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REQUIREMENTS AND STATISTICS

by

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Colonel McCain - Gentlemen:

You are required to make an analytical study of requirements and statistics involving the problem of how much to procure and at what rate. My job is to discuss these subjects from the Planning Branch point of view. I shall discuss requirements first and then statistics.

Requirements

The problem of requirements was recognized as a major one during the World War. The proper determination of requirements is the basis of the entire procurement program. It is a problem which has been stressed and restressed from the very beginning of procurement planning. But there is still room for improvement, as I propose to show you today. You may, sooner or later, find yourselves in a position to assist in finding the best solution and I hope that when you do you will be able to give this matter the study which its importance demands.

The solution to the problem involves involves: first, the definite decision of the item that is desirable, its military characteristics, its specifications and its procurability; second, a decision as to the amounts necessary for all purposes; third, a decision as to the amounts to be procured; fourth, a procurement policy or plan to execute the procurement program; and fifth, when and where the items procured are needed.

If the requirements program is to be solved efficiently, it is important that the decisions entering into these matters be carefully considered; that once made there be a minimum of change until the procurement program has been completed. The General Staff is responsible for (1), in part and in whole for (2), (3), and (5). The Office of The Assistant Secretary of War is responsible that the item is procurable, and for the execution of the procurement program (4).

The decisions are all so intimately related that it is most desirable that the General Staff and the Office of The Assistant Secretary of War work in the closest possible cooperation and that at the end of such deliberations as may be necessary The Assistant Secretary be furnished by the General Staff a list of the items to be procured.

Obviously, The Assistant Secretary of War and his staff have a very great but indirect interest in how the problem of computing primary requirements, made under the supervision of the General Staff,



shall be solved. For unless the solution is a good one, the difficulties of the Supply Arms and Services and the Office of The Assistant Secretary of War will be greatly pyramided and the procurement program will be endangered.

Suppose we restate the problem in more general terms and then proceed to a more detailed discussion of these general terms. In this case the problem resolves itself into a determination of: first, what to procure; second, the rate of mobilization; third, how much and what will constitute the war reserve; and fourth, how much will be required after deducting the war reserve.

Let us consider first the problem of what to procure. When procurement planning was initiated, each Supply Arm and Service made up its own shopping list, generally without regard to the essentiality of an item and, in some cases, without any attempt at priority or to apportion the procurement load to the various districts. Of course those Supply Arms and Services which followed this method got nowhere during the first few years of procurement planning. When the General Staff finally designated the essential items to make up the authorized war reserve, the Supply Arms and Services used this essential item list as the basis for procurement and apportionment, and subsequently added to that list those items which they knew must be procured but which presented special difficulties in procurement. This list was known in the Office of The Assistant Secretary as the "Priority List."

The shopping list for which plans must now be prepared is called the "Procurement Planning List." This list, made up from a revised essential item list from items on the W. P. & E chart and from other items on the Supply Arms and Services procurement lists, and finally from the important contributory items entering into the manufacture of the primary items of all groups.

Let us consider next the amount and rate of mobilization. Under the 1924 General Mobilization Plan the General Staff proposed to mobilize the following:

3 Field Armies	-	1st month, or 450,000 men
		2nd month - (150,000 men, and
		(300,000 men per month
		( thereafter
1 Field Army	-	5th month
1 Field Army	-	6th month
1 Field Army	-	8th month

The rate of mobilization was based largely on the ability of the Supply Arms and Services to supply the armies taking the field.

In 1928 the General Mobilization Plan was revised and the rate was based on the ability to procure and assemble the necessary man power without reference to the ability to supply and equip them. Under this plan it was proposed to mobilize:

- 3 Field Armies in the first sixty days, or about 1,600,000 men, and
- 1 Field Army each thirty days thereafter

The 1933 War Department Mobilization Plan, sometimes called the 4-Army Plan, has as its first objective the mobilization of the Regular Army and the National Guard, and proposes that the forces so mobilized will be ready for the Theatre of Operations in ninety days. About one million men are to be mobilized in the first sixty days.

The Office of The Assistant Secretary of War took exception to the 1928 rate of mobilization on the ground that it set up an impossible procurement objective. Further, not having completed the procurement plans under the 1924 General Mobilization Plan, it seemed possible that rapid changes in the rates of mobilization would have the Supply Arms and Services engaged in a never-ending task of recomputing requirements with each change in the Office of the Chief of Staff. Therefore, with the exception of the Quartermaster Corps and the Medical Department, all Supply Arms and Services are still using the 1924 rate as a basis for procurement planning. When the Troop Tables for the 1933 plan are available it is proposed that all Supply Arms and Services shall plan for procurement with the rate established by it as a basis.

The next problem to consider is what and how much will constitute the war reserve in order to satisfy sound military judgment as well as to satisfy the requirements of the law for maintenance of a war reserve sufficient to initially equip one million men or two Field Armies. In was in the establishment of the war reserve that an essential item list was first prepared by the General Staff. Obviously the better the status of the war reserve the better will be the status of procurement planning. Unfortunately and for various reasons it has not been possible to maintain the war reserve in all items. It is also unfortunate from the procurement point of view that the war reserve does not include any strategic raw materials, such as manganese.

You should understand that the war reserve includes all items set aside as a reserve by the essential item list and in mobilization stocks the items in the hands of troops, and the items held as minimum depot stocks.

Now for the consideration of how much shall be required after making proper deduction for the war reserve, that is, the procurement requirements. In presenting the deficiencies in the solution of this problem, please do not misunderstand me. No criticism of the General Staff or of any of the Supply Arms and Services is intended. I am merely stating facts which are available to any of you who may care to search. These facts or opinions are clearly borne out by repeated studies at this College and at the Army War College. There are no secrets in regard to these deficiencies. We are interested in them here because they are too often an unnecessary block to the procurement objective. Many of the statements which follow should be accepted as representing my personal views rather than those of the Planning Branch. However, these statements cannot be made with the same force that was necessary a year ago. Much thought has since been given the subject by the responsible officers of some of the Supply Arms and Services and undoubtedly when the requirements are computed on the 1933 plan very great improvement will be noticeable.

Following years of experience in reviewing the procurement plans during which requirements have received close scrutiny, it is the opinion of the Planning Branch that the requirement factors as established lead to cumulative pyramided totals that are out of proportion to actual requirements. These pyramided totals not only complicate procurement, but they lead to grave dangers in connection with contributory requirements and also in connection with the economic structure of the country which correct procurement planning should safeguard. Colonel Ferguson once stated that if we obtained all the requirements computed as necessary for one army, it would take two additional armies to handle them.

It is clear that false requirements in primary items will pyramid requirements in contributory items in which, in many cases, the real difficulties of mass procurement begin. This is particularly true in the case of items the production of which necessitates the conversion or expansion of facilities. It is reasonable to suppose that computed monthly requirements will form the basis of monthly deliveries under contracts made in time of an emergency. The pyramiding of requirements during the early months of an emergency will key up an industry to a greater production than is needed during the late months. Equipment built perhaps at a sacrifice will no longer be required. To illustrate - the monthly production requirements for field glasses jumps from something over 2,000 for the first four months to over 24,000 in the seventh month, and then on down to about 4,600 in the fifteenth to twenty-fourth months for a total of over 217,000 pairs of field glasses.

In order to meet these deliveries, the industry must strive for a maximum monthly production of 24,363 which, after being once attained, is no longer required. Another bad feature, in this particular case, is that in order to meet production requirements there must be an expansion of facilities.

Certainly some effort should be made to adjust requirements in such cases so that planned maximum capacity, once achieved, can be reasonably maintained.

Considering the contributory requirements in the case of field glasses, it is found that each pair contains four porro prisms and ten lenses, all made from optical glass which must be ground and polished to close tolerances. The supply of lenses alone, from the standpoint of grinding and polishing, is equivalent to a supply of over 1,000,000 pairs of highly accurate spectacles. Other remarks might be made in regard to complete sets of drawing instruments to be furnished by the Chief of Engineers to nearly all Coast and Field Artillery units.

I mention these two items, field glasses and drawing instruments, because I know that during actual combat the Artillery regiment I was with overseas never used at one time more than 10 per cent of its field glasses, and hardly more than 5 per cent of the drawing kits issued each battery.

For such items planned adjustments should be possible.

I want to discuss now the factors involved in computing requirements. These are: initial allowance, the maintenance and distribution factors, and the production lag. The question of allowances is rather abstract and is apparently one that, once established, is accepted and rarely tampered with except to increase the allowance in various items. The factors entering into the requirement load are still more abstract, and once established the tendency to accept them is stronger. The point to be made here is that those factors once formed the objective of an intensive study under pressure and have not had sufficient itemized study by all Supply Arms and Services. There should be balance as between energy spent in decreasing allowances and that spent in increasing them.

The Initial Allowance Factor: At least one difficulty in the pyramiding of requirements is attributable to the fact that the Supply Arms and Services in too many cases are striving to completely equip each unit, as it is mobilized, with each article called for on its Procurement Planning List. As an example, during the first year of mobilization, and considering all requirement factors, it is expected to procure tentage sufficient to cover more than seventyeen million men. Such a program will call for, in addition to means now

readily available, the conversion of the entire carpet industry. Considering this in connection with any scheme of housing, certainly some pooling of equipment should be possible. It is also possible that many other items of equipment can be pooled. This is a practice that was developed successfully during the last war and was a material factor in enabling the Supply Arms and Services to meet their procurement program and would undoubtedly apply in the next emergency. Why not plan for it now? There are many outstanding examples of procurement plans calling for tremendous quantities which, if the initial allowances were placed on a more rational basis, could and should be materially reduced. The requirements for tentage; for service hats, in consideration with other types of headgear; for nearly all clothing and individual equipment; for field glasses; for pistols for Coast Artillery units; for chests for Engineers; for drawing instruments as used by the Coast and Field Artillery units, etc. may be considerably revised. Undoubtedly many officers of the combat arms, particularly in the less mobile units, could mention some items of equipment which though classed as items for procurement, have little or no practical use on the battlefield or elsewhere. They are like many obsolete orders or prohibitions which, once issued, too often remain in the regulations. Certainly there are many items of initial issue which are not immediately necessary, and the issue of which could be materially set back.

The Maintenance or Wastage Factor: Aside from the failure to consider salvage as a source of supply, it is apparent that the tendency to play safe has too often governed. This becomes more apparent when one compares the maintenance factors established by the Ordnance Department in connection with some of those established by some of the other Services. Here we have items in which battlefield wastage reaches the maximum, yet the factors, by comparison, are very conservative. A War College study indicates that even these factors are in many cases excessive. The lack of uniformity in regard to the maintenance factor is further exemplified by the fact that one Supply Service includes in this factor the amount necessary for a Theatre of Operations reserve.

At a meeting held in the Planning Branch several weeks ago, and attended by representatives of the Supply Arms and Services, with a view to making appropriate recommendations to the General Staff on this subject, it was held: first, that maintenance factors must be carefully explored with a view to placing them on a more reasonable basis; second, that the value of salvage must be recognized and that while it should not enter into the initial computations, provision should be made to reduce requirements after M-Day. Recent studies made by the Air Corps provide for consideration of salvage in meeting maintenance requirements.

The Distribution Factor: Existing instructions define this factor as covering the quantities necessary for:

- 1. Echelonment or overhead
- 2. Movement or time lag
- 3. Tariffed or sized items

Considerable misunderstanding has existed as to the proper application of this factor, and as a consequence considerable pyramiding of requirements has resulted.

Major Graham of the Ordnance Department, who has given the matter considerable study, has advanced the idea, and I understand it is looked on with favor by the General Staff, that the echelonment or overhead and movement or time lag should constitute the distribution factor. Under such circumstances a definite requirement for overhead can be abolished, because if any change is necessary it can be effected by displacement of requirements or production forward or back, as the case may be. Under such circumstances the tariff or size factor would only be applied separately by those Supply Arms and Services having sized items.

In the past, to provide for the time lag, it has been the policy of the Supply Arms and Services to allow for a 15-, 30-, or 60-day set-back of production or an advancement of requirements. This set-back or advancement has been made more or less arbitrarily by each Service. The Army Industrial College doctrine has been to allow 30 days for the Zone of the Interior; and for the Theatre of Operations - 30 days for all items for which no break in bulk is required, and 60 days where there must be an intermediate break in bulk. As at present applied by some of the Services, it complicates procurement by demands that the first 60- or 90-days requirements be produced in the first 30 days.

In a study on this subject submitted by the Quartermaster General the requirements for the first month for 1½-ton trucks, cargo, after making the necessary advancements, total 21,201; for the second month, 10,938; and for the third month, 8,502. The actual requirements without advancement for time lag and using the distribution and maintenance factors are 10,604, 10,265, and 10,891, respectively. The initial allowances are 9,469, 8,986, and 9,364. It is clear that the advancement of requirements in this case places an impossible procurement load on industry. Were it possible to advance production to a point in time 30 or 60 days preceding M-Day, there could be no objection to this method. As handled by the Ordnance Department, every effort would be made to get the maximum production. However,

it is recognized as being impracticable to effect delivery as soon as an item is accepted at the factory, therefore production is set back a sufficient amount in point of time to allow for the difference in time between date of acceptance and date when issue can be actually accomplished.

One of the most serious difficulties brought out in connection with Civilian Conservation Corps procurement has been the lack of coordination of the requirements program. For example, when the Quartermaster General was forchanded and computed his requirements on the basis of Regular Army supply, his computations were completely upset in many instances because the Corps Area Commanders were authorized and did increase their allowances as they saw fit.

Out of five items in which there were considerable procurement difficulties incident to C.C.C. supply the delays in four cases may be largely attributed to the failure to coordinate requirements. In one of the five items, that is, woolen undershirts, although there were more than 2,300,000 units in reserve, delays in procurement were directly attributable to the fact that the tariff of sizes as laid down for the Regular Army did not meet the situation when it came to the supply of the enrollees for the C.C.C. The procurement of arctic overshoes furnishes a good example of uncoordinated effort. In the efforts to please the Corps Area Commanders and to give them exactly what they wanted, it became necessary to establish requirements piecemeal with the result that this was done on seven different occasions. It is interesting to note in this connection that the requirements as computed by the C. & E. Division of the Quartermaster General's Office totaled 311,000. Had the approved factors for the War Department Mobilization Plan been followed the requirements would have totaled approximately 470,000. When it is appreciated that this item involves the use in manufacture of large quantities of two strategic materials, wool and rubber, it is clear how pyramiding of requirements may affect the procurement program as a whole. It is rather interesting to note that over the protest of the Quartermaster General it has been necessary to prepare plans for approximately ten million pairs of overshoes for the first year of mobilization.

The Production Lag: This lag is in general the factor used as a basis in the computation of the war reserve of primary items. Faulty assumptions as to the availability of finished components have made some of our predictions as to this lag entirely too optimistic. This has been fairly well demonstrated by Civilian Conservation Corps procurement during August and September of this year.

The important thing is, once war procurement becomes effective, to have production meet consumption rather than theoretical requirements. Procurement plans must be flexible to this end. During the World War the Staff insisted that production of T.N.T. and smokeless powder meet theoretical requirements. The Ordnance Department was hard pressed to find storage space for the accumulated production which greatly exceeded consumption.

A study of mobilization requirements clearly indicates that from the procurement point of view the present policies and methods in regard to requirements under the War Department Mobilization Plan are unsatisfactory. These policies are often indefinite. They are not fully understood or are not applied in the same manner. Furthermore, such requirements as have been computed are rather for the purpose of determining our productive capacity than for determining more specifically the quantities which it is proposed to procure to meet any specific situation. It is appreciated that a recent War Department directive called for the determination of requirements to meet specific situations. Before this can be done, however, it is essential from the procurement point of view that the requirements factors be revised and redefined, and that their methods of application be clearly set forth. Certainly if Corps Area Commanders are allowed to increase allowances as they see fit, the whole procurement program may be seriously interfered with. Mobilization Supply Regulations require Corps Area Commanders to compute initial and maintenance allowances. These will undoubtedly form the basis for Corps Area requisitions and must be carefully coordinated with the total requirements as computed by War Department agencies if the success of the procurement program is to be assured.

Now from a study of the problem of requirements from the procurement point of view and on the basis of computations as they now exist, and from a study of Civilian Conservation Corps requirements, it seems to me that certain conclusions are possible. These are:

First, Corps Area requirements must be coordinated with the War Department requirements program.

Second, Corps Area Commanders should be restricted in time of emergency from increasing allowances.

Third, Corps Area requirements for plant equipment must be prepared and the procurement thereof must be restricted in such a way as not to interfere with the War Department procurement program. Consideration should be given to the standardization of Corps Area plant equipment.

Fourth, Present policies governing computation of requirements should be revised, redefined, and made more uniform as to the procedure followed.

Fifth, One of the greatest lessons to be learned from Civilian Conservation Corps procurement is the necessity for the coordination of requirements. For in time of emergency requirements is a vital moving problem. The various problems that arise under it must be carefully but promptly coordinated. The decision in the matter must be made as rapidly as the circumstances warrant. To this end G-4 should establish a clearing house or other agency on which

shall be representatives of the Office of The Assistant Secretary of War with representatives of the Supply Arms and Services acting as technical advisors to both G-4 and the representative of the Office of The Assistant Secretary. Thus, when General "A" decides that new requirements are necessary these requirements will be referred to the clearing house for necessary action. The question will be taken up at once by the Office of the Assistant Secretary with a view to determining procurability. G-4, sitting in a judicial capacity, can then decide more promptly what to do and what priority, if any, to recommend. Any disagreement can, of course, be handled in the regular way.

Contributory Requirements: In the solution of his problem of how to procure The Assistant Secretary of War must solve the question of contributory requirements; that is, the critical components, raw materials, and the machine tools necessary to complete the finished primary requirements.

That a system for the control of contributory items is necessary can be appreciated by the fact that we have but seven Supply Arms and Services which might be competitors for certain primary items, while there are thousands of facilities which will, unless controlled, compete against one another for contributory materials. This is a matter which the Director of the Planning Branch is giving close personal attention. For example, in a study directed by him it was found in the case of the Christie tank that 15 different firms contributed parts or work that involved procurement difficulties.

A system for the control of contributory items was inaugurated on July 20th, 1933 when Planning Branch Circular No. 2 was published. Briefly the system provides:

First, The determination of those contributory items which will be purchased by the Supply Arms and Services. These items will be controlled by allocation in the same manner as for primary requirements. This list should be kept to a minimum.

Second, The determination of those contributory items which will be purchased by the allocated facilities or by governmental manufacturing establishments. This list covers those items for which procurement difficulties are foreseen, and which may be due to lack of capacity, shortage of materials, lack of skilled labor, etc. Planning is necessary in order to minimize these difficulties. The requirements will be computed or estimated for these items.

Third, For the group of items which must be procured by facilities, allocations will be made to Supply Arms and Services

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unless two or more Supply Arms and Services are involved, in which case allocation will be reserved to the Office of the Assistant Secretary of War.

Fourth, Subschedules of production for these items will be routed through the Office of The Assistant Secretary of War for clearance.

This method was given the most careful consideration before it was inaugurated. How it will work, only time can tell.

### Statistics

On July 20th, 1933, the three statistical reports previously made by the Supply Arms and Services to the Office of The Assistant Secretary of War were discontinued. A consolidated form was adopted, doing away with many of the smaller details required in the previous reports.

The new report of progress on procurement planning is designed to give a better but more general picture of the whole progress of procurement planning by the Supply Arms and Services. It is not designed to show competitive progress between the Supply Arms and Services. The progress made by the Ordnance Department, insofar as the preparation of procurement plans is concerned, and in comparison with the preparation of plans by the Quartermaster Corps, is no criterion of the amount of work done by either department.

What has been done amounts to this: The Assistant Secretary of War has directed the Supply Arms and Services to pick out those items from their procurement lists for which procurement plans must be prepared and to list these items on a procurement planning list. This list is made in five groups -

Group I - All those items on the essential item list are designated by the General Staff, that is if it is included in the war reserve and is unobtainable from civil stocks or production in the time and quantity required.

Group II - Contributory items which must be procured by the Supply Arms and Services to insure manufacture of the essential items.

Group III - Any item not listed above which appears on the War Planning and Equipment charts and for which a separate plan must be prepared.

Group IV -Contributory items which must be procured by the Supply Arms and Services to insure manufacture of those items in Group III.

Group V - Any other items for which a separate procurement plan must be prepared.

The preparation of a procurement plan involves certain preliminary work and on which statistical data are considered desirable. These are: first, the number of items for which requirements have been computed; second, the number of apportionments that have been completed; third, the number of specifications required, completed and in process; fourth, the number of bills of material required and completed; fifth, the number of factory plans required and completed; sixth, the number of schedules of production placed; and finally, the number of procurement plans required and computed. It is hoped to complete all plans for items on the Procurement Planning List within three years. A program to that end has been laid down by each Supply Arm and Service.

In addition to the preparation of plans for primary and contributory items which the Supply Arms and Services must procure, specifications and procurement plans must be prepared for certain contributory items which are necessary to insure manufacture of the primary item, but which will be procured direct by the manufacturer.

Various members of last year's class at the Industrial College who have been on procurement planning duty in the field suggested that better check and control should be maintained over the activities of officers on such duty. Accordingly, provision was made in this report for showing how much detailed work is accomplished in the field. This involves a report on the numbers of facilities allocated, the number of facilities canceled, the number of facilities surveyed and re-surveyed, the number of schedules of production completed, canceled and in negotiation, and also the number of subschedules of production completed.

Distribution of Load: It seems possible that our procurement load is not well distributed - too much of it lies in the New England area. It is hoped that statistical data showing for each district and each zone the facilities to be constructed and converted, the number of schedules and subschedules of production charged to each district and zone, and the estimated cost of such schedules, will give a sufficient picture of the load so that proper steps can be taken to effect a gradual redistribution.

The reports received from the Supply Arms and Services also cover pertinent data in regard to personnel training and the requirements of personnel for peace and war.

Based on the individual reports submitted by the Supply Arms and Services, a consolidated master report is made up in the form as you see here. A study of the master chart will be made and the progress analyzed in a special report to be made to The Assistant Secretary of War. Each Supply Arm and Service will be in competition with itself and, when insufficient progress is indicated, appropriate action will be taken.

So much for peace-time statistics. In time of war a daily or weekly report will be made of the status of procurement of each essential item and of as many of the other items as may be necessary or desirable. Similar reports of contributory items necessary to insure production of the primary essential item will be made.