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ANALYSIS OF ARMY REQUIREMENTS DETERMINATION

20 November 1947

L48-45

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Publication Number L48-45

THE INDUSTRIAL COLLEGE OF THE ARMED FORCES

WASHINGTON, D. C.

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Analysis of Army Requirements Determination

20 November 1947

COLONEL MICKELSEN: Gentlemen, we are very fortunate today in having with us an officer whom a great many of you know, and for those who don't know him too well, I will explain that on the Army side he has the job of doing the particular thing that we are studying. He is largely responsible for mobilization planning and supervision thereof for the Army. One of his big problems is requirements. He, in that position, has learned to appreciate timing and the importance of that in planning and determining requirements. He is going to talk to us today on that subject. Colonel Westphalinger.

COLONEL WESTPHALINGER: Members of the faculty, guests, students of The Industrial College of the Armed Forces, it is indeed an honor to have the opportunity of addressing you gentlemen. It has been my good fortune to have been associated previously with many of you.

The subject of my lecture is an "Analysis of Army Requirements Determination Methods."

I would just like to say that in my brief experience here today I have gathered the impression that perhaps there is a little confusion in the minds of students. I would like to get down to getting us all on the same basis to start off. I would like to do that by telling a story.

General MacArthur had a series of Chiefs of Staff, beginning with General Sullivan who was his wartime Chief of Staff; then Dick Marshall. He was followed by General Chamberlain, the present Director of Intelligence, Department of the Army, and then he had his present Chief of Staff, General Miller. General Miller was called away because of sickness in the family.

I happened to attend a dinner and was seated next to his Deputy Chief of Staff, General Clarkson. General Clarkson was a very good field soldier but this business of being Chief of Staff, particularly to General MacArthur, was a new angle.

He walked into General MacArthur's office one morning. General MacArthur looked up and saw he had a new Chief of Staff and said to General Clarkson, "How are you getting along on this job?" General Clarkson said, "General, this is the hottest job I ever had." He had to run the Japanese government, the Army Forces, and Korea, which was quite a job.

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General MacArthur didn't say anything. About a half hour later, he came into Clarkson's office and said, "So the heat is on on this job?" Clarkson said, "Yes, sir." "General," he said, "I don't understand half that is in these communications that pass across my desk." MacArthur said, "I don't either." So I guess, gentlemen, we are all in the same category.

Now I would like to start in by a brief summation of the record.

Colonel Tischbein, Chief of the Supply Group, Service, Supply & Procurement Division, General Staff, U. S. Army in his lecture of 5 November 1947 has given you an insight into the requirements determination methods currently used. Colonel E. K. Daley in a lecture 24 September 1946 on the subject "Organization and Functions in Determination of Army Requirements" outlined the organization and methods employed by the Army Service Forces of the Army as of VJ-day. I recommend that you read Colonel Daley's lecture on file in the College. A detailed description of the procedures employed by Army Service Forces of the Army as of VJ-day is given by Army Service Forces Manual M-413.

These two lectures give you the requirements determination methods used on VJ-day and since then. I shall limit my discussion to the first three years of a future mobilization. I favor in a future mobilization, the supply control methods in use on VJ-day as they can be improved during peacetime. This phrase "as they can be improved during peacetime" is important, for peacetime conditions do not normally tend to improve methods of determining requirements.

To explain that statement you know that the Army and the Air Force budget requirements for funds for FY 1949 were successively reduced by reviewing authorities from 14.4 to 8.4 to 5.9 billion dollars. This is obviously an abandonment of requirements in favor of requests. Requests are made only for those things which it appears likely can be obtained from Congress.

The basis of that method is the peacetime tendency to omit from requirements any items and quantities whose absence will not certainly cause failure of a program. As a corollary any program which Congress, for one reason or another, is expected to disapprove, is omitted. This is a negative approach since it is based on substandard conditions. War results in the use of the positive method which includes as justifiable any requirements which will contribute to the success of operations. This is the method which must be kept alive and improved in peacetime by planning, to permit successful support of a war. There will be enough limitations on our ability to fill requirements without our adding confusion by not knowing how to ascertain requirements.

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Peacetime Armed Forces requirements, then, are primarily limited and partially determined by the funds available. Wartime requirements, however, are limited by vastly different factors. We had time to learn for the late war what many of these factors were before Pearl Harbor. In 1940 and 1941 the Services were procuring munitions in an economy which was engaged at the same time in unrestricted civilian production. As defense appropriations were enacted, efforts were directed towards the quickest possible obligating of all available funds and the rapid procurement of equipment to clothe, house, and train the growing civilian Army and Navy. This was the period of broomstick guns and tarpaulin armored tanks. When industry could not meet the expanding needs, purchases were made "off the shelf." The Quartermaster Corps, for example, was supplying new recruits with 30-odd types of shirts, purchasing anything that was reasonably close to regulation color and of any obtainable quality. Orders were superimposed on each other without assurance that deliveries would be made as scheduled. The absence of fixed fiscal dates during which funds has to be obligated lead to a looseness of procurement.

As you know, the actual availability of materiel at any particular time from the production line to the fighting man is primarily determined by requirements. When a general assessment of the items and quantities needed for mobilization has been made, the problem of determining production requirements is barely begun. Filling these requirements depends on many things. The main factors affecting required production are shown by the following:

1. The time required to convert industry from peacetime to wartime production.
2. The availability of raw materials.
3. The availability of manpower to industry as personnel is absorbed by the Armed Forces.
4. Availability of cargo shipping capacity.
5. The ability to discharge cargo overseas and forward it to the point of use.
6. The timing or phasing of requirements.
7. The balance between requirements for different programs.

Let us consider these factors and their effects. If we cannot produce enough combat planes and tanks for the combat troops they must go short. Also our requirements for armament, ammunition, and fuel to run

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planes and tanks automatically decrease and the number of vehicles and maintenance units to support them is decreased. This is an important factor because these decreases are substantial. Since less of this equipment exists, replacements are decreased as no replacements are necessary for the nonexistent portion. Generally in time of mobilization they are not available. There may be, on the other hand, if available, a resultant increased requirement for other types of substitute equipment.

Next, raw materials necessary to produce given items of material can be correlated with realistic production possibilities or schedules. This was done by the Controlled Materials Plan during the war, and it materially assisted in solving the raw materials problem in World War II.

If the military requirement for personnel is so large that the national man and woman power pool will not allow filling the requirement and continuing industrial operations in support of the mobilized forces, either the requirement for Armed Forces must be decreased or production will fall.

If we can mobilize and equip a force but cannot move the troops and supplies to the proper combat areas the requirements for these forces are an unnecessary drain on the economy. Now, we actually ran into that in World War II. We had to cut back on the size of the Armed Forces. There is a limit to the size of the Armed Forces, and we cannot drain from the manpower pool of the United States too much.

Assuming that we can mobilize large Armed Forces and move them overseas to combat areas, as well as move enough supplies to support them, but cannot offload supply ships on the far shore or move cargo from the discharge point to the point of use in combat, there is no reason to make such shipments until such time as they can reach the proper areas. The effect is a lowering in requirements because of the slowdown or phasing-back of the supplies which cannot be discharged or moved.

Since materiel serves no useful purpose unless it can be brought to bear against the enemy directly or indirectly, our ability to produce must be carefully coordinated with the time when results of production must be used, otherwise our depots will bulge with useless stocks. The improper phasing which resulted in unrealistically high-estimated requirements for tanks during the years 1942 and 1943 made available many more tanks than could be used. Not the least of the repercussions which can result from such improper timing or phasing of requirements is the effect on the morale of the factory worker when he sees mounting stocks of materials accumulating outside his factory.

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Finally, balance between programs is essential. Requirements for personnel, weapons, vehicles and communications, transportation and the many other items required for the Armed Forces must be carefully balanced against the requirements of the industrial and Zone of the Interior organization which supports the Armed Forces and the requirements of the civilian population which supports both.

One of the members of this class took me on a jaunt over in Tokyo and we went to a Japanese arsenal. In their broken English they told us what they did during the war. I was very much interested in one thing that they told us--this was entirely voluntary. They said that toward the end of the war great emphasis was put on the 120 mm gun and that it had overriding priority over all other production programs. One little Japanese, apparently a captain, said, "But we had neither radar to control the guns nor did we have ammunition to fire them. So you see they had their program slightly out of balance.

Army requirements determinations resulting in production programs of the magnitude of 20 billion dollars per year and changes thereto have a major impact on the national economy. An important change may put industries in or out of business and may determine the degree of prosperity a community enjoys.

Theoretically, requirements determinations for the Department of the Army for a given period should be a mathematical computation based on the following considerations:

1. Strategic guidance which should give in general terms the type, number, and employment of forces by areas.
2. Troops lists which show troop composition and deployments.
3. T/OE, T/BA and special equipment lists.
4. Operational Supplies.
5. Stock levels and pipe lines.
6. Replacement factors.
7. Requirements of Air Force, Navy and International Aid.
8. Others.

From the total of requirements determined from the foregoing are subtracted the sum of resources in being to obtain the quantities to be procured during the period corresponding to that of the requirements.

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Unfortunately, in no field of endeavor is the spread between theory and practice so wide. Now let us examine some of the considerations that cause these divergencies.

Strategic concept or guidance: Every logistic planner hopes for the much sought for and desired strategic guidance. However, it requires up to about eighteen months for a going production line to shift from one type to a new type of major weapon. It also takes up to nine months to increase production of a going line. It is almost humanly impossible for strategic planners in a fast moving, and ever changing modern war to outline a strategic concept eighteen months ahead.

After all, the personnel of the Joint Staff and General Staff are the same ilk as you and I and by reason of their position alone are not necessarily endowed with any unusual prescience. The decision to land in North Africa early in November was announced on high Washington levels on 8 August 1942--3 months' warning. The decision to invade Europe in May 1944, later changed to June, was made at the Cairo conference in December 1943--6 months' warning. However, tentative plans for a cross-channel operation were formulated in the summer of 1942. The decision to land on Leyte instead of Mindanao was made sixty days before the Leyte landing. The decision to invade Kyushu Island in November 1945 was made early in April 1945--7 months' warning. Obviously production could not reflect strategic guidance on such short notice.

While we should like to have strategic guidance it may prove the largest source of error in the long-range Army requirements determinations. For a general mobilization in the future, we must make preparations to support any probable strategic plan. Nevertheless, strategic guidance, when available, is valuable for adjustment of short-range requirements.

The following is an extract from statement by Secretary of Defense, Forrestal, before Senate Special Committee to Investigate the National Defense Program, 22 October, 1947.

"There was too great a tendency for the strategic planners to slight the capabilities and limitations of war production in making their strategic plans. There was not sufficient knowledge of the factor of lead-time. Strategic plans must be translated into the end-items of military equipment necessary to carry out these plans. These end-items must in turn be translated into materials, facilities, and labor. The success of strategic plans is dependent upon these factors of production and if limitations exist in them, the strategic plans must be modified accordingly. The lead-time for the manufacture of major items of military equipment is many months. This fact was sometimes overlooked in the preparation of strategic plans, sometimes with dangerous consequences.

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"Timely statement of requirements for our Allies was particularly trying. The personnel in the Services responsible for procurement too often had to try to outguess the planners."

Troop lists or troop bases are derived from strategic concepts and are materially influenced by the employment of forces. Employment of forces is likely to produce major shifts in types and numbers of units. This in turn materially affects requirements for materiel and required production. An example of this from World War II is the attainment of air superiority and the shift away from AA troops.

Development of amphibious operations after the outbreak of war, which materially affected the troop structure, is another example. Tactical employment of the Ground Forces placed emphasis on heavy artillery units and increased requirements for heavy artillery and ammunition. For their devastating raids against Japan, because of weak opposition and fighter escorts from Iwo Jima, B-29's were stripped of most of their defensive armaments, thereby decreasing requirements therefor.

T/OE, T/BA, and special lists of equipment change with strategic and tactical uses. I cannot emphasize too much the necessity for early decision in finalizing on T/OE. The time lag required by the users to make this decision generally is too long. Too often during World War II it was necessary to courageously initiate procurement of improved types of equipment, without formal approval by the users. Even materiel approved by the users was canceled and subsequently put back into procurement. In addition to preventing users having equipment when desired, this gave industry the admittedly rather well-founded impression that the Armed Forces didn't always know their own minds. To give you some idea of the time lag in getting T/OE changed, our forces in Italy proposed using six instead of four 105 mm howitzers per battery in late 1943 or early 1944. The current tentative, but at this time still unapproved, T/OE for the Infantry division provides for this organization.

Requirements for operational supplies are extremely difficult to determine. These requirements are materially affected by the action of the enemy. After all, he has a lot to do with our strategic concept at times. If the enemy has time to use a scorched earth policy, these requirements skyrocket. If, on the other hand, his withdrawal is rapid, as occurred in France in the summer of 1944, the enemy is unable to destroy bridges, roads, utilities, and communications, and requirements are less than anticipated. Moreover, the enemy under the foregoing conditions cannot withdraw nor destroy his stocks of operational supplies. This may produce unanticipated windfalls which further reduce requirements for operational supplies. However, it is an ill wind that blows no good. Most excess operational supplies, the bulk of which is

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in engineer construction materials and signal supplies, if held in the Zone of the Interior can be used for other campaigns or in domestic postwar expansion.

Stock-level requirements are probably the most accurately determined requirements, being entirely arbitrarily stated quantities. Of significance are the following facts: On the defensive when supply lines may be interrupted by the enemy, stock levels must be high enough to assure continuous supply. On the offensive in island-hopping warfare, supply levels can be lowered materially. In the Philippines our forces after 1944 were unable to acquire more than 20-30 days supply of an authorized 90 day level of supply for the peak force there. Petroleum supply can be accomplished on an even lower level if the inland distribution distances are short. However, where the offensive operation extends to the interior a considerable distance from the base or point of discharge, stock levels must be increased to provide the necessary distribution. The greatest danger with respect to stock levels is the accumulation of supplies in excess of need. This results in maldistribution or the freezing and inaccessibility in a locality of materiel which is difficult or impossible to redistribute or ship to the point of need. This maldistribution or freezing of quantities in an area in excess of local needs is not provided for by the requirements and may result in a duplication of required production to the extent of the maldistribution. When you consider the fact that we delivered supplies to 340 different ports and beaches throughout the world, it is apparent that maldistribution at each point can add up to enormous quantities.

In previous lectures the necessity for accurate replacement factors have been indicated to you. I should like to reinforce these views on the importance of such factors. Our current factors are predicated on World War II experience which reflects the influence of our overwhelming air superiority. We all hope we will always realize this advantage. However, with the advent of new weapons this may not be the case. It is not my intention to endeavor to indicate what these factors should be but I should like to briefly illustrate by example what the magnitude of the error in requirements determination can be under a certain set of conditions. I am thinking of early World War II now.

The approved War Department day of supply for caliber 50 anti-aircraft machine guns at the outbreak of World War II was 100 rounds per day. We had no reliable experience data. After the fall of the Philippines an inconclusive and unreliable check of the experience of that campaign, and of course reflecting lack of air superiority, indicated 100 rounds per day as a reasonable figure. As a result of the North African campaign experience this figure was reduced to 50 rounds per day. By the summer of 1943 air superiority built up, permitting

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this figure to be cut in half again with the realization that 25 rounds per gun per day was still too high. Further experience has reduced this day of supply to five rounds per day per gun as the currently approved factor. This is probably an extreme case, but it does indicate a lack of accuracy in this particular factor.

On the other hand, some amelioration of this situation can be achieved at the Department of the Army level by adjustment of procurement to prevent acquisition of undue stockages as indications appear of stocks accumulating. Inasmuch as the bulk of the Army required production after 1943 was for replacement purposes, the importance of replacement factors cannot be overemphasized. Unfortunately any replacement factor based on experience is historical and may or may not apply to the future operations. Replacement factors must be carefully scrutinized on a day-to-day basis. Changes must be reflected in the procurement program at the earliest possible date. Following the normal supply channel indications on which to adjust the procurement program were delayed far too long in arriving.

Two systems were devised to obtain better replacement factor data by the Army and the Air Forces. The Air Forces had a statistical officer in the T/O of group headquarters. This officer was specially trained. From the data available to Headquarters, Air Forces, in Washington, this work appeared to be performed in a satisfactory manner. In the second system each Technical Service trained a number of selected officers to report replacement factor data. These officers were attached as teams to the several theater headquarters for the primary purpose of accumulating replacement factor data. This system, while it produced some results, was generally unsatisfactory. As a method of screening out the superior officers from the average officers in the teams trained for this work, it was a complete success. What happened was that the theater headquarters proselyted the outstanding officers for their staffs and returned the others to the Zone of the Interior. Under these conditions it is readily appreciated why this system did not work.

I have high-lighted some of the more important sources of difficulties in the determination of requirements. As previously stated, from the total of requirements determined is subtracted the stocks on hand to obtain required production. Unfortunately, it is extremely difficult to obtain an accurate inventory either in war or peace. Items must be properly identified to insure that we are adding apples to apples and not apples to oranges.

You are all well aware of it but I cannot emphasize too strongly that, particularly in requirements determinations, any system is only as good as the data available to it and the personnel running the

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system. Have no illusions. There are no military requirements determination methods that bring forecasting to the degree of accuracy demanded by bookkeeping. Also, there is no substitute for sound judgment in requirements determinations.

The aforementioned gives you some insight into the major considerations involved in requirements determinations. While much of this is history, let us not chuck it overboard. Nor should we be reactionary and gear our thinking to the past. Rather, let us study the past methods using them as a starting point in developing improved methods. Now let us consider what we should do to improve our Army requirements determinations methods for use in a future mobilization.

First and foremost we must indoctrinate our officers now that in time of war it is the requirements determinations which in the first instance control the availability of supply from the production line to the fighting soldier.

Requirements organizations in the Army and Technical Services must be on a level which will permit the closest possible supervision and coordination of requirements, production, and distribution agencies. Staffing these agencies with the best obtainable personnel will pay handsome dividends.

Realistic strategic guidance must be provided for a future mobilization. By war gaming a strategic concept for mobilization and applying certain feasibility tests, the planners can quickly evaluate whether or not the plan is capable of being implemented. For example, our Mobilization Plan of 1933 required more strength overseas at the end of three weeks than was in the Army on M-day. Such an unworkable provision is readily detected by war gaming and application of feasibility tests. Assuming a workable strategic plan is provided, the Mobilization Plan then can be tested from the industrial support aspect.

At present the Army is using flash estimates to determine capabilities of supporting a mobilization plan. This consists of determining the requirements and capabilities to satisfy these requirements for a limited number of selected key or representative items indispensable to combat or support of combat. This appraisal will indicate with certainty the failure of resources to meet requirements and hence the inability to support the plan.

On the other hand, ability of selected items to satisfy requirements is not necessarily positive proof all other requirements can be satisfied. I, personally, am highly optimistic about getting the necessary broad strategic guidance required for a future mobilization plan.

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I feel confident that the new Director of the Joint Staff, General Gruenther, has been on the receiving end of high level, operational directives too long to permit an unworkable plan to emanate from his shop.

While the current requirements determination methods are geared to troop bases, considerable pioneering is being done by the Army in developing a modification of the present system of requirements determinations using the division slice. It is hoped that the proposed modified system can be used in the next Army mobilization plan requirements determinations. Of course, the current methods will also be used for purposes of comparisons. I should like to briefly expand on the use of the division slice.

The use of the division slice is not a new idea. It was used to advantage in the larger theaters during the late war. Generally, its use was in connection with determination of total strengths of a large force, shipping tonnages required, and operational or class IV requirements. It also served as a guide in determining detailed replacement requirements for a force.

A division slice may be compiled by dividing by the number of divisions, all other Army units (exclusive of Air Force) in the force to determine the ratio of the other units and bulk allotted personnel in the force to the division. Thus the composition of an average or hypothetical division and its supporting troops is determined. This then gives you an average yardstick, and with this average yardstick is included combat, combat support, and all the way down the line, including all supporting troops. Using this division slice, an equipment list and replacement quantities are computed. For your information the Army is currently using two division slices as follows: From firing line back through the Port of Debarkation 43,00 strength; from the firing line back to the White House 60,500 strength.

It is of interest that ACF have determined by independent study these figures as 42,000 and 61,000. This is sufficient agreement for planning purposes.

Strategic and mobilization plans are stated in terms of divisions by time periods. Hence, to get requirements for materiel, all that is necessary is to multiply the above-mentioned division slice equipment lists and replacement quantities by the number of divisions. This provides a substitute for the troop bases, and, although it introduces certain discrepancies, they are within the probable error of other data used in requirements determinations.

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By extending the computations, costs, raw material requirements, tonnages, and storage requirements can be compiled for the division slice, and, hence, for the entire Army.

The afore-mentioned use of the division slice is analogous to asking a contractor for an estimate on a house of say six rooms. The contractor can give an estimate based on cost per unit of floor space or cubic content. Adjustments in the general layout of the house are made to fit the buyer's pocketbook. The architect then draws up the detailed plans which correspond to the detailed troop bases. Using the detailed architect's plans, a more accurate estimate of costs can be made.

The T/OE must be kept up to date. It is imperative that we do that and they have gotten behind. Many of you are Combat, Ground Force or Air Force officers. I implore you to use your influence to keep them up to date.

The need for quickly obtaining replacement factor data is a must. Investigation of the Air Force Statistical Officer system with a view to adoption by the Army would appear desirable.

Finally, serious study must be given to the development of the best possible management reports to assure the most efficient utilization of materiel produced.

I understand it is customary for the speaker to come to bat and answer any questions. I hope you will give me three strikes before I get put out.

COLONEL MICKELSEN: Gentlemen, Colonel Westphalinger has very kindly volunteered to answer your questions, but I want you to bear in mind this one thing, and that is, we are going to have a seminar after this period. The Requirements student officers are going to have a full opportunity there. So I am going to ask you to allow the student officers from Technological Progress, guests, and members of the faculty to ask some questions first. Then, if there are some questions that you know you haven't on the list you have prepared to ask him at the seminar we can take them up here.

QUESTION: In computing with the division slice, do you include foreign aid?

COLONEL WESTPHALINGER: The answer is no, we do not.

QUESTION: You don't feel you can use the division slice on that?

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COLONEL WESTPHALINGER: No. This is not the panacea for everything. We had enough trouble making it cover the Army.

QUESTION: Do you use the division slice for the computation of raw material requirements?

COLONEL WESTPHALINGER: It can be used by the extension of the computations. We haven't got that far with it yet, but it can be used, and that is our intention.

COLONEL MICKELSEN: Colonel Westphalinger, I would like you to expound a little bit on this relationship, that is, the relationship of the division slice for long-term forecasting as opposed to its use for the short-term forecasting used for procurement purposes.

COLONEL WESTPHALINGER: I will be glad to do that. The longer the range for forecasting requirements becomes, the less accurate they are, and of course the less time you want to spend computing your requirements. I don't hold that the division slice is usable for everything. I would not attempt to ship a force overseas, particularly a small force using the division slice. The division slice is primarily designed for a large scale mobilization. I certainly would never try to produce with the present budget from a division slice. Does that give you enough?

COLONEL MICKELSEN: One other point there. Would you consider it feasible to make initial procurement in a preparatory mobilization period or during an actual war period from computations determined from your long-term forecast derived by the division-slice method.

COLONEL WESTPHALINGER: You are getting into a controversial subject now. It is not a question of whether you have a choice or not. It may be the only thing you are going to have in future mobilization so you may have to use it. This system is a lot more accurate than anything we had during the late war, believe me.

COLONEL MICKELSEN: Then I take it you would consider it feasible.

COLONEL WESTPHALINGER: I would.

QUESTION: I would like to take that one step further. Would you discuss division slice on the basis of long-range predictions of raw material requirements?

COLONEL WESTPHALINGER: Well, here is the situation, you come up with an equipment list. From your equipment list you can get quantities of items. You can multiply the number of items in a division slice by the factor of quantity of material per unit to give total raw materials

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a division slice will require, in tons of steel, copper, brass strip, aluminum, and so on. You can get it directly from the division slice if you prepare it ahead of time. In the same way you can get the costs.

QUESTION: The thing I was asking was whether it is not more accurate for long-range forecasting of raw materials than for the end-items for the simple reason that there might be a change in the design for the items using the same raw materials.

COLONEL WESTPHALINGER: Let me say this. I don't say it is more accurate, but in the case of raw materials you have more flexibility, in that you can take certain shapes and forms of steel and make rifles of them one day and machine guns out of them the next day. You have great flexibility in that respect.

QUESTION: Shouldn't there be more than one division slice? I assume you are talking about a division slice, that is, one for the future. I am just wondering--there is more than one way the next war could be fought. It would seem to me there would be several assumptions, two, three, or four plans, and when they were all figured out, you would have that many different division slices?

COLONEL WESTPHALINGER: It depends on how much planning manpower you have at your disposal. At the present time we have great difficulty handling one division slice because of personnel limitations. I agree with you, and it depends on how much you want to refine this thing. If you have the planning manpower to do it, by all means go ahead and do it.

COLONEL HAAS: Aren't there three different division slices now?

COLONEL WESTPHALINGER: I am talking about the Army now. I have dropped the Air Force in this discussion.

COLONEL HAAS: How about air-borne? Aren't there three, the Armored, the Infantry, and the Airborne?

COLONEL WESTPHALINGER: We use an average division slice. We have the Armored, Infantry and Airborne in this slice so you will get a hypothetical or average cross section. Now, there are lots of ways of improving or refining this in any way you want to do it.

COLONEL MICKELSEN: I think I can express for all of you, student officers, faculty, and the College our appreciation for the very fine lecture that was given to us. Thank you, Colonel Westphalinger.

(25 November 1947--450)S.