

FINAL REPORT NO. 43

ITEM NO. 2

SKODA WORKS, PILSEN, CZECHO-SLOVAKIA

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BRITISH INTELLIGENCE OBJECTIVES
SUB-COMMITTEE

LONDON — H.M. STATIONERY OFFICE

MF/P3/3



SKODA WORKS, PILSEN, CZECHO-SLOVAKIA.

Reported by

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Trip No. 1160

No. 2 Group, B.I.O.S. (Armaments)

BIOS Target No. 2/27h

BRITISH INTELLIGENCE OBJECTIVES SUB-COMMITTEE
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SKODA WORKS, PILSEN

CZECHO-SLOVAKIA

OBJECT OF VISIT:

The object of this visit was to investigate, at these Works, methods of production used by the Germans during their occupation of Czecho-Slovakia, of Armaments as a whole, with particular reference to Weapon Production, the Writer being a member of the staff of this Directorate at the Ministry of Supply. The factory was visited during the period 20-25 September, 1945.

REPRESENTATIVES MET:

Mr. Riha General Manager

Mr. Kalina English-Speaking
Commercial Manager (acting as
Interpreter).

Mr. Miler Secretary

Lt. Berger } Czech Military Officers employed
Lt. Liska } for conducting visitors round
Works.

Various Shop Managers.

SUMMARY:

The Pilsen Works, which cover an approximate area of a quarter square mile, have suffered badly by bombing and fire, and it is estimated that some 30 per cent of the plant had been destroyed. Apart from steel making, foundry and forge, the works could be divided into two parts - the commercial side, and the armament side, although when the Germans took over the Works, they utilized such capacity as was suitable on the commercial side for armament work.

On the commercial side the firm was engaged on the production of turbines, locomotives, lorries, machine tools, etc., and includes probably one of the most comprehensive gear cutting shops in the world. In addition to this, there is an inspection department which has an extensive range of optical measuring instruments. Since one of the first considerations of the newly liberated Czecho-Slovakia is transport, the firm is now engaged on an extensive programme of lorry production, and repairs to locomotives, as far as reconstruction of buildings will allow them, and are doing nothing at all on the armament side. The main administrative buildings, including drawing offices, etc., were completely destroyed by fire during the last raid on Pilsen, and this is always advanced by the firm as a reason for not being able to produce more detailed information, when the latter is sought.

As far as armaments were concerned, the Works produced guns, shells, and tanks for the Germans. Tanks were made in the locomotive erection shop, which was totally destroyed. The fuze shop was also destroyed, but a forging and machining plant for 15 c.m. shells is undamaged, but not working. Some damage was done to the gun shops, but this is not extensive. Experimental work was also carried out on development of Rockets by the Germans, but no actual production took place. All this work was removed by an American Technical Mission in May of this year.

GUN PRODUCTION

Amongst the guns which were manufactured complete at Pilsen for the Germans, the following were produced in large numbers:

5 c.m.
88 m.m.
15 c.m.
21 c.m. (B.L.)

The firm also made parts for the other weapons under a rationalized scheme instituted by the Germans, whereby they hoped to attain some measure of secrecy. By this means, sub-assemblies were made by various firms, and finally assembled in Germany. Amongst these was the 3.7 c.m. automatic A.A. Gun. They had no knowledge of the 88 m.m. with a three-piece barrel, and stated that it was never produced at Pilsen. The Writer is inclined to believe this, as he had to go to some lengths to explain the functioning of this barrel.

Production generally followed the lines adopted at home with the same sequence of operations. The following points of interest, however, were noted:

(i) A considerable number of 5 c.m. centrifugally cast barrels were seen in the heat treatment shop. According to the firm, these were the only size manufactured by this means at Pilsen. They had considerable trouble in getting into production, and their own personal view was that a forging was superior. The Germans, however, in their urgent need of production, concentrated more on quantity than quality, and towards the end of the War only took a test on the breech end of every one barrel in ten, the rest being merely Brinelled. This would seem to indicate that casting was a success. Asked if the equipment for casting the barrels was available, the firm gave the usual reply that this had been destroyed when the steel making plant was damaged.

(ii) A large number of steel castings of Breech Rings for 15 c.m. Gun were also seen. These, too, had given them considerable trouble, although from the quantities seen, it looked as if these troubles had been overcome. They stated that these were not machined at Pilsen, but in Germany, and that the 15 c.m. rings machined at Skoda were from forgings.

(iii) All muzzle brakes were from steel castings. The firm has a special technique in this line of business, having produced steel castings in all alloy steels, and it is thought that producing muzzle brakes by this means would not unduly embarrass them.

(iv) Although the firm autofrettaged all their own barrels in pre-occupation days, they stated that the Germans did not use this method for their barrels, although they were running short of alloys towards the end of the war, and were using Carbon Vanadium Steel. An autofrettage plant exists in the Gun Shop, and has apparently not been used for some time. The Germans had apparently amassed huge stocks of Tungsten before the war, and there had been no shortage of tungsten carbide tipped tools in Skoda.

(v) Skoda made the usual asbestos obturators, and had all the troubles associated with these in preventing them from distorting. The Germans had produced a synthetic rubber pad for the 21 c.m. gun, the firm of Hecker of Dresden being mentioned in this connection. The rings were singly split in the orthodox manner, the only difference being that an inner split ring was used instead of a solid one. A sample obturator was brought home for investigation.

(vi) A rifling head was seen for rifling 88 m.m. barrels which had half the number of tools around the head as there were grooves in the barrel. The functioning of the head itself incorporated no new features, but flat cutters were used which were the width of the groove. These were fitted normal with the axis of the head, and were ground away on one side of the cutting edge to clear the spiral of the groove. It will be seen that the rifling could be completed with two turns of the head, and the firm stated that $\frac{3}{4}$ hour was the normal time for this operation. The making of this head would call for a high standard of toolmaking skill, but a cutter could be readily replaced if one was broken. It is doubtful, however, if this means of rifling is any quicker or cheaper than the broaching method employed on 25 pdrs. in this country, when quantity production was required. No drawings were available for this head.

(vii) An expanding boring head employing Widia tipped tools was used for finish boring of barrels. The particular one seen for the 15 c.m. had 32 cutters. Adjustment to cutters was carried out in the same way as with a rifling head. The firm claimed that this was a German design, but had no advantages over the orthodox head, which they themselves had used. No drawings were available of this particular job.

(viii) As far as inspection was concerned, all material was tested by the Germans themselves. The inspection of all parts up to and including assembly was carried out by the firm, the Germans relying on technical S.S. men and collaborators in the Works to see that no sabotage was carried out. Although the Skoda people used to proof their own guns near the works, the Germans carried this out in Germany.

No system of comparison of surface finish seems to have been adopted, the orthodox method of giving a code on the drawing for the finish required being used.

An instrument for testing the straightness of bores of barrels was mentioned. This consisted of placing a bush holding a concentric telescope in the chamber, the telescope having centre lines inscribed upon it. An opaque plate fitting the bore with fine centre lines was let in from the muzzle end, and various readings along the bore were taken. Although this appeared to be an over-elaboration, and would necessitate some very fine optical instruments, it is possible, in view of the firm's own inspection department, that a device of this description may have been used. The usual answer that the equipment had been destroyed and drawings burnt, was received when further information was requested.

GENERAL:

From a production point of view, there would appear to be little to be learned from the methods employed on gun manufacture. It should be pointed out, however, that the firm do not volunteer any information, their policy being to get rid of as much armament work and plant as soon as possible, so that they can start on large commercial undertakings. Their attitude is that they want to forget the war and all things associated with it, hence they do not show much co-operation, and getting information from them on their war time activities is difficult.

It should also be realised that the Pilsen Works are only one of the Skoda factories which exist in Czecho-Slovakia. A list of these factories, together with other Czech armament factories, is shown in Appendix A. With the exception of Doudlevce and Rokycany, these are at present in the Russian Zone of occupation, and although the Writer was informed at Pilsen that it is possible to visit this Zone with a special American permit, it is not known how the Russians are using these factories. Owing to trouble with transport, the Writer was unable to visit Rokycany, but a report to the effect that it was open was left with F.I.A.T. Headquarters at Frankfort, and it is understood that an investigator from the Filling Branch was about to visit. The ground at Pilsen, however, had already been well covered by American technicians, and it is felt that this particular visit was made rather late in the day.

APPENDIX "A"

SKODA FACTORIES IN CZECHOSLOVAKIA.

<u>Organisation of Firm.</u>	<u>Place.</u>	<u>Remarks on Place or Personnel.</u>
Skoda	Prague.	Head Office of Skoda Machine Tool & Diesel Engine Production.
** do.	Doudlevce.	Electrical equipment of all types, trolley buses, etc.
do.	Hradec Kralove.	Industrial plants of all descriptions.
do.	Mlada Boleslav.	Motor Car Factory. Partly damaged.
do.	Adamov.	Shell Cases, shells and filling. Destroyed by Germans.
do.	Dubnica.	Guns. Underground factory; damaged.
do.	Komarno.	Dockyards.
do.	Myrany.	Filling of shells and fuzes.
Gal. Zbrojovka	Brno.	Small Arms. Partly damaged.
do.	Povazska Bystrica	Shell Cases. Damaged.
Ceska zbrojovka	Strakonice.	Small Arms, Motorcycles. Slightly damaged.
** Tovarna na nabojky a kov. zbozi	Rokycany	Shell cases. Undamaged.