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A PROGRAM TO MEASURE MAXIMUM POTENTIAL PRODUCTION
UNDER FULL MOBILIZATION CONDITIONS

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Dr. George A. Steiner, Director of Policy Development, Defense Production Administration, was born in Norristown, Pennsylvania, in 1912. He received a B.S. degree from Temple University in 1933, an M.A. from the University of Pennsylvania in 1934, and a Ph.D. in Economics from the University of Illinois in 1937. Since 1942 Dr. Steiner has held several positions in government agencies, both full time and as a consultant. During World War II he served in uniform first with the Army and then as an officer in the Navy, being separated in March 1947. Dr. Steiner has been professor of economics at the University of Illinois since September 1947, but on leave of absence to the Defense Production Administration since June 1951. In addition to his present assignment with that agency as Director of Policy Development, he is also coordinator for the Office of Defense Mobilization of the current program for full mobilization requirements. He is the author of numerous books, pamphlets, and magazine articles, among the former being: "Wartime Industrial Statistics," with David Novick, University of Illinois Press; editor-contributor, "Economics of War," John Wiley and Sons, Inc., and "Economics of National Defense," Indiana University Press. His latest book, "Government Regulation of Economic Life," will be published by McGraw-Hill in January 1953.

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**A PROGRAM TO MEASURE MAXIMUM POTENTIAL PRODUCTION
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COLONEL GOLDSMITH: Admiral Hague, gentlemen: So far, during your study of requirements, you have had a number of lectures from this platform which have explained the responsibilities and problems of the military departments and agencies in the area of requirements determination.

As all of you know, however, the Office of Defense Mobilization (ODM) and the Defense Production Administration (DPA) also have vital and significant responsibilities pertaining to the development of requirements. Specifically in this area, these agencies have the task of correlating the total demands from all segments of the economy, including the military, and of solving the problem of how to provide them. This involves, of course, planning the expansion of the mobilization base.

Here today to tell us about what ODM and DPA are doing in this field is Dr. George A. Steiner. He has been professor of economics at the University of Illinois since 1947 and over the years has had many important assignments with the Government. At the present time Dr. Steiner is the Director of Policy Development of DPA and, in addition, is chairman or a member, of a number of top-level ODM committees. I can assure you that he is engaged in day-to-day planning and decision making, and is thoroughly competent to talk to you on the role of the ODM in the determination of requirements. He is definitely an old friend of the school, as this is his fourth lecture at the college, in addition to a number of seminar panels of which he has been a member.

Dr. Steiner, it is a privilege indeed to welcome you once again to this platform.

DR. STEINER: It is a real pleasure for me to be here. As I mentioned to the Admiral, I almost have forgotten that I am a professor because in the last 10 years I have been in Washington most of the time. So it is a double pleasure for me to be here; it gives me a feeling of my academic background, and I am glad to be back with you again.

A new program to measure maximum potential production under full mobilization is now being launched by the defense agencies. I have been asked to describe the background of this undertaking, the basic objectives to which it is directed, and to touch upon the general methods to be used in completing it.

You will notice that I have chosen the expression "maximum potential production under full mobilization" rather than "calculating full mobilization requirements." The reasons for this new label on an old bottle

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with the same ingredients I will develop a little bit later. Sometimes, when speaking of this effort, I shorten the title by speaking of methods to "unscrew the inscrutable." This may be an even more appropriate title since, to the uninitiated, the process by means of which full mobilization requirements are calculated is a baffling mystery. There is some comfort for such people, however, in the fact that to many generally but not intimately familiar with the procedure associated with it, the process seems to be simple. It is in concept. In execution it is extraordinarily complicated.

This whole business of developing and guiding the machinery for allocating resources for a partial mobilization or a full mobilization is deceptively elementary. At the beginning of World War II, for example, the fundamental concept was unborn that today guides the allocation of materials under the Controlled Materials Plan (CMP)--that of equating total requirements for the materials with total demands for them. We today take that concept as basic and as generally accepted.

I would like to point out to you, however, that it was only after an extraordinary conflict that the concept was accepted in the War Production Board and among the mobilization agencies of World War II. The struggle to get the concept accepted and the further time-consuming problem of working out appropriate methods to guide material allocation on the basis of the concept are familiar to many of you.

In contemplating now the magnitude of the problems encountered and the successes with which resources were allocated in World War II, in the current mobilization program, and in the development of full mobilization requirements, I am reminded of a verse composed by the late Don Marquis, which runs as follows:

My little children, may I trouble you
 To concentrate your minds on the letter W
 The water-beetle here can teach
 A sermon quite beyond my reach
 With ease, celerity and grace
 He scoots along the water's face
 But, if he ever stopped to think
 of how he did it--he would sink.

I am not going to attempt to explain in the short time allotted to me the detailed methods by means of which agencies are preparing to go about developing full mobilization requirements. It is rather the basic concepts and the broad strategy of the undertaking that I wish to pursue.

At the very beginning I want to stress that the requirements we are dealing with are the demands made upon the industrial system for end items--military planes, tanks, ships, guns; construction needs; end items for export and for the minimum needs of the civilian economy. I shall

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use the term requirements to refer to end items, as well as to the basic resources needed to make them--steel, copper, aluminum, manpower, plant and facilities, power, fuel. Resources refers to the common limiting elements of national production out of which the end items are to be made--steel, aluminum, copper, manpower, plants and facilities, and so on.

The approach now being developed is a new attack on an old problem. Under full mobilization, national policy is centered predominantly on the achievement of maximum military power. This does not mean maximum output of military products to the neglect of other types of goods and services. Rather, it means the best balance of production and construction to meet the related needs of military programs, defense-supporting programs, the bedrock civilian economy, and essential exports. One fact is clear, now, as well as under full mobilization. Military, war-supporting, essential civilian, and basic export requirements to be satisfied from the Nation's productive system cannot be higher than the Nation can deliver.

Resources determine the production potential of the Nation. Any war in which we become engaged will be fought with the productive capacity that is in place on the day hostilities start, plus the productive capacity that can be created during the course of the conflict, plus, of course, reserves that exist on M-day. The problem is to measure requirements in all programs capable of being satisfied within those available resources that cannot be readily expanded, to insure balance among the requirements, to identify deficiencies that can be remedied to increase production of specific military end items, and to take whatever action is possible to strengthen resources weaknesses brought to light in the requirements calculations.

Calculations of full mobilization requirements in the past have generally proceeded from the requirements side of the equation. These calculations were uninhibited by resource limitations. It has been assumed that it is possible to compute, for example, the number and kinds of military goods necessary to win a war, without detailed recognition of over-all resource limitations. Requirements for nonmilitary programs were also developed independently of the resources needed to meet them. The process then called for various types of feasibility testing to determine whether the aggregate of all requirements calling for production during a war period could be met by available, generally limiting resources.

Long-range planning of the Department of Defense requires, of course, the preparation of requirements based upon strategic estimates. The further away an M-day the more necessary this becomes. The difference between requirements which can be met (over time and during a mobilization), and strategic needs, results in the required level of reserves or expanded production capacity. The closer an M-day the more current resource capacity governs the volume of equipment available for

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wartime use. But, even for long-range planning, current calculations of maximum protection potential become an indispensable frame of reference for Department of Defense planning. This bench mark does not now exist.

The new approach we are using tries to avoid these difficulties. It starts with resources rather than requirements. As a first step, it makes a tentative rough calculation of the Nation's maximum ability to turn out goods and services of all kinds. It then makes a rough division of total resources among direct military, defense-supporting, essential civilian, and minimum export programs. Each responsible agency then goes to work to develop its optimum production and construction programs within the assigned ceilings. The translations of agency program needs into detailed materials and other resources are then aggregated and compared with anticipated detailed supplies. If specific imbalances are revealed, a program adjustment can be made and action taken to remedy deficiencies.

By approaching the problem of measuring full mobilization production potential in this way, it is expected that the development of a balanced national program can be accomplished more accurately, more quickly, and more efficiently.

It should be observed here that this program is quite timely. The work of defense agencies in the past two years has been primarily directed to meeting current production and construction schedules of the defense program. In addition, important progress has been made in expanding the Nation's productive resources in the areas where they seemed most deficient. A new mobilization base has been laid. During the past two years, in addition, important work has been carried forward in developing detailed full mobilization requirements, calculating full mobilization resources, and perfecting the machinery to do this sort of job.

This program, therefore, is a logical outgrowth of and improvement on activities pursued up to this time in the mobilization effort. The progress of the past not only makes this program far more meaningful now but also essential to carry forward those programs which will insure the necessary readiness of the Nation's productive machine.

This program will provide a new stimulus and a new framework to coordinate the activities of the various agencies and to insure that the Nation will be in a position to utilize all its resources effectively in case of full mobilization. It can do this by controlling requirements calculations within resource availabilities and by using the experience accumulated in the current mobilization program.

I should like to emphasize, too, that this is not an exercise to engage in long-range visionary planning. The development of usable and realistic data on full mobilization requirements and the resources

available to meet them have important uses for current as well as long-range mobilization decisions. A few examples may be cited.

First, are decisions concerning stockpile objectives. On the basis of full mobilization requirements, decisions must be made whether to expand or accept existing and projected capacity for materials, to conserve existing and future supply, to undertake intensified technological programs, to redesign, and to stockpile at accelerated rates. Decisions such as these you will recognize as being extremely important decisions, and the sounder they are, the more realistic and reliable are requirements calculations.

Second, is firming up of tax amortization and expansion goal policy and levels. In most cases the goals established in the past two years were based on partial mobilization demand because reliable full mobilization requirements simply did not exist.

Third, identification and correction of specific critical resource deficiencies can be firming up. Great expansion of the mobilization base has taken place in the past two years--steel, aluminum, power, and many other elements of the base--but the expansion has not been balanced. There may be deficiencies in critical areas that should be identified and steps should be taken to correct them, else important end-item production will not be so large as permitted by other resources.

Finally, plans and actions of the military services can be advanced. Clearly it is essential that the Joint Chiefs of Staff and the military services have reasonably certain knowledge that their logistic and strategic plans are based upon equipment flows that are neither far in excess nor far below the Nation's ability to produce. If strategic plans are based upon requirements that simply cannot be realized, the results may be disastrous. And if requirements are based upon substantially less than capacity output, the military capability of the Nation is not being used to the full. It should be added, too, that reasonable estimates of output of industry will have an important bearing upon calculations of required levels of reserve stocks of military equipment. This in turn will have a bearing upon future budgets, plant expansion needs, problems associated with maintenance of the mobilization base, and so on. In addition, there obviously is no way to determine whether the total productive capacity of the Nation is sufficient to meet the anticipated strategic needs of the military services until some reasonably realistic measure of total capabilities in relation to end-item requirements is available.

Centralized coordination and direction of the program is obviously required. The structure of responsibilities to perform this particular function in requirements calculations has been completed by the creation of two central guiding groups in ODM. One is a new ODM Base Program Committee. The other is an ODM Technical Steering Committee. The

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first committee is established to provide whatever broad guidance is needed by ODM to operating agencies in accomplishing this particular job, as well as a number of other jobs associated with the Mobilization Base Program, with a minimum of expenditure of time and energy. The other exists to resolve various technical problems associated with the organization and development of the program among various mobilization agencies. The bulk of the work, of course, will be done in the mobilization agencies. The basic organization of this work will compare generally, although not exactly, with the organization for quarterly programming under the CMP.

I should like to turn now to a few basic procedural steps in the development, flow, and evaluation of the data growing out of this program.

There are three fundamental steps in the process. The first is the preparation of basic assumptions and of factual guidelines within which requirements calculations proceed. The second is the development of required end-item production levels, their translation into specific resources, and the relating of detailed resource requirements to resource supplies so as to test the requirements for consistency and feasibility in terms of specific resources--such as finishing facilities of the steel mills. The third step is to use the data for uncovering specific resource deficiencies, perfecting mobilization plans, and so on, which I have already touched upon.

The first step--the development of factual guideline within which requirements are calculated--runs through several stages. The preliminary stage is the calculation of the total dollar volume of goods and services that can be produced by the Nation in the first, second, and third years of a hypothetical full mobilization within the economic resources available. The dollars, obviously, have to be constant and express the potential gross national product of the Nation.

In the development of this total, the overriding limitation on the Nation's ability to produce is assumed to be the size, skill, and location of the civilian labor force. The basis for the calculation is the projection of the size and composition of the labor force, the number of hours to be worked per year by each civilian employed in the labor force, and the dollar value of gross national product in dollars per man-hour. On this basis, the outside limits of production are yielded. No adjustment is made for scarce materials, component or end-item deficiencies, shortages of specific labor skills, potential enemy attack damage, or other adverse influences on production. Such limitations are more appropriately evaluated on the basis of the detailed program requirements once they are made.

When the gross national product is calculated, it is necessary to divide up the pie into broad components representing the ultimate destination or use of the total product. The breakdown in this stage

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corresponds rather roughly to groups of claimant agency programs. Such components are, for example, military hard goods (including all the end-item schedules of the Department of Defense), consumer durable goods, producers' durable goods, and all construction. The calculations are still in terms of constant dollars.

Many assumptions must be made in this stage of the work. These include, for example, the projected rate of military production and the levels existing on a proposed M-day, the minimum levels of consumer durable goods production which must be maintained, and the extent to which current expansion programs will relieve requirements for construction following an assumed M-day.

These data, in the light of such assumptions, must be viewed as rough guidelines. The construction total for instance cannot be determined with any finality until the Department of Defense has developed in considerable detail the composition of various military end-item programs, and productive deficiencies in meeting these levels are discovered. But the presumption is--and I think it is valid--that the estimates can be made within resource capabilities and be reasonably consistent with a balanced pattern of demand under assumed mobilization conditions. As a matter of fact, these figures have been calculated, and I think there is general agreement among the technicians in the Government that they are reasonable in terms of getting this program under way.

With these shares calculated, a more difficult problem arises. It is that of calculating the shares, within these totals, which correspond to specific programs now assigned to individual claimant agencies. The problem here is to accomplish for the civilian area what the Department of Defense is now undertaking in the military area. The Department is now engaged in breaking down the total hard goods dollar figures into specific program dollar totals. In doing this the problem of consistency and balance is extremely important. In the civilian area the problem is to provide a division in the producers' equipment area, for example, among important programs which correspond to NPA Industry Division assignments--such as freight cars, engines and turbines, machine tools, and so on. The same sort of thing is required in the construction area among claimant agencies such as the Defense Electric Power Administration (DEPA) and the Petroleum Administration for Defense (PAD). The same sort of thing is required in the consumer durable goods area.

It is not possible or necessary to seek great precision in fitting details exactly to each claimant agency program. But reasonable first approximations must be made so that agencies can go to work on their requirements calculations. In developing these shares to fit agency programs, obviously many additional assumptions and projections must be made. Assumptions concerning consumers' durable goods, for instance, include levels of inventories of finished items, levels of inventories of raw materials with which to make finished items but unusable for

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military end-item production, and so on. These also are assumptions that cannot be accepted as final until a thorough analysis of each of these relevant considerations is made by the agencies responsible for specific programs.

These detailed dollar program control figures must be considered as general guides for individual programs. They must be made before the program can move on a wide front. It is recognized--certainly I recognize it--that no individual or group is so omniscient as to come up with perfect data at this stage of the program. But it must be recognized, too, that the need at this stage is not the development of perfect precision. The need is to calculate reasonable factual guidelines on the basis of which the program can move. Once the program proceeds, a second calculation in the future should provide much more reliability.

On the basis of these assumptions, or dollar control figures, participating claimant agencies will be in a position to prepare three sets of information.

First, they can develop production and construction program levels, in dollars or units, or both, where appropriate and significant. Second, once these levels are established, it is necessary to translate them into resource requirements. The requirements sought are the controlled materials--steel, copper, and aluminum--in specific shapes and forms at the mill levels; the strategic ferroalloys; manpower (in numbers and skills); and other basic production resources as appropriate and possible. Finally, while the requirements calculations are moving forward, the supplies of these resources, in their detailed fabricated shapes and forms, will be accumulated to match against the calculated demands.

The basic methods for aggregating these different types of requirements and matching them against the supplies available to fulfill them vary among the different types of resources. But since the greatest amount of interagency participation is required in dealing with the controlled materials--steel, copper, and aluminum--the procedure for them will constitute a basic framework for the development of other types of requirements. And from that procedure there will be developed basic data--production and construction levels that are reasonable and realistic in terms of resources available for full mobilization conditions--that can be used in a great many different ways.

In the development of the controlled material requirements from projected production and construction levels, a good bit of the machinery of the quarterly programming operation will be used. Some of you may remember that I described this machinery from this platform last year. It involves coordinated direction by the DPA. Agencies meet with DPA prior to their requirements submission and thrash out problems which they face in calculating requirements. A uniform set of instructions is then sent out, with prepared forms and other needed bases for doing

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the work, and data flow to DPA which can be readily evaluated and aggregated. Reports supporting the data accompany the submissions.

One innovation on that procedure, among others, will be the request that agencies make their calculations within the ceilings given to them. But if they consider the total too high, which is not likely, or too low, which is much more likely, they can submit another set of requirements. Two sets of requirements therefore may be presented.

On the basis of the detailed production and construction levels, the Department of Labor, with other data at hand, can make two types of calculations centrally. One is a more detailed test of the over-all feasibility of the programs in terms of labor available. The other is a detailed calculation of manpower skill availability to meet specific production requirements.

Detailed methods to calculate the so-called Band I materials--nickel, cobalt, and so on--now exist and are being used. These can be continued with firmer program requirements growing out of this procedure. Similarly, specific procedures now in use for power and fuel can be firmed up with the basic production and construction data yielded by this method. I don't want to take time to explain the procedure by which Band I demand-supply relationships are calculated; but if any of you are interested, you might get hold of Defense Mobilization Order No. 22, which sets forth the methods by which Band I demands and supply under full mobilization conditions are to be calculated.

Once the basic data are assembled, they must be tested for their general feasibility in terms of manpower--noted above--and specific material fabricating capacities at the mill level. Whatever adjustments are required in the programs to fit more specific general limiting resource capacities, for example--such as manpower, can be made at this point. When they are made, the data are available for other uses. Both this evaluation process and the ways by which data can be used to uncover specific deficiencies in the industrial chain, firm up stockpile objectives, measure general mobilization readiness, and revise expansion goals, constitute another story.

These are three basic steps: (1) development of basic guidelines, (2) assembly of the data after development of detailed production and construction end-item requirements and their translation into materials; and (3) the process of evaluation.

In sum, the innovation of this new approach to an old problem is basically twofold. First, requirements, in terms of production and construction programs are calculated within, not independently of, resource guidelines, which in turn are based upon the maximum most optimistic resource capabilities of the Nation. Second, the basic tested machinery of the current mobilization allocation program is

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being used to decentralize the work among mobilization agencies. The results should be much better therefore than in the past.

These two things go together, for this is the kind of a process that should not be done once and the figures used forever and ever; it must be repeated. If the first set of data is realistic and usable, and if the procedures and machinery are workable, short-cuts can be developed, and the basic data which are indispensable for mobilization planning can always be at hand. Thank you.

COLONEL GOLDSMITH: Gentlemen, Dr. Steiner is ready for your questions.

QUESTION: Dr. Steiner, can you give me a little more insight as to how the Requirements Committee squeezes the "fat" out of requirements? What set of ground rules do they fall under? Is it pretty arbitrary or do they ever get guidelines?

DR. STEINER: I expect claimant agencies may calculate that the process is a bit arbitrary. But these are definite and tested general procedures under CMP that are used in the requirements-reduction process.

I would like to say, parenthetically, that the procedure I described is not a CMP procedure. The actual processes of allocating materials under mobilization conditions, whether partial or full, differ in many ways. The procedure that I outlined is a procedure whereby we seek to develop realistic requirements under full mobilization conditions, so that a number of important mobilization plans can go forward, and current and future decisions can be made on a more firm factual basis. Without that factual basis decisions will be made without facts. I am sure you will agree with me that a decision made on the basis of facts is much more likely to be a sound decision than one which is not made on the basis of facts.

There are many differences among the requirements processes. For example, there is a difference in the degree of precision that is needed. Under an allocation system, it is quite important to squeeze the last pound of materials out of programs so long as the materials that are allotted are sufficient to meet program levels. Such precision is not possible, nor particularly desirable, under the procedure that I discussed today.

Of course precision is important. But, if I can make a generalization that I think probably is valid, by and large there are many more short cuts that can be taken and rough estimates that can be made, without violating the basic developments of the data, under the full mobilization requirements calculations than under a quarterly allocation programming procedure.

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I would like to make this one other observation. Under full mobilization conditions, such as in World War II, the allocation procedure is much tighter than it has been under the past partial mobilization program.

To get back directly to your question--I hope you will pardon me for inserting those few comments--I thought they were useful. Under the CMP, the flow of data moves from manufacturers to the claimant agencies which have jurisdiction over their output, to the DPA Requirements Committee. The process is one of calculating materials to meet production schedules without any reference to the limitations of controlled materials supplies. Thus, for example, as a result, the usual demands for controlled materials in a tight situation, such as early this year, were something in the neighborhood of from 150 to 200 percent of the supply. It is necessary to reduce allocations to fit supply.

In the actual CMP allocation process, requirements are calculated without regard to supply limitations. The process I discussed this morning seeks to develop a balanced set of requirements within resource availability.

The presumption in the kind of a procedure I discussed today is that the requirements, when they come in, will be reasonably within the realm of resources capacities, so that we won't have to go through the procedure of squeezing down. One important reason for this approach is that the process of squeezing down the full mobilization requirements is extraordinarily more complicated than squeezing down the requirements for a quarterly production program. Indeed, in my judgment, if full mobilization requirements are far above or below resource capabilities, the problem of adjusting programs so as to create a balance is almost impossible to solve. Rather than attempting to solve the problem centrally, the better approach would be to do the job over again in the claimant agencies. The end results might be the same as before.

The first step in squeezing down requirements to fit supply, under the CMP procedure, takes place in the claimant agencies. On the basis of all kinds of techniques and methods, agencies evaluate manufacturers' input-output data. The effort is directed toward seeking to determine the precise quantity of material to meet a specified production program in a given period of time.

Experience in World War II, and in the current program, leads unequivocally to the conclusion that there must be a central body to look at requirements and scale them down.

One of the basic reasons is not so much that there is distrust of claimant agency calculations (of course there is), but rather that a body of centrally organized bench marks is necessary to get maximum precision in data evaluation. This evaluation, under a quarterly programming operation, is extremely important. The reason is that if,

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with a limited supply of brass-mill copper, for example, the Department of Defense asks for and gets allocations to receive 10 percent more than it really needs to meet a production schedule that has been established, the 10 percent will be lost in "attrition" through the CMP allotment system and, as a result, somebody else will not get material that they need. That can be rather important to a clock and watch manufacturer, for example, who needs a very small quantity of brass-mill products in order to support a substantial gross and a large body of employees.

Another basic reason is that balance and consistency of production in the industrial system cannot be assured without the central evaluation process. As I noted above, requirements are always greater than material supplies under a CMP operation. If this were not so, there would be no allocation process needed. It is necessary therefore to insure that less essential demands are curtailed so that materials will be available for programs of the higher urgency. In seeking such curtailment, it is essential that balance in the industrial production system be assured. This cannot be done except through a central programming operation.

Incidentally, this is one point that is crucial in the introduction to CMP and the time it takes to get the plan operating efficiently. When we speak about CMP taking 9 to 12 months, or maybe two years, to become perfected, we think especially of this particular problem. It takes a long time in industry and among the claimant agencies to develop accurate material input-output calculations. It also takes a long time to perfect the process of evaluation of the data. If these data and procedure are available at the time CMP is introduced, in my judgment, the process of perfecting CMP can be cut almost in half.

The process varies a great deal, I can assure you. The evaluation process obviously varies a great deal. It varies among claimant agencies, it varies among different materials, it varies over time. Every statistical device that it is possible to center on the problem is used. In addition other methods are used if they promise useful evaluation results. Early this year, for example, we had a very difficult problem with respect to structural steel. In coming to grips with that problem, the DPA organized a group of experts from the steel industry--construction engineers, technical men from the mills, and so forth--to go over each claimant agency production project. These people evaluated the structural steel needs for almost every single construction project, among the claimant agencies, to determine whether or not they really needed the quantity of structural steel they said they needed, and whether they needed it at the time they said they needed it.

The process of evaluation is centered in the DPA Requirements Committee. I refer you to my lecture of last year which was centered on this whole problem and the way in which the Requirements Committee structure develops program determination.

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COLONEL GOLDSMITH: I might add here, because Dr. Steiner didn't tell you, and it is not stated in his biography, that he was director of the Requirements Committee staff.

QUESTION: In order to obtain a figure for the maximum military production capability of the Nation, it seems you first would have to determine what is the minimum civilian requirements; it also seems there is a lot of controversy about what is the minimum civilian production requirements in the United States. I believe the military will maintain that it was much higher during World War II to justify that level to be called the minimum civilian requirements. How do you go about estimating the minimum requirements?

DR. STEINER: Well, first of all, I would like to partly answer that question by asking another question. What is the minimum civilian requirements necessary to maintain the civilian safety, health, welfare, and morale? That maintenance is one of the basic essentials of a mobilization effort.

Now, obviously, it is extremely difficult to come to a quantitative answer to that question. It depends upon many, many things. The projections are made basically upon the lowest calculated per capita expenditure that seems to be reasonable. Now, obviously, that figure can vary up and down, depending upon all kinds of judgments and decisions. For example, the figure can be lower in terms of material requirements in order to support a given level if a decision is made to concentrate production of specific items in a single or a few plants. But in the absence of decisions like that, the first projection is being made on the basis of estimates that appear to indicate the lowest possible level. In essence, if I can generalize, the procedure is to take off from World War II, to reduce that to the extent possible below World War II levels, and to make reasonable necessary adjustments for population changes and other factors.

QUESTION: We are working on a program which is referred to as the mobilization base program. From time to time you hear or read of an industrial base program. Is that something different, something smaller within the over-all mobilization base program, or not?

DR. STEINER: The problem of clarifying completely what we mean by a mobilization base is a little difficult. I refer you, before I forget it, to Defense Mobilization Order No. 23, where a few programs are spelled out. Very briefly, this is my view: The mobilization base refers to the resources that are available to achieve the most rapid build-up and to gain the highest plateau of production that is possible under full mobilization conditions.

Now, there are many programs that associate with the development of the balance and the consistency in that base which will permit us to

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do that. For example, here are a few of them: A program to identify and correct specific deficiencies in the mobilization base that will inhibit the maximum balanced utilization of common limiting resources in important military production end items, such as a heavy castings plant needed to achieve a given level of tank production, or a particular type of long lead-time machine tool that is required for a gun, or facilities to produce reduction gears in the quantity necessary to achieve a ship construction program that is reasonable and within the realm of generally available resources. This is a deficiency program.

Associated is the problem of building up stockpiles of critical and strategic raw materials so that they will be available to move into the productive machine.

Another program is the one I just discussed this morning, which in some respects is a form of umbrella to all the mobilization base programs. The data from the over-all program are extremely useful in pursuing the individual programs. It is possible to pursue some of these programs without the umbrella, but on the whole the programs can be pursued much better if we do have the umbrella.

Another program is the maintenance of plants that are strategic in full mobilization programs which may be dismantled or cannibalized. If commercial and defense demands are not sufficient to keep the plant in operation, the problem arises as to how you maintain these plants.

These are some of the programs associated with what you might call the industrial mobilization base. I would like to add a couple more. One I would like to add is the basic organizational and factual means by which resources are allocated under full mobilization conditions.

QUESTION: Dr. Steiner, you indicated there was a certain amount of distrust in the figures that agencies have presented for the quantities of materials required for the various production programs. If the same sources of supply made, in addition, estimates of manpower requirements--over-all man-hours or by skills--and also plants required, and machine tools required, doesn't that compound the distrust to the point where the whole program is infeasible?

DR. STEINER: First, in speaking about distrust my reference was to the need for evaluation of all data that are used in this kind of procedure, because the unreality and poor calculations that unintentionally arise in the way in which we calculate these things, as you know, can have a rather deleterious impact on the conclusion, particularly in dealing with the quarterly programming operation.

Second, you seem to have inferred from what I said that the claimant agencies are going to calculate manpower requirements; they are not. The procedure I treated develops the basic framework of production and

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construction levels within the controlled resource limitations under full mobilization conditions. That gives us a basic framework upon which we can do a lot of things centrally.

One of the things that will be done centrally is the calculation of the skills needed to achieve production and construction levels. The Department of Labor has information which, when tied with reasonably consistent and detailed comprehensive production and construction programs, can produce reasonable estimates of demand-supply deficiencies for particular types of skills.

So, the claimant agencies individually are not going to calculate manpower requirements to achieve their production and construction levels. The same thing is true with fuel and power. That will be centered in PAD and DEPA, respectively. The problem at this point centers on the development of production and construction levels and the basic materials needed to achieve those levels.

I don't know whether that is quite clear. Look at it this way, Colonel. You are familiar with the quarterly programming operation. In many ways, what we are doing is capitalizing on that machinery. We are not doing it in precisely the same way. What we are doing is asking for production and construction end-item requirements within a controlled figure. That is just the reverse of the way it is done in the programming operation.

But, the same kind of material translations are made. Agencies get production and construction level and then make the material translations. These data flow into a central point, DPA, and are evaluated. The Department of Labor takes these data and from them develops manpower skills and efficiencies.

QUESTION: I am not quite clear on the squeezing down process. Aren't the claimant agencies in a little better position to do the squeezing down within guidelines than the higher-level organization?

DR. STEINER: There are two kinds of squeezing that go on. I think that the kind of squeezing you are talking about is the purely technical quantitative squeezing in terms of precisely how much material is needed to achieve a given level of production. Thus, for example, if machine tool production is going to move at the rate of a billion dollars per year, 250 million dollars a quarter, precisely how much copper does it take to do that?

A second type of squeeze is in terms of essentiality when requirements for scarce materials are far beyond the supplies. It is necessary, in order to assure the military of its essential programs and balance in the economy, that some less essential programs be cut. You can call that a squeezing of requirements.

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So you really have two kinds of actions taking place--one an evaluation of the data, which is purely a technical problem, and one an evaluation of essentiality and balance.

I might say this in connection with the technical problem--it is not solely a matter of saying: "Is it true that it takes X tons of copper to do this?" Involved are all of the complexities of a CMP system, such as one claimant agency duplicating the metal demands of another claimant agency, partly because of changing regulations, partly because of changing B-product assignments, and things of that sort. It is partly a problem of assuring that calculations are made within the precise purview of an agency and partly a question of accuracy of input-output relationships.

There are many illustrations I could give you of extremely large tonnages being cut out of agency requirements figures simply because they wrongly duplicated what another agency had claimed for.

The evaluation process is a technical problem of what it takes to do what. It must inquire into pipeline requirements, lead times, input-output accuracy, accuracy of coverage, and things of that sort. It is also a problem of determining essentiality among programs and insuring a balanced flow of materials in the economy.

COMMENT: I got the impression that you had some steel men who actually computed the requirements during the last war.

DR. STEINER: No. What I said was that a small group of experts reviewed and evaluated the requirements calculated by the claimant agencies for structural steel. I might say in passing that the claimant agencies themselves were delighted with the work of this committee because it helped them come to a more realistic calculation of what they really needed.

Agencies have a real problem. They get their demands from their manufacturers or are obliged to estimate them. They have a real problem of evaluation. If you took the raw data from the manufacturer the demand-supply imbalance as it strikes the Requirements Committee would be far beyond what it otherwise would be. The claimant agencies, in effect, go through the same kind of routine that the Requirements Committee goes through in scaling down the requirements in terms of both the technical aspects of the problem and in terms of essentiality.

QUESTION: Dr. Steiner, if you were to set up the second day of January to determine, by your new concept, the requirements for full mobilization, how long do you estimate it would take before we had workable figures--that is, going through the complete cycle?

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DR. STEINER: Well, in my judgment, if everybody worked diligently-- and I do not mean by that if all agencies put every hand to this wheel-- I would say it probably could be done by March or April.

COMMENT: A few days ago one of our speakers said the schedules were due in the Department of Defense in April.

DR. STEINER: I would like to take back my estimate. What I was calculating rested on the fact that the Department of Defense is now working on the job and that the other agencies would first become involved in January. In that event April would be reasonable--if we started on 2 January afresh. You are quite right--about six months. Then I would say another two months to evaluate the data for general use. It would be a total of about eight months.

I would like to make one observation on that estimate. For many uses we will not have to wait eight months. We can dip into the system and pull out estimates for various uses a couple of months.

QUESTION: When you break it into two general parts here, what are called the refinement of the data and then the determination of what is essential, I follow where all this wrestling with figures, and reviewing, and comparing each other's estimates goes on, but I am a little at a loss if, let us say, they are able to get an agreement that this is the computed requirement to do this, actually, in this program, and you still are trying to put 10 gallons into a 5-gallon bucket. Where does the determination of which is to be retained and which is to be wiped out come from? I am a little worried that if anything arbitrary goes across the board we might result in having a little of everything and not enough of anything to be useful.

DR. STEINER: What we are talking about are the basic decisions associated with programming. In the past those decisions were not made lightly, believe me, nor were they made arbitrarily. They were made by many combinations of procedures which varied, depending on the importance of the decision: Mr. Wilson, Mr. Fleischmann, Mr. Fowler; the Requirements Committee and the Program Adjustment Committee which are inter-agency committees; and others who had to stand by the decision and support it, were involved in the decision-making process. In the evaluation of a decision a tentative action was determined in the Program Adjustment Committee, an interagency committee. The Program Adjustment Committee then passed on its recommendations to the Requirements Committee, also an interagency committee composed of top administrators in the Government. At that point, depending upon the decision, the Administrators of DPA, NPA, other claimant agencies, and, finally, the Office of Defense Mobilization--if it was that important a decision--were consulted with and advised as to the reasons for the decision. All of the alternatives were considered, the problem was thoroughly discussed, and the decision made.

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COMMENT: Looking at the Joint Chiefs as representative of an area where the military intentions originate and then go down through all the computation, and so on, and eventually come out in materials--when you mention how this essentiality was determined, I am a little at a loss. Where there is a direct telegraphing right back to the Joint Chiefs as to what restriction is going to have to be placed on what the strategic intentions were and where they can determine this question--will not all this discount this part of the thing and prevent this point I made a while ago of having a little of everything and not enough of anything to be effective?

DR. STEINER: The reason I did not touch on that was that all of this discussion is associated with current programming and not with full mobilization requirements calculations, which I talked about in my formal presentation.

COMMENT: It would apply in both cases.

DR. STEINER: Not in the same fashion. If you are talking about the current programming operation, my answer to you is that the Requirements Committee, to the best of my knowledge, always provided the materials that the Department of Defense needed to meet the programs that it had scheduled, as it said it had them scheduled. There was never any cut of program levels. Under the full mobilization program discussed, a limitation is initially and tentatively imposed on the submission of the Department of Defense (of the total hard goods--dollar figures under full mobilization conditions) within which they will seek a balance among their programs. So that the preliminary decision of production which can be satisfied under assumed wartime conditions is made at that point.

Now, then, there may be another point of decision. Once the information flows in, it might become clear that there simply is not enough steel, copper, and aluminum to meet the detailed production patterns. At that point evaluation of the data might lead to the necessity for going back and cutting some users of these materials to get a balance; or it might lead to a recognition that there is a supply deficiency that can be corrected, and that action should therefore be taken to correct it in order to achieve the program levels as established within the initial resource ceiling figure.

QUESTION: Doctor, a specific case, in speaking of priorities, comes to my mind. Was it not last March that the Requirements Committee set a unit-quota on automobiles and about a week later upped it? It seems to me that any determination, obviously, on radiators, if copper seemed scarce, would be that everybody would get less copper. Wouldn't any Requirements Committee, no matter what its integrity, be subject to call by politicians, to psychology, to things other than pure facts which will sway its decision in a priority? I don't know whether there

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was an accusation of politics in that case, but the automobile manufacturers were strong enough to get the unit-quota upped? If you could comment on that, I would appreciate it.

DR. STEINER: The unit limitation was raised on several occasions. The basic reason for raising the limitation was not additional allotment of materials, but because the companies claimed that they could, with the allocations that had been given, by squeezing their pipelines, produce the additional units. For that reason the unit ceiling was lifted.

Insofar as the second question is concerned, of course there is all kinds of pressure exerted at that point.

QUESTION: Dr. Steiner, I appreciate the importance of having requirements calculated within certain ceiling limits. I am wondering, however, how serviceable is the allocation, based upon an appropriation of your gross national product, particularly in giving guidance to the person in charge of estimating requirements--like for consumer goods, including both soft and durable goods, to make it more specific? For instance, if I were told I had X percentage of the national income, I would know that the dollar volume of my requirements should not exceed that portion of my income. I was wondering to what extent that would help in estimating my bill of materials. Can you help us on that?

DR. STEINER: Before you begin, obviously, it must be necessary to make some judgments about needed levels of particular kinds of consumer durable goods such as refrigerators and stoves. These should be tentatively set on the basis of estimates of inventory levels rock bottom needs, and so on. You then come to some estimates of how much the population should have and how much should be produced, in the light of reserves and stocks.

That kind of detailed information should be available before you begin to work within your total dollar figure for consumer durable goods. You are obliged, of course, to work out the production levels for consumer durable goods within that total. I think you should apply historical patterns, particularly of World War II, and other detailed data to major consumer durable goods items. The major items are the ones that take the great bulk of material, facilities, and manpower. You are not too much concerned about those that do not take materials, like the consumer durable goods made out of clay. As a matter of fact you might want to increase the production of that kind of item, if it doesn't take skilled labor and if facilities are available, because it will help drain off purchasing power. But in those programs where you have a problem of facilities and need for converting the facilities; large consumption of scarce materials; or a utilization of skilled manpower; it seems to me that, if the kind of information is available that I mentioned, reasonable judgment about specific production levels within the ceiling can be made and supported.

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QUESTION: In other words, sir, the setting of the ceiling will force the claimant agency to review this program a little more carefully?

DR. STEINER: Yes; to insure there is consistency among the detailed programs of the agency.

COLONEL GOLDSMITH: The time has run out. I want to say again, we are grateful to you for taking time out from a busy office to tell us what goes on in ODM and DPA. On behalf of the Commandant, the faculty, and the students, I thank you very much.

(25 Feb 1953--250)s/ijk

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