Flensburg, 20 May 1945
INTERVIEW WITH MINISTER SPEER, 20 May 1945

Note: "Q" indicates the question asked by the interrogator, "Sp" the reply by Speer.

Sp. As to the relocation of aircraft plants, I should like to point to the forest works which we constructed recently, for example, near Regensburg; those were well hidden in the woods, were constructed in the form of light barracks and were not discovered by you.

With regard to another point:
We have tried to find out how many of your bombs actually hit the target; I do not mean the general target area but the plant installations themselves. We have found that about 1/2 to 1/3 of the bombs fall on the plant installations. It would certainly be interesting if you were to make a study of this question - which is entirely possible now.

Q. Do you mean all attacks, i.e. could you give us this information separately for British and American attacks.

Sp. No, that I cannot. But the plants where such investigations were made are in the Ruhr area and were mostly attacked by you during the day. One could make such investigations in Central Germany, for instance at the hydrogenation plants, which were attacked almost exclusively by Americans.

As to the question of the effectiveness of aerial attacks on Japan, I think that attacks on power stations, if concentrated, will undoubtedly have the swiftest effect; certainly more quickly than attacks against steelworks, for the high quality steel industry, especially electro steel, as well as the whole production of finished goods and public life, are dependent upon the supply of electric power.

Q. Do you have an opinion concerning the relative vulnerability of hydroelectric and steam power stations to aerial bombings?

Sp. This question is difficult to answer. Both may be completely destroyed by means of numerous aerial attacks with heavy bombs. In the case of hydro-electric stations there is the additional possibility of penetrating the conduits by hits in the base, as a result of which the power plant may be washed away by the water. Such an event occurred in Norway through an act of sabotage. One pressure tube leading from a mountain was broken, and the force of the water completely destroyed the power station.

I think we shall discuss power stations in detail another time and then we can concern ourselves with those things in particular. I simply wanted to express those ideas to supplement our conference of yesterday.
While we are on this topic, we should like to know about the destruction of the Mochne and Eder dams by British aerial attacks and its significance to production.

Bothowero not power plants with great hydro-electric plants. In the case of the Mochne, it was the water supply of the Ruhr that was principally concerned. The attacks - which were also directed against the Sorpe and another small dam - indicated an intention to flood the Ruhr valley and destroy the summertime drinking water supplies of that area. The plan was excellent and might well have been expected to paralyze the Ruhr area. That it did not succeed was due only to the fact that the Mochne valley basin emptied and we were able to pump water up from the other side of the Rhine at that time. The English probably did not know that as yet. The flooding filled the pumping stations in the power plants with mud, several units were soaked and had to be dried; this took weeks, but constituted no special loss for the industry. The Edor dam and the power plant below it is of no special importance as a source of power, but serves to regulate the water level of the Weser for ship traffic. The attack was of little importance to us, and we did not understand what reasons lay behind it. Other than these two we never experienced attacks on power generating plants.

Was not the Goldenberg power plant attacked?

That happened very late, at a time when production in the Ruhr was no longer very high due to a lack of gas, transportation difficulties and to aerial attacks, so that for all practical purposes no additional damage was caused by the elimination of the Goldenberg power plant.

When was it that the effect of our attacks on the Petroleum Industry began to have a noticeable effect upon the training program of the Luftwaffe?

As Baumbach has already stated, as early as 1943 the Luftwaffe did not train sufficiently because of a lack of fuel. This shortage of fuel was avoidable - of the 160,000 tons of fuel at the disposal of the Luftwaffe, only 10 - 20,000 additional tons would have been necessary for training purposes. The bad training therefore was a faulty recognition of the urgency of training. Bad training has been placed further in the foreground, as it deserved to be, it would have been possible to allocate the necessary fuel for a much longer period.

Baumbach: There was no planned allocation between tactical use and training.

Then no reasons of petroleum production, at least those directly attributable to the effects of aerial attack, could be recognized?
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Sp. Difficulties resulting from shortage of fuel in the Luftwaffe began to be felt in September/October '44. Up till then and despite aerial attacks the Luftwaffe had 90,000 tons at its monthly disposal, with reserves etc. as far as I remember. This decreased to 30,000 tons so that, since December, it was not able to fly all the planes which were produced.

Q. You mentioned yesterday that refineries had about one hour alert time. The question arises as to whether the loss of labor for emptying and refilling of pressure containers etc. becomes very substantial.

Sp. Especially at the hydrogenation works this always resulted in a very considerable loss.

Q. Did you always stop the Hydrogenation works if planes were reported in the neighborhood?

Sp. In fact we stopped every time because carbonisation takes place in the Kolennen, i.e. pressure vessels, if the whole work is suddenly stopped for instance by a bomb hitting the conduits, and the whole pressure bodies may become unusable. At the first attack against Leuna the pressure bodies were filled with a carbon substance. One succeeded in cleaning them relatively quickly but one could avoid it if one stops in time, and if the chambers are practically empty. I can't give you details on these procedures. In any case, this stoppage often reduced production very considerably.

Q. In this connection one more question which does not directly concern petroleum. We have seen that alerts resulted in general loss of labor where great areas were attacked. Two questions arise here: First, did this loss exceed that caused by the attack itself, and, second, what was the effect of the continued attacks by Mosquitoes when those started.

Sp. One has to distinguish between general alert and work's alert. The general alert does not concern plants. The latter were especially warned via internal connections with the air raid warning post. It was up to the head of the plant air raid protection how long he let the plant work.

Q. This refers only to big plants?

Sp. Yes. In general the attacks of Mosquitoes, because they were relatively short did not interfere with the industry; besides, they were not so numerous. Every evening the planes arrived punctually and with equal punctuality they left again.
One topic should be discussed once more, viz.; Mosquito attacks which were piloted by what we called the boomerang procedure. Despite darkness and cloud cover these were more precise than the ordinary daylight attacks; It is bomb releasing by crossing rays.

Q. In your alerts, did you distinguish between good and bad weather attacks?

Sp. No. This was no criteria for distinction.

Q. We shall now concern ourselves with the allocation of fuels. Was this done by the planning office (Planungsamt) and if not, by which department?

Sp. The Planungsamt distributed them wholesale - but only according to civilian and Wehrmacht needs, the demands of the Wehrmacht were given the major share. Inside the Wehrmacht the Chief of OKW made the allocations.

Q. After the attacks became critical, i.e. from May 44 on, rationing became more rigid, of course. Are you informed as to whether the OKW conformed to rationing the way you thought it necessary? Did the Wehrmacht rigidly take into account the critical situation?

Sp. No, not at first. It was not applied very rigidly, especially by the Luftwaffe. First I demanded only single engine, and no more multiple engines planes be flown and, later the termination of travel by air. It took several months before the existing danger was recognized by OKW and particularly by the Luftwaffe.

Q. Do you have an impression of the situation end of existing stocks in May?

Sp. No. We did not get any information as to stocks, including reserves at OKW.

Q. Could you perhaps estimate how extensive stocks must have been? Maybe on the basis of estimated consumption in relation to actual consumption?

Sp. Not even that, or the demands were considerably higher than production because the speedily increasing programs constituted the basis for those demands. I never could picture what was consumed and what became reserves.

Q. How effective was the control of civilian fuel supply? Was it absolutely effective or did a considerable black market exist?

Sp. It is possible that such a black market existed behind my back. I never heard any reports about it. But it usually happens that the minister is the one not to know about it.
However, I do not think that important black market transactions existed. It was pretty difficult at the end because all the legitimations, travel orders etc., for greater distances one needed special permits.

Baumbach: Every trip exceeding 100 km had to be approved by a commanding general. At the end every flying trip had to be approved by Generaleobrist Stumpf, commander of the Luftflotte Reich.

Sp.: Those rigid resources date only from end of 1944, maybe September or October.

Q.: When the situation became increasingly critical and allocations were decreasing, who regulated the priorities for aviation and ordinary gasoline?

Sp.: Until late fall of 1944 we produced aviation gasoline to fullest capacity. Aviation gasoline had an absolute production priority, partly because in the hydrogenation works the so-called DHD-installations were needed to produce it. After attacks these installations were always ready later than the ordinary installations so that the works first produced ordinary fuel and later were able to make aviation gasoline. Always as much aviation fuel as possible was produced.

Q.: You said that aviation gasoline had special priority until fall 1944. How did it develop afterwards?

Sp.: We then often let the hydrogenation works continue to make ordinary fuel for a few extra days - mostly in the case of works near the front lines. Up to about the same period we were able to refine additional ordinary fuel using Rumanian crude oil stocks. Afterwards the stocks were used up so that for producing ordinary fuel we only had the Zistersdorfer and some odd wells in the various remaining territories of Germany. This was not sufficient. At that time ordinary fuel was repeatedly provided from reserves advanced, I know for instance that this happened when the offensive started on 16 December.

Q.: Were great supplies built up before the winter offensive started?

P.: As far as I know those were taken out of the OKW reserves. One tried to send fuel from there to the front. Those tank cars were lost, as I already mentioned, during the return trip.

Q.: Why did you never build a pipeline in the East or West or towards both fronts and in case you did why was the situation critical despite it?
The distribution of fuel on the front changed very much on all fronts, because of the general shortage, fuel could be allocated only where there suddenly developed gravitation points. This could be achieved only by means of tank cars. We never could have done it with pipe lines. But I had been building four pipe lines across the Rhine since fall. They were designed to get the fuel across the Rhine if the bridges had been destroyed.

Q. Were those ever operating?

Sp. No, they had been just completed.

The Planungsamt allocated fuel only wholesale to civilian and Wehrmacht consumption and as far as detailed distribution goes was only concerned with the civilian part. The OKW sub-allocated its share itself.

Q. Did it specify the percentage of aviation and ordinary gasoline or did it simply state how much it had to get?

Sp. The OKW had knowledge of the total production. It approached us when allocations decreased and demanded that we must make more restrictions and distribute less defensive position. Of course the Wehrmacht frequently stated its needs. They had to, after all. They sent us from time to time what we called "cover letters", in order to be covered at all times. We used to say "another cover letter", and file it away, for it was senseless to send these letters. We never replied to them.

Q. Did the OKW state any reasons for its demands?

Sp. No, no reasons.

Q. But subdivided its aviation and ordinary fuel?

Sp. Yes, that anyhow. But we did not undertake any distribution. If Army, Air Force or Navy got some of the ordinary fuel, it did not interest us.

Q. As minister of production were you informed about the impending Ardennes offensive?

Sp. I know about it directly from Berchtesgaden, but in a rather private way. The December offensive was a mistake in its organization. Only a few of the officers were permitted to know about it. Those were listed by name. When, a few days before it started, I checked the spare parts situation for tanks, the responsible men told me "I have so and so many tinks but they don't roll, therefore I don't need any spare parts." This ignorance of impending events was in itself an impossible situation.
How long in advance was the day fixed?

Only a few days before and in spite of the protestations of Sepp Dietrich who commanded the 6th SS Armored Army and of Fieldmarshal Lodl, neither of whom were yet ready. They did not have ammunition and only one set of fuel supply at the front.

As you did not get an analysis of the allocation from OKW - do you think a detailed plan of distribution at OKW possible.

In OKW there was a distribution office which was directly subordinate to Keitel. I think the man was Captain Briebel. I think even the OKW was unable to divide the quantities in advance. Because of the shortage they had to move them forward and backwards on the front according to the situation, i.e. they practically had to keep their hand on quantities down to single tank cars.

The distribution situation therefore was not very satisfactory, I mean even before the situation became critical. You had only those arbitrary figures from OKW to rely upon in reducing civilian quotas - do you think that this was a happy situation?

No. But I was not concerned with it. I controlled the production of tanks etc. because these are long term items but the distribution of fuels, which for a long time had been pushed into the Army groups, represented daily decisions. If it had been trimestrial decisions, it probably had interested me more.

Now a few questions regarding rubber: What was the import of crude rubber and was a substantial import from Japan possible after December 1941, i.e. after Japan entered the war?

I can't give you exact figures. During my time we got a few blockade runners in, which had rubber cargoes. The idea to transport rubber in U-boats was never realized. It was not really so important for us because we succeeded in making good progress with Buna production, thanks to Dr. Ambros. Even for the very important air plane tire production we hoped to be able to make both ends meet with the small amounts of natural rubber available. Exact figures concerning the development of the natural rubber situation must exist at the Planungsamt. They were kept there quite accurately.

Did crude rubber stocks suffice to satisfy the needs for Buna production during the whole war?

During my time we always managed to add the necessary quantity of plantation rubber even for large size tires. Of course very sparingly, but we managed to do it, mainly by improving the Buna production. But we also had to decrease the quality of tires temporarily.
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Q. Those are the only questions re rubber. As to the production of explosives it would be interesting to know the effects of aerial warfare on this line.

Sp. We never observed any influence of aerial warfare on the explosives situation. There were never any attacks on it. Or what attacks do you refer to?

Q. Did not attacks against chemical plants have their repercussions here?

Sp. Yes, that is a different point.

Q. We meant the by-products and residue of hydration which are used for explosives.

Sp. Here we were able to hold out for a long time, for the main ingredient - nitrogen - had to be allocated to agriculture as well, and I reduced the latter mercilessly. During the whole year of 1944 powder and explosives were fully supplied with nitrogen. There exists a memorandum on this subject which Backe and myself together addressed to the Führer. It is among the files which you have. I wanted to say that the situation became more critical later because of the increasing bombardment of chemical works around September/October. This can be seen from a memorandum to the Führer which covered not only fuels but also such by-products as Methanol, toluol, plastics etc., and stocks thereof. Its date corresponds roughly with the moment when the nitrogen situation became so critical that we were unable to go on. We tried to give powder and explosives such a priority that we forgot about other chemical products. Despite that I must say that, since fall, we had to stretch explosives by mixing in ordinary kitchen salt. This mixing in of kitchen salt is said to have had no influence on the explosive effect. At the end of the development the whole ammunition production decreased because of the decrease of raw materials for the Ruhr, traffic complications, electricity etc., and the loss of Upper Silesia reduced the steel basis for it and less powder and explosives were needed. One can say that up to the end of the war there existed no sensible shortage of powder and explosives, i.e., it never happened that produced shells could not be filled for lack of powder and explosives.

Q. Figures show that, from September 1944 on, you suffered losses of nitrogen as well as explosives. You said before that there was no shortage because of attacks against chemical plants?

Sp. I misunderstood the question. To fill the ammunition we always had enough, partly because we stretched with salt, partly because we did not make bombs. But anyhow, up to the end we did not have a shortage of powder and explosives.

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Figures showed us that there was not an explicit coordinating the amount of steel production with that of explosives and arms.

Sp. No, there was no plan. It is quite clear, the process from raw material to finished gun requires about 6 months. Here we had a certain reserve of the former high steel basis. For ammunitions the process is very short because of its simplicity. For practical purposes one can expect the decrease of the crude steel basis within two weeks.

Q. Major Szymek said that plans for ammunitions were always too low in relation to other productions.

Sp. That was always our opinion, too. We really had too many guns and too little ammunition at the fronts. But this chapter deserves a separate discussion.

Q. Which was the limiting factor for the production of ammunitions, the steel or the filling?

Sp. That depends on the kind of ammunition. For infantry ammunition it is the so called Platine. We had difficulties because we had to make the cartouches of steel, and that was a complicated undertaking for Infantry ammunition. In the beginning we had a lot of misproduction. The production of Platine really governed the production of Infantry ammunition, but not powder and explosives in this case. But it balanced approximately. Had we had a few percent more shells, powder and explosives would have become bottlenecks.

Q. Increase of 8.8 Flak ammunition was only 10% comparing 1941 with 1944 figures. Regarding the intensive aerial warfare, why was there not a far greater increase?

Sp. Personally I did not think much of the effect of the old 8.8 Flak. It did not reach high altitudes, while all bombers flew at very high altitude so that for all practical purposes it did not have any other effect than to help reassure the population. Something was a-going. Better were the 12.8 and 10.5 and the improved 8.8. Therefore I thought it a waste to produce any more 8.8 guns of any kind and a waste to make so much ammunition for them. I did not attach any importance to it end in this respect opposed the Fuehrer who thought the Flak very promising. During the summer of 44 even a decrease of the Jäger program was demanded and redeployment of labor for the Flak program.

Can you give us an estimate as to how many men were tied up for manning the Flak in Germany during the height of our bombing offensive?
Baumbach: At the end there were mostly Flak auxiliaries and even female auxiliaries and whole school classes employed. It is hard to answer this question.

Q. Also Hitler Youth?
Baumbach: Yes.

Q. Did this have an important influence on the labor situation?
Sp. Yes. We had difficulties especially because 100,000 skilled Russian workers in one action were transferred to Flak.

Q. When did that happen?
Sp. 1943

Q. Was that a continued action?
Sp. No. As Baumbach already mentioned, later on one released higher grades of school and inducted them en bloc into Flak.

Q. If we had had scheduled to attack powder and explosives plants?
Sp. Exclusively nitrogen. Especially since you were determined to attack the Hydrogenation works. There was one sole headache with nitrogen, because it was in danger as a byproduct only at Leuna during the attacks against chemical plants. We still had Krpaceck and Linz where installations were hit only at the end of 1944. If, at an earlier date, these had been completely lost we would have been at the end of powder and explosives in a very short time. Powder and explosives plants are widely dispersed because of the danger of explosion and are difficult to hit.

Q. Was the Schonebeck plant destroyed?
Sp. I think so. There was once an accident. But the situation was such that because of the decrease of the chemical basis we did not need to worry about end production. In case one plant fell out there was always another to fill the gap. Therefore I may not even have heard about it because it did not interest us.

Q. We heard in 1944 that the reserves of ammunition had reached a dangerous low?
Sp. We really never had ammunition reserves in Germany proper. During fall'44 it was openly declated that we had enough stocks and at that time the production of ammunition was drastically reduced. There was no reason for it because we had steel. The charts show the decrease from 41 to 42. 1942 the winter crisis was behind us, ammunition reserves which had been not far behind the front were lost and from then on we practically lived from hand to mouth.
General Henrici declared that reserve stocks of ammunition equalled four weeks requirements up to 1944.

No. During these discussions it is rather difficult to determine exact definitions. For all practical purposes there were no reserves, there were "transit quantities" i.e. stocks at ammunition plants that were not yet filled. I understand something else under reserves: filled ammunitions, stored ready in Germany and to which one can resort. We had laid down at a time when we still were going strong in the crude steel base a quota system for ammunition of 650,000 tons. The production was higher than the normal powder and production base without reference to air raids. Due to this increased ammunition production, there was built up a four to six week supply of shells (hulken und hulison). But this too wasn't a real supply because there wasn't enough powder and explosives. This had been used up then after the production of shells increased due to the scarcity of the crude steel base.

This is a question for Colonel Gilkrost. The taking away of so much nitrogen for powder and explosives production is supposed to have obvious effects on agriculture. What was the influence on the crops?

As can be seen from the memorandum to the Fuhrer by Bege and myself, agriculture got only part of the normal nitrogen requirements. I estimate that it was only half or a third of the previous year's allocation, and I assume that it means at least a 20% decrease in crop production.

Who in your opinion is the right man to tell us about this?

In my opinion, better even than Mr. Becke, who is very expert, is State Secretary Rieke, who is even better in details. I don't know Mr. van der Decken.

What is your opinion of how to deal with the present problem of Nitrogen supply?

At the beginning of March I ordered Gailenberg and Krauch to expand nitrogen production in preference to hydrogen plants. The reason was that the war was nearing its end and it was necessary to prepare for peace. I don't know how much of this program it was possible to carry out.

Can you give us information as to where we can get import figures for ball bearings?

This you should find in Kessler's documents. Kessler was the head of the Sonderausschuss (Special Committee) ball bearings.
which was directed by Mr. Juergensmeyer (?). Dr. Schieber was above Kessler and the Special Committee, but he doesn't have any separate documents.

You have told us in previous interviews that very serious damage would have occurred if we had continued the ball-bearing raids. The question arises: did the damage which was created cause a great diminution of the aircraft constructive program and (2) of the other armament programs?

Let's start with the first heavy raid on Schweinfurt. We have to proceed chronologically. At the first Schweinfurt raid we weren't prepared and so we were badly frightened by the results of this raid. As a matter of fact this raid had a very serious effect on us. Aiming was good, and production at Schweinfurt was nearly paralyzed. At that time, our only reserves consisted in the fact that the so-called Verlauf for ball-bearings consisted, on the average, of several weeks' supply and that we reduced this Verlauf after the first raid to eight days.

Can you give us a definition of the word "Verlauf"?

"Verlauf" is the amount of ball-bearings that is enroute from the ball-bearing plants to the producers. Thus, if the ball-bearing plants were hit, the "Verlauf" continues into production. So we were able to add the production of half a month to the available production. Beginning with this raid the situation, because of the reduction of the "Verlauf" to only eight days, occurred that some tanks and aeroplanes could not be finished due to the lack of ball bearings. In these cases we had to haul ball-bearings in trunks using soldiers as couriers. But as can be seen from the figures, in spite of the Schweinfurt raids, we didn't have any essential diminution in production. The extremely great service that Mr. Kessler rendered to the saving of ball-bearing industry has to be stressed. Kessler used to be my Special Deputy for Emergency Action (Sonderbevollmaechtiger fuer Gewaltaktionen). I put Kessler to work immediately after the raid as Commissioner General for ball-bearings. He was authorized the same authority as Geilenburg and ordered to proceed without regard for other priorities to provide whatever was necessary for the Ball-bearing industry.

We were fortunate enough after the first Schweinfurt raid - (it proceeded immediately to the plant) that there were not many fires, but the effects, as a result of high explosives, were greater. The valuable machine tools were intact under the debris; I must say that machines producing ball-bearings are heavy and not too vulnerable to debris. They can be destroyed only by a direct hit or fire. Furthermore it was to our advantage that we ordered
increase in capacity of ball-bearing industry a few months before which had priority. Fortunately machine tools for ball-bearings were still being produced and so all we had to do was to speed up production.

Q. Could you give us an approximate increase percentage-wise of the ball-bearing industry.

Sp. It was intended to double production because we had envisaged with this increase of plant capacity the then existing industrial programs in a long range view. We finally wanted to break the ball-bearing bottleneck once and for all.

Q. In your plans for expansion of the ball-bearing industry did you provide for a dispersal of the plants? You know the industry was highly concentrated.

Sp. Not to a large extent. We planned additional in Schweinfurt itself. Furthermore Steyr was already in operation and would be expanded. We then hadn't adequately appreciated the danger of an air attack to the ball-bearing industry.

Q. Did the plans call for a doubling of the machines as well as the doubling of the area?

Sp. Certain types of ball-bearings were in themselves bottlenecks and the production of these alone were to be doubled. Various other types of ball-bearings were not bottlenecks. There are small, medium, and large ball-bearings. These ball-bearings destined for Tanks were a bottleneck and we had to more than double the production of those. Small bearings, on the other hand, were not so important with the exception of some specialized types. In general, however, a doubling of production was provided. All detailed plans were in existence and were drawn up by the ball-bearing industry and the main committee.

Q. I assume that this increase of production was for tanks and A/C?

Sp. Yes, for the engine and airforce program. After the last reserves were used up which we had from the "Vorlauf" we took the following measures: We reduced drastically the number of ball-bearings for each tank and plane and thereby reduced the requirements. Co. Schada of the Technical Office had great success with his rationalization measures. In certain instances we were able to decrease by 70% the Ball-bearings required. Especially in the case of aircraft we found out that a great reduction could be effected. This saved us. We thought it necessary in the aircraft industry (Ju 290, the heaviest machine) to be able to do the job without too great an effort. Everything depended upon ball-bearings. It was an outspoken luxury. More energy had to be utilized now.
In spite of the attacks of August 1943 you were able to maintain approximately the curve until 1944. It would be interesting to hear how you were able to maintain the high curve.

After the Schweinfurt raid I consider it a miracle that Kessler was able to do what he did. All ball-bearing people were of the opinion, and their statistics confirmed it, that a sharp decrease in ball-bearing output must take place. It is impossible to see, however, from this curve that some Special ball-bearings could no longer be produced. The good picture does not quite correspond to the bad situation in this field.

It is obvious that you gave a man complete powers to solve a critical situation - for example Geilenburg. You gave similar powers to Kessler as well as to others later on. To what extent was he able to divert labor and material from other production?

It is obvious that we had a greater labor force and more material during the raids than we had later on. With each new delegation of power the efficiency of the person concerned decreased. When Kessler was commissioned to do his task, he found the machine tool industry intact and no competition like that which he later had from Geilenburg in the hydrogenation plants. Ball-bearing production, in relation to total production, represents a very small part. This angered me and made me attempt to break this bottleneck. It was only a result of bad planning. After the first attack the main problem was to replace the electric motors which operated the heavy machines. This could be accomplished by our electrical industry. In case the replacing did not proceed quickly enough we would have diverted electrical motors from other industries. This may have temporarily caused a small decline in the industries affected. We were thus able to restore the ball-bearing industry again. Such small accounts were involved that they played no role in the general economy.

The technique which you used is not clear. How were you able to set up these various people? Kessler was no problem. But how were you able to maintain central control later on? Surely there were difficulties.

We must distinguish however two things: the self governing agencies of industry planned and executed programs in large sectors of the economy. In the long view it was clear. To those agencies belonged Tix, Roland, Geilenburg for example. The danger was that these people could act as ministers without regard to other things. This was not the case for the leader of the main committee. It was the case with Kessler and Geilenburg. At the end I was forced because of the air attacks, to me so many commissions, that the system of the main committees was broken. These main committees were the correct approach but they no longer functioned properly. That was the dilemma in which I found myself.

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Q. We were very surprised that in important industries as for example in the aviation industry work was done in only one shift. The same applied probably for the ball-bearings industry. Did you introduce a second shift as partial solution for the crisis?

Sp. No, that is not quite correct. We did not work only on the shift, bottleneck machine tools worked day and night. The other sufficed during the day shift. I think we had bottleneck machines in the ball-bearing production too, and they worked at night.

Q. We have a general question: Why did not more of the German industry work around the clock, as we do in America?

Sp. I think it is because we have bottleneck machine tools. You don't have such a shortage in America.

The situation with us was such, that single purpose machines worked 20 hours daily and their production was sufficient to keep the rest of the plant busy for 10 hours. I made the same mistake as you at the beginning of my job. It struck me that everywhere one worked only 10 hours and I thought that one could achieve speedy increases by introducing a second shift. But we discovered that this was not possible with us. We always hit bottleneck situations with our single purpose machines. Other machine tools, such as ordinary lathes, were available in sufficient quantity. During any visit at night you could see that the bottleneck machines were working.

Q. How about the ship yards in Hamburg? Those worked only in one shift. There you need only very few single purpose machines.

Sp. That has nothing to do with it. At Hamburg the U-boat production pace was set by the supply of sections which came from elsewhere. Assembling went very fast. The determining factor was the supply. Besides the whole question of ship building was governed by bottleneck metal sheets, which we discussed the other day. That is why we did not put in more labour, there would not have been any sense for it.

Q. Let's assume the case that there had not been any bottleneck machine tools, had all requirements been fulfilled to achieve greater successes with an additional shift?

Ap. For me it would be useless to double shifts if I had the labour. The capacity of machine tools on hand was about sufficient to work the steel. An additional number of 1, 000,000 to 1, 500,000 workers could have been placed in time and would have helped me to increase armament production.
Q. Does this mean that the original bottleneck is steel, i.e., was production figured out of the basis of steel and did therefore the question of labour never become quite acute? What was the bottleneck question of this steel bottleneck?

Sp. Of course the bottleneck was high grade steel. Before the war the whole steel industry was composed in a different manner than in war time. They had to produce different qualities. Now high grade steel, with a high percentage of alloys, was needed for guns, tanks, ammunition, etc. We had a surplus of Thomas steel. We then switched to Thomas steel in the manufacture of ammunition.

Q. Where was the bottleneck of high grade steel? Why could it not be increased?

Sp. It was increased. The production of high grade steel—according to our bases, was not very much below that of the United States at the beginning of the war. We concluded therefore, that our armament should be able to keep step with that of the United States. That, of course, may have been a great error.

Q. Our figures were rather low.

Sp. I should like to elaborate this topic a bit.

This was because before the war our industry was an export industry for high class products, we did not export mass manufactured goods, but specially built ones and for those there were mostly quality steel specifications, i.e. for example electro steel. America on the other hand had mass production of relatively low quality steel. As a result our production of electro steel was relatively great in contrast to the United States, where electro steel represented but a small fraction of the total steel production. Since 1939 we did everything possible to increase the output capacity of electro steel. The electro steel industry got orders to build a maximum of electric furnaces for high grade steel manufacture so that our increase of electro steel production may be considered the maximum obtainable. At the end of the war we had a process in which by mixing Siemens Martin with electro steel, we obtained a steel of a quality comparable with electro steel. This was developed at Donawitz.

Q. Can we conclude that the high grade steel works in Krefeld and one or two other producers of high grade steel would have constituted an ideal target as they represented the bottleneck of all bottlenecks?

Sp. You know how those electro steel furnaces look. The furnaces are relatively small and easy to get up. I always had to fight
fight against each plant procuring its own electro furnace and establishing its own cooking pot for producing its own iron. The output of high grade steel works did not amount to much per-centagewise. The furnaces were dispersed to every place where plenty of energy was available, as in many valleys. It really is the way to produce steel, a method least dependent on its emplacement.

Q. What was the reason why not more electro steel was produced, the furnaces or the metals?

Sp. Only the furnaces.

Q. Because of energy?

Sp. No, electro steel was so important that we stopped Aluminum to produce electro steel. Losses because of current distribution could not be avoided in spite of this measure.

Q. We thought that it is easy to build those furnaces.

Sp. Our industry could not build more of them Figures will show you how much it was. I think it was quite considerable.

Q. One more question with regard to the ball-bearing situation. You said that it would have been possible for you to maintain production until spring 1945 and then you decreased. Can you give us an indication as to the cost of maintaining ball-bearings.

Sp. No, Kessler must do that.

Q. Up to what point were you able to compensate by means of imports from Sweden your production less caused by attacks.

Sp. The Swedes did not supply us more than before. (Thanks to the efforts of an economist from America who happens to be present at this interview) With the Swedes it was not possible to compensate bottleneck ball-bearings against others. They stuck to their agreements but otherwise were very rigid. They did not help us. Imports from Sweden decreased then and at the end there was not any at all.

Q. Was it possible to use ball-bearings from shot down or forced down American machines?

Sp. As far as I know this has never been done.

Q. We heard many rumors about it.
Transport:

We have the impression that up to the fall of 1944 rail road traffic increased and then sharply decreased. The question arises as to whether this decrease represents a crisis in the general economy and production, or is due to air attacks against the means of transportation?

Sp. It is not correct to say that traffic decreased only at the end of 1944 that had already happened at an earlier moment.

Q. Loading time for cargo cars increased up to 1944.

Sp. We got after the figures of loaded cars. Comparing the two years, 1944 was generally below 1943 throughout its course.

Q. We do not have the figures for the last three months. According to the first nine months the figures are higher.

Sp. That is not correct. The figures of loaded cars were lower. Moreover this depends upon the time each car needs to go from dispatcher to receiver. One disadvantage resulted from goods which I had to transport remaining too long on the rails, causing me a loss of substance.

Q. Why did the transportation decrease so drastically during the spring of 1942?

Sp. That was the Russian winter offensive. We had the winter 1941/42 behind us with a very difficult situation on the Russian railroads. The railways were not yet put in order. Roundhouses for locomotives, water stations were not sufficient. Because of this there developed a transportation crisis during the winter of 40/41 which grew until the spring of 1942. This led to the situation which I mentioned during the recent conference whereby it was demanded that a young man be placed in command of transportation and that he achieve an increase through his energy. On has to take when comparing these figures that they only concern a small territory - Germany and the protectorate - while effects from outside were added to it. Comparing figures of 43 and 44 one must not make the mistake of not noting correctly the relatively favorable development despite air attacks. The Russian territory became smaller and smaller, consequently auxiliary means flooded back to the Reich and permitted a certain densification. Then, in 1942, during the winter offensive there developed acute shortage of locomotives because many froze in Russia. From that stemmed our locomotive program, as figures will show you.

Q. Did you have the impression that besides this Russian winter offensive there were other locomotive bottlenecks?
There were two schools of thought in the Reichsbahn and they fought each other vehemently. The ones said that we had a shortage of locomotives, the others maintained that we had enough of them. Where experts can't agree, I as Reichsminister cannot decide about it. Anyhow we built some and this paid off later, otherwise we could not have lasted that long under aerial attacks.

What was the reason for the decrease of traffic - the attacks against highways, against transportation installations against plants?

Only the attacks against transport facilities mainly marshalling yards. The whole armament program was dependent upon coal production. It was this which in view of the rapid enlargement of chemical production in the future would have made it possible for us to supply all the planned chemical works with coal. When the attacks against the Ruhr started, I think May/June 1944 transportation of the Ruhr area was much deranged for the first time. This resulted in a sharp decrease in the number of loaded coal cars. The decrease automatically involved the whole armament industry. Every reduction in coal transportation affected production.

After the great attacks against the three marshalling yards Osnabrück, Münster and Hamm do you attribute the great decrease of transportation to the damages suffered by general administrative procedures, to the breaking of communications, to the damages suffered by signal installations or to the absolute impossibility of dispatching trains?

Mainly to the impossibility of dispatching trains. Only at a much later date, January/February 1945, was the net of signal communication shattered by the air attacks to such an extent that it had a decisive influence. For instance, it became impossible to find out where single cars and even single trains were etc.

Can you give us some indication as to when the decrease or crisis in transportation started to have consequence for the armament industry and the whole economy?

One can say that this again was mainly a question of satisfying the needs for coal and this problem became acute at the beginning of winter 44/45. In previous years stocks of coal at electricity and gas works as well as in large plants were regularly increased during the summer months so as to build up reserves for the winter. This broke down in part because of the low capacity of the railway roads during summer 1944 as far as coal transportation is concerned. Consequently we entered the winter with low stocks but this did not at first have any repercussion.
About November 1944 in spite of the bad coal situation I gave orders to use the stocks fully for armament production in order to achieve a maximum output of armaments to help the critical situation at the front. Using the meager stocks which were on hand in the fall brought us very close to a coal catastrophe, at the beginning of 1945, one that later occurred and paralysed basic production and armament.

Were there still other difficulties worth mentioning?

Sp. In 1943/44 we had difficulties, but to a much smaller extent. These happened every winter, not as a result of transportation but as a result of the coal ceiling which was too low. The influence of air attacks can best be shown by comparing the daily figures of loaded coal cars. Out of this shortage of cars arose the most difficult situation, other transport problems being of lesser significance. By determining the number of loaded coal cars of the various territories, such as the Saar and the Ruhr etc. you will find the exact curve showing the effect of your attacks. It will be noted that the attacks against transportation resulting in an insufficient number of loaded coal cars gave us the rest.

Did the attacks against canals and rivers influence transportation of coal considerably?

Sp. They played an important part. After the attacks against the Ruhr and rails around the Ruhr area had reduced the number of loaded cars to 6-7,000 daily compared with a normal load of 20,000-25,000 cars the maintenance of steel production in Central Germany-Salzgitter, Poinc etc. only through canal shipments of coal. We loaded the boats almost exclusively with coal. This was the last opportunity of supplying steel works. The attacks against Ledbergen and Minden deprived us of this opportunity but we still were able to get a few boats through because of a short margin of a few days between accomplished repairs and renewed attacks. Only the high frequency attacks of the last two months rendered all traffic impossible.

One of our problems in this connection is that we are unable to get any statistics concerning transportation for the Wehrmacht exclusively.

Sp. At the Reichsbehn this was the domain of Ministerialrat Ebeling, liaison man to the Chief of Wehrmacht transports. But certainly...
certainly such information must be available from the Chief of Wehrmacht transports, General Gorck.

There arises an important question: In your opinion did the attacks against German transportation have a disastrous influence on the whole situation, aviation, chemistry, etc.

The destruction of transportation resulted in stoppage of coal shipments. This in turn curtailed industrial production. If you intended to achieve this you completely via transportation, while the destruction of chemical plants would have sufficed to break the war machine had the refineries been included. Destruction of chemical industry and the refineries would have resulted in a speedier collapse than that caused by break down of transport, which requires more attacks. If one wants to destroy the whole industry one can achieve it by destroying transportation, as shown in our example. When I tried to follow your line of thought I had the impression that you did not attack transportation in order to destroy armament but mainly for tactical reasons, in order to hamper operations at the front. Those attacks brought the damage of armament with it, but only as a by product. I think this impression was correct. For the tactical movements at the front these attacks were most damaging. For Japan there are certainly different targets which will lead to a speedier victory. The destruction of the whole industry can be achieved with less effort via power plants.

Signed: Speer