SUBJECT: Interrogation of ALBERT SPEER, former Reich Minister of Armaments and War Production

6th Session - 15:00 - 17:30 hrs. - 30th May 1945

1. SPEER was asked about his and the German official view taken in 1942 of GERMANY's long-term prospects of keeping up with Allied war production after the failure of the Russian winter offensive and the entry of the U.S. into the War. SPEER began by saying that very soon after these events HITLER had issued a strict order banning any discussion of the above topic, official or private. The Vorbildrichteramt, then in charge of economic intelligence, had been instructed not to give out any information on Allied war production, not even to government agencies with official interest in this question.

Unofficial discussions, of course, took place and to SPEER's knowledge it was universally admitted that GERMANY would be unable to avoid a steady deterioration in her relative armaments position. SPEER himself, however, took the view that GERMANY's quantitative inferiority could have been offset by qualitative factors. In certain fields of armaments GERMANY had a lead in quality at this time, and he thought that German industry was more versatile than American, and would find it easier to keep changing over to better and better weapons.

As to specify his views on the relative qualitative position at the time for the principal categories of weapons, SPEER admitted that in 1942 GERMANY was clearly inferior in tanks, as the PzKpfw III and IV were no match for the Soviet KV-1 and T-34. The immediate employment of heavy tanks by the Soviets came as a great surprise to SPEER, and he declared that the T-34 had been completely unknown to German intelligence until it was encountered in battle. As regards T-34 artillery, GERMANY was similarly inferior, as it had only the 7 cm PaK, which was not heavy enough against the Russian tanks. An immediate effort was made to rush through the first batch of 1,000 7.5 cm PaK, and as an emergency measure 700 captured French 7.5 cm barrels were converted to use and rushed to the front. It is still inexplicable to SPEER how the German army at that time was able to withstand the Soviet tanks.

The subsequent development of the T-34 and later Panther has already been described in an earlier interrogation. These types, coupled with progressively longer and heavier T-34 guns, later established qualitative superiority over the Russian tanks. Simultaneously work went on in 7.5 cm guns, and SPEER considers that the last Krupp 8.8 cm T-34 piece was the best in the field, although it was too heavy and immobile.

In ammunition, even after the elimination of tungsten carbide cores (see below), the quality was approximately equal to the Allies', and German aircraft ammunition was better.

In fighter aircraft, GERMANY had a superior type in the Fw 190. GERMANY's chief efforts later were directed towards getting the Generalstab der Luftwaffe and GERMANY to adjust themselves to a definite defensive policy. SPEER was backed by GALLAND and HITLER. The opponents, and also HITLER, however, insisted on retaliation against GERMANY. He considered that even losses of one fighter for one enemy bomber were fully justifiable, in view of the weight and cost ratio of 1:9 in production, and the total loss of bomber crews. Even the Allied production potential would not have been able to keep up with a 1:1 loss ratio. Having talked to German pilots who had flown in the Battle of BLITZKRIEG, SPEER also considered that no Air Force's morale could in the long run stand up to losses of more than 10-15%. per operation. When the daylight attacks were intensified in summer 1944, SPEER still remained optimistic. He attached great importance to GALLAND's plans of concentrated fighter defense forces of 2,000 or 3,000 planes each. Although he took issue with the Führer in the controversy on the employment of jet planes, (see earlier report) he did not expect very much from the jets, as from his experience in other fields he knew the difficulties usually encountered when entirely new weapons are first tried in operations.
2. On the quantitative inferiority, and its inevitability, SPEER never had any illusions. He took the relative steel capacity as principal measure of the relative potentials. The recuperative powers of Russian industry, after the loss of the Western territories, came as a surprise to SPEER and everybody in Germany. He still fails to understand the speed of Russian industrial evacuation and re-location. On tours of inspection in Russia and elsewhere he found that heaviest machinery had been moved in a time which was amazing to him and which was never approached in later German attempts at evacuation.

3. On the subject of German losses of equipment at the fronts, SPEER observed that German armaments production (as explained in his Rechenschaftsbericht) in 1944 was equivalent to the complete equipment of 250 Inf Div and 40 Pa Div, while Germany had only the equivalent of 150 Inf Divs and few cavalry divisions (12,000 men each) in the field. He attributes the steady deterioration in the weapons strength which nevertheless ensued largely to the losses of equipment and ammunition during the continuous German retreats, but also to a considerable extent to faulty distribution policy of the OHL. FRJOM, as Chef der Heeresmunition und Besoldungs der Ersatzheeres, was in charge of supply as well as the formation of new units. The latter received 90 per cent of all new equipment produced, while only 10% went to the front as replacements. In consequence, "green" units newly formed were fully equipped with new equipment, while experienced troops at the front had to go short. During a visit to the Heeresgruppe Kesselring, SPEER found that it was 1,500 machine guns below strength, while monthly production at the time was running at 30,000.

Equipment losses at the front were further increased by a chronic shortage of traction power, due to the insufficient production of ML.

In Spring 1944, the Generalquartiermeister VAGNER prepared an estimate of the replacements of equipment which he would require to meet losses anticipated in further withdrawals on the E. Front, when it was approaching East. His estimates were several times higher than what SPEER would have been able to produce. VAGNER's estimates, according to SPEER, was prepared for his personal re-insurance against future blame, and SPEER retorted to VAGNER that there would not be enough room for him to retreat anyway to incur his estimated losses.

4. SPEER estimated in September 1944 (as laid down in his records which is available) that the loss of peripheral European territories, especially the Baltic, would not immediately paralyse the German economy. The most serious effects were foreseen (by BACKE) in respect of food supplies, the minimum required by a hard-working population being insured in the long run. Economically, according to SPEER's estimates, Germany could have held out until early 1946, though not much longer - all this assuming absence of air attacks.

It is important to note, for subsequent evaluation of SPEER's memoirs, that the stock figures may be partly misleading. Thus, the 450,000 ton stock of copper, according to SPEER, includes "copper registered but not yet mobilised", e.g. church bells. He insisted, however, that copper stocks were satisfactory, and in the final phase of the war copper was even used in the place of aluminium, as it had been estimated that bauxite stocks would otherwise give out earlier than copper.

5. Asked whether the scarcity of steel-alloy metals had resulted in a qualitative deterioration of military equipment or in manufacturing difficulties, SPEER replied that despite reductions in the alloy content of armour-plate etc., their quality had been maintained on the 1939 level. It was realised that in some cases the quality would have been improved by a higher alloy content, but the army never attempted to insist on specifications for such steels. If it had done so, SPEER would not have been able to meet their requirements. Asked whether the short life of German aero-engines was due to low alloy content, he stated that he had never been aware of this. If the Luftwaffe had asked him to increase alloy allocations for the specific purpose of extending the life of aero-engines, he would have gladly made them available, as such a policy would in the long run have resulted in economy of alloys. It was customary to manufacture the experimental O-Serries with materials containing more alloys than were later used in serial production in order to eliminate low alloy content as a possible source of errors in tests. The same was done with turbine blades for jet engines.
Supplies of tungsten-carbide tips for machine tools could only be maintained at the necessary minimum by stopping production of carbide-core /ER ammunition. SPEER was uncertain of the time of this decision; he thought it was taken in May or June 1944. The Germans considered that carbide cores considerably improved the performance of ammunition of small calibers up to 5 cm. 5 cm Pak carbide-core ammunition was the only type which was allowed to remain in production as it had been found that such shells were just able to penetrate the armor of heavy Russian tanks. Carbide cores were also permitted for 5 cm AP shot for aircraft cannon, used mostly in HISSAH. In addition to stopping production, the Germans blocked and called in all stocks of other types of carbide core ammunition, which produced several tons of tungsten for tool tips. The use of carbide core ammunition for heavy calibers was apparently considered much less essential. After this measure, tungsten supplies for tool tips were secured, but continuous difficulties were experienced owing to the scarcity of chrome. SPEER thought that there was a considerable demand for both tungsten and chrome on behalf of the chemical industry for use in catalysts. They had no difficulties with platinum, which according to SPEER was used, inter alia, in catalysts for R-Stoff (rocket fuel) manufacture.

6. Asked about the effects of the US air attacks on the German ball bearing industry, SPEER expressed the view that they would have knocked out this industry, with very serious general effects, if the first attack had been followed up and repeated at short intervals or if the attack had been carried out earlier. Seventy to 80% of the German ball bearing industry were concentrated at SOEHNEMANN at the time of the first attack, but a dispersal scheme had been initiated before this attack, which ultimately was to have reduced the share of SOEHNEMANN to 10%, largely by dispersal of manufacture to approximately eight small plants in the SOEHNEMANN area. This scheme had not advanced very far when SOEHNEMANN was first attacked, as the Germans were always slow in pre-attack dispersal, being reluctant to accept the production losses involved in re-location (the average production loss in an evacuation project was put at eight weeks). But the existence of the scheme was a great help on this occasion.

7. The attack on the tank engine plants caused considerable difficulties. It had no effect on the rate of tank output, but the spare engine situation remained extremely difficult after the attacks, especially for heavy tanks, at the time of the attacks, HAMBURG at PAKENHOFEN, and NUREMBERG, were the only large scale tank-engine manufacturers. M., at NUREMBERG was to take up tank engine manufacture, but had as yet only started on a very small scale. NUREMBERG had the heavy HE230 engine for Tiger and Panther, and NUREMBERG the lighter H120 type. SPEER suggested that the effects would have been much more serious if both plants had been attacked at the same time. Repairs at NUREMBERG were undertaken with exceptional speed as a special Fuehreraktion. Engineer troops and other Wehrmacht units were mobilized for this job, and production was resumed very soon. Later on, one of the principal dispersal plants for tank engines was to have been installed in an underground site at LEITHOFFEN.

8. The attack on oil plants on and after May 12, 1944, was the "first heavy blow" struck against German industry. Here again, however, SPEER suggested that the intervals between the attacks were too long. The speed of repairs, which probably had been under-estimated by the Allies, had been made possible by CHILIBRIN's able direction and the exceptional scale on which labor was mobilized for oil plant repairs. The hundred thousand repair workers were ultimately employed. In the usual interval of 6 to 8 weeks, between attacks, CHILIBRIN was generally able to get output equivalent to 10/14 days' normal production.

The problem of placing synthetic oil plants completely underground was solved in stages. In the first plan, the stalls were to be placed in "wells" in a vertical position. Later on, the entire plants were planned below ground, with the stalls in a horizontal position in underground galleries. Three such plants were planned (code name SOEHNEMANN).

9. The raids on HENSCHEN produced the most serious effects in the offensive against tank assembly plants. As a result of these raids, output of Tigers fell from 100-150 monthly to about 50 to 60. SPEER claimed that the total tank production was numerically maintained to the end, through expansion of output in the Protectorate, but he admitted that only the light 38 (t) tank was manufactured there, so that the maintenance of production was essentially numerical and not qualitative.

SOEHNEMANN
10. The attack on the EDER DAM had no effects except some slight flood damage. The MOEHNE DAM attack would have had serious consequences only if it were broken, and two other small dams had been broken at the same time. The chief factor which prevented serious reduction in industrial water supplies to the RUHR was the existence of a pumping system from the RHINE up the RUHR valley designed to supply the whole district as far upstream as ESSEN. The pumping plants were silted up by the floods from the MOEHNE, but were quickly restored. Repairs to the MOEHNE Dms were then rushed through in time for catching the autumn rains. Restrictions on water consumptions were imposed on the RUHR industry during the summer, but otherwise the attacks had no effect except that of giving the Germans "a big scare". The Ruhrstab was set up in order to enforce the water rationing scheme.

11. SPEER considers that the gradual build-up of the Allied night air offensive contributed to what he describes as its initial failure. The steady increase in the weight of attacks served as a "training" for the Germans, both as regards defense methods, A.R.P. and repair organization. The civilian population also got hardened to the raids in a gradual way. "Shock effects" were produced by the first 1,000-bomber raid on COLOGNE, and especially by the series of attacks on HAMBURG in summer 1943. After the latter attacks, the German authorities voiced the view that if twenty major German cities were similarly devastated, he would not be able to maintain armaments production. He changed his view, however, when he saw the speed with which HAMBURG industry recovered from the attacks, which came as a surprise to him.

The purpose of the night attacks directed exclusively against city centers had been "incapable" to SPEER; their effects on industry were very slight. Later on, when attacks were sometimes directed on industrial areas, damage to plants tended to become more widespread, but SPEER considers that even bombing alone would never have been a serious threat. He particularly emphasizes the factor of civilian morale, and especially labor morale, which was excellent throughout, and resulted in rapid resumption of work after attacks. He admits, however, that after a series of attacks like that on BERLIN in fall 1943, fatigue effects made their appearance and labor discipline began to flag. The dislocation of civil services after such attacks was also a serious factor.

The only type of night attacks which, according to SPEER, had serious direct effects on industry were those undertaken with special aiming devices against selected targets. SPEER was much impressed by the first Mosquito attacks of this type against the GÖRLITZ and BOCHUM VEREIN plants. The Germans at first suspected that some new guided bombs were used in these attacks, but then found that the U/X bombs which they examined were of standard pattern. He was much impressed by the bomb plot of one of the RAF attacks on KRUPP, where the accuracy was such that a high proportion of the bomb hits were on the centers of the factory buildings. (It was not clear to which attack he was referring.)

12. SPEER prefaced his reply to a question on the efficiency of Allied transportation bombing with a general statement of his views on bombing strategy directed against the economic system. He considers that selection of end product industries as target systems is always wrong. The attack should be directed either against basic raw materials such as steel or basic chemicals, as "it is much easier to dam up the river near the source than at the delta". But even this would have the desired effect only if it was sufficiently comprehensive to destroy all capacity in the selected target system, as a partial stoppage of production could be cushioned in the end product phases by manipulation of priorities. SPEER includes transportation among the basic target systems susceptible to such an attack, while admitting that an offensive on a sufficient scale to paralyse transport requires very great effort.

The attacks on the RUHR transportation system caused the Germans the greatest difficulties. A memorandum on this subject which he wrote in 1944, and which is said to be among his files, sums up his views on this subject. The cutting of the LGEBRUDER-BIS Canal had most serious effects, especially as railroad carloadings had already declined heavily owing to previous bombing, and speeded up the collapse of German transportation. Once again SPEER noted that the intervals between the canal attacks were too long. Even if they had the canal open for only two or
three days before it was cut again they were able to rush through the coal barges which had been accumulated in the Ruhr in anticipation of the reopening of traffic.

13. Speer's discourse on general bombing strategy led to a discussion of the industrial pipeline concept, with which he was broadly familiar from his industrial planning activities. He gave the following rough estimates which, he stressed, were only very approximate as he had never studied the subject intensively. The period, in each case, is from crude steel to the finished product:

<table>
<thead>
<tr>
<th>Product</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball bearings</td>
<td>3-4 months</td>
</tr>
<tr>
<td>Motors (tank and aero)</td>
<td>6 months</td>
</tr>
<tr>
<td>Tanks</td>
<td>4-5 months</td>
</tr>
</tbody>
</table>

Speer emphasized, however, that the additional pipeline from factory to front was extremely long in Germany owing to the clumsy supply system of the Army and Luftwaffe. Guns, for example, were accepted by the Heereszeugamtinspekte in the factory without sighting equipment, and were then sent to an Ordnance Depot, where the sights were installed. Only in late 1944 Speer persuaded the HWA to reverse this system, and to send the optical equipment to the gun, instead of vice versa. Aircraft, after leaving the factory, went into a Luftwaffe depot for a process known as "Umrüstung" in which minor modifications were carried out. In late 1944 Speer obtained through the Generalquartiermeister the serial numbers of a sample of finished warplanes equal to the factory's output, and had them checked with the factories to obtain the dates of completion. The pipeline to the front was found to be two months on the average, which to Speer seemed excessively long. Towards the end of the war, he insisted on various measures to speed up delivery to units. To avoid the delays involved in taking guns to testing ranges, the test firing was sometimes done from the factory. Thus, 17 cm field guns made by Hütte were test-fired straight from the plant across the city of Hannover, whose inhabitants were used to air raids and did not mind. Similarly, Flak guns were often test-fired in cities. Speer's ideal was to introduce what he describes as the Russian system of direct delivery from factory to front, and he also favored an organisation of Army supply based on the feeding of each Army Group from the nearest industrial area. However, the OKH with its policy of first concentrating all production in Heereszeugamt and Munitionsamt and then distributing it to units, would not accept his suggestions until shortly before the end. Speer encouraged direct dealings between unit commanders and factories in obtaining equipment and spare parts, although the Army bureaucracy frowned upon such procedure.

14. Questioned on the organisation of spare parts production and supply, Speer referred to Direktor Ostreich, who was in charge of the matter and organized it very efficiently. Speer's own knowledge on this subject was sketchy. He thought that in the early days a certain quota of spare parts was produced with the complete item. Later on, under Ostreich, a certain proportion of capacity in each industry was set aside for spare manufacture, and production was based on statements of requirements received from the Army. He thought on the whole not enough spare parts were made in relation to complete items.

15. Speer said that it would be extremely difficult to obtain precise figures on the labor force engaged in bomb damage repair at different times, because there was usually a good deal of improvisation in the handling of repairs, and nobody had time to bother about collecting statistics. He suggested that up to mid-1944 the total time employed might have averaged 1-1.5 million, but stressed that this was merely a guess. For the same reason, Speer never attached any weight to the Fliegerschadensstatistik or non-hour losses through bombing put out by the Flugzeugamt. He thought it was unreliable, and based on a lot of guesswork. He himself had issued orders that plants should not be bothered with statistical inquiries and questionnaires after they had been attacked, so that they could concentrate on restoring production.

16. Speer confirmed that in some cases it was necessary to suspend repair work in one place in order to divert the labor to work on more recent and more critical incidents. Thus, after the first attack on Siemens, repairs to the Siemens transformer plant at Hannover had to be interrupted, although they were regarded as very important.