonel Irvin L. Allen.

COLONEL ALLEN: I am told that at the Industrial College the worst part of talking here is not giving the talk but the searching questions that are asked at the end of the talk.

I remember when I was a student at the Joint Services Staff College in England two years ago, the care and effort that we students took in preparing questions for the unsuspecting lecturers who appeared to discuss various subjects, hoping to ask a question which would make us appear intelligent and which would be difficult to answer. However, some of the lecturers were not unsuspecting but crossed us up by finding out ahead of time the students who possessed some knowledge of the subject, and when the difficult question came forth merely asked one of the selected students to give the answer. Accordingly, last week I asked Colonel Mann to furnish me a list of the students in this class who were particularly proficient in the subject of requirements determination. I was told that after the series of nine lectures presented to date, and with the care exercised in the selection of students to this

course, that all of you are experts, so he gave me the roster of the class. So prepare yourselves. If your questions are too difficult, I will ask you to answer them.

The subject this morning is the "Effects of Lead Time on Requirements Determination." In other words, how long before items of military equipment are needed must those needs be anticipated, and what are the actions or elements of the requirements cycle which require time? In addition to the time elements involved in planning, budgeting, procurement, there are other actions which must be taken to insure an accurate forecast of needs, all of which have lead time.

As Mr. Henkel stated the accurate determination of materiel requirements sufficiently in advance of need to insure adequate supply has always been a major headache of logistic planners and supply people. Forecasts of requirements are the bases for supply policies, procurement actions, and budget estimates and play an important part in the development of strategic plans. As we look back over military history, we are more and more impressed with the effect of logistics on tactics and strategy. Even from before the time that the Greek engineer Archimedes perfected the catapult at Syracuse in 397 BC for use as artillery against the Romans, thereby changing future strategy and materiel requirements, to the present when the development of atomic weapons is similarly affecting us, the problems of forecasting future needs have existed.

No longer can a nation rely upon its million men springing to arms overnight for defense of the country. We must not only plan in advance how to house, train, equip, and maintain them in action, but must take action well in advance to enable this to be done.

All of you have some knowledge of the time required to draft personnel into the service or recruit them, train them as units or individuals, and weld them into effective units. You also know some of the time required to plan and build facilities, such as shipyards, air fields, and camps. All of these take time, but, in addition you must plan well in advance to determine the actual need for such facilities.

I will not discuss anything today except materiel requirements which, by definition of the Joint Chiefs of Staff, are "all items necessary for the equipment, maintenance, operation, and support of military activities, without distinction as to its application for administrative or combat purposes" and will confine the discussion to requirements for end or user end items.

Prior to this discussion, you have heard a discussion of the planning methods at the Joint Chiefs of Staff level, a discussion of the military planning and procedures by the services, the part the Munitions Board and the Office of Defense Mobilization play in the system, and the effects of the budget upon requirements determination. Bearing in mind the effects in these actions and the time elements involved, I will give you as an example the lead time normally required in peacetime to meet the specific requirements for one end item, the medium tank, in the Army supply system.

Chart 1, following page.--Let us assume that on 1 December 1952 the G-4 of the 2nd Armored Division in Germany needed 10 tanks for one of his tank battalions and was supplied the 10 tanks on that date. What actions must have been taken, by whom, and when, to insure that the 10 tanks were available for issue on 1 December 1952? First, the Chief of Ordnance, USAREUR must have prepared a requisition upon the NYPOE on 1 August 1952, for order and shipping time to Europe is 120 days. It takes that time to process the requisition; OSD, NYPOE to extract upon the U. S. Ordnance Depots; the depots to process and ship to the Port, for the tanks to be transported to Europe and for the theater Ordnance personnel to prepare the tank for issue, and for the unit to draw the tanks. However, the Chief of Ordnance, Department of the Army, must have placed a contract for procurement of these tanks at least 12 months prior to that time if he has a tank production line operating, or 18 months with a nonoperating stand-by facility, or even longer if no facility is established. Let's assume there is an operating facility and the contract was let about 1 August 1951. In order to make the procurement contract, the Chief of Ordnance must have had funds to do this and these funds would have been provided from the fiscal year 1952 appropriations which became available on 1 July 1951. To do this, funds must have been included and defended in the budget estimates which were prepared and defended during the period 1 June 1950 to 30 June 1951. However, the computations for those estimates, which included requirements for tanks, were computed, based upon Army Budget Directives issued in the spring of 1950. These estimates were based upon Army Program Objectives which were developed upon the Long Range Estimate; these estimates, in turn, were based upon what is now called the Joint Strategic Objectives Plan--work upon which was started 1 November 1948. So, approximately four years before the 2nd Armored Division needed the tanks, the planning and actions necessary to make the tanks available started. The time phasings are assumed and have been adjusted to conform to the present program for planning established by JCS. As an actual fact most of the funds being used now to procure tanks came from the fiscal year 1951 supplemental budgets, prepared on a crash basis after the outbreak of hostilities in Korea in June 1950.

CHART 1

LEAD TIME

TO MAKE A SPECIFIC ITEM AVAILABLE

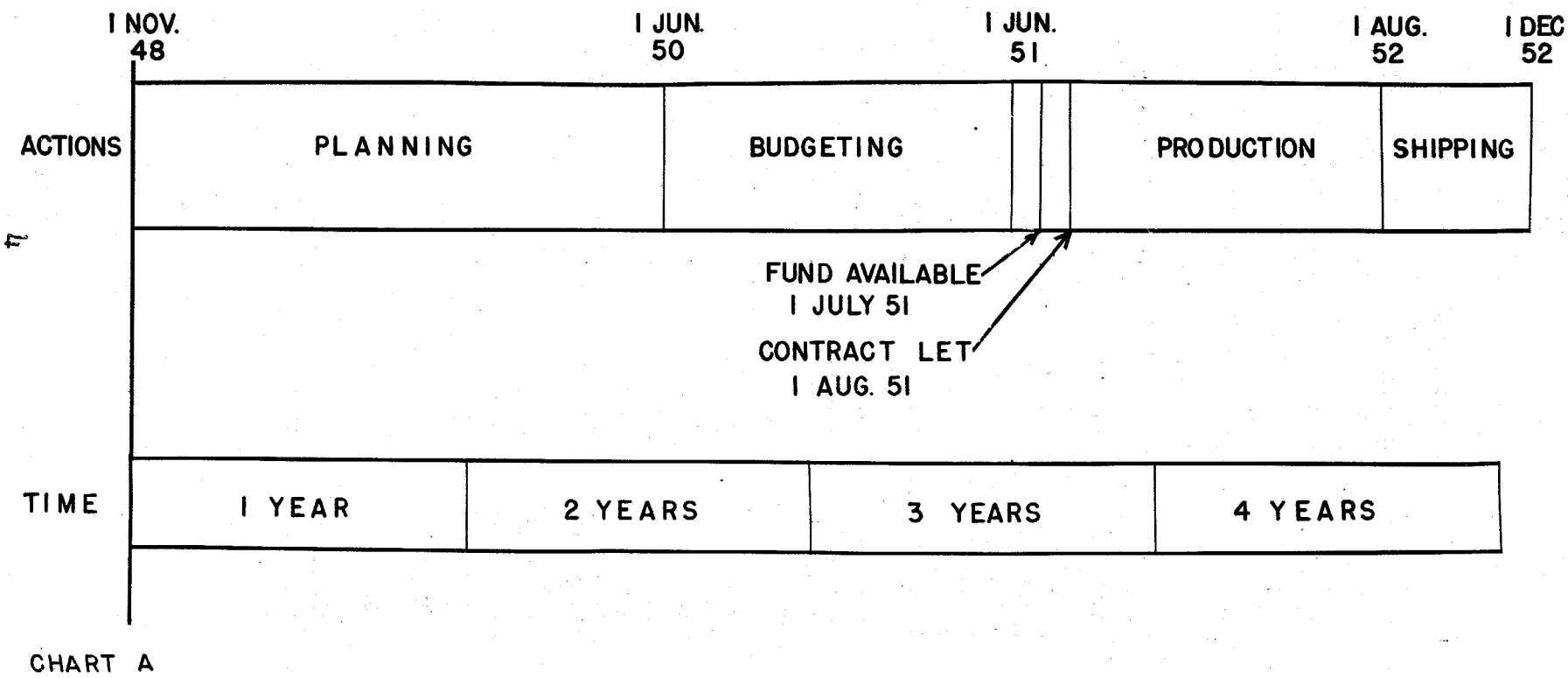


CHART A

You will remember the requirements planning chart that Colonel Mann showed you in the first lecture on requirements. Normally, about 18 months are spent in the development of the planning and program guidance. It takes about 12 to 15 months for the development of requirements, which goes on concurrently with industrial planning, and budget defense. Procurement takes anywhere from three months to, sometimes, seven years. Distribution time is normally about three months to six months--possibly seven months. It is difficult to break out the exact lead time in any one of these actions, because many of them go on concurrently. In the event of an emergency or for specific items, some of those actions can be telescoped and the lead time reduced.

As I mentioned previously, there are other factors of materiel requirements determination which extend substantially the lead time involved. These are the development of the working tools of requirements personnel, without which materiel requirements cannot be determined and into which all the high level plans and programs must be translated. These working tools with which materiel requirements are determined are the same in the three services. The methods and procedures may vary somewhat. In general, the elements of the requirements are shown on this chart.

Chart 2, following page.--We call this requirements arithmetic. First, one takes the troop list and multiplies it by the allowances for particular units of the troop list. This gives the requirements for initial equipment. Then to determine the replacement quantities, use the initial allowances times the replacement factor times the number of months required, which may be the 12-month period for which the budget is being prepared. That equals the replacement quantities. Levels and in-transit quantities are determined by taking the initial equipment, multiplying it by the replacement factor, and that result by pipeline in months--(three, four, or six months), and that gives the levels and in-transit quantities. Then class IV requirements (for mobilization requirements in the Army we use strategic logistic studies) for projects, which may be either operational or research and development, are added.

To compute the materiel requirements to support the current peacetime forces is a relatively simple matter. One takes the currently approved troop program for the fiscal year under consideration, extracts and multiplies the troop units by allowances, adds requirements for consumption, replacement, pipelines, and class IV, and comes up with gross requirements. Then one subtracts assets on hand in units, pipelines, and depots and comes up with net requirements. This net requirement is priced and included in budget estimates and, after many reviews and hearings, ends up with an appropriation, which is used to buy what is needed.

CHART 2

REQUIREMENTS ARITHMETIC

COMPUTATION	ELEMENT
TROOP LIST x ALLOWANCES	Initial
INITIAL x REPLACEMENT FACTOR x MONTHS	Replacement
INITIAL x R.F. x PIPELINE IN MONTHS	Levels & In Transit
STRATEGIC LOGISTIC STUDIES AND SPECIAL OPERATIONAL PROJECTS	Class IV
TOTAL	Gross Requirement

Usually the questions which arise in securing the appropriation revolve around the scale of equipment needed and the validity of the replacement and consumption figures, and whether or not all of the assets are correct. Many times the Office of Secretary of Defense or Congress decides the forces are too large and must be reduced, and the computation is revised. The problem of determination of materiel requirements for peacetime forces is not a difficult problem, the lead time being usually about three years from the time the actual budget estimates are started until the long lead time items are secured.

The Air Force and Navy lead time for aircrafts and ships is much longer for procurement lead time is greater. I noticed in "The Washington Post" of 10 December 1952 that the Air Force is initiating production of a supersonic bomber which it expects to issue in 1958 or 1959, which is about seven years from now. However, advance planning must have been going on for some time.

Let us look, however, at the working tools which are used in the requirements arithmetic. Consider the development of the troop list--its composition, the balance between combat and service elements, and, further, the breakdown between armor, infantry, and artillery.

As any element of the troop program is changed, that change will affect many others, each of which affects requirements. The type field army which you will find in FM 101-10 was drawn up after almost three years of work and studies by the Department of Army, Army field forces, and the European Generals Board, which studies were based primarily on World War II experience. The type field army was used in the development of the mobilization plan for the Army. In turn, the peacetime forces were determined and established as the take-off point or nucleus to start a mobilization effort. The lead time in developing the basic elements of the troop program goes back many years, for the experience of all wars is incorporated within it. Likewise, the technical service troop basis incorporates all of our military experience, and one might say that it began at least with the logistic organization which developed in World War I under Major General J. G. Harbord. Certainly the experiences of General Somervell's ASF and overseas commands in World War II have had a great influence in determining the present technical service troop basis.

Tables of equipment or allowances is one of the basic tools in requirements determination. The preparation and approval of tables of organization and equipment (T/O&E) and tables of allowances (T/A) is a time-consuming and detailed job. At present there are approximately 900 T/O&E's in the Army and 300 T/A's. The Department of Army program for revision of those takes almost four years. Almost every agency in the Department of Army is involved, but the Army field forces, G-3,

G-4, and the technical services have the big job. The normal length of time to inititate, process, and publish a T/O&E is about six months, and revision of one of the basic tables, such as a tank company or an artillery battery, affects the initial, replacement, pipeline, and may even affect class IV requirements. Many of the T/O&E's and T/A's we have today existed in World War I but have been revised. You remember in World War II we changed the infantry division from a square division to a triangular one, reducing the strength from 22,000 men to about 12,000 men. Now it is back up to about 18,000 men.

To draw up and publish a table of equipment or allowances for a brand new unit is also a difficult job and takes a long time. I remember when I was in Germany in 1945, and those of you in the student class who were there remember, too, the trouble we had drawing up tables of equipment or tables of allowances for the military communities, which later became military posts. As a matter of fact, we started work on them in the summer of 1945 and our work was approved in 1948. It took about three years.

I think the Army has been working for about two years on developing the allowances or the T/O&E's, for the ordnance support battalion group or unit, to support the 280 millimeter gun battalions and the guided missile battalions. I don't believe it is published yet. I presume the Navy, the Marines, and the Air Force have the same problems and probably about the same lead times.

One of the basic elements in determining the mobilization materiel requirements is a phased troop program for the estimated period of combat, giving listing of units, when to be activated, how long to be trained, where and when committed to action. This is necessary to determine the phased gross requirements. Training units need only training allowances, but will need complete T/O&E's when committed to action. The general location in which the units are to be used determines the type of equipment they will need, because the type of equipment will vary according to the area in which it will be used (such as tropical, temperate, or arctic areas). The time the units are to be committed to action is essential, because the rate of consumption in combat is much greater than it is in training.

That brings me to another problem, which is the establishment of accurate combat factors and consumption rates. It is one of the most difficult areas in requirements determination. Most of the presently approved Department of Army replacement factors and consumption rates were established, based upon World War II experience. How good these rates will be for the next war is difficult to determine. We know that in the first six months of the Korean combat the artillery ammunition expenditures were almost double what they were in World War II; yet for the AA ammunition the expenditures were much less, because there was less air activity.

The addition of new weapons and items to the system also poses a problem in determining replacement factors. Usually, the Technical Committee, which is composed of representatives from G-3 and G-4, technical services, and Army field force, tries to determine what the replacement factor or consumption rate should be for a new item of equipment, but we don't know until we find out in combat. Actually combat rates, based on experience, may not be too good. Rates are established, based upon the actual number of items in use divided by the number of items issued for replacement, and adjusted for the items recovered or repaired. This gives the replacement factor.

In combat, however, the maintenance of or the making out of reports is not too good; we can never expect it to be very accurate. Many units do not report; some make superficial reports. Depot personnel are overworked. And the actual reports on which the information is based sometimes are not too good. I can remember in North Africa in 1943-1944 we didn't get reports from more than about 65 percent of the units in the command. They just didn't make them out. Maybe it will be better in the next war, but I doubt it. Field commanders object strongly to making reports. They term it useless paper work. I can understand the objections to it. It is a time-consuming job, and the personnel you have in the combat units are not too much interested in making out reports. Some of them either don't make them or take the T/O&E and copy off the items they are supposed to have, without regard to whether they have them or not.

So we can say the lead time in determining combat replacement rates is the time which elapses between one war and another. We started World War II with replacement factors based on World War I experience--23 years had elapsed. We started Korea in 1950 with combat replacement factors based on World War II--five years had elapsed.

That the consumption or replacement factor is important is borne out by the fact that the annual cost of replacement or consumption of "hard goods" for a division force set (equipment for the division slice) at combat rates is estimated to be approximately 178 percent of the cost of initial equipment.

Incidentally, SHAPE felt combat replacement factors so important that a working group was established in London in May to determine broad over-all combat replacement rates for all NATO forces for major items of equipment and ammunition only. And they are having great difficulty arriving at factors acceptable to each of the countries.

If we assume the consumption or replacement rates are good, and the troop allowances and troop basis are firm, the requirements for the pipeline can be computed rather easily.

Class IV requirements, however, those above normal allowances, present another complex problem. To determine these requirements for mobilization, the planned operations must be carefully examined for each area or operation, and materials such as construction equipment, landing craft, communications, and so on, determined as best you can. Included also must be material for indigenous labor personnel and for aid to our allies. During World War II a procedure was developed for determining class IV requirements but too late to be of much benefit to the overseas theaters. Now we determine mobilization requirements for class IV material through use of what we call strategic logistic studies. The preparation of these takes a long time. It takes anywhere from 6 to 12 months to actually prepare one of them.

Another type of requirement that will exist in war is excess issues of normal T/O&E type equipment, not only for T/O&E units but for the special or provisional type units that will be needed from time to time.

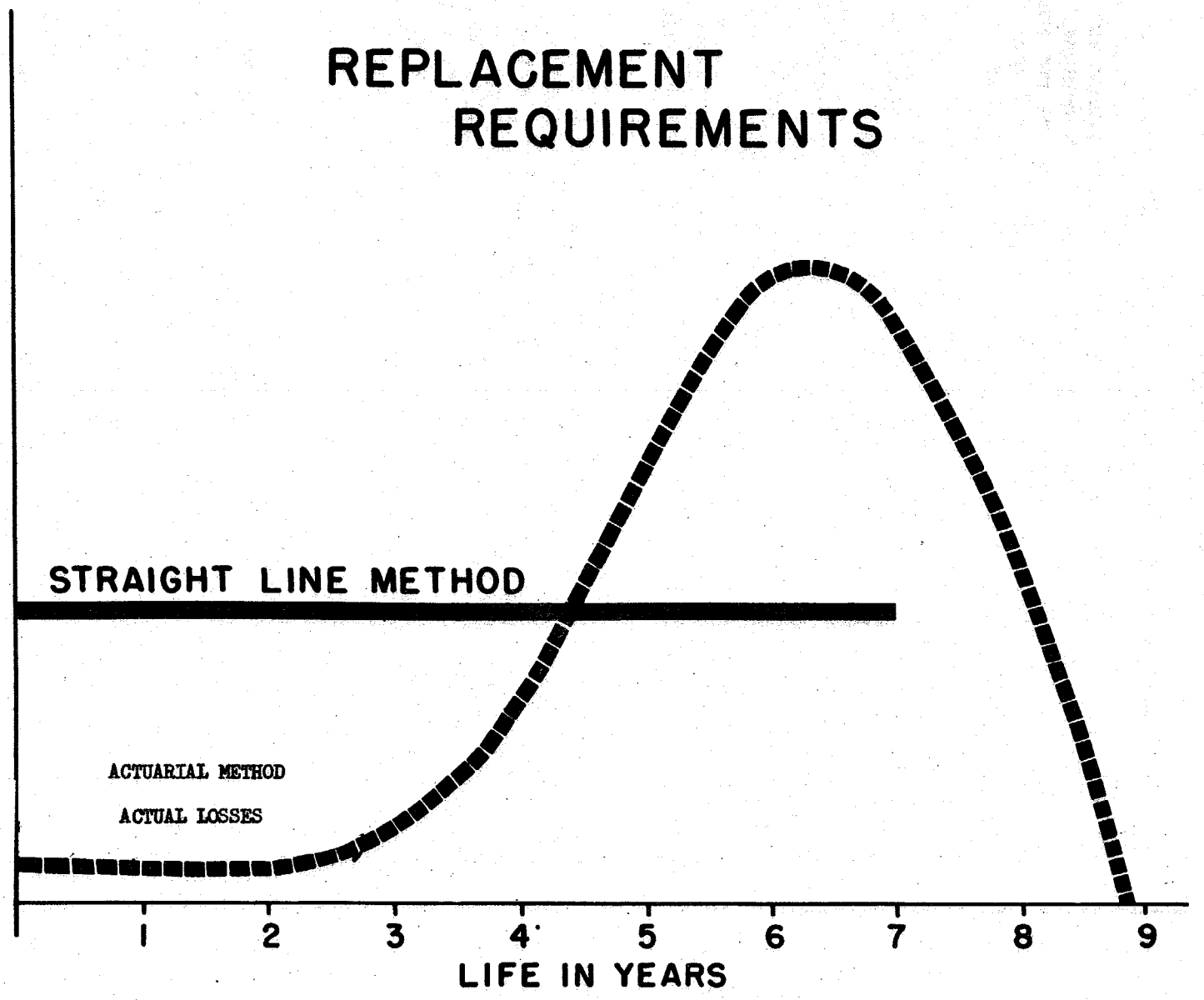
A T/O&E is developed to furnish minimum essential equipment for a unit to do its normal mission anywhere in the world, regardless of location; but when it is assigned a special job, normally it is issued some excess equipment of one type or another.

During the war there was no provision for supplying an overseas command with extra equipment to meet special needs or for provisional units. I remember in North Africa we had approximately 80,000 people in what was called the theater overhead. There was no equipment provided or authorization for shipment to the theater of equipment for the 80,000 in the theater overhead. Some of these were personnel to staff the headquarters and for various provisional units which were formed. In order to provide equipment, we had to draw it from the depot operating levels or from the service units of the base sections, or from units in training. At one time I remember all the units behind the Army boundary were reduced to 60 percent just to meet the requirements for excess issues to provisional type units and to T/O&E units for special operations.

About the end of the war--as a matter of fact, it was May or June 1945--the War Department finally recognized there was a valid requirement for issues to theaters for special needs and authorized theater table of allowances. I went home before we ever had one approved for the Mediterranean theater. I think the one for Europe was finally forwarded and approved sometime in 1947 or 1948--approximately three years afterward.

Chart 3, following page.--I mentioned previously the many difficulties connected with determining realistic replacement factors. This chart will illustrate another portion of this problem; the straight

CHART 3


REPLACEMENT
REQUIREMENTS
STRAIGHT LINE METHOD
ACTUARIAL METHOD
ACTUAL LOSSES
1
2
3
4
5
6
7
8
9
LIFE IN YEARS

line shows the anticipated losses in an item with average life of seven years in which we lose one-seventh of the inventory each year. The actual loss from wearing out (if all items bought at same time) would probably more nearly correspond to the dotted line. This is the actuarial method versus the straight line method of determining losses. In the first five years by the straight line method we have overstated our requirements and in the next three or four years we have understated the replacement needs. The straight line method is realistic if there is an equal spread in age life of equipment, but if not it is unrealistic. For example, during the past two years we have almost completely modernized our tactical vehicle fleet. Our actual losses from wearing out for the next few years will be much lower than losses computed by the straight line method. The introduction of actuarial methods for determining replacement losses will require accurate inventory data by "model" and "year." Therefore, it is doubtful if the cost of maintaining the records is worth the effort except for high-cost items of equipment. The Army uses the actuarial method for computing replacement factors for commercial vehicles and some types of transportation equipment. We are running a test on some other types of equipment. I believe the Air Force uses actuarial methods for computing attrition for aircraft and aircraft engines.

In determining requirements for end items, we must also take cognizance of the impact of new equipment being developed. Research and development goes on concurrently with planning, T/O&E development, and other steps mentioned. As new equipment is developed it may replace one existing item, two or three items, or it may be a new item over and above all existing types. Care must be exercised to phase out old items and phase in new items.

The steps of research and development in the Army are given as follows:

Lead Time in Research and Development

1. Need for an item generated by user (including tentative military characteristics).
2. Feasibility study by technical services.
3. Development of firm military characteristics.
4. Engineering design--pilot model.
5. Test of pilot model.
    a. Engineering test.
    b. Service or board test.
    c. Troop test.

6. Standardization (including proposed basis of issue and replacement or consumption factors).

7. Production engineering and production.

8. Inclusion in T/O&E and T/A.

You will note I haven't put in any time elements. First, as the need for items is normally generated by the user--it might be suggested by anyone--the user develops tentative military characteristics and forwards them to the technical service responsible for that type of equipment.

The technical service makes a feasibility study. It has scientists and engineers who determine whether an item can be produced, how, approximately what it will cost, and what it will do. This study is then returned to the user. In the case of the equipment for the field type army, it goes back to the Army field forces.

The user reviews the feasibility study and develops firm military characteristics.

It is then returned to the technical service for engineer design and development of a pilot model. After the pilot model is made it is tested. It always receives an engineering test, and a service or board test. A troop test may or may not take place. If it is considered that the service or board test is complete and a troop test is not needed, the troop test is eliminated.

After all the bugs are eliminated, it is standardized by the Technical Committee--which, as I mentioned before, has representatives from each of the technical services, Army field forces, G-3, and G-4. At the time of standardization a proposed basis of issue and also a replacement or consumption factor is approved.

Then it is put into production engineering and actual production. Concurrently with this (step 8) inclusion in T/O&E and T/A takes place. By the time the item comes off the line, there is a published authorization document for issue.

Some of these steps can be telescoped and the item goes from step 4 to step 7 without the tests. In the spring of 1951, when World War III looked imminent, the Korean affair having broken out some six months before, we did that on a number of combat vehicles and tanks. We are having trouble with some of them now, such as light tanks and the self-propelled Howitzer T99E1. There are a lot of bugs that have been hard to correct, and it's taking time to correct them. Actually,

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sometimes you lose time doing this, rather than gaining it. At the same time other items are produced satisfactorily and the bugs are eliminated during the production, which results in your having saved yourselves some 12 to 24 months in the production of an item.

I would like to discuss very briefly the purposes for which materiel requirements are computed. We know we use it for preparing and defending budget estimates, but there are many other purposes for which mobilization materiel requirements are used over and above the funding aspects.

Production feasibility studies are made, based upon raw materials, components, end items, and facilities, used by the Munitions Board in the allocation of facilities; also for the computation of raw material requirements; for the development of national stockpiling program for strategic materials and for the development of raw materials programs.

It is used for the determination of machine tool requirements and the stockpiling necessary; for personnel and labor availability studies; for the establishment of mobilization reserve material requirements for post M-day production schedules; and for the facilities expansion required; for the determination of storage space requirements; for the calculation of transportation requirements; and for the estimation of port facilities needed.

Each of these actions takes time to plan and implement. Three of the areas mentioned--the determination of raw materials requirements with the stockpiling of strategic materials, the determination of machine tool requirements and securing them, and establishing or expanding production facilities--require an immense amount of time of not only the Department of Defense and other government agencies, but also of civilian industry. These three areas are the most critical in the production field, and you have heard detailed discussions, undoubtedly, prior to this time, concerning them. They are, however, part of the lead time involved, and all of these computations are based upon the determination of the materiel requirements or the end-item requirements.

Capability and feasibility studies are made by the Munitions Board and the Defense Production Agency. If the phased requirements are in excess of the national production capacity, the mobilization plan must be reduced or greater quantities secured in advance as a reserve. If we knew the exact date we would begin mobilization, the determination of what quantity of material we should have on hand at the beginning of a war would be easier. An aggressor nation can set its own mobilization date, but a nation like the United States cannot; so we must try to adjust our plans to fit some indefinite date in the future. Accordingly, factors such as storage life, obsolescence, and the possibility of the use of commercial substitutes must be considered.

After we have eliminated all those items except the hard core ones, how much should we accumulate in reserve? This will vary, based on the production base in operation, in stand-by, or for which machine tools are stockpiled.

Chart 4, following page.--Here are four schematic diagrams. In each instance the cumulative gross requirements are shown by the upper line and are identical. In the first example we have a production base of three facilities operating at minimum sustaining rates on M-day. Our deliveries from procurement represented by the lower curve in this instance catch up with the anticipated consumption rate at the end of six months. So we have our M-day materiel requirement represented by the heavy vertical line--the maximum distance between the two curves. In the second diagram, with one facility in operation and two in stand-by status, production equals consumption at M/12 with a corresponding increase in the M-day materiel requirement. In the third diagram we catch up with consumption at M/18; and in the fourth diagram, starting from scratch, we do not catch up until M/24. Please note how our M-day materiel requirement increases as the M-day production base decreases or disappears. For the same peacetime force this, in turn, means a progressively larger mobilization reserve requirement.

As I have mentioned before, there are some variable factors which necessitate a recomputation of materiel requirements. These are:

1. Changes in the projected troop programs and plans.

2. Reductions or increase in attrition rates.

3. Changes in tables of equipment.

4. Introduction of new weapons or equipment and deletion of old items.

5. Changes in production capabilities.

Accordingly, an orderly schedule for revising plans and mobilization requirement computations annually is needed.

Chart 5, page 17.--This chart shows the percentage relationship to the total cost of each of the four elements (initial, pipeline, class IV, and Replacement) for materiel requirements for three years of war for the Army under the last mobilization computations for about 1,000 of our most important hard goods items. Of this total, 58 percent is to meet replacement or consumption requirements--hard goods actually consumed. It shows you the importance of replacement factors and consumption rates in determining materiel requirements, and the influence of inaccurate or inflated or deflated replacement factors.

CHART 4

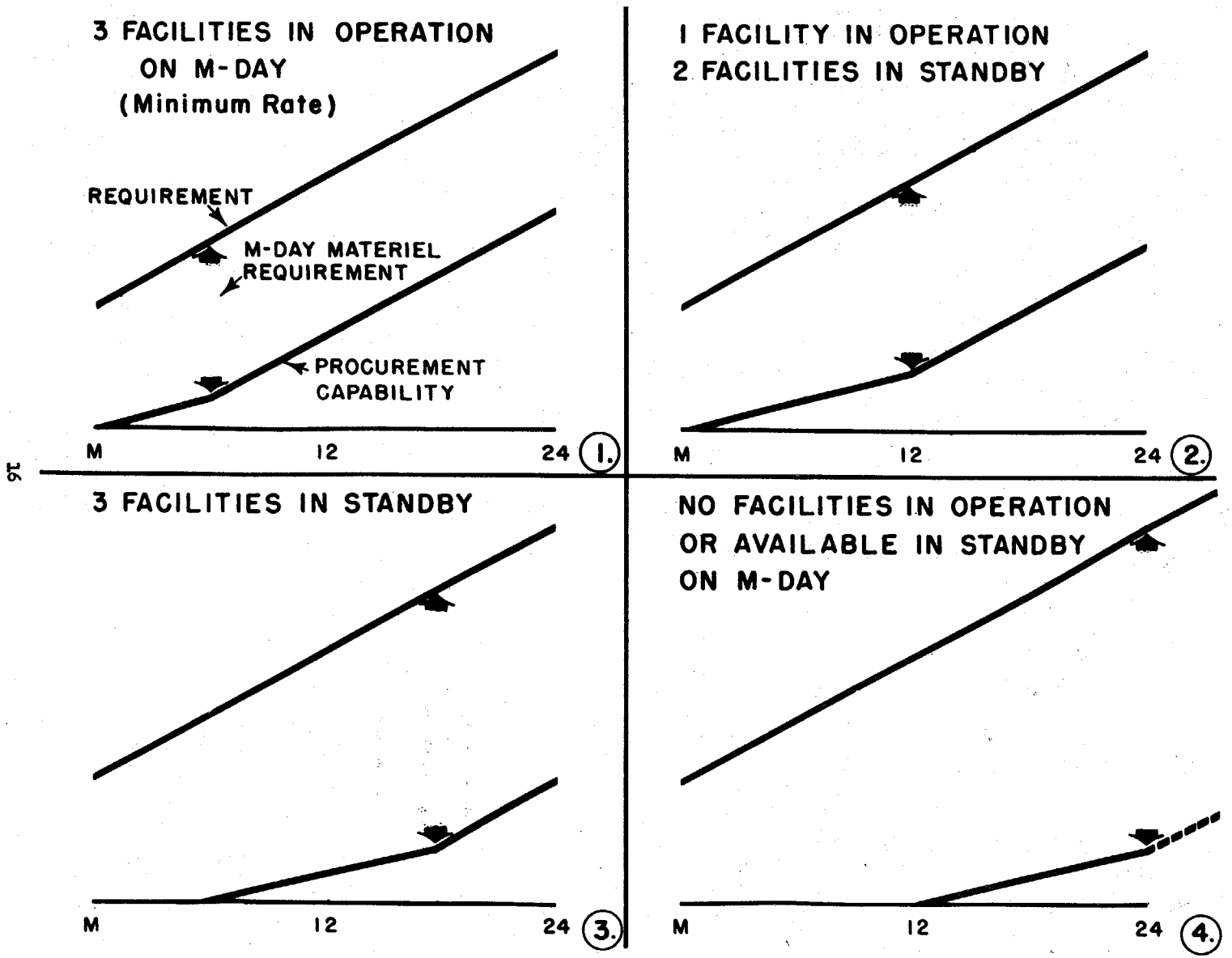
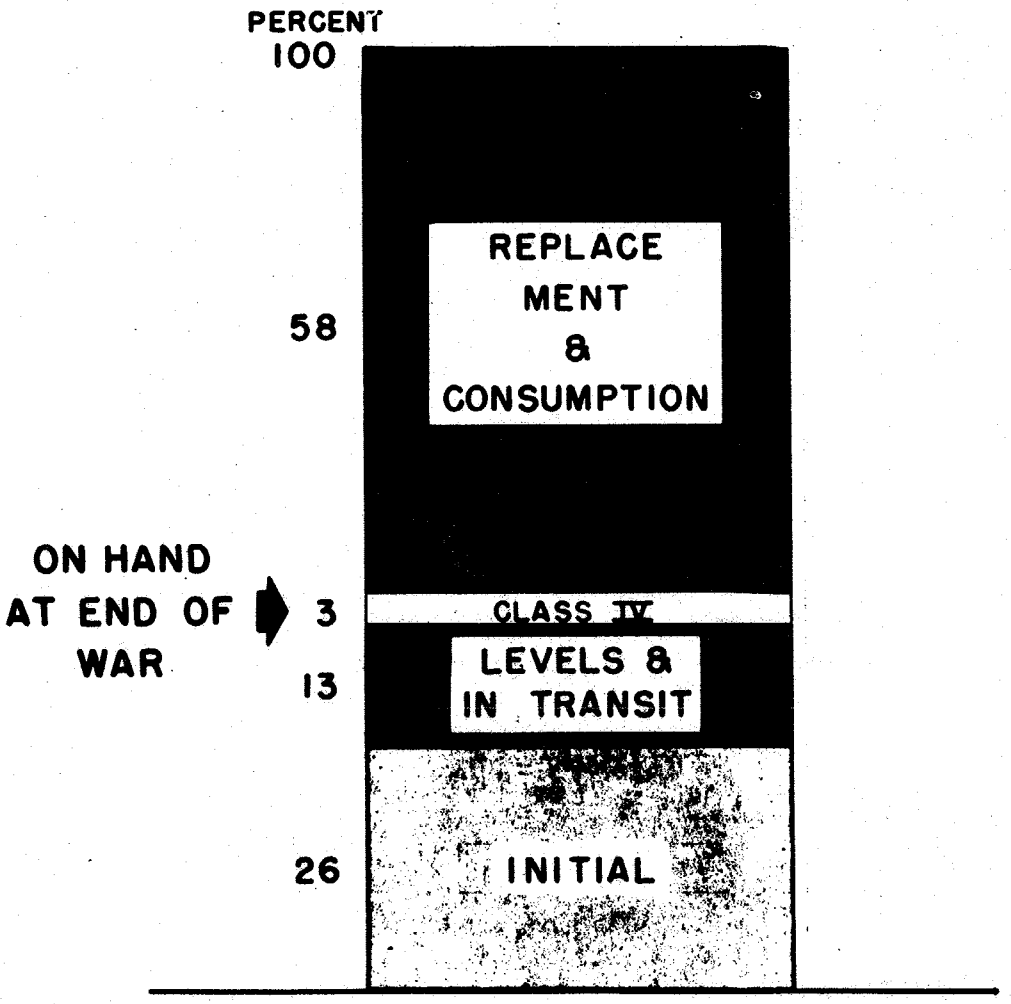

3 FACILITIES IN OPERATION
ON M-DAY
(Minimum Rate)
REQUIREMENT
M-DAY MATERIEL
REQUIREMENT
PROCUREMENT
CAPABILITY
M
12
24
1.
1 FACILITY IN OPERATION
2 FACILITIES IN STANDBY
M
12
24
2.
3 FACILITIES IN STANDBY
M
12
24
3.
NO FACILITIES IN OPERATION
OR AVAILABLE IN STANDBY
ON M-DAY
M
12
24
4.

CHART 5

U.S. ARMY GROSS MOBILIZATION MATERIEL REQUIREMENTS - 3 YEARS OF WAR

(HARD GOODS)



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However, it points up another problem. That is, the immense amount of material that will be left over at the end of the war; that is, initial equipment pipeline and class IV which equals about 42 percent of the gross quantity. Even if the replacement factors and all the other elements are correct, it emphasizes the need for cutting off procurement action just as soon as possible, considering anticipated requirements. This is not easy and rarely will it be done right. Hitler reduced his ammunition production in 1942 after his initial easy victories in Poland and Western Russia; but when he hit Stalingrad, and then with his losses in North Africa, the German expenditure rates on ammunition went up and he never was able to catch up. Lead time prevented him from doing it.

As I mentioned, there will be an enormous amount of equipment left over at the end of a war, and one of the jobs of the requirements people is to compute what we need to save after the war is over for future requirements. So, when G-2, G-3, and the Air Force pilots are swapping stories about the relative merits of the European blondes and the Asiatic brunettes, you will be sitting by trying to figure out how much of this equipment you must save to meet future requirements.

Most of you who were in the Pentagon in 1945 remember what a headache it was. There was pressure to distribute some of the war material back to the civilian economy, but at the same time you had to determine what you needed to keep and how long you could store and maintain it. I was in Germany at that time, and we had the same problem, only to a lesser degree. We had about 2 million tons of materiel scattered all over Europe. That was after we had shipped back to the United States the items that the requirements people here decided should be returned for future use. What would we do with it? How much of that would we save? How many troops would remain in Europe and for how long? No one would give us the answer. We sent a number of cables to the War Department and received no information. Finally, we had to make up in the theater a phased troop program covering the next five years and, based on that phased troop program, we determined what we should dispose of and retained the rest.

In summary, the job of determining materiel requirements is not a job for supply personnel alone. All agencies within the Department of Defense and the three services have a function to perform and are members of the team. How quickly and how accurately the requirements computations are made depends on how well each member of the team does his job. The research and development people who invent the gadgets; the operational people, who use them; the staff which prepares the T/O&E's, the troop bases, and the plans; the troops who report what the assets are and what the losses are; the depot personnel, who maintain the records, all have a vital function in furnishing information and tools that the requirements people use in their electric computers or by hand to govern what we will have with which to fight.

The more effective that cooperation and coordination is, the less our requirements personnel will have need for the crystal ball we sometimes are accused of using, and less frequently will crises develop because of equipment shortages. Such materiel shortages may well have resulted from failure by someone on the team to appreciate the lead time required in materiel requirements determination.

COLONEL HOLMES: Gentlemen, Colonel Allen is ready for your questions.

QUESTION: What document furnishes the basis for the calculations of your gross mobilization materiel requirements for a three-year period?

COLONEL ALLEN: This is based on the mid-term plan, AMP-51, Army Mobilization Plan. This plan is being replaced by a new plan. The Munitions Board, you remember, made a study of the mobilization requirements of the three services and determined that the plan was infeasible and beyond the productive capacity of the country, particularly for the first year. As a result, they are now making a new mobilization production schedule. They started working on it last week. So these quantities are now out of date.

QUESTION: Will you comment upon what effect the present system of budget review has upon your determination of requirements? Is that a fair question?

COLONEL ALLEN: That is an awfully good question. I don't think it has any effect on the determination of requirements. It may have an effect on how many of those requirements you will be able to procure. If your factors are all good, you come out with a sound requirement. However, you may not be able to procure all that requirement because you don't have funds with which to pay for the equipment.

The questions in your budget review and analysis which come up are usually questions of the validity of the figures, the asset information, the validity of the requirement. As Mr. Lawton mentioned in the first lecture today: Are the T/O&E's too lush? Are we providing too high a degree or standard of living or equipment for the people? It is not a question of computation of requirements--it is possibly a reduction in the tools by which those requirements are determined. Does that answer your question?

COMMENT: Not completely, because I really didn't mean just the detailed computation. It would appear to me that you have a case that may generate a definite requirement, or think we have a need for something, and then the budget review comes along and strikes it out.

Where do we go from there? You have to go back and compute everything again, modify your current requirements, not only by what you feel you need, but by what you get. I was wondering if that wasn't a major effect.

COLONEL ALLEN: It is. It is a major problem. I don't know that it reduces your requirements; it merely, as I said before, reduces the amount you are permitted to budget for, or buy. If the requirement itself was valid, if in the budget review they did not discover something you should not have asked for, then your requirement still exists.

QUESTION: You mentioned the effect of lead time on research and development for requirements for new equipment. Is there any case where research and development reduces your current or mobilization requirements, considering that it usually results in slowing down production lines or in making your assets on hand obsolete?

COLONEL ALLEN: I don't know--the development of new items of equipment has resulted usually in an increase in the quantity of material needed. For instance, the development of guided missiles and other nonconventional weapons has not yet resulted in any reduction in the standard items needed. I don't think we have had enough experience in this field for it to be reflected in T/O&E's and in the troop bases, and in the computation of requirements. Some items were developed to take the place of two or three items but you don't see too much in the over-all results.

QUESTION: I recently saw an order from the Secretary of Defense setting up a Requirements Analysis and Review Board of civilians. It seems to me that there is serious danger, the way that is written, that war planning by the military may be taken away from us. What has been the reaction of the Army on this order?

COLONEL ALLEN: I am afraid that very few people have expressed an opinion on it at the levels in which I operate. I know that there was a working group established within the Army, and I assume also in the Navy and Air Force, to advise the Director of Supply Management, as to the exact wording of that directive. I am not quite sure how much influence they had in the wording of it, because it appears to have come out even stronger than the original draft I saw six weeks ago.

The agency is to be established under each of the Secretaries, and I think you have seen a copy of the directive. It gives them no operational or command responsibility, but the authority to go into any planning group or any committee meeting. How much influence that will have, I still don't know.

QUESTION: You outlined on your first chart the timing cycle and preparation of the objectives plan. Will you comment as to the adequacy of the time provided from the time the services get the plan until it is completely developed? Is the time adequate? Is it too much or is it inadequate?

COLONEL ALLEN: I don't know. If you had nothing else to do, if you had sufficient personnel in each of the agencies who would work on this, the time undoubtedly is adequate. But, don't forget--the same people who are working on and results of this plan and making the requirements determination are also making budget estimates and probably doing them over four and five times. So it is hard to say whether or not the time is adequate. I believe it is.

COMMENT: The particular part I was thinking of is the three and one-half time from the time the Joint Chiefs of Staff start working on the plan until the assumed D-day occurs.

COLONEL ALLEN: I think it is adequate.

QUESTION: Colonel Allen, we have heard of this resources limitation approach to computing requirements which you just mentioned in response to a question. I think you said you started working on it a week ago in the Army. Is that right, sir?

COLONEL ALLEN: The actual computations or breaking out the production schedules from the slices started a week ago. We have done a great deal of preliminary work on it.

COMMENT: From a previous speaker I understood the answers were going to be back to the Munitions Board by 1 December. Will you give a guess as to when the answers are going to be back from the Department of Army to the Munitions Board?

COLONEL ALLEN: I believe the Munitions Board did receive the over-all slices from the services on the first of December. However, I believe the time on the actual mobilization production schedules which are now being drawn up will be about 15 February 1953, if I remember correctly.

COLONEL HOLMES: Colonel Allen, on behalf of the Commandant, the faculty, and the students of the Industrial College, I thank you very much for a very interesting and inspiring talk.

(2 Mar 1953--350)S/rrb.