

COMMERCIAL FORECASTING OF SALES AND PRODUCTION
GOALS IN THE AUTOMOBILE INDUSTRY

8

24 November 1948

CONTENTS

	<u>Page</u>
INTRODUCTION--Lowell L. Henkel, Faculty, ICAF	1
SPEAKER--E. E. Angerman, Planning Coordinator and Sales Forecast Director, Chrysler Corporation	1
GENERAL DISCUSSION	11

Publication No. 149-50

THE INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

RESTRICTED

... (faint, illegible text) ...

COMMERCIAL FORECASTING OF SALES AND PRODUCTION
GOALS IN THE AUTOMOBILE INDUSTRY

24 November 1948

MR. HENKEL: General Vanaman and gentlemen: A few days ago we had a very interesting talk on the forecasting method for sales and production goals of the steel industry which covered primarily semi-finished products and their adjustment to raw materials. Today our speaker is going one step further and will discuss the forecasting methods in planning for production of the finished product, that is, the automobile or truck.

This morning it is our good fortune to have a man from the automotive industry whose lifework has been spent in various manufacturing and sales departments of the automotive industry, and at the present time is planning coordinator and sales forecast director of the Chrysler Corporation.

It gives me great pleasure to welcome Mr. E. E. Angerman to our platform.

MR. ANGERMAN: Thank you, Mr. Henkel, General Vanaman and gentlemen: As Mr. Henkel told you and as the screen indicates, I am going to discuss briefly our methods at the Chrysler Corporation of determining sales, production goals, and material requirements. It is indeed gratifying to come here to discuss this with you: First, because there exists a very fine relationship between Chrysler and the Armed Services; then, too, there is the hope that discussions of this nature may suggest improvements in coordinating your planning and your operations with those of industry for the benefit of our national security.

At the outset, I would like to point out that my remarks will be confined to the way the job is done at Chrysler. There are material differences, I believe, in the systems of the various automobile companies. However, they have in common one thing--a systematic effort to keep the flow of materials in balance with production requirements and to keep production closely related to the shifting sales opportunities.

In order to clearly follow the events of our discussion, I think it would be well to consider briefly the corporate structure of Chrysler. Many people look at the Chrysler Corporation as a big business. However, when we look at it on a day-to-day basis, we find instead a collection of several small businesses. Each is responsible for the successful conduct of its operations and all are guided by major policies

developed by the over-all management. In other words, we have a combination of centralized direction and decentralized operations.

In the development of general policy, control is centralized and begins with an Operations Committee, then through a Manufacturing Committee, an Engineering Committee, and a Sales Committee. The Operations Committee membership includes the general officers of the Corporation, the managing and operating heads of the principal divisions, and various staff men. Meeting twice monthly, these twenty-six men pool information. Facts are reported, ideas exchanged, opinions and judgments checked. Out of these meetings, major lines of action are adopted.

The Manufacturing Committee consists of the heads of the manufacturing plants and staff men who are involved particularly in the production activity. It meets weekly and coordinates production, and sets day-to-day working policies. This committee comes under the leadership of the Vice President who is General Manager of the Chrysler Corporation.

The Engineering Board, under the direction of the Corporation officers responsible for engineering, links the development and research activities.

The Sales Committee, under the vice president in charge of sales, studies the markets for our products and keeps abreast of conditions. This committee develops policies under which divisions operate to get our products to users and keep them actively serviced. The individuals who make up these top groups and their principal assistants make Chrysler go. In their individual positions, they function individually; in policy development and coordination, they function as teams.

Decentralized control commences with the management of each division of the Corporation. Divisions, such as Dodge, DeSoto, Chrysler, Plymouth and Dodge Truck operate individually, each with its own executive staff and manufacturing organization. Each produces its own finished vehicles and many of the component pieces for those. There is, however, an interrelationship between divisions since many of the individual parts and subassemblies are furnished by one division to another much the same as an outside supplier would furnish parts that he might specialize in. All are governed by the general over-all policy, yet no attempt is made by centralized management to dictate to the divisions how parts will be fabricated or assembled from day to day. Policies are the result of practical judgment and, while explicit, they are flexible, so that operations can be adapted to changing conditions.

Today's operations with respect to scheduling production are quite different from those followed in the prewar years, which we like to

consider normal. There is in today's conditions much that may be of special significance to you, since the controlling circumstances now is a shortage of material--one of the outstanding characteristics also of wartime production. However, to develop our subject correctly, I think perhaps we should first examine our normal method of making sales projections and manufacturing schedules.

Under normal conditions, establishing a production goal calls for long-range planning, generally from 12 to 18 months in advance of the production date. Many factors are considered by top management committees in reaching a decision on volume. There is an external group of factors, such as the over-all economic health of the Nation, the impact of the world situation, the probable direction of government programs affecting economics in general and transportation in particular, growth of population, and changes in its composition and location.

Then there is an internal group of factors, such as the condition of our facilities relative to public acceptance of our products, proposed changes improving our products, the state of our sales organization in relation to markets, the extent to which various markets are satisfied or unsatisfied. Much of this internal information is developed by the operating and sales staff at each division.

The Master Mechanics Department of each division prepares reports indicating the amount of tooling, the productivity of machine equipment, and finally the daily rate of production that the machine equipment will yield.

The Statistical Department of each division develops data covering sales trends, broken down into various body types, activities in the competitive field, and general business conditions. These analyses of plant capacity and sales statistics are studied by the operating staff of each division, and recommendations and opinions are submitted to the Operations Committee of the Corporation. Here the management group considers the recommendations submitted by the divisions, together with the costs and the advisability of creating additional tooling or facilities if these be necessary. From these studies, decision is made as to what the daily production rate will be in terms of facilities, machines, and tooling. These data guide initial mill reservations, soon to be made, for raw materials which take many months to procure.

Now this production rate is not just a gross total. A figure is set for each division and is subdivided into models and body type since each of these requires different tooling to a greater or less extent. There is no way of defining the data studied or the method by which they are analyzed. There is a continuing thorough review of the information available from outside--from Government and private sources. We

maintain an organization devoted to economic analyses which produces both routine and special studies.

The principal ingredient in our analyses is the judgment of experience. We are always conscious of the fact that judgments can be misled and of the necessity of providing for extremely rapid changes. An undefined but ever-present policy in the making of decisions is the intention to make the fullest and most economical use of our facilities at all times. The ideal sought is a steady production pace rather than extreme peaks for maximum volume. In the long run this is the chief protection for quality of product and efficiency of operation. This daily production rate is a target to be attained by the selling organization of each division as consistently and steadily as possible.

But, Chrysler puts into production only cars that have been ordered by dealers. The full rate is not always obtainable at all seasons; so a number of steps remain to be taken before the volume of materials and parts to be produced by vendors and brought into our plants is determined. In other words, sales estimates are to be made, manufacturing schedules determined, production and procurement of parts considered. All of these are coordinated to attain this production rate or goal.

So, in the next phase of our discussion we will deal with the method of estimating sales. In selling automobiles to an organization of 10,000 dealers, it is necessary to have a thorough knowledge of the potential capacity to absorb automobiles in the markets of each dealer's territory. The number of automobiles in use there is known; the average replacement is known; and so is the distribution of automobiles by various makes. A sales organization starts, therefore, with a goal or quota for each territory. This is based on past experience and modified, of course, to conform to major changes either in condition of the territory or the competitive status of cars sold.

Since conditions are always subject to change, not only nationally but locally, a system of current reports is maintained. At a regular interval of days, each dealer informs the factory exactly where his business stands. This report includes the number of sales made since the last report, number of cars, new, used, on hand, and the number of unfilled orders. These data are detailed by model and body type. Compared to a previous series of such reports, trends are disclosed. If there is a slump in a given locality, it is the business of a field organization to determine the causes and propose measures to overcome these. If a general slump or rise is indicated, these are interpreted in the light of previous comparable periods and general economic data. If a particular body type is selling faster or more slowly than expected studies are made so that this public choice may be met.

Of such material, each sales division of the corporation makes up a four-month projection of expected shipments to dealers. The immediate month's schedule is a firm one. The others are subject to revision in progressive degree.

As these monthly estimates come in from the divisions to the general production manager, they form the basis for releasing forward production schedules, but not until they have been thoroughly reviewed and analyzed in terms of plant conditions and various other pertinent factors. Modifications are made, where advisable, as they affect the proportion of body types. Not only is it necessary to assemble cars in the right combination of models and body types, but schedules of fabricated parts must be considered. Requirements of steel must be reckoned with. Therefore, the correct gauging of material requirements becomes a matter of first-rate importance in order to maintain proper balance between inventories, production, and retail sales.

As an example, let us consider the events that take place in determining the requirements of material for the desired products. We shall take steel as an example. Instructions are issued to the Planning Department of each division to submit a report showing quantities of bar, sheet, strip or coil steel required for the breakdown of models and body types. These instructions emanate from the general production manager and cover a given number of vehicles--usually one month's anticipated production. At the time these instructions are issued to our manufacturing division, vendors are also requested to report their material specifications and requirements. While they procure their own material, it is necessary for us to know this in order to establish the complete content of our end items.

The method of arriving at steel tonnage requirements by all divisions is coordinated and is an interesting procedure. Many departments and activities are involved in bringing together at one point sufficient information to quickly and properly translate automobile parts into pounds of steel. This job could not be accomplished without an up-to-date bill of materials and a closely followed list of part numbers. Thus, much importance is placed on a comprehensive bill of materials, which we will take up a little later in this discussion.

The Planning Department maintains material record cards for every part released for production. This record is the focal point for all pertinent information relative to parts. Information reaches this record primarily from three sources: (1) The Engineering Department, (2) the Master Mechanics Department, and (3) the Central Routing Department.

The Engineering Department compiles a parts list, which is a listing of all items required and released for a complete model. When a

part is released for production, the Engineering Department likewise issues an engineering release. This form provides basic information identifying the part and describing its use for specific models and body parts.

The Master Mechanics Department develops tooling for the processing within our plants of all parts released. It also prepares reports covering sizes and commercial descriptions of raw materials required for the fabrication of parts in relation to the tooling. Parts lists, engineering releases, blueprints, and Master Mechanics reports clear through the Central Routing Department where they are distributed with the bill of materials to the Planning Department of each division and to the other departments which may be concerned.

We mentioned earlier that much importance is placed on the bill of materials. It is the controlling instrument for the entire process of determining requirements of steel and other materials. With all the necessary information channeled into the Central Routing Department, it is here that the bill of materials is formed. It is created from the parts list of all items released for a complete model. It is a combination of the parts list and material specifications and covers the number and nomenclature assigned to each part, the size, analysis, and classification of material required to manufacture the part, the dimensions required to purchase the raw material, and the unit size and weight of the finished piece.

To arrive at a comprehensive bill of materials, information is collected from our vendors and is included with that supplied by our own divisions. All this information is then brought together and recorded in the Planning Department, where calculations are made to determine steel requirements for all parts contained in the bill of materials for any given model. Knowing, to the pound, the material contents of each car or truck, we are then in a position to determine the total tonnage of each material required. A recapitulation of this material required for each model or body type is prepared and written into a steel requirements report which is submitted to the General Production Manager by each division.

When steel reports from all divisions are in, a combined report is prepared showing total tonnage required by the entire corporation. If you come right down to it, the key to any flow-plan of manufacturing is an accurate and complete bill of materials. There is no other way to keep the enormous volume of raw material needed from running over or falling under requirements. The more critical the supply of such materials--as under war conditions--the more essential it is, it seems to us, to have accurate and immediate information on exactly what quantities of items of different kinds can be had out of available mill capacity. The top military command and procurement agencies must know this. Bills of materials are the only accurate means to yield this information.

Now, let us go back to the sales estimates. Sales estimates, when approved as written or modified, become the basis for authorized production schedules. These authorized production schedules are known as the master schedules from which the production of all plants of the corporation is regulated, all material released, and on which forward buying is based. These schedules are set up to indicate firm production of a given number of vehicles for one month, tentative monthly production for three forward months to allow for fabrication of parts and materials, and simultaneously projections of still further probable production to allow for procurement of those raw materials which are long-time items. In directing the master schedules to the management of each division, responsibilities for attaining production and sales goals shift from the corporation management to the individual plants.

We mentioned earlier in this discussion that operating under today's conditions is somewhat removed from our normal procedure. From the end of the war until today, master schedules at Chrysler have been based on the availability of steel rather than on sales estimates--since we have at no time obtained enough steel to meet the demand of these estimates. Steel is obtained by allotment from the mill, establishing basically on the prewar record of consumption. The inflow varies under changing steel mill conditions. Steel must be obtained in many different shapes and specifications. The availability of different widths and sizes of sheet and strip, the promised delivery dates from the different mills, and the ability of these mills to fulfill their promises are all factors which are followed in minute and exact detail so that the obtainable quantities of the various classifications of steel may be distributed to the divisions and plants in proportion to their several programs. Here again only a bill of materials makes an accurate distribution possible.

With this analysis completed, production is authorized and master schedules are prepared. Now, gentlemen, with production goals established, sales estimated, and manufacturing schedules authorized, let us consider the events that take place in correlating parts and materials to the finished product.

The Engineering Department has supplied an engineering release for every part required and has developed a parts list for each specific model. As we have seen, the engineering release carries a description of the part, the models on which it is to be used, the number of pieces per model, and the production line-up, which enumerates the subsequent steps in the manufacture or procurement of the part. Engineering releases are channeled through the Central Routing Department in their course of distribution to the Manufacturing Division. It is in the Central Routing Division that bills of materials are compiled and where master records are set up and maintained for every part released. It is here also that blanket requisitions are prepared for the purchase of parts that will be supplied by outside sources.

When received in the manufacturing divisions engineering releases, bills of materials and authorized master schedules are directed to the Planning Department. At Chrysler, it is the Planning Department of each division that is charged with the responsibility for the control of all parts from the time they are released by the engineers until they reach the final assembly line. I think it is important for you to know that throughout the manufacturing operations no stock rooms are maintained except for protective banks. Materials are dispatched directly from the receiving room to the operation on the line. This calls, of course, for exact timing and constant follow-up of materials to meet production schedules.

Now, let us take this Planning Department apart and see what the general functions are and how the department is constructed. First, we find that the general functions of the Department consist of: (1) interpreting, coordinating, and releasing engineering specifications; (2) preparing and releasing manufacturing schedules; (3) controlling inventory of purchased finished and raw materials, regulating the flow of materials from vendors, and seeing that sufficient material is on hand within the plant to cover schedules; (4) regulating the quantity of output in relation to sales schedules; and (5) handling materials to effect economical manufacture.

Then we find the Structure Department consists of two main sections--the Material Records Section and the Material Handling Section. These sections are subdivided into groups, each of which is responsible for certain divisions of the planning functions. The Material Records Section is made up of the following groups: Engineering specifications, Schedule and Auditing, Shop Schedules, Calculating, and Release and Follow-up. The Material Handling Section controls: Receiving, Inter-department Trucking, and Miscellaneous Shipping. Each of these groups is an important member of the planning team, and it is coordinated teamwork that brings parts and materials together in proper sequence and at the right time and place.

The Engineering Specifications Group receives and interprets engineering reports and specifications for all parts released and coordinates these with operation studies preparatory to manufacture. I might say that these groups that I am speaking of now, the Engineering Group and so on, are all in the Planning Department of each division. Each division controls its own Planning Department. I am speaking now of the procedure followed by each one of these groups, which is uniform at each division of the Corporation.

All the information received in the Engineering Specifications Group is tied together. From this tying together, specific activities are performed and various records are established which form the starting point of the planning sequence. The material record card originates

here. It is the working medium and control record for the entire planning process. All pertinent information, plant routings, production and procurement line-up, models on which the part or assembly will be used are recorded on this card.

It is here that parts are checked with bills of material to insure the receipt of all releases necessary to complete the model. Engineering change notices, describing changes in any part or assembly, are examined and recorded (I wish we could get away from engineering change notices, but, as you gentlemen know, there are constant changes being made. Maybe that is progress) then effective points in manufacture are determined and instructions issued to those departments concerned.

The Scheduling and Auditing Group compiles detailed schedules of major assemblies so that necessary requirements of component parts can be calculated and subsequently procured or manufactured. I have likened this operation to the ignition system of an automobile.

It will be noted that the information used in preparing detailed schedules emanates from two sources: (1) the authorized schedule from the General Production Division--illustrated as the battery--this is the authorized master schedule that was compiled from sales estimates; (2) the interplant releases from other plants of the Corporation--illustrated as an auxiliary power storage. Interplant releases cover shipping dates and quantities of parts required by the other plants of the Corporation.

On receipt of these schedules and releases by the Schedule Group, they are broken down into detailed schedules and generally cover motors, transmissions, axles, special equipment, trim and bodies. On completion of these detailed schedules, they are distributed to the following groups: Engineering Specifications, Release and Follow-up, Calculating, Shop Schedule, and Body Framing, where the procurement process starts.

The Schedule and Auditing Group also perform (and this is important) an auditing function. This consists of an examination and verification of all planning records to insure accuracy of calculations and to see that the releases are properly prepared so that material will be available at the right time to meet schedules.

The Shop Schedule Group is interested in the parts to be manufactured within the plant. It is its function to prepare and issue manufacturing schedules to the factory departments showing quantities of each part to be produced. The material record card is the controlling instrument in compiling shop schedules. From an analysis of this card, the Shop Schedule man determines the quantities required and the specific departments to schedule. Close coordination with the Release

and Follow-up Group is necessary with respect to the procurement of material or fabricated parts required for the Shop Schedules.

The Calculating Group.--I think this particular group of the Planning Department is one that would be quite interesting to you gentlemen. It might seem that it is a small operation, but it is a most important one. This group actually does the figuring and comes up with the answer as to how many we will use and how many we need. The Calculating Group is charged with the responsibility of calculating the requirements of each part. Requirements are generally determined once a month, and are based on the number of vehicles authorized in the master schedules plus the number of parts required by other divisions of the Corporation. In making these calculations, several factors are considered, such as the usage required per model, accumulated scrap, general inventory, the normal bank that is carried, and in-transit time. Those are all factors that are most important in considering the actual quantities that are required.

The success of the over-all operation is due to a large extent to the regulation of incoming material and the control of floats and banks of stock, so that balanced inventories may be maintained and obsolescence kept at a minimum. In this connection, I wish to make clear that contracts in terms of purchase orders for the supply of raw materials and fabricated parts are negotiated with vendors by our Purchasing Department. It is, however, a planning function to release against purchase orders specific quantities to meet our schedules of production.

It is in the Release and Follow-up Section that a procurement program is laid out, after a thorough analysis is made of all information indicated on the material record card. Vendors' shipping releases and interplant shipping releases are prepared showing exact quantities and shipping dates. These generally cover a three-month period plus an additional quantity to allow for vendors' raw material commitments. After releases are issued, constant contact is maintained with the vendors to insure the inflow of materials in relation to manufacture schedules.

As materials are received into the plant, the Material Handling Section of the Planning Department takes over. This section is responsible for the prompt unloading, dispatching of material, the maintaining of sufficient stock at all production lines, and the handling of outgoing shipments of parts and materials.

That in a nutshell explains the planning process and indicates the steps that are taken to correlate parts and materials to finished products.

Now, let us quickly summarize a few of the points we have covered this morning.

First, the Chrysler Corporation is made up of several operating divisions. Each operates individually with its own executive staff and manufacturing and sales organization. All are guided by major policies developed by the over-all management.

Second, over-all management works through an Operations Committee, a Manufacturing Committee, an Engineering Board, and a Sales Committee to coordinate divisional activities.

Third, production goals are established by the Operations Committee many months in advance of the production date and after consideration is given to certain external and internal factors.

Fourth, sales estimates are formulated by the Sales and Statistical Department of each division from sales trends and actual week to week developments as reported from the field.

Fifth, sales estimates approved as written or modified by the General Production Manager form the basis for authorized production schedules for all divisions.

Sixth, the Bill of Material is the common multiplier for determining the requirements of all materials for the scheduled products.

Seventh, when the production program has been authorized, it becomes the task of the Planning Department of each division to reduce it to working data--dates, times, and quantities for delivery of supplies to manufacturing points, and then to follow through to execution.

All this discussion may lead you, gentlemen, to the conclusion that producing automobiles, particularly preparing the way for production, is a cumbersome and complicated procedure. Certainly it would be beyond any one man's capacity. But, when many men put their minds to the job, use their experience and "know-how" on it, and when the big job is divided into thousands of small jobs, things get done as planned and on schedule. It is careful forecasting and skillful planning that enables Chrysler to keep production in balance with sales demands.

Thank you very much.

MR. HENKEL: Before we start the question period, I would like to introduce to your Mr. Moran, who is the Planning Coordinator of Chrysler Corporation along with Mr. Angerman. He will assist Mr. Angerman in answering some of the questions.

QUESTION: Just taking one plant division, about what percentage of the total people of one plant division is overhead?

MR. ANGERMAN: That, of course, varies. Do you know, Mr. Moran?

MR. MORAN: It runs between 8 and 10 percent, as applied to salaried employees. Hourly rated employees averages one nonproductive worker to two productive.

QUESTION: Could you state to what extent the export market influences sales? I ask that because in Great Britain, I should think, 80 or 90 percent are exported. I wondered what percentage of the cars are exported from your corporation here?

MR. MORAN: At the present time the production of export cars runs 8,000 a month against the total production of 90,000 in all our lines.

QUESTIONER: You mentioned that in the parts assemblies of the various plants you had no stock rooms but that the various parts coming in from the various shippers went right to the shops' assembly lines.

MR. ANGERMAN: That is right.

QUESTION: It seems to me that is a tremendous problem in view of transportation difficulties. I was wondering what size stock you keep at the assembly line?

MR. ANGERMAN: As you probably will recall, I qualified that by saying "except for protective banks." Now, the banks are to protect, of course, the production lines, and it runs a ten-day bank. It varies, of course, on different parts. There may be parts that are standard parts--nuts and bolts--that would run into a lot of pieces. But ten days, I would say, is a very good figure on that.

MR. MORAN: I would like to amplify that a minute if I could. I think what you are driving at is how we operate with practically no bank at all. I would like to give you a specific example of that.

We purchase, say, assemblies from the Budd Manufacturing Company of Philadelphia. We operate our plant on a bank consisting of what we can get on the conveyor lines from the first to the fourth floor. The rest of the protective bank is in box cars rolling between Philadelphia and Detroit. We actually have a four-hour protection for finished parts.

MR. ANGERMAN: I can go you one better. Two hours on body parts.

QUESTION: Could you tell us what type of business machine you use? Is it the International Business Machine?

MR. ANGERMAN: Both International Business Machines and Remington-Rand.

QUESTION: Is it done on machine record cards?

MR. ANGERMAN: Yes, pretty much.

QUESTION: In your last slide here you indicated the basic elements in the general organization, I believe. As I gathered from your discussion, your production goal is established by your production element, which is, I believe, secondary to your management element; that, I believe, is the top echelon. Is that so?

MR. ANGERMAN: The Operations Committee, as you will recall, sets the production goal.

QUESTION: What I was confused about is whether the production goal is actually established by your second echelon in your organization or the top group?

MR. ANGERMAN: That is the top group. The Operations Committee takes in the top officials of the Corporation. They establish the production goal, which, as you recall, is a long-time goal that is set twelve to eighteen months in advance of production. But that, of course, is adjusted and modified as we near the production date.

QUESTION: In forecasting your production, do you allow any factor for possible loss of production through labor difficulties?

MR. MORAN: We don't anticipate any, no. We operate on the theory that we aren't going to have any labor difficulties or material shortages. However, if we do have them, we try to fix them up after they happen, although we don't have too many.

QUESTION: Under the present condition of operating your production against the limitation on materials, how do you allocate materials between your various manufacturing divisions?

MR. ANGERMAN: That is done on a proportion of the body type against this production goal, and the amount of steel--I use steel because that is a very basic commodity--is determined on that little description that I gave you of steel. We set an anticipated month's supply or month's production of cars, and from that we break down by each division how much they will require of this steel. That is used as a basis. We can't, of course, take that amount and say to the mill,

"We want this much," because it is going to tell us what we are going to get. So after we get our allotment from the mill, based on this proportion that has been developed on a certain number of cars, by percentage we determine how much each one of these divisions will get, and from that how many automobiles it will make.

QUESTION: Due to the fact that you are still operating under a shortage of steel, do you make any effort to turn out cars with a lesser amount of steel in them?

MR. ANGERMAN: No.

QUESTION: In other words, you don't change the specifications to fit this quota.

MR. ANGERMAN: Not to a great extent. You might qualify that, Mr. Moran.

MR. MORAN: We have endeavored to reduce our specifications in view of the steel shortage but not to lessen the efficiency or the quality of the products. But through development and through research there have been definite substitutions made, such as aluminum or something like that, which does reduce the total quantity of steel used in an automobile.

QUESTION: I notice that you figure the amount of steel required by your vendors, but you say they purchase their own steel.

MR. ANGERMAN: That is right.

QUESTION: Do you attempt to get allocations for them?

MR. ANGERMAN: No, we do not. We only use that to determine our own end item, as to what goes into it.

QUESTION: I am not quite clear. Is the actual procurement done by the Corporation or by the individual divisions?

MR. ANGERMAN: It is done this way: An over-all requisition is made for the amount of material, broken down by divisions. There is a central purchasing department that purchases for all divisions. I will try to make that a little clearer. While the purchasing department issues and negotiates with vendors for materials, the actual procuring or releasing of this material is done by the division, based on the previous requisitions that had been broken down by divisions, but put through a central purchasing department.

QUESTION: How do you forecast your spare parts requirements that your dealers will require?

MR. MORAN: That might take a speech. Briefly, we do that basically on experience. We have no other means to use but experience. We have a very close affiliation with our dealer body and we maintain at about ten or twelve strategic points in the country, parts depots that carry a normal amount of inventory to take care of immediate requests from the dealers. Then we have two main depots that carry a larger volume of materials which feed to these depots; and we order every six months on the past month's parts the equivalent of the preceding six months' requirements and sales. There is no fixed formula that we use other than experience. I could go into that a little more in detail if you want me to.

QUESTION: Do you have a replacement factor developed for each part?

MR. MORAN: Yes. Not specifically by part numbers, but by groups. They are broken down into about ten or twelve major groups in the total automobile. They have a relative replacement usage developed on that basis. But then they are each individually analyzed as the current market sales come in.

QUESTION: Where does availability of materials come into your distribution of steel as between models in one division? Do you have a bill of materials and you know the quantity? If you allot a certain amount of steel to one division, how is it broken down then between body types? Is it a separate portion?

MR. ANGERMAN: Yes.

QUESTION: Or dependent on the amount of material involved for each body type?

MR. ANGERMAN: Each division figures its own bill of materials and determines its own quantities that will be required for the body types that they are going to build. So that is a divisional procedure and is handled by them.

MR. MORAN: I would like to add to that a bit if I may. There is a controlling factor there other than steel. There is the tooling factor. Each of these body types can be produced up to a certain total regardless of whether there is surplus steel or not. As a specific example of that, in these past two years since we have been building the present models, we have a very definite control on the Club Coupe model. The public acceptance was very good. We underestimated it, frankly. We don't have the tooling to produce as many as we can sell.

864

So the steel is just broken down in line with sales for a particular body type plus our ability to produce it.

QUESTION: Are these twelve depots, as well as the reserve depots, operated by a central warehousing agency of the main Corporation, or are they operated by the division?

MR. MORAN: They are operated by one main corporation division of the Chrysler Corporation. They do not come under the control of any of the car building divisions thereof.

QUESTION: Do you maintain in the warehousing division of the Corporation a stock record of each of these parts in stock in each of these twelve depots by sizes and by quantities?

MR. MORAN: No. We only keep a record of what has been shipped to them against their orders. They are treated as just another dealer. We don't maintain their inventories. They maintain their own.

QUESTION: Wouldn't you attempt to keep track of the parts on hand on dealer's shelves?

MR. MORAN: No.

QUESTION: On the matter of spare parts, do the depots maintain any stock control with the individual dealers?

MR. MORAN: No, they do not.

QUESTION: In other words, you have no means of recalling large stocks that may be hoarded by a dealer in any particular area.

MR. MORAN: If that happens. Of course, we are in business to sell parts. If a fellow wants to buy them and hoard them, normally it is all right. But at the present time if there is a shortage of a particular part and it is hard to procure and we are forced to do other things to get it, we have our field sales representatives and our field technical men survey each of the dealer's stocks, and if there are too many there, we will take some away and redistribute them to the points where they are needed. But this is only done in remote and rare cases.

QUESTIONER: I have in mind situations such as came about in the farm implement and airplane industries, as well as the automobile industry, during the war when there was a shortage of spare parts.

MR. MORAN: That is one way we handle them. The other way, during the war, we did put dealers on an allotment basis and we did control the sales to them and our shipments to them. But since the war, we haven't done it. We don't do it normally.

QUESTION: Do you make any effort to follow-up on customer complaints or dissatisfied customers as affecting future sales?

MR. ANGERMAN: Very definitely.

QUESTION: How do you go about that? A lot of times we go into a local service station or an authorized dealer to get a part deficiency corrected. We are not satisfied. A lot of times it influences our feeling against that particular make. You feel that unless you take action direct with the company, maybe that complaint or that attitude of the local dealer wouldn't be known higher up. How do you learn about those complaints and try to keep a happy customer?

MR. MORAN: Well, of course, that is one of the unfortunate things-- we don't do business with the public; we do business with the dealer organization and hope that it is a good one. However, our sales department does contact the public. If you purchase a new car from one of your local dealers, in the course of three or four months you probably will get a letter from the sales manager of the division that you bought the car from. If it was a Chrysler, it would be from Joe O'Malley, who is the sales manager for the Chrysler Division, asking how you like it. If you have any complaints, you can give him your beef. Otherwise, the only recourse is to address your complaint to the division service manager. There is a service manager in each of our divisions, and he takes care of servicing that car after it is sold. Any letter addressed to him will get a reply. It may not get a satisfactory one, but it will get a reply.

QUESTION: We have had a great deal of difficulty and quite a bit of comment about duplications in the Armed Services on item materials. It seems to me that with several different plants you might run into that same difficulty of duplication of spare parts. How do you handle that? Do you have an interchangeable list?

MR. ANGERMAN: That is one of the points that I wanted to cover and did cover. I emphasized in my talk about an exact, up-to-date parts list. We try to maintain that, and we talked to the procurement agencies during the last war in that same regard, to get everybody educated to the fact that we must have--and you should have--an accurate, up-to-date, comprehensive parts list that will identify that part and avoid this constant duplication that creeps in if you don't have an up-to-date parts list. It is the parts list that does it.

QUESTION: I was asking partly as to the interchangeability of parts lists on different models of your cars, Chrysler, Plymouth, and so forth?

MR. ANGERMAN: Yes, we do have that. Yes, indeed.

866

QUESTION: Do you have the same number?

MR. ANGERMAN: Yes.

QUESTION: At what stage of obsolescence of your models do you cease building spare parts?

MR. MORAN: We never do. We service our models. We are still servicing Jack Benny's Maxwell. But to answer your question sincerely, we try to obtain a service requirement for a two-year period from the service parts division of the Corporation on all parts that will be obsoleted by the incoming model. We try to run those through our production facilities sixty days prior to the time that old model is stopped in production. So that it comes through on a production run and doesn't get bottlenecked at the conclusion of the program with the inception of the new program.

QUESTION: Isn't that a very expensive operation, especially with older types?

MR. MORAN: You mean running a two-year requirement or running sixty days ahead, or what?

QUESTION: Just the general problem of maintaining spare parts for old cars and keeping them in production.

MR. MORAN: Yes, it is. But there is quite a bit of interchangeability. Even though the exterior of the car changes quite a bit, the interchangeability underneath the car continues on, and the life of the functional parts is sometimes four or five or six models long.

We don't stock a lot of parts on cars ten or fifteen or twenty years old. The bulk of the stock that we carry is on cars seven years old or younger because that is the big service demand.

The service problem of an automobile is probably a little different because the number-one man that has a car is one of your big users of service parts. He keeps his car up. As the cars go down from the seller, the original owner to the next owner, and down three or four stages until it hits the graveyard, the demand for certain types of parts becomes less. In other words, all the third fellow is interested in is transportation. He doesn't care what it looks like. So we use that in scanning our requirements and orders. So it doesn't become too expensive.

QUESTION: What percentage of your production is handed out to external production facilities, that is, you must subcontract for a lot of your parts?

MR. MORAN: There are normally around 8,500 parts in an automobile as we make it. At the present time we are making about one-third of all those parts. That doesn't mean it is one-third of the cost, or one-third of the weight, or anything like that. Just one-third of the part numbers involved.

GENERAL HOLMAN: Mr. Angerman, this has certainly been a very splendid discussion of the problems of organization and management. I know that the officers who have heard you this morning will find a great many military parallels in the problem that you have discussed. So far as attacking the problem of requirements, you have taken a great deal of the mystery out of that particular subject for us this morning.

Mr. Moran, we are very appreciative of your response to the many and varied questions which we have had this morning. Thank you very much.

I know that I speak for every member of the faculty, staff, and the student body when I say that we are most appreciative.

(22 December 1948--450)S.

868

868