Discussion

"The Procurement Plans Division, Planning Branch, O A S W "

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December 10, 1938

Q -- I know in some instances we have leased descriptions of manufacture to industrial plants in the United States for the production of munitions for the country I take it that would take the place of an order for the manufacture for ourselves as far as the education of industry is concerned I am wondering whether that really occupies any large place in the picture

A -- That, of course, would be the best sort of educational order But I don't know of any cases where that has been done recently where our methods have been leased to commercial plants for production.

Q -- It has been done, at least they have come through I remember one order leased for description of manufacture of ammunition I believe it was for somebody who was working for the Cuban government I was wondering whether that might be used in place of special orders

A -- Our relation to the Cuban government is different than toward other countries of the World We supply the Cuban army with its munitions I presume that any contract to produce munitions for the Cuban government would be practically an United States Government contract.

Q -- The question that usually comes up that Colonel MacMorland asked me to talk about is-after we spend all this money to make a description of manufacture in order to look at this which is just a shell you can imagine how much money goes into the thing, especially aircraft carriages? Is it worth it after you get through? A-- It will be the manufacture in the methods of operation which deviate so far from the one that we happen to have used in our arsenal or perhaps in a manufacturing plant that has been making something for time of peace so that it isn't worth it That sounds as though that is more possible to a large extent than what it actually proves The fact remains that we have here an article made in quantity yearly right now Secondly, I don't think anybody in industry, if they were to go to shell machining, would have as modern equipment as Frankfort has installed in the last five years so that we needn't worry that the description is based on twenty years old machinery; that isn't so at all It's increasingly less so in all our arsenals Few people realize how much new machinery and technique has gone into these plants in the last five years We are no longer working with forty year old machinery Third, the shell looks like a simple turning job but actually it's not just a job of getting dimensions The manufacturer who doesn't study that drawing carefully may jump to conclusions in his tooling only to find out that he has got to get not only certain dimensions within certain tolerances but more important and the thing that takes precedence in the inspectors eye is a weight tolerance and weight distribution of metal in the shell are from the inside and rear surface The

base of the shell is inside. So that the more you study that drawing the more you see that so carefully thought out has this business of machining the shell gone to such extent that the manufacturing company isn't able to deviate far from that method of manufacture, even if he started to he'd soon come back to that method that is shown there In other words a man would be foolish indeed who is going to put a shell factory to do anything but that is the advantage that this thing offers and get into production and then as he becomes expert slip in such ideas as come to him after he makes an acceptable product So that the thing is really worth the money and everything and everybody hopes that we'll get the additional funds asked for to do this work I couldn't give you an idea of what this cog is but it takes, I'd say, about $3,000 at least. This was a time, it's true, when no matter what the aresenal said a manufacturer could always come back and say their men were doing it on twenty or thirty or forty year old machinery and their method will be so different that this is just a guide and the tendency is not to use it, but those days are rapidly changing This is modern equipment They use induction furnaces and all that stuff that even few men in industry know about So they are valuable and they are worth every cent that goes into them and in a thing as critical as ammunition a man that follows this, the chances are it will take him very little in the way of adjustment to meet the inspector's wishes and the fellow that puts his own

ideas in it is going to come to grief Those who tried it before did just that Cartridge cases are a good illustration

Q -- I'd like to ask one question It's the question of educational orders How much value would experience in manufacturing British sixteen pounder shells, for example, have with that same concern if it turned around and tried to make American 75 millimeter shells Does it get anything out with anything like an educational order to that concern corresponding value in making the British shell?

A -- My own experience with having hired men in arsenals who got such ordnance experience as they had on the munitions-making experience in such plants is definitely valuable There is considerable value to be got even from it because we compete very closely, one nation with another, in our equipment, ballistically, we all try to achieve the same range of efficiency You can't vary very much in your shell design and still get that close performance that each nation seeks when he finds out the other one has something a little bit different In further amplification, it must not be forgotten that the item which is described here is a relatively simple item It involves only about 33 operations, not difficult operations at that Consider the difficulty of making one of these things for the same automatically having 73 components and in the neighborhood of 2,000 operations It can be made for even an item like the semi-automatic rifle But there is bound to be expensive labor Consider also large items which are really construction problems rather than mass production problems.

I refer now to some ex-Navy carriages. It would be a tremendous book before you get through with getting up a book like that but the question is whether it's necessary to have books of that type for rather complicated items. If you give the manufacturer the route here, if you give him proper drawings which by the way often show on them the specifications, if you give him some sketches showing where the metal has to be cut off and if you give him a machine, our study, that is about all he needs for a complicated item where mass production on a great tonnage basis is not required.

Q -- I'd like to ask Colonel MacMorland if procurement planning ever proceeds in advance of standardization?

A -- That is provided for, yes, but I don't have a single example. Find some cases where the plan as shown did not have a standard standard has been adopted since that time and it was the same shown on the particular procurement plan of record

Q -- In other words that provision which allows that comes practical advantage?

- That is practically what it amounts to. I don't recall id hands on any item that at that time answers that

onel, I have several times heard that the modification r Department Mobilization Plan resulted in our inability ction. Are we letting the tail wag the dog? Isn't imum military requirement which we should cilities to meet it rather than change the nd bring it below what we ackno ge it to be by 1933?

A -- The PMP is supposed to be that military requirement Then the 1933 plan was not a minimum I was associated with this work a good many years ago and it seemed that the mobilization plans were to come out every year and the new crop of officers of the General Staff and their had been a new general staff and the supply branches never got any where with that Finally somebody used the big stick and allowed the 1933 plan whichhas turned out to be not the proper plan to be used as a basis for procurement planning for several years and we have gotten some place with that now If you'll leave the PMP alone we'll get along all right in trying to meet that too.

Q -- The question I had in mind was pertaining to a remark that was made yesterday to the effect that there existed at a certain period of time no specification for the loading of e-inch shells Now would that be properly termed as specifications or description of manufacture I'd like to clarify the difference between a specification and instructions pertaining to manufacture.

A -- Well, the loading of shell-you could have a description of manufacture similar to what is shown there in the drawings pertaining to that loading-would have on the face of them peculiarities which in themselves constitute a specification for that particular operation If you look at the drawing of that shell that is in there you'll have almost a complete specification

or a reference to another drawing such as the basic forging with physical chemical characteristics of the forging shell I want to emphasize again that the controlling thing in every instance is the drawing and if it is properly made there can be no difficulty in interpreting what it means More than one interpretation is possible There is something wrong with the drawing.

Q -- Colonel MacMorland, General March stated in his book "The Nations at War" that in the reference to the three-inch gun whichwas our standard gun before the war-during the war no three-inch guns were used- that even if he had started our preparedness program earlier and had built a lot of three-inch guns and ammunition for them that they wouldn't have been used. That doesn't fit in with our idea of procurement planning that we are studying now and I wish you'd comment on that

A -- I hate to go back into history on this old matter but the fact is that this country was in rather large production for the allies when we went into the World War-rather large production. And in addition the plants of the Allies in Europe were putting out huge quantities of supplies even had a surplus of production at that time when that principal mission came over here in 1917. One of the things they asked was that we send basic and semi-finished material to their factories and that in return we'd get ammunition and guns of foreign design for our armies in France The American contribution in, we'll say, forgings and basic

materials of all kinds was tremendous. Now as a practical thing on the three-inch field guns you waste-at the field artillery school in 1917 we had three-inch field guns, as our training weapons-in fact all the schools had the three-inch field guns and were using the three-inch gun ammunition They had been found in the school there to be totally unsuitable for firing barrages. As you fired those guns for a long period of time and they won't go into battery any longer I have seen barrages fired at Fort Sillat that time where the guns would not go back into battery. French guns aresuperior in that respect I think no mistake was made in making the American contribution the basic and semi-finished materials and taking everything we could get from foreign sources

Q -- I'd like to bring up one point there that I think is back of that decision to us The French 35 gun and the French 75 ammunition which outweighed anything in the like of procurement the tactical employment of the gun - if you go into the artillery needed in any operation you're impressed that you need a tremendous amount of guns - more than are organically a part of the unit engaged - which brings up the need for reinforcing artillery You had to have time to sort out that artillery but any artillery that was available was shoved into that fix, placed to make up that quantity in order to employ that artillery effectively you needed a tremendous quantity of ammunition. One morning I fired over a thousand rounds from one battery You need a tremendous round of artillery ammunition Now when we're the newcomers in the

line and rather than complicate the ammunition supply by adding another type of ammunition another bunch of our part had to be maintained the simpler method was to put the French 75 gun which had ammunition in large quantities and get behind their ammunition production and put out more and more of that kind of shell rather than make our own even if it was superior. I think that had more to do with it than anything else.

Q -- Referring back to our question, Colonel, with respect to description of manufacture here is a situation where you have drawings for an item Suppose now I suggest an item for which I can't make a drawing I'm referring particularly to a chemical There is Colonel Riefkohl's particular point of a description of manufacture specification for the chemical Obviously you can save, say, nothing as to how it's to be manufactured.

A -- Then the experience produced should be in a book like this so that you can hand it to anybody that you select to produce mustard gas That book would be filled up with a lot of drawings There wouldn't be any drawing showing the item itself

Q -- The question has been raised this morning about what is an adequate minimum force for a mobilization plan Theoretically the correct way to determine the adequate minimum force is strategic estimate of the situation Everything arrived at this ideal minimum force then we should examine the mention at our disposal in the way of man power and the ability to arm and equip and no military commander had ever had what he deemed adequate to the assigned

job so there is a question of reconsideration and of the needs.

Q -- How were the items selected for which we'll place educational orders I have understood thiswill be an educational order placed for search lights. The thing seems to me that the search light has already been produced far in excess of the height finder; without the height finder the search light wouldn't be worth much and furthermore with the height finder there is considerable question whether the search light is very effective

A -- The items which are the educational orders were studied b a board and they selected the items which would be one sided for educational orders and the first years priority they selected the ones that I mentioned in my lecture among others the search light Now it's true that the search light has been produced by the Sperry Company but what they wanted to do was have the light produced by the General Electric Company by producing educational orders The situation is more critical on metal mirrors. There is only one place in the country hich can produce these metal mirrors and I understand that their facilities indicate their inadequacy and this next year there will be an educational order to produce the mirrors Or they may change their minds entirely on it and decide that those mirrors will be produced at Fort Belvoir in their own plants I don't know what they plan to do To answer your question, the orig nal selection of items was by a board which sat on the subject for several months

Colonel Hines Gentlemen, I'm sure this morning's talk has

given us a very comprehensive picture of the intricacies of manufacture, and the necessity for careful study of processes to the end that the unitiated manufacturer may benefit thereby and expedit production

Colonel Miles. - On behalf of the Army Industrial College I want to thank you very much for this talk, Colonel MacMorland.