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SUBCONTRACTING IN THE AUTOMOBILE INDUSTRY

5 March 1948

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COLONEL CRANE: Gentlemen, with the establishment of material controls and the issuance of limitation orders, we had a serious problem to face in the fact that many plants were unable to operate by virtue of lack of materials. In most cases, these were the smaller plants which were not particularly suited for prime contracts and therefore had considerable difficulty in obtaining war contracts. The matter became so serious that it acquired political significance and became quite a headache for the Services in securing proper work for these small war plants.

The problem never was really satisfactorily solved and it remains for us to attempt to devise some way of utilizing satisfactorily small war plants in the event of any future emergency, not only from the point of view of the political significance, but also from the point of view of utilizing to the best advantage all of our possible resources.

Now, in approaching this problem, the thought occurred to me that the automotive industry normally does a tremendous amount of subcontracting. It has developed the art of subcontracting; it has devised the organization necessary to do that successfully; and it has developed certain plans and methods which might point the way for the Armed Forces in the adoption of those plans which might be applicable to a future emergency.

Our speaker this morning will talk on "Subcontracting in the Automobile Industry." He is admirably qualified to do this, having been associated with the automobile industry for many years. During the war he was closely associated with the Automotive Council, and at the present time he is assistant to the president and assistant to the chairman of the board of the Studebaker Corporation.

It is a privilege indeed to present to you Mr. Courtney Johnson.

MR. JOHNSON: Thank you, Colonel Crane. Gentlemen, General McKinley and Colonel Crane have asked me to discuss the problems involved in subcontracting in industry in the event of a national emergency, with particular emphasis on how the subcontracting methods used in the automotive industry could assist in developing a system which will produce the needs of the Armed Services most rapidly and efficiently and with the most widespread use of our industrial facilities. I explained to them that while I am very glad to discuss this subject, I doubt my ability to give you categorical solutions of the problems involved. In fact, I doubt the ability of anyone to give you complete solutions. There are, however, a number of phases of this

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one manufacturer from another manufacturer of anything which contributes to a production program.

The classes of items which may be purchased in a subcontracting program to produce an end-item are also defined by the Munitions Board as follows:

An end product "is a completed assembly of component parts, subassemblies and/or materials ready for operation, as is, but intended for further installation in an end-item."

A subassembly or component "is a group of two or more component parts that function together to form a portion of an end product."

A component part "is a finished article manufactured for use in subassemblies, end products or end-items."

A basic processed material "is a material derived from a raw material ready for use by itself or in combination with other materials to form another processed material which is ready for use in one or various ways."

A raw material "is an ore or other unrefined material existing in nature."

Therefore, within these five classifications fall all of the products which may be used in connection with the production of an end-item.

Fortunately, we have some very specific information in regard to subcontracting in the automotive industry during World War II. It should be realized that during the military procurement program from about 1 February 1942 until 1945, the automotive industry produced none of its peacetime products with the exception of a relatively small quantity of replacement parts which were necessary to keep existing vehicles in operation. We built no passenger cars and we built no civilian trucks. Therefore, all of the subcontracting which was done related to the war programs. Let me give you some statistics in regard to subcontracting by individual companies and an estimate for the industry as a whole.

The General Motors Corporation, which was the largest prime contractor in industry in World War II, consists of 37 divisions and approximately 110 plants. Its facilities for the manufacture of metal-working products are greater than those of any other organization in the world. In spite of this fact, General Motors employed during World War II, 18,735 subcontractors who were not directly connected with the General Motors parent organization. Duplication of subcontracting by the various General Motors divisions has been eliminated

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On page 32, the statement was made as follows:

"An analysis of the available data on subcontracting, however, indicates, first, that it was never carried on as extensively as has been commonly assumed, and, second, that most of the value of the subcontracts placed by big prime contractors went, not to small firms, but rather to other large concerns."

On page 33:

"With big business receiving the great bulk of the prime contracts and doing comparatively little subcontracting to small firms, it was inevitable that big business would obtain the larger share of the Nation's resources in the war effort."

And on pages 30 and 31 of the same publication are listed the 100 prime contractors who obtained prime contracts to the value of approximately two-thirds of the total amount awarded. The indictment is to the effect that when the Armed Services had a big job to be done, they got a big company to do it. When that big company had a big subcontract to place, it was placed with a big subcontractor, and when it had a small subcontract to place, it was placed with a small subcontractor. It seems to me that if this indictment has any merit, then the corollary would have to be that the Armed Services, if they have a big job to be done, should get a small company to do it, and if they have a small job to be done, they should give it to a big company. I don't want to appear facetious in making this statement, but I can see no other possible solution, and yet such a solution might very well destroy the prime objective in time of war, which is to get good products in large volume quickly.

Since an objection was raised to giving large prime contracts to large companies, it would be well to examine the functions of a prime contractor in assuming war responsibilities. You will remember that 56 cents of every dollar paid to prime contractors in the automotive industry were passed on to subcontractors. What became of the other 44 cents that the prime contractor retained? What were the functions for which he was paid? First, he organized, trained, and paid the labor force within his own factory out of this 44 cents. Next, he paid all of his overhead expenses, which included top management with years of experience and "know-how". He paid extensive engineering forces, including research engineers, production engineers, experimental engineers, testing engineers, draftsmen, designers, and engineering mechanics. He paid purchasing agents and a purchasing organization which had not only the experience and ability to buy the goods and services needed but had the knowledge of industry which allowed them to find and establish other organizations as subcontractors and suppliers, and, to a very considerable extent, supervise their

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Small business did benefit to a maximum extent under this system. The fifteen companies in the automotive industry included in the list of 100 large prime contractors employed some 25,000 subcontractors. In a group this large, most of them definitely are in the realm of small business.

General Motors Corporation headed the list of 100 with nearly 14 billion dollars of prime contracts, just about double Curtiss Wright in the number two position; but here's how General Motors handled this volume of work. Even with its 37 divisions and more than 110 plants, on the M-4 tank containing 3,719 parts, 392 were made by the division that was the prime contractor, 1,103 by other G.M. divisions, and 2,224, or 60 percent of the parts were made outside the General Motors Corporation. On the aerial torpedo which contained 5,112 parts, only 110 were made by the prime contracting division, three by other General Motors Divisions, and 4,999, or 98 percent outside the corporation.

In the manufacture of the Weasel, we employed 306 subcontractors who made all of the parts of the Weasel, except the engines (and we subcontracted many parts for the engine) and certain small stampings and chassis springs which we manufactured ourselves. A multitude of examples of the same kind could be cited if time permitted.

With this background of World War II experience, I think, as a part of this discussion, we should now ask ourselves three questions which relate to possible future procurement:

1. Should large prime contracts be given to small companies just because they are small?
2. Should subcontracting be expanded beyond the pattern of World War II?
3. How can this be done?

It seems to me that the first question answers itself. If you want production on large prime contracts, they must be handled by large companies or by companies that immediately become large. An attempt to do otherwise would most certainly handicap industrial operations to a point where we might very well lose a war.

I think the answer to the second question--Should subcontracting be expanded?--is definitely "yes" provided, however, that this can be done in a manner that will equal or improve the results that we have obtained, which leads us directly to the third question--How can this be done?

Before attempting to answer that question, we should examine the functions and activities of subcontractors. By a definition already quoted, a subcontractor is a producer of anything which eventually

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facilities to make but not in sufficient volume; and (c) those products which a prime contractor can make but would have to establish completely new facilities to make.

I think it would be unreasonable to suppose that a prime contractor should subcontract those products which he can make and has the facilities to make. Thus we finally get down to a very limited area in which subcontracting can be expanded or contracted; namely, those products which a prime contractor could make but would have to increase his facilities or establish new facilities to do so. In this area, there may be some opportunity for increasing subcontracting. Let me define this area more closely in relation to certain Studebaker operations during World War II.

One of Studebaker's prime contracts during World War II was for the U.S. 6, 6x4 and 6x6 trucks. We produced approximately 200,000 of these at a cost to the Army of between 500 and 600 million dollars. This contract, therefore, was a large prime contract, and the subcontracting pattern for it can well be used as an example to illustrate my point. We employed 398 subcontractors from whom we bought materials directly. This number, of course, does not include the subcontractors employed by our subcontractors on this contract. I have no idea how many sub-subcontractors there were. Of these 398 first-tier subcontractors, 140 furnished us with basic processed material and the subcontracting was automatic; 212 furnished us with standard parts, component parts, assemblies or supplies which, in many instances, we could not make and in others would not make unless absolutely forced to by the complete absence of outside sources of supply. Typical examples of this classification would be carburetors, electrical equipment, frames, wheels, and tires. Therefore, out of a total of 398 subcontractors, 352 represented subcontractors which I consider as inevitable and automatic. The remaining 46 subcontracts were for products which we conceivably could make but which we subcontracted because of necessity or to save time or money. Of these 46, one subcontract was for an item for which we had capacity, namely, gray iron castings. We did not use our capacity because we were not allowed to do so. Governmental regulation on wages required a ceiling on wages paid foundry workers, and since we could not employ foundry workers within this ceiling, we did not operate our foundry during the war in spite of many efforts to do so. Twenty of these subcontracts were for items which we could have made but for which we had no capacity. A good example of this is forgings. We have no forge shop but could have established one and made forgings if that had been desirable. Twenty-five of these subcontracts were for items for which we had partial capacity. A good example is stampings. We have a stamping plant but could not accommodate all of the stampings necessary, therefore, we subcontracted many of them. We actually subcontracted everything on these trucks except chassis springs, some stampings, and, of course, various assembly operations.

our aviation engine program. Therefore, in this case, the area in which subcontracting might have been increased was much larger, but it proved impossible to do it.

My conclusion from this analysis is that the area in which subcontracting can be increased or decreased is small, and that that area is subject to analysis, preferably before the contract is awarded to a prime contractor or at the time that it is awarded. To drag in a term which really relates to something else (terminations), I might say that the amount of subcontracting to be done by a prime contractor can be predetermined and agreed upon between the prime contractor and the procurement authorities.

My suggestion is that the possibility of predetermining the subcontracting pattern in this area receive your very serious consideration.

Before closing, I should like to point out that there are some dangers involved in forcing a subcontracting pattern. If subcontracting is forced too much, you may get unreliable sources; you may limit the volume of production; you may get sources that will not produce parts up to quality standard; and you may overload some available sources to the detriment of the whole program.

Furthermore, intelligent subcontracting involves an analysis of any subcontractor to determine capacity of his management, the skill of his engineering and technical force, the availability of labor, the capacity to produce in volume and his reliability as a producer of good products. If a subcontracting pattern is forced to an extent where each of these considerations is not given full weight, the result will be disastrous.

May I repeat that we should all bear in mind that contracting for war purposes has as its primary objective the winning of a war, and that there is no compelling motive for the distortion of the industrial pattern so great as to warrant the risk of losing the war. Our primary purpose is not to spread subcontracting, but to win the war!

QUESTION: This is a question concerning spare parts. Did the Government in purchasing subsequent repair parts for an end-item purchase direct from the prime contractor or go down to the subcontractors for those parts?

MR. JOHNSON: I believe both systems were used. I do not believe there was a clear-cut case of doing it one way or the other. You must remember that if the Government goes in to purchase spare parts, in some instances, separately, and very obviously from the same sources of supply, you have your production program in competition with your spare parts program within that source of supply, and the pressure for

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We had some experience with that on the weasel, which was a very rush job. We gave the transmission job to Clark Equipment Company. It got out the first thousand, and then said, "We just can't make any more." They tell us we have to meet schedules for other programs." Well, we had to go out and get another source. It wasn't easy either. We finally got the Cincinnati Milling Machine Company in Cincinnati to make those transmissions. It was not a producer of transmissions--it produced machine tools--but it made them just the same. We had to move machinery down there for the Cincinnati Milling Machine Company and do all kinds of things to get the transmissions, simply because our original subcontractor became overloaded. Warner Gear was overloaded on transmissions, too. We finally had to go to Reo which made transmissions and also some trucks. We were making and sending some of the truck parts to Reo, and Reo made and sent transmissions to us. Out of the whole thing, we finally got the program going. That overloading is a very serious possibility.

QUESTION: My question concerns planning for expansion in case of mobilization. How could the Government now get industry to enter into that program?

MR. JOHNSON: I think the answer to that question is very clear, and I hope it is being done. I am told it is being done over in the Munitions Board.

I think the answer is this: First, obviously, the Armed Services have to know what they want, and as soon as they know what they want, if they can tell a company--ourselves or anybody else in the automotive industry, or, I think, in any other industry--what the item is that they want, how fast they want it--I mean in what quantity, how many per hour, per day, per week, or per month--and give us the blue prints, we can give you all the information there is, and fairly promptly, too. We can tell you how long it will take to set up for it, what facilities must be added, what machine tools will be necessary--jigs, tools, dies, and fixtures you will need--how much labor will be necessary, whether it could be done in one place or another. Furthermore, we can tell you what we will subcontract and what we don't propose to subcontract. That can all be done.

The basic thing is what do you want, how fast do you want it, and what are the blueprint specifications. From that point on industry can do it, but we can't do the first three steps. We can't do a thing until we get that information. Then we can more or less do everything.

Now, you can carry that program of preparation as far as money is provided. You can either do the paper work or you can go beyond that and get critical jigs, dies, tools and fixtures ready a long time ahead, perhaps machine tools and put them in grease, if you like, or you can go further and build facilities if you want, or set up a

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suspect that the subcontractor may not be quite reliable in his quality, you may put an inspector right out there yourself, and we did in many cases put an inspector in such plants and inspected everything before it left the plant, because we were suspicious of the ability of the particular subcontractor to hold to very exact standards. There is no use shipping the product Studebaker if it is not going to be right when it arrives. If a contractor is completely reliable, when you have had years of experience with him and you know he produces good stuff, then you trust to your receiving inspection. I think you cannot say you do it one way or the other. I think you should not say that, because you have almost as many different kinds of subcontractors as you have subcontracts, and some of them are completely reliable; some are not; and some are partially reliable. You have to cut the cloth to fit the pattern.

QUESTION: Did the Government have any inspectors in subcontractors' plants specifically for the purpose of inspecting your transmissions for your company that came in for installing in the weasel?

MR. JOHNSON: No, sir, they did not in our case. I don't know whether they did for other companies. I don't remember that there were any government inspectors in our subcontractors' plants. There were some in our plant. Do you remember, Colonel Haas?

COLONEL HAAS: Clark Equipment threw the inspectors out. Do you recall that?

MR. JOHNSON: That is right. I didn't recall it until you mentioned it, but that is true.

COLONEL HAAS: The inspectors got under foot and the company insisted that they be taken out of there.

MR. JOHNSON: I had forgotten that. I know we had no inspection in there because we had done business with them for years.

COLONEL HAAS: I remember that company specifically did that.

COLONEL CRANE: Mr. Johnson, we certainly do appreciate your very instructive and interesting discussion of this subject. Thank you very much.

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