AIRCRAFT PRODUCTION

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COLONEL GODARD: About twenty-five years ago, or to be exact, in 1922, I took a course in public speaking under Dale Carnegie. The basic principles which he taught have been gathering dust on the shelves of my mind ever since. But one thing I recall very well. A point that he constantly made in the discussions and teachings that he gave us was that there are certain attributes in a lecture that are absolutely essential. He used to say, "You should never cross all the T's and dot all the I's." Another point he used to make was, "Leave your audience something to think about. Give them something to chew on. Don't wrap everything up in a piece of paper, so that they haven't had any mental gymnastics."

If we were to rate our speaker today on the basis of the performance we had from him last year, he would have a series of A's, I am sure. Certainly I can't remember any lecture we had last year that was more thought-provoking and more stimulating than the one we got from General Shepard. It is a pleasure to welcome him back to the College and a privilege to present him here. General Shepard.

GENERAL SHEPARD: Gentlemen, I notice in looking back over the transcript of my talk last year that I was presented as Chief of the Procurement Division at Wright Field. I was a little bit afraid Colonel Godard was going to remind everybody that I am Chief of the Procurement Division, and I had planned to say that our duty at Wright Field covers both procurement and production. In these days and times I like to consider myself a production officer, because, based on experience, the worst thing that happens to a production officer is to get in the dog house pretty regularly; but from what I read in the papers, far more serious things can happen to a procurement officer.

I was told before coming here today that I should not repeat the things I said last year. It was not indicated as to whether talk last year was not well received or whether they just wanted to avoid repetition. In any event, I am going to skip last year's remarks and simply remind you that, if you have seen the transcript of that talk, you will remember that I mostly covered the various levels of aircraft production before the war, during the war, and what we thought was going to happen in this present period; and that I also dwelt at length on the production problems that we had in changing from those various levels before the war, during the war, and after the war. I went on then to point out how we were arranging our planning to proceed to the higher levels of production of a mobilization effort, and how we could, we thought, take advantage of the lessons learned in the previous production period.

and we actually have some of those creatures around. Well, the airplanes that we are building and flying in that category would have to be changed about in a fairly extensive degree in order to build them in quantity.

We had a good reason for building them the way we had chosen to. We didn't plan to build very many at the time we went into the production order. It is really an accelerated service test order. So it was cheaper and faster and better all around to settle on the configuration that we picked. But the fact is that it doesn't have enough producibility at the moment to permit rapid expansion to a much higher production rate.

Another one of our current problems is generated by the fact that we have a most unbalanced distribution of business, particularly throughout the airframe industry. When we went to work on our fiscal year 1948 program, we discovered to our horror that we had about 85 percent of our dollars in three companies, when actually there are a total of fourteen major companies, eleven of which we mostly deal with and they are screaming for business. That certainly has its effect on our ability to produce things.

Not only in the airframe field but in the component field as well we find ourselves with an unbalanced distribution of business, with the result that there are manufacturers coming in almost every week and saying, "We are full. Take your choice. What do you want us to work on--guided missiles or the fire control system?" So we have to sit down and take the bitter pill of sacrificing something we want in order to get something we want a little more.

A third area in which we are having considerable trouble with our current production is in our effort to produce undeveloped articles. We have found that many of the equipment items that go into the airplanes are far more complicated than anyone ever dreamed they would be, and their development has not progressed as rapidly as the "long hairs" thought it would. So we are trying to grind out on a daily schedule different patterns and pieces of equipment the final configuration of which is not yet known. That certainly, if any one thing can be considered our most critical problem, is it. We have too many undeveloped items of equipment committed to production contracts.

The fourth consideration that is giving us considerable trouble in production today is our poor judgment--and I say "poor judgment" and mean it--in trying to change the configuration too rapidly. We have been trying to keep up with the Joneses, but we didn't know who the Joneses were; at least, we didn't know what the Joneses were doing.

it was going to take more drawings for the fire-control system on the airplane than it would take for the whole airframe itself. I alluded to the number of drawings because that is an excellent indication of the complexity of producing that article. But here we have a pretty fancy-looking airplane of a considerable size requiring fewer drawings and therefore a lesser amount of production effort at present than the fire-control system, which comprises a couple of 50-caliber guns jammed back in the tail. We didn't know those things when we made our production commitments right after the war. Those production commitments are now coming home to roost.

There are innumerable other examples of our ignorance of the complexity of the equipment that goes inside our present-day "tin can." And I am not trying to alibi or excuse ourselves. But it is a fact that our ignorance has contributed to our present position.

Still another condition that contributed to our present dilemma was our willingness to accept the spellbinding performance proposals of a number of the manufacturers. They were all as interested as we in offering something attractive that would justify procurement and production. So they got their engineers as busy as they could and came up with the most fantastic performance advantages. We took one look at them and said, "Gee, it looks good to us too" and we signed up for them. Again it was the psychological condition of the time which generated some of the problems that we have had.

You are wondering, I am sure, what we are doing to try to get out of this business, how we are ever going to get the production. I wonder about that myself, but I think, "Well, conditions are improving every day." We are making some specific improvements in our thinking and our planning. We are applying the very bitter experience that we have just come through. We are concentrating on these three general areas in an effort to assure that next year's airplanes and those of the year after will come out on schedule.

The first place in which we are doing our constructive work is in the design stage of the article. You heard me say that one of our current problems is a lack of consideration of producibility in the design. We considered that, sure; but we didn't consider it enough. So now we are being very sure that we do consider it enough. We in the Air Force go out to industry in much the same manner as the Bureau of Aeronautics does with circular proposals asking for suggested designs. Our special proposals today contain a requirement that the manufacturer give us considerable detail on the producibility of the article that he is suggesting.

I will tell you frankly that we don't know whether we have gone too far or not. I think if you want to engage in some of these mental calisthenics that Colonel Godard was talking about, we can well consider the prudence of going ahead with any such plan as requiring the manufacturer to use production-type tooling on experimental models. We are not sure.

But we are sure of one thing--that we have to obtain more producibility than we ever obtained before in our experimental designs. Therefore we have to move at least in that direction. How far we can move in that direction will be determined only after we gain a little more experience. But it is just a good problem for you to sink your teeth into.

The second area in which we are devoting considerable emphasis--and I would say, the primary emphasis at this time--is in trying to figure out how to insure the availability of this equipment that goes inside the airplane. I ascertained from Captain Harrison just last Friday that our sister service is doing exactly the same thing. They too are tired of hearing manufacturers say, "I could build this airplane if you would just supply the government-furnished items." They, as we, are doing everything in their power to improve the availability of the government-furnished equipment. Now, that, again, must be corrected in the design stages.

Component development must be initiated in sufficient time to insure that it can be accomplished by the time you put together your experimental airplane. You will find then in the Air Force research and development program the beginning of a new model or a new type in a manner that will produce the envelope of the article. In other words, this year will find us laying down a new medium bomber in our Air Force research and development program; but, contrary to past experience, you will not find us next year going ahead and trying to construct either the mark up on it or the experimental airplane of that particular type. You will find instead that next year we are pouring our research and development money into the fire control system for that airplane and into the bombing system, into the power plant, or into the propeller if it is going to have a propeller. The year after next you will find that we are doing the same thing. We are developing the components of that airplane. We will not put development money into a contract to build the experimental article itself until we are assured that we are going to have the components to put inside the article. Now, that, whether you know it or not, represents a radical departure from past practice, in at least the Air Force developmental field. I am not sure of the position of the Bureau of Aeronautics. But we have changed the thinking of our research and development people simply because we could not produce the articles after they had considered them developed.

So they have a solution that should improve their component availability in the Bureau of Aeronautics. We have one that we think will insure our component availability. But again I say, we are not always getting the equipment that we would like in the end-item. Nevertheless, both services must employ some interim measures such as those to permit the delivery of the airplanes that we are now putting on order. We cannot either of us afford to continue the past performance of having airplanes on contract and no delivery.

Now, the third area in which we are devoting considerable effort to improving the production availability of our end-items, namely, airplanes--and the same thing is true of current equipment items--is in phasing our production improvements. We are taking what you might consider a conservative attitude about accepting suggested improvements, either suggested by practical necessity or suggested by manufacturers to evolve a more salable article, or suggested by our own eager production officers, who, as much as anyone, want a continual improvement in the technical excellence of the production article. We are phasing those changes. We are insisting that if we have a little better gadget here and a little better gadget there, we will wait to introduce it when we introduce a new model or a new type.

For example, we start out to build the B-50 airplane. We will be building B-50's for several years. We are not going to put all the most recent developments of all the little equipment items in those B-50's. A B-50 is a B-50 from start to finish. When we take the B-50 out of production, then we will have ample opportunity to include all the new fancy gadgets that are cropping up in our laboratories in the successor to the B-50.

So, as I say, we are insisting upon a phasing of the changes in production. But when we think it is important enough to permit the introduction of some changes by model improvement, we are insisting upon realism in our production estimates. We are no longer taking without a detailed examination the suggestions of our manufacturers and our own people that, "Sure. We can put four more feet on the wings. We can put fifty inches more in the fuselage. Sure, we can give you this higher-thrust engine. That is not much of a change. We can accommodate that pretty easily."

That old stuff is over. We have stopped that. When people offer proposals like that now, we get busy and find out what is wrong with the present production. We talk at length about that. We try to ascertain what position that manufacturer would be in if we didn't change anything by next July. Would he be on schedule then?

I don't mean to leave the impression for an instant that we are going to forget about all the things that I talked about last year. Sure, we are going ahead with our mobilization planning. We are determining the requirements for materials and for facilities and for manpower. We are working with the manufacturers on detailed plans so far as our money will permit. We will go ahead later to the higher levels of production required by our mobilization effort. But at the same time that we are going ahead with those plans we are devoting our primary interest to getting articles delivered today.

That is all I have. I thank you very much.

COLONEL GODARD: General, I would like to say that this entire audience, sitting as a combined faculty, has rated your 1948 talk with a perfect rating. I think you have gained another A to add to those you earned here before.

COLONEL McCULLOCH: How far have the current mobilization plans progressed? Are they coordinated with the aircraft industry to any extent at all?

GENERAL SHEPARD: Our mobilization plans are accomplished by the aircraft industry. We have provided the industry with our requirements for mobilization rates and quantities, and they are telling us how they are going to do it.

The progress to date has been primarily that of computing the resource requirements, the requirements for materials and facilities, manpower, and such. The industry has not progressed very far along the lines of what we call direct preparedness measures, in other words, preparing their shop layouts, all their operational data, and their shop releases. They have not selected all their vendors, subcontractors, and things of that nature. We have primarily concerned ourselves first with getting basic resource information, so that we could coordinate that with and combine it with the requirements from the other services to ascertain whether or not our requirements are so far out of line that they would have to be corrected before we could really get into the detailed planning.

QUESTION: We were told in a seminar the other day that the Air Force wants the output of the entire automotive industry in the event of another war, that is, to make things for the Air Force. Is there anything you can say about that, sir?

GENERAL SHEPARD: It is incorrect.