

DEVELOPMENT OF REQUIREMENTS FOR MOBILIZATION  
AT THE NATIONAL LEVEL

22 December 1955

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MR. HENKEL: General Hollis, Gentlemen: So far in our Requirements Course we have emphasized the military side of our problem, but the picture is far from complete until we learn about the determination of civilian requirements and how military and civilian requirements are correlated and balanced with total resources. It is also most important that we understand the role the Office of Defense Mobilization plays in this vital program.

Our speaker today is the Assistant Director for Production in the Office of Defense Mobilization. Besides his extensive experience in industry, he has been associated with the Office of Production Management and the War Production Board during World War II. We are extremely fortunate in having him with us this morning. He is going to discuss "Development of Requirements for Mobilization at the National Level."

It is a great pleasure for me to introduce you to this class Mr. Landry.

MR. LANDRY: Thank you, Mr. Henkel. General Hollis, Ladies and Gentlemen: It is an honor and a privilege to have the opportunity to address an important group of high military officers such as this is and I hope that I may measure up to the occasion.

The subject on which I have been requested to speak this morning is one of the most important in the mobilization field. The supply-requirements situation in a period of mobilization is at the very core of a war effort. The relationship between the requirements for goods and services on the one hand, and the resource supply on the other hand, sets the initial limits on a war program, and indicates what measures must be taken to increase the scope of operations for a long-range effort. ODM and the delegate agencies are devoting a considerable amount of time and effort in the development of requirements data and in analyzing the relationships between requirements and supply. I will discuss this work in detail a little later. Before doing this, however, I would like to

review briefly with you, the function of ODM and how it operates. I think this will give you a perspective on the need for, and uses of, requirements information.

ODM directs and coordinates mobilization planning in the Government but delegates responsibility to other agencies to the maximum extent possible. This incorporates mobilization thinking and planning into the activities of Government agencies. Without this active participation on the part of the delegate agencies, the danger would always exist that any plans would be filed and forgotten.

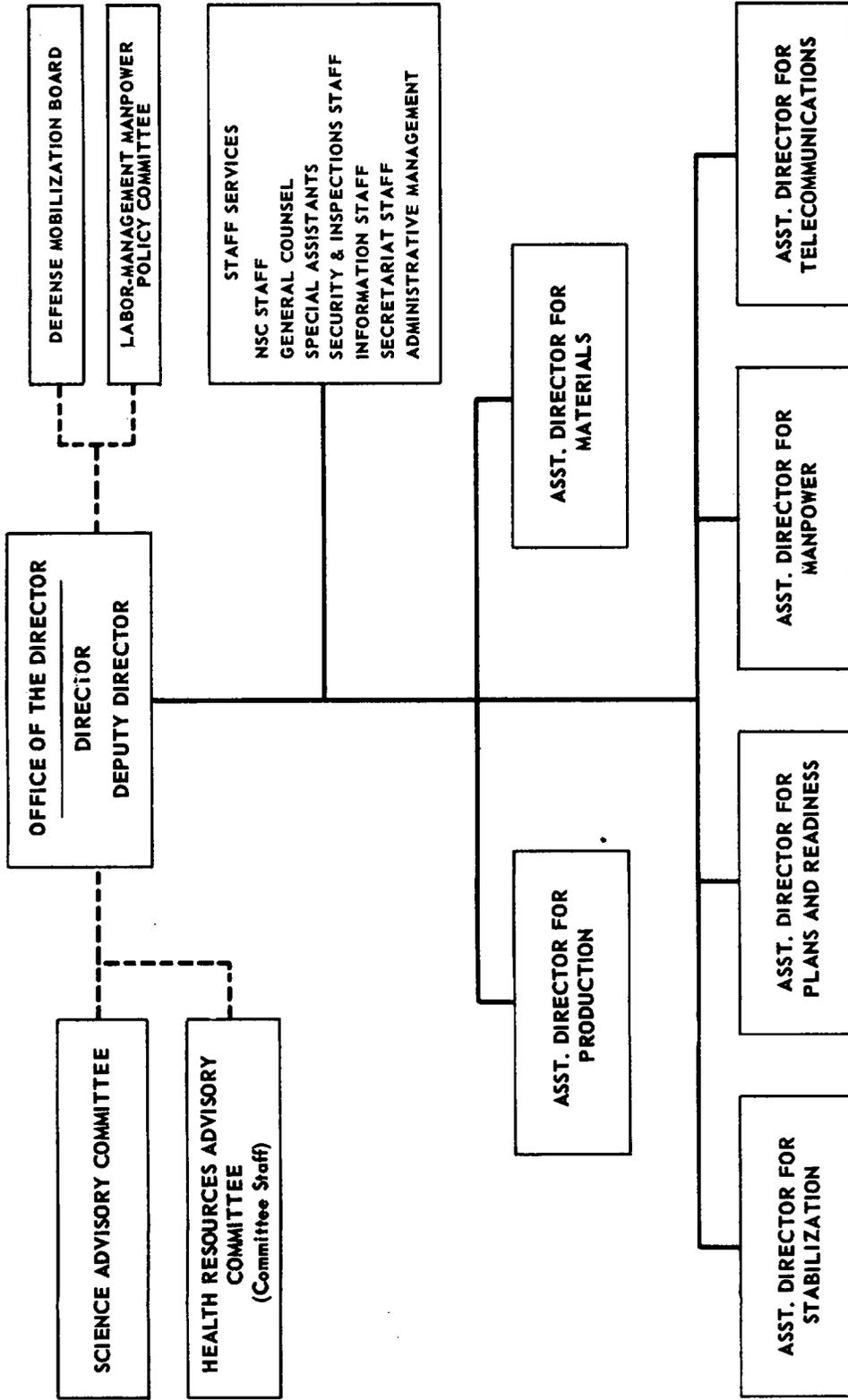
In broad terms, ODM has the job of making sure that: (1) action programs, necessary in case of an emergency mobilization, are prepared with responsibility clearly fixed and understood; (2) resource bottlenecks or deficiencies are identified, and programs are devised, to overcome serious weaknesses in our mobilization base; and (3) the Government is ready to act, in an emergency, on all mobilization fronts in such a prompt and consistent manner that the transition period will be held to a minimum.

Right here I would like to show our organization chart (chart 1, page 3).

In mobilization planning, ODM first determines the scope and content of the overall program. It then makes specific assignments to Government agencies to act within their area of cognizance and delegation. The ODM staff works with the delegate agencies in the detailed development of their assignments. When any assigned work calls for a common analytical framework, so that all agencies proceed on the same basis, ODM develops and supervises the necessary coordination. Periodic reviews are made of the work carried on in delegate agencies and recommendations resulting from such work are evaluated with particular emphasis on their value to the overall mobilization program.

ODM, with the advice and cooperation of the delegate agencies, also establishes action objectives, such as stockpile goals and industrial expansion goals. Finally it is the function of ODM to prepare periodic reports on the overall status of the mobilization program of the Government. Reports are made to the Congress and to the Executive Branches of the Government, together with recommendations for action.

# CHART 1 OFFICE OF DEFENSE MOBILIZATION



Approved:

*Arthur S. Fleming*  
 Arthur S. Fleming  
 Sept. 15, 1955

This brief statement on the functions and methods of operation of ODM points up both the objectives of mobilization planning and the extent to which the resources and knowledge of Government agencies are used in a coordinated effort to achieve the objectives.

I direct your attention now to one specific aspect of mobilization planning, the subject of my talk here this morning--"The Development of Requirements for Mobilization at the National Level."

I realize that in your studies here you undoubtedly devote some time to consideration of requirements in a period of mobilization. I am sure, therefore, that you will find some of what I say to be repetitious. I offer no apology for this. I think the subject is important enough to stand the repetition involved in constant study and appraisal. If my talk here this morning does no more than emphasize the importance of the subject and give you the reasons why it is important, I will be satisfied.

I would like to point out that we are still in a period of experimentation in the development of requirements for programming purposes. Certainly we in ODM consider this whole area to be still in the pioneering stage. We are far from considering ourselves as the experts in this field. As one former programmer has said, we are reminded often of the following bit of verse of the late Don Marquis:

"My little children, may I trouble you  
To fix your active minds on W?  
The Water-Beetle here shall teach  
A sermon quite beyond my reach:  
With ease, celerity and grace  
He glides upon the water's face  
But if he ever stopped to think  
Of how he did it--he would sink."

In the following discussion of requirements, I have subdivided the subject into two parts: (1) the need for requirements; and (2) current work in the development of requirements.

The Need for Requirements. --To know our wartime requirements is fundamental, either in a period of actual warfare or in planning. The primary task in either case is to determine how our resources can be used to best advantage. In peacetime, resource use is determined by the interplay of forces which operate in the free market for goods and

services. In war, this process is altered drastically--the Government determines, through its programming activities, the overall pattern in the use of resources.

In a war period, requirements information provides the basis for the allocation and control of resources, and for the establishment of production levels. The information is also used for the expansion of productive capacity and resources.

At the present time, we are developing mobilization plans and readiness measures. Information on the supply-requirements balance which would probably confront us in case of actual mobilization is the basis on which much of this type of planning rests. One of our primary objectives is to develop and maintain a mobilization base which will shorten the time involved in shifting to a war footing. For this purpose we obtain estimates of end-item requirements under assumed mobilization conditions. We also obtain the complementary estimates of capacity and resources to produce these end items.

Programming provides a mechanism for determining what resources are needed and for allocating available resources. The programming operation rests on the creation of a balance sheet of requirements for, and supplies of, those resources which determine production levels.

On one side of the balance sheet are listed requirements for the materials needed to complete approved production and construction programs. On the other side are listed the supply of the materials. An analysis of the supply-requirements balance indicates where deficiencies exist and thus provides a basis for readjustment of program levels, necessary actions to increase supply or to take whatever steps are indicated.

**Current Work in the Development of Requirements.** --We have studies underway now to provide this kind of basic information. These studies are designed to provide answers to the following types of questions:

What is the overall output potential of the economy under full mobilization conditions? Within this overall potential, what share of our resources can be allocated to military purposes, while still providing for essential civilian needs? What are the required output levels for the limiting resource factors--steel, copper, aluminum, nickel, manpower, power, fuel, etc.--which are necessary to yield the desired military and essential civilian production.

In developing the mobilization study program, both "general" and "specific" approaches are used. The "general" approach is concerned with the measurement of estimated total resources and their maximum use in wartime. One of the primary objectives during a period of full mobilization is the efficient allocation of resources. An efficient combination of labor, capital goods, and natural resources is one that produces the assortment of goods and services needed to meet a particular set of conditions. Efficiency in this sense requires not only efficient production techniques but also correct decisions regarding the specific goods and services to be produced.

The "specific" approach is concerned with deficiencies and imbalances in limited areas. This approach is closely related to individual production programs. By means of this approach, we can reach conclusions on specific requirements and deficiencies for specialized equipment required by a particular program. Examples are types and sizes of valves, bearings, optics, and aluminum extrusion presses. The purpose of both approaches is to identify those deficiencies in the mobilization base which would seriously limit production under full mobilization conditions.

With this general distinction in mind, a more detailed examination of the purposes and methods utilized by each will be useful.

To measure the adequacy of the mobilization base in peacetime, it is necessary to develop a balanced set of requirements for a particular war plan, and to determine their feasibility with respect to existing resources. It is important to develop these requirements within an integrated economic framework because of the complex interrelationships existing within the productive process. The result must be a set of requirements that are within our national capacity. For example, the level of production for mining equipment is determined in part by the level of coal production, which in turn is dependent on total energy requirements. Total energy requirements, of course, represents the needs of the military, the transportation and manufacturing industries, domestic needs, and other uses. The complexity of these interrelationships illustrates the need for guidelines which control the development of consistent and balanced programs.

The approach of these studies is to begin by estimating the level of general activity which could be attained under the assumed mobilization conditions and establishing a framework for determining the optimum wartime distribution of resources. This distribution is in

terms of broad categories of uses, such as munitions, war-supporting industries, essential civilian needs, and exports. This procedure is designed to insure that total uses will not exceed total resources. These estimates also provide the guidelines for the development of specific programs which will be mutually consistent and will be geared to specific levels of production.

At this point I would like to have you see some charts.

Chart 2, page 8. --This chart illustrates the long-term growth in Gross National Product (GNP). The growth has been at an average rate of about 3 percent per year.

You will note the wartime increases of World War II when the red posts shoot up pretty high; also note the Korean period. Note also where we estimate it will go in the mobilization period planned, beginning with the end of 1957.

You will note that the Government purchases during war periods account for a good part of the growth. The increase during World War II of Government purchases was from 20 percent of the gross national product to 46 percent, and we estimate that the increase will go from 18 percent to 40 percent in 1960.

Chart 3, page 9. --This chart shows the percentage of gross national product allocated for hard goods and construction. The hard goods includes consumer durable goods--automobiles, refrigerators, and so forth; producer durable goods--equipment; and munitions--tanks, planes, and so forth. Construction includes private and industrial, residential, Federal, State and local. There again you can see the big bulge during World War II, the somewhat lighter bulge in the Korean period, but a bulge.

Chart 4, page 10. --This is the estimated per capita personal consumption expenditure over the year. Again durable goods includes automobiles, refrigerators; nondurables include food, clothing, fuel; and services include electricity, gas, water, and medical care. Note the cutback in per capita expenditures which took place in World War II and in Korea, and this is something that we reflect in our full mobilization estimates.

CHART 2

ESTIMATED DISTRIBUTION OF GROSS NATIONAL PRODUCT

1939 THRU FISCAL YEARS 1960  
 CONSTANT 1954 DOLLARS

(M-DAY ASSUMED TO BE JULY 1, 1957)

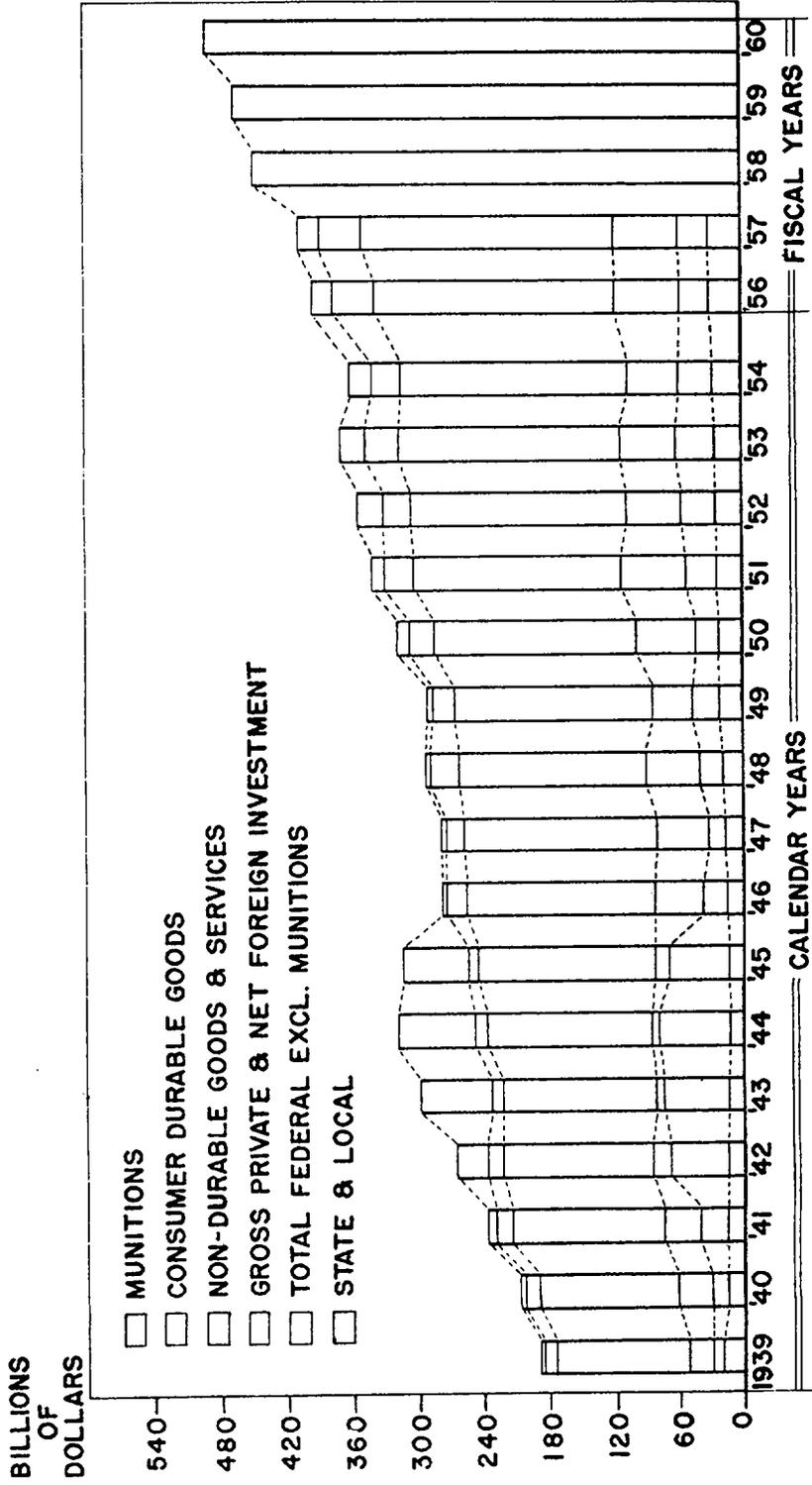


CHART 3  
 PERCENT OF ESTIMATED GNP ALLOCATED FOR  
 HARD GOODS PRODUCTION  
 & CONSTRUCTION

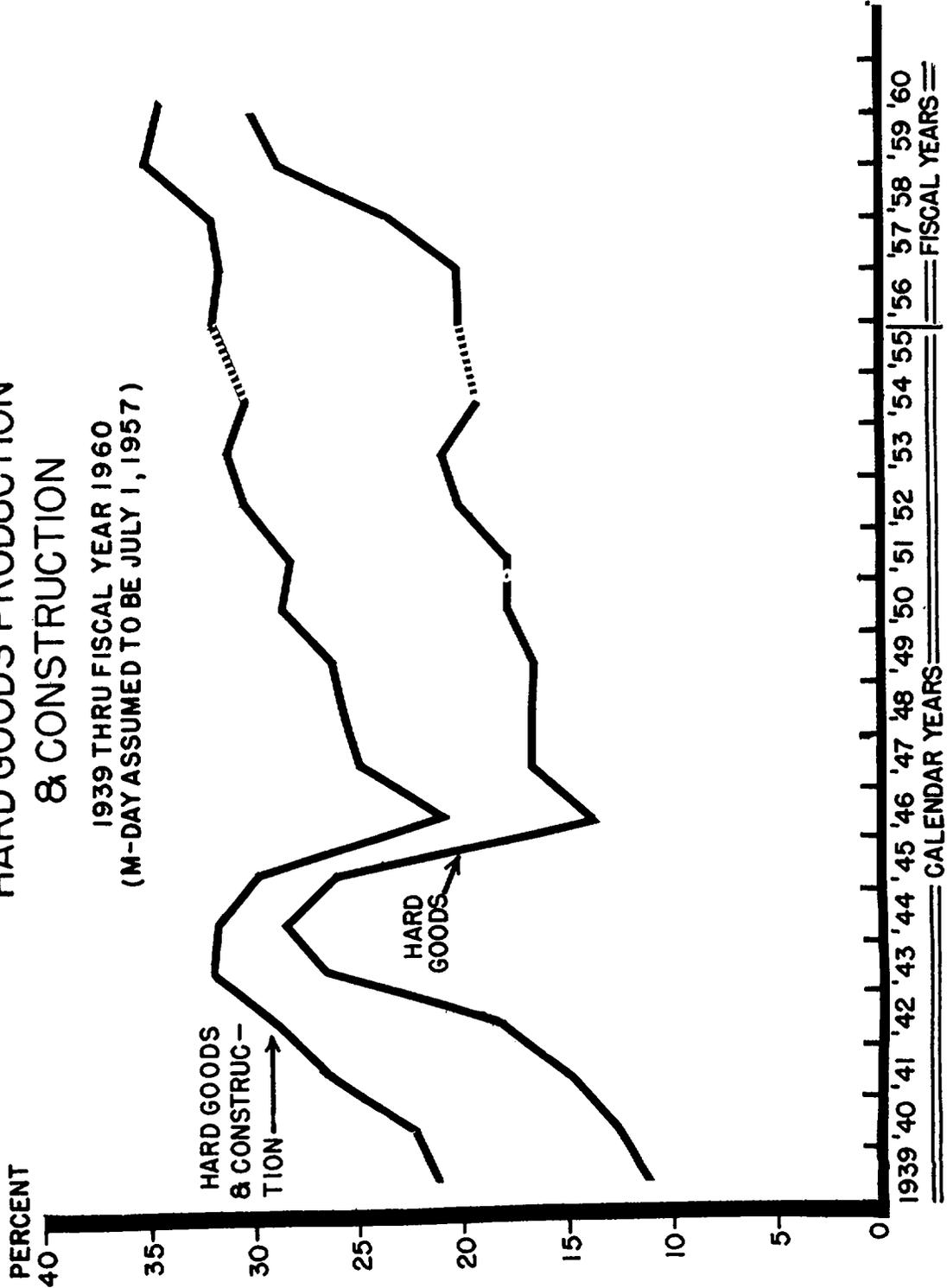


CHART 4

**ESTIMATED PER CAPITA PERSONAL CONSUMPTION  
EXPENDITURES**

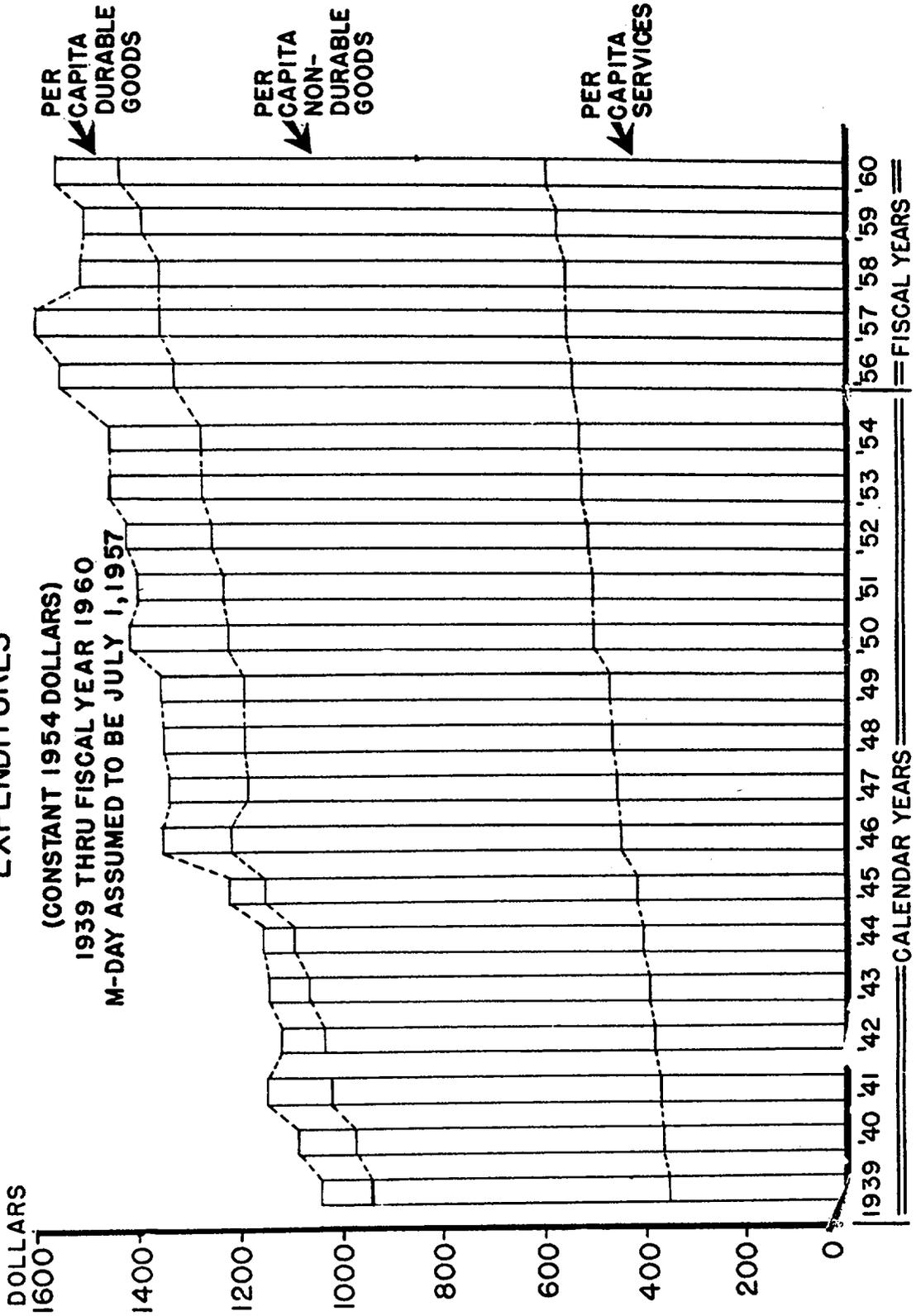


Chart 5, page 12. -- This chart shows the estimated hours of work. Note the big bulge during the war period and the bulge planned for the mobilization program that we are planning. The tremendous increase in World War II ranged from 44.7 hours per week in 1941 to 48.5 hours per week, an increase of almost 4 hours.

Chart 6, page 13. -- Output per man-hour. Note the long-term upward trend per man-hour resulting from the increased efficiency of workers, the tremendous increase in plant investment, better equipment, better improvements. Output from World War II showed no increase in 1942-43 but took a substantial spurt in 1944-45. This is caused by new workers who are not as efficient as they are later on when they are trained. Then there was a loss of production due to a shift from one type of product to another.

I recall from my own experience during World War II--an electronics manufacturer with a very large force of people just about doubled the efficiency of the people and doubled the amount of output with the same force as soon as the people had learned their jobs and were able to go on a piecework basis.

You have noted that these charts are all geared to gross national product. I am sure you are all aware of the significance and use of this term.

Once the total output--measured in dollars of gross national product--is estimated, the dollar "ceilings" are established for major categories of hard goods and construction. These ceilings are prepared for each of the assumed mobilization years, and therefore are based on an assumed time-phasing over the projected mobilization period. The ceilings are assigned to agencies of the Government responsible for calculating mobilization requirements for particular areas of the total economy. These agencies are commonly referred to as "claimant agencies" because in wartime they would claim allocated materials for the activities under their cognizance. The claimant agencies are responsible for developing detailed and specific program levels within the ceiling limitations and for translating these program levels into requirements for the controlled materials needed to carry them out.

The summation of the program levels and the materials translations furnishes information for the analysis of mobilization production programs and requirements. The body of statistical data built up

CHART 5

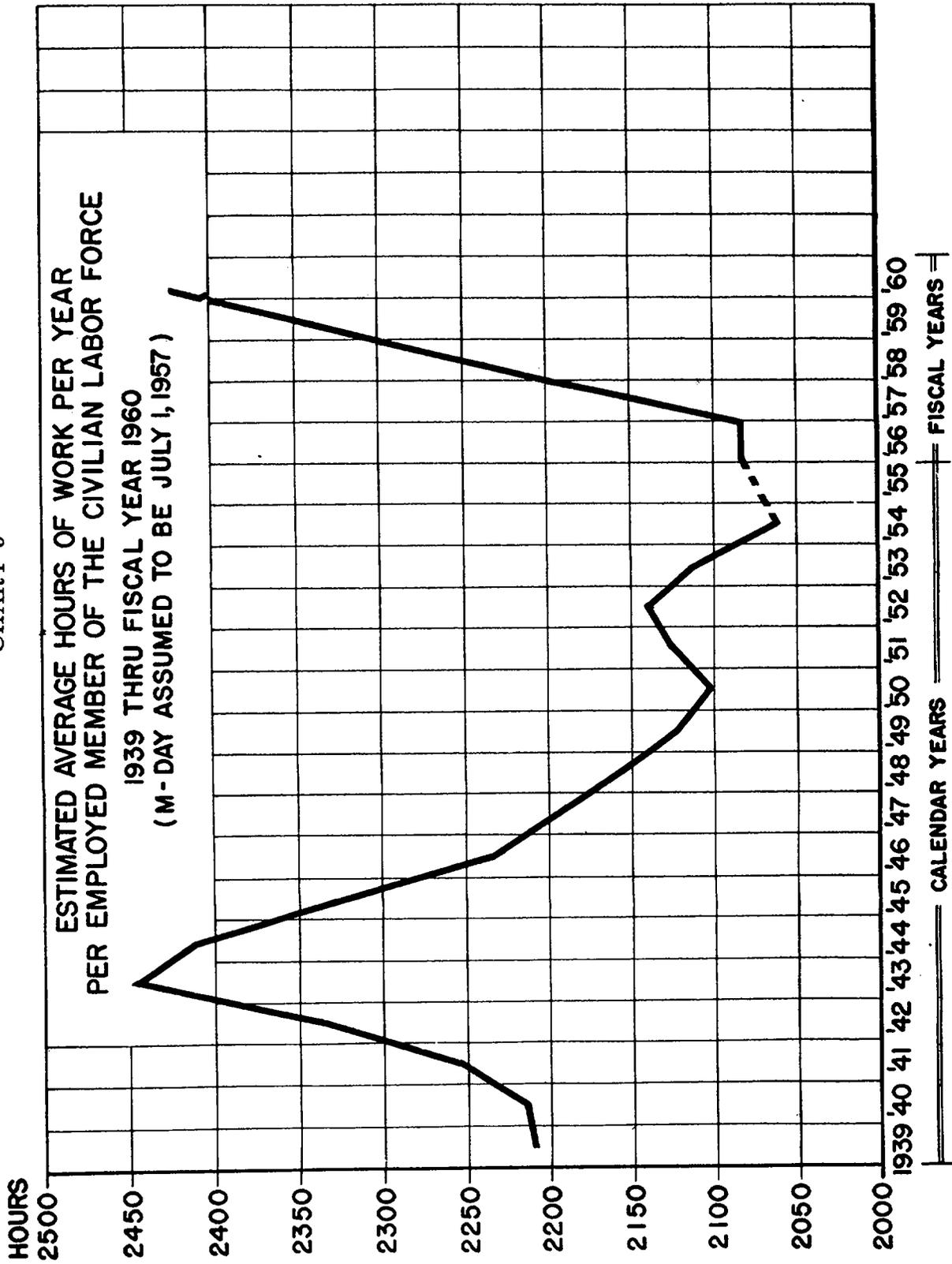
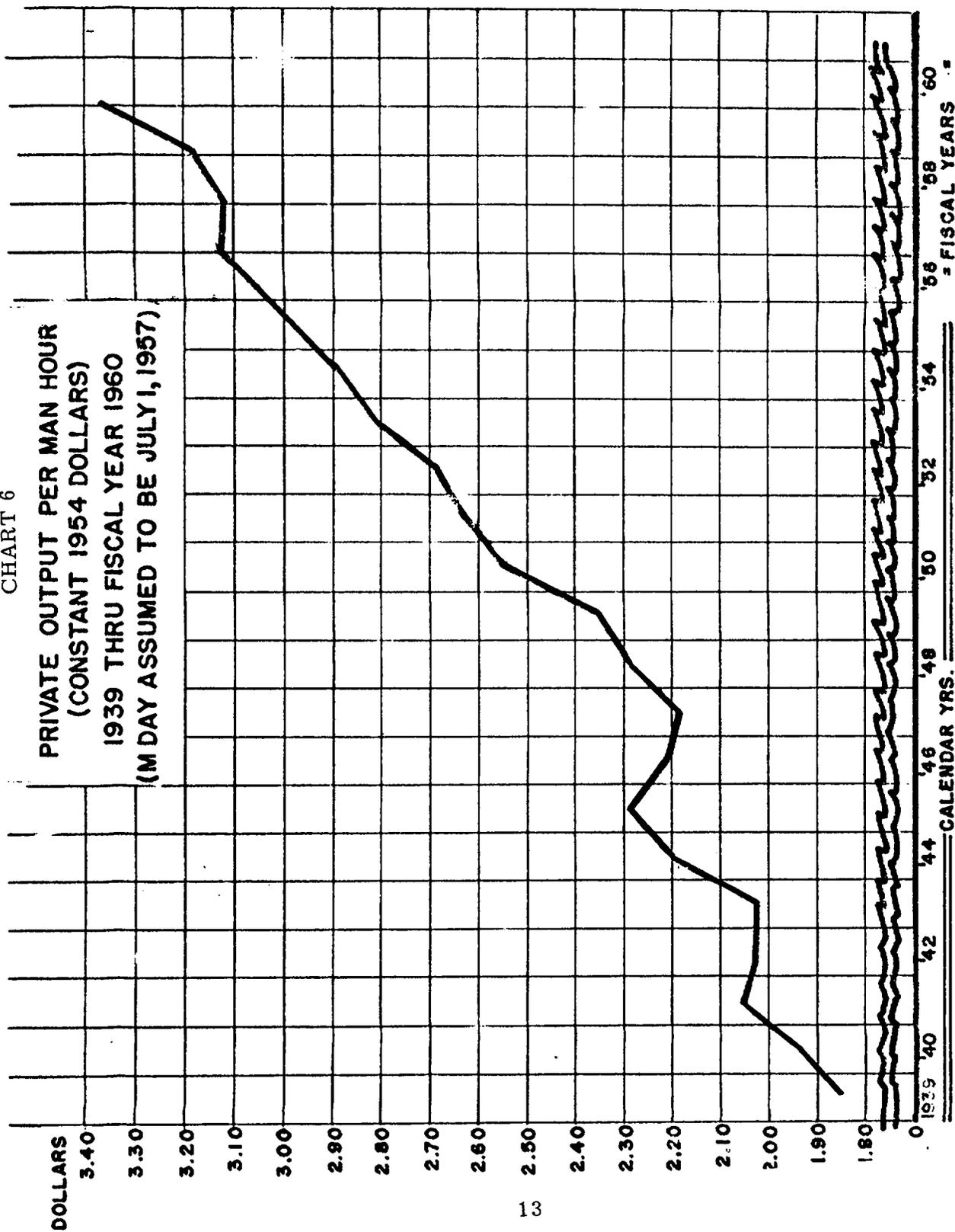


CHART 6

PRIVATE OUTPUT PER MAN HOUR  
(CONSTANT 1954 DOLLARS)  
1939 THRU FISCAL YEAR 1960  
(M DAY ASSUMED TO BE JULY 1, 1957)



PRODUCTION AREA - O.D.M. DEC. 14, 1955

through this process assists judgments on the adequacy of productive capacity, the availability of resources to produce the volume and specific types of goods and services needed, the determination of inter-program balance, etc.

The comparison of the steel, copper, and aluminum requirements with supply estimates, for example, provides the basis for determining our ability to produce these materials during a mobilization period. This comparison furnishes a quick test as to the feasibility of the projected mobilization program. This is particularly important when a specific product mix calls for requirements for a particular material or special-purpose facility that cannot be met, although total resources appear adequate.

During fiscal year 1955, ODM completed the first of these studies. Much useful information was obtained concerning the varied problems which arose in connection with mobilization planning. The results of this first study did not automatically yield all the answers to problems noted previously. However, the data made it possible for agencies to obtain answers to important questions much more readily than had been the case in the past. The results undoubtedly provide a firmer base for current planning.

One important result which will benefit future work in this field should be noted. For the first time in mobilization planning all agencies with defense responsibilities engaged in a cooperative project to develop a balanced and integrated mobilization program for the entire economy. Thus, the procedures and techniques for preparing mobilization requirements have been considerably improved. Each successive mobilization study will reflect changes and improvements indicated by previous work.

Three points should be made. First, the estimates developed thus far represent on a current basis the most comprehensive available data on the size and configuration of the war economy if war were to break out in the near future. But, as the anticipated emergency keeps receding into the future, it will be necessary to revise these estimates periodically to bring them up to date, taking account of: (a) changes in output potential; (b) changes in military concepts; and (c) changes in resource availability.

Second, since the results thus far furnish a test of the feasibility of the programs, only in terms of overall steel, copper, and aluminum

capacity, the testing must be extended to specific shapes and forms for these materials, and to other key and critical resources.

Third, while the present estimates do not take account of the impact of bomb damage, a project is being developed to make estimates of bomb damage by industries and to tie them in with the program levels developed by this method so that some gage is available of the output capacity of the economy under bomb attack conditions.

The GNP approach which we have been discussing provides information on overall and major-purpose resource use. In many instances it is necessary, however, to direct attention to specific kinds of resource deficiencies which must be subjected to intensive analysis. Examples are components and machine tools.

There has been a substantial but uneven increase in the last five years in productive capacity. Because of this expansion, it is probable that critical deficiencies in the component and intermediate product areas would be more severe in a future period of full mobilization than they were in the past, unless steps are taken to identify and remove them.

Unlike the situation which exists in the case of raw materials, data and techniques have not been developed for translating end-product levels into requirements for intermediate products and components. However, a specialized approach has been developed for determining requirements for these. Since 1952, the Departments of Commerce and Defense and the Atomic Energy Commission, with the cooperation of industry, have undertaken a number of requirements-capacity studies of components expected to be critically deficient under full mobilization. ODM provides leadership and coordination over these studies and over the development of action programs for removing any indicated deficiencies.

The general procedure has been to establish a joint Government-Industry Task Group to conduct each study. Industry representatives have contributed generously to these studies, particularly in determining component requirements per unit of end-use item, in estimating capacity, and in determining the additional equipment, tools, and facilities required to expand capacity.

An interagency committee on components, under ODM chairmanship, provides coordination over these studies. The agencies represented on this committee are the Departments of Commerce, Labor,

and Defense, the Atomic Energy Commission, and the General Services Administration.

Sixty individual studies in thirty-four component areas have been undertaken. Thirteen have been completed and forty-seven are at varying stages of completion. Eleven of the completed studies indicate no capacity deficiencies, based on currently available information. Two studies--one on turbines and turbine gears and the other on high pressure steam boilers--indicate serious capacity deficiencies under full mobilization conditions.

The report on turbines and turbine gears recommended that a minimum of 64 million dollars worth of machine tools and equipment be made available to "round out" existing capacity.

The Director of ODM approved this recommendation and certified 70 million dollars to GSA to purchase the required tools and equipment, and to provide for their maintenance in standby status in the plants of turbine and turbine gear manufacturers.

The final report on high pressure steam boilers recommended that expansion of capacity be deferred and that a small reserve of selected steel items be established to enable boiler manufacturers to get into production quickly in case of mobilization. ODM is studying these recommendations.

Different methods of removing deficiencies are appropriate for various components. Ordinarily, the indicated action will be to purchase tools and equipment and maintain them in standby status. In some instances it may be desirable to create an industrial reserve of critical finished or semiprocessed materials, parts, and subassemblies to enable production of long lead-time components to get underway quickly in an emergency. In other cases it may appear desirable to maintain a reserve of finished components.

Existing policy calls for full utilization of accelerated tax amortization before consideration is given to the use of other means of financing the removal of critical component deficiencies. The peacetime demand for some components, however, would not justify privately financed capacity expansion even with accelerated tax amortization. In these cases the thinking is to use Government funds to remove deficiencies.

This general description of our approach to the determination of requirements did not specifically discuss the derivation of civilian requirements. I understand that several experts have spoken to you with respect to the derivation of military requirements. In order to round out the picture, I would like at this point to consider with you some of the important factors in the determination of civilian requirements.

In a period of mobilization, maximum military power for defense and victory is the primary concern of national policy. However, this objective cannot be attained by devoting all of the Nation's resources to this purpose alone. The development of a sound wartime program calls for a balanced allocation of our resources to all essential claims. A successful mobilization program maintains a proper ratio of military to civilian products and proper proportions within each of these two classes of goods.

The relationship between military and civilian goods will vary, of course, with the severity of the threat which confronts the country. In a period of limited mobilization, defense demands can be met with little or no reduction in the level of civilian goods and services. A full mobilization effort of, say, two to three years duration, and which does not arise as a result of attack on the continental United States, can very probably be carried out in this country without any substantial reduction in the standard of living. In a period of total and desperate war, a sound program, of course, might very well call for the minimum amount of production for the civilian economy--bedrock requirements--with remaining resources devoted to military uses.

In order to give perspective to a discussion of civilian requirements in a period of mobilization, it might be well to consider a few facts concerning the operation of a wartime economy. The huge volume of goods and services required to conduct a war effort is obtained in several ways: (1) an increase in total output; (2) a decrease in civilian goods and services; (3) a reduction in investment; and (4) an increase in goods from abroad. In actual practice a combination of all these methods is used in developing a war program, with emphasis on which device to use, shifting as circumstances indicate.

Each of these methods of achieving the necessary volume of production has an effect on the availability of civilian goods and services. This can be illustrated by a consideration of the several stages involved in developing and maintaining a war effort. Three major stages are

clearly defined--a period of growth in total production; a period during which operations are at peak levels; and a period of possible decline in output.

The growth period is characterized in its early stages by an increase in the production of both military and civilian goods. The extent and duration of this phase is dependent on two factors:

1. The extent to which the economy is operating at or near full employment when war breaks out; and
2. The availability of capacity to produce war goods and the rapidity with which existing capacity can be converted to military production.

If the economy is operating at a relatively low level, with unused plant and equipment, with a considerable number of unemployed workers, and with other resources not fully utilized, it is possible to considerably expand production of civilian goods along with military production. Present mobilization planning efforts are directed toward improving our position with respect to the second of these factors--maintaining a mobilization base which will shorten the time required to convert quickly to the production of needed military goods. Mounting a full mobilization effort today, with a full employment economy and the availability of a much stronger mobilization base, would find the country much better equipped to shift quickly from a peacetime to a wartime economy. Thus, this first phase would be relatively short.

In the latter stages of the growth period, total production continues to increase but at a slower rate, and the increase is almost exclusively concentrated in the production of military goods. By the time this second phase starts, the necessary size of the overall war effort is beginning to come into focus and actual or anticipated shortages of resources cause some restriction on the production of civilian goods.

When the production of goods and services approaches effective capacity, the second stage of a war economy is reached. If additional production of military goods is required, it can be obtained only at the expense of reductions in civilian goods. Initial impacts on the civilian economy are felt first in those areas using vital materials or skilled manpower needed for the production of war goods. Thus, the production of durable goods is restricted and expansion of plant and equipment for the production of civilian goods is curtailed. If labor shortages

develop, curtailment of additional civilian production in the nonmetal using areas is also required.

A third stage, never experienced in any previous war effort in this country, is reached when total production decreases. This occurs when, as a result of a prolonged struggle, shortages of critical materials develop, demands for manpower by the military result in insufficient labor to produce goods, and when a continued reduction in investment in plant and equipment finally causes a loss in efficient productive capacity. When this stage is reached, a rigid scrutiny of both military and civilian requirements is called for.

It is important to note that this third stage, reached only after a relatively long struggle in a war not involving nuclear attack, is reached immediately in the event of a successful bomb attack. The country would be faced with the immense task of rebuilding the economy, maintaining a bedrock civilian level of activity, while simultaneously mounting a war effort. Currently we are devoting a considerable amount of effort to this problem.

It is apparent from the foregoing discussion that no precise statistical formula can be used to determine civilian requirements in a period of actual mobilization. The level of goods and services available for nonmilitary uses is dependent upon many variables which are known individually only at a particular period of time, and whose relative weight in any decision must depend upon circumstances existing at that time.

While it is impossible to determine precisely how many automobiles, shoes, washing machines, etc., can be produced without definite and precise information respecting the mobilization period involved, it is possible to set down some of the criteria which would be used in determining such levels:

1. In cases where the production of civilian goods is reduced or eliminated, provide for the production of repair parts to maintain existing equipment.
2. Maintain production of items, as long as it is practicable, through the use of substitutes. Materials in relatively good supply can often be used in place of critical materials, particularly in the short run. Thus, wood can replace metals, cotton can replace nylon, iron can be used in place of brass pipes.

3. Concentrate on production of functional items as opposed to decorative or luxury goods. Put primary emphasis on goods requiring minimum production effort and materials.

4. Produce items which serve the public generally rather than individually--equipment for public phones, busses and streetcars rather than private cars.

5. Tie the production of goods into the overall war program--cut down on the production of items which need for their operation scarce goods or services. Heating equipment must be considered in the light of what fuels are available, for example.

In my discussion to this point, I have not indicated what plans we have for the determination of requirements in a bomb-damaged economy. Certainly one of the most important next steps in our supply-requirements analyses is to incorporate bomb damage assumptions into our work.

At this point I want to be perfectly frank with you and tell you that, while progress is being made in estimating damage from specified bomb attacks, we still have a long way to go before the estimates are more than educated guesses.

Let me review for you briefly work accomplished to date in estimating bomb damage, with specific reference to production losses.

ODM has a bomb damage assessment unit which is devoting a considerable amount of time determining how to measure bomb damage. A substantial volume of information is available on electronic tapes, which can be run off with respect to a specific attack, to determine loss of life and property. However, the resulting tabulations leave many very important questions unanswered. For example, information regarding the effect of radiation and fallout on people is still on the sketchy side; this lack of information also exists with respect to livestock and crops.

With reference to estimated production losses, we are in the following situation. We can determine loss of facilities, although this must be improved to determine loss of facilities to produce specific products rather than by broad industry classes. The most serious weakness in estimating production losses, however, is the lack of information on the extent to which the "chain of production" is damaged.

To be more explicit--it is not enough to know how much remains after an attack in the way of production facilities to assemble end items. We must also know whether the components, subassemblies, and other items needed for end-product manufacture are available. ODM, in cooperation with delegate agencies, is undertaking work in this field. The results are not yet available.

With respect to an analysis of the supply-requirements situation which would exist in the event of a bomb attack, we plan to move along the following general lines.

ODM will develop the pattern of an assumed bomb attack. The assumptions underlying this pattern will be set forth and will indicate the type and scope of the attack. Information will be available on: the time of attack; target cities; bomb size and height of burst; fallout patterns; estimates of population losses; facilities losses, and such related factors as Government setup, rehabilitation and reconstruction activities, etc.

Based on this information, the delegate agencies will be asked to develop, for rather broad areas, requirements for their area of responsibility. It is not anticipated that long, detailed listings will be requested or even usable in the circumstances. What will be needed are requirements for meeting survival needs of the remaining population; minimum needs of the military for forestalling further disaster, or for dealing a quick and decisive blow to the enemy; and requirements for reconstruction and rehabilitation.

The delegate agencies will be requested to furnish these requirements for designated time periods, at least by half-year intervals for the three-year period following the assumed attack.

Since these requirements will not be estimated on the detailed basis ordinarily used in requirements calculations, it might be feasible and practical to have all the work done in rather small groups within each agency.

With this information in hand, summed up, and related to remaining supply of resources, ODM would prepare an analysis which would evaluate the effect of the specific attack on the ability of the Nation to survive and the steps needed to reestablish the economy on a working basis.

We are still working out the detailed procedures for the bomb damage analysis, but I believe that we will proceed within the general framework I have outlined.

I think this presents, in broad outline, the ODM approach to the estimation of requirements. The actual process is, as you know, an exceedingly complex and difficult one, reaching, as it does, into all areas of our economy. It is necessary to take many factors into account in both the determination and use of requirements data. As I noted earlier, we are still experimenting, still searching for better analytical tools with which to evaluate the supply-requirements situation.

Gentlemen, this is the end of my paper, I hope I have been able to give you some information, some inspiration. Thank you very much.

I hope the subject was not too heavy for you. I hope we were able to present it in a way that you got something out of it. I hope you will be able to ask questions that we will be able to answer. I say "we." Mr. Franklin Aaronson is here with me. He and my associates have been of inestimable help to me in preparing this paper and to me since I have been in the organization. It has been a revelation to me how this job is being approached by the GNP concept. So fire away with your questions and we will do our best to answer them between Mr. Aaronson and myself.

**QUESTION:** Before you kicked off on the agencies in figuring their individual requirements, you mentioned that you give them ceilings. Would you tell us how you pull ceilings out of the hat before you start?

**MR. LANDRY:** That is somewhat arbitrary. Frank, could you deal on that a little more specifically than I could?

**MR. AARONSON:** That is done in this fashion. You first calculate the total GNP independently of any other consideration by the use of manpower, hours of work, and productivity. Then you have this total to distribute among the various GNP sectors.

For example, on consumer durable goods, the procedure generally is to make use of whatever past war experience you have. How far can you reduce consumer durable goods is a question. In World War II we had some experience and we had some experience in Korea. We also had experience from the first feasibility test where we estimated a

ceiling. We sent it to the agencies and they came back with a specific product mix. That differed from our original ceiling, but we agreed on a ceiling which they devised and which in their opinion--this is primarily the Commerce Department--was a reasonable level of consumer durable goods.

Similar ceilings for producers durable goods were based on World War II and other experience. These ceilings really--and I think Mr. Landry mentioned it--are guidelines. All we want to do is give these agencies some idea of the approximate level, but they work out within that guideline all the detailed product mixes.

For example, within the consumer durable goods and producer durable goods areas there are 500-some products. They work out within this ceiling all the product information. They sum it up and that should approximate the ceilings which were given them. But, as I said, ceilings are only in a sense guidelines. They can exceed or go below that. It is when you get all the facts, sum that up, plus construction, plus consumer durable goods, that you can determine whether or not you really had given them a good ceiling.

QUESTION: Mr. Landry, I was a little confused on the charts you showed showing a per capita consumption of durable and nondurable goods and services. It seems to me, as I remember it, the chart picked mobilization day as in 1957. Your chart was projected through 1960, and yet you had an increase in per capita consumption of consumer goods--as I remember the chart--yet you emphasized, as we have heard others do--the need to cut down on consumer goods. It seems to me the chart showed services increasing, durable goods increasing per capita, and nondurable goods also.

MR. LANDRY: That's right. There is an explanation for that. Frank, will you answer that.

MR. AARONSON: Yes. You will notice on that chart in World War II the reduction in personal consumption expenditures per capita was in durable goods. You will notice in the services and the nondurable goods there is an upward trend, and immediately after the war it took a little zag. But you will notice also that Mr. Landry said in his talk that in a full mobilization which would last two to three years and not as a result of a bomb attack, we might not reduce the standard of living in this country very much.

There is a drop in the durable goods in our projection. The 1956-57 is a peacetime projection. War is assumed to start in July 1957. We did reduce durable goods. We would allow the nondurable goods, which is primarily food and clothing, to increase. We would allow services to increase. The demand for munitions is such that you do not need to reduce in our estimation per capita personal consumption expenditures beyond those levels shown.

That is the status of this work at the present time. We have some tentative data but they are not final. But in the light of what we now have, that would be our best guess.

MR. LANDRY: That is determined by the mobilization plan that we are working on.

MR. AARONSON: That's right. That is that three-year projection. But there is a sizable reduction there in durable goods, you will notice. I reckon from that chart 1959 is about half of the 1957 level. That is a sizable reduction in consumer durable goods. Does that answer your question?

QUESTION: I am still having trouble in my mind reconciling it but certainly that is the answer.

MR. LANDRY: That is without bomb damage, you understand.

QUESTION: Early in your talk you said, to know our wartime requirements is essential. Then I tried to follow through, and further development of that thought in your talk led me to the belief that perhaps we are getting requirements and capabilities and using them interchangeably. Your talk seemed to bring out that the idea was to find out what our capability is in order to support an all-out effort. I have one question first, then I will get into my main point. Do you accept the premise that you cannot determine what the requirements will be for a future effort in the light of past experience? For example, going back to World War II, they said we tried to fight that war on the experience of World War I. Now how do you reconcile the premise that you must know your wartime requirements with the thought that you can't plan for future effort on the basis of past experience?

MR. LANDRY: Well, to begin with, you have got to have some kind of a base. You have got to put some figures down and work from those figures. They may prove to be wrong and you have got to make some

adjustments if they are proven to be wrong. Both in war and in planning, these things have got to be continually redone. You have to be continually working at it. You have to use past experience to some extent, but past experience doesn't determine the type of war that we would have. It could be very, very different. We expect that it will be very different. I don't know how much more I can say on the subject. Can you add to that, Frank, from what I have said?

MR. AARONSON: Well, there are two things I think should be pointed out. One is that any full mobilization plan that we set up is set up with reference to a specific war plan. You know, therefore, when you start what the type of war is, how long it will last, and have a pretty good idea of the necessary munitions. So any mobilization work you do is with reference to a particular type of war.

With respect to whether or not you can use the experience of a previous war--you can't use it perhaps to determine your military strategy, but you could use it with respect to your production capacity work. For example, in World War II, you cut back civilian production so much, and you know it had a limited effect upon the civilian economy. You know perhaps, therefore, that you could cut it back still more--at least you could test it--and still not have too much effect. The experience that we use from past wars has nothing to do with the type of war they are fighting in a military sense. It is what you can do with production. The military end of it is strictly out of our field.

QUESTION: In your mobilization planning, did you take as one of your assumptions that there would be a National Service law?

MR. LANDRY: National Service in what sense? In the sense of manpower?

QUESTION: Yes, manpower; also resources.

MR. LANDRY: I don't know that we did. I fail to see where that would affect the conclusions we come to. If the war gets to a point where it is a serious effort, of course there will be a National Service law, but at the start we are quite likely to have volunteerism pretty much across the board, are we not? It seems to me so.

MR. AARONSON: We assumed that the Armed Forces would get whatever men they needed through the Selective Service law. This model implies a heavy buildup of the military forces needed.

QUESTION: I am confused now on this possible requirements versus capabilities. It seems to me that you are dismissing the military requirements planning problem with the argument that there must be some ceiling placed on them; otherwise military minds will come up with fantastic demands. I don't subscribe to that view. I think you are actually doing capabilities planning.

You put on a ceiling and say you will develop a strategic limit through a feasibility plan to this assumed amount you will get out of the civilian economy. It has been pretty conclusively proven that with American genius plus the almighty dollar you can get almost anything you want, and it seems to me your munitions demands are not going to be so great as to cut in on civilians' goods.

Why is it not more feasible to take what is necessary to perform a mission, which is national survival, and then see how much you are going to cut back the civilian economy and civilian consumption?

MR. LANDRY: I am afraid we have confused you by the use of ceilings in the way we have used them. Certainly if there is enough space in the economy, certainly if it doesn't involve squeezing the civilian belt to the point where you are not going to preserve civilian morale, you are going to give the military what they need.

The main point that I think I made in my paper is that it is necessary to win the war; it is necessary to have a strong military; it is also necessary to have a strong civilian morale. We have never had a war that has cut back civilians much really. The use of ceilings is not at the start with any idea of limiting military demands or requirements. Frank, would you say something about that?

MR. AARONSON: Just one thing--in both models we have set up our estimates to such that they exceeded what the DOD said they would need in munitions. So, in effect, your question may be pertinent in a theoretical sense; in practice, both times the munitions are below what we say the economy could stand. Whereas we might very well run into the type situation you envisage, where they would come in with a terrifically higher level than we have in ceilings, I think that would simply mean we would go back and look at our model again. But both times they have come in with much lower requirements than we had estimated.

QUESTION: In addition to your organization chart there, do you have any kind of chart that will show the flow of an end-item request

through the organization and especially show the relations not with other departments but what you do with the other departments? The Executive Order--I think it is 10980--with reference to ODM is a combination of a number of others, and it seems to me somewhat disjointed. I can't get straight on when you throw your clinker in the hopper, where it gets, and how it gets there. I wonder if you could help me in indicating any kind of flow of a particular type of item--plane, tank, whatever type item it might be--where it goes in until it comes out?

MR. LANDRY: If I understand your question, I fail to understand what troubles you.

Somebody in ODM, somebody in the Production area has the task of coordinating the whole study. If he needs something from the Commerce Department, he goes to Joe Doakes in the Commerce Department, or to whichever organization has that responsibility--electronics organization, or BDSA, if you will--and gets them to work on that problem and somebody in the Atomic Energy Commission to work on that same problem, and so on for agencies across the board. I don't think of it as a flow, as a thing that takes place in a series. It is a lot of parallel things. Several things go on in several agencies at the same time. They are tied together by some individual in Production of ODM.

MR. HENKEL: Mr. Landry, it is quite evident that you and your staff have spent a lot of time in developing this material. On behalf of the students, the faculty, and guests, I want to thank you for a very instructive and informative talk.

MR. LANDRY: It was very pleasant to be with you this morning.

(7 Mar 1956--250)K/sgb