

SECRET

SUPREME HEADQUARTERS
ALLIED EXPEDITIONARY FORCE
Office of Assistant Chief of Staff, G-2

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

2nd Session, 15:00-18:00 hrs - Monday, 28 May 1945

RESEARCH, DEVELOPMENT

1. SPEER is firmly of the opinion that the right of deciding what to develop belongs to those responsible for tactics, i.e. the General Staff. But the German G.S. contained no representatives of industry--they were all officers and had no idea of the inter-relation of requirements and production. For example he quoted the case of their demand for 15 cm and 21 cm flak: this happened before SPEER's time and the industry was only in a position to produce a few heavy field guns of 17 cm and 21 cm per month, and a similarly low flak output would have been quite useless when distributed over all the areas in need of A/A defence.

2. In 1942 he formed the Entwicklungskommissionen (Development Commission) each containing representatives of:

- (a) The Wehrmacht (General Staff)
- (b) Entwicklungsstelle of the Waffenamt
(Development Offices of the Munitions Dept.)
- (c) Those responsible for the manufacturing side in the Waffenamt.

--these were the military organizations

and (d) Designers
 (e) Hauptausschüsse.

3. The head of the Commission was always an industrialist, with the exception of the EK Schiffbau, headed by Admiral TOPP.

(SPEER said that KOPFMUELLER was not head of the Nachrichten-EK: he was the representative of the Navy, and the other two services were also represented. There was no EK for Maschinenbau.)

4. The first EK was the Panzer EK, which was formed before SPEER's appointment. The aircraft EK was formed in very late 1944 and was never able to start work. The general procedure before SPEER's time was illustrated by the development of the TIGER tank. This was in the early stages of development when SPEER took over. Two competitive proposals had been put forward, one by PORSCHE, involving, among other things, diesel-electric drive, the other of more orthodox design, made by MAN.

The two were put on trial by the Subcommittee "Panzer-Tiger" under General TOMALE and tests showed the HENSCHEL (MAN) to be the best proposition; the PORSCHE was "unusable." A great tussle then ensued at a meeting in the presence of HITLER, and it was decided that the MAN should be adopted. (Later the ingenuity of the ALKETT designers enabled the PORSCHE design to be used for the Ferdinand S.P. gun carriage, but production of this type was confined to the number of hulls which were already on order.)

5. As to events before his arrival, SPEER has only secondhand information. The Tiger was a requirement of the Fuehrer in 1940, and the army were quite opposed to the idea of very heavy tanks, as well as heavy tank guns. The gun which it was designed to carry was a normal 88 mm flak type with slight modifications; nearly all heavy tank guns were initially developed from flak weapons.

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6. The Panzer EK as originally constituted in 1941 was not quite the same as the rest, though SPEER cannot say what exactly was the difference without reference to his records.

7. HWA had no facilities for detailed design work: they supplied a sketch and rough specifications to industrial firms with whom the development contracts were placed. (In the above case the MAN design was supported by HWA rather than the other.) Ten to 15 prototypes were usually made, known as the "Nullserie." The time taken in the pre-SPEER organization was roughly

Drawings for prototype	4 months
Proto production	3-4 months
Tests (barring accidents)	6-8 weeks
Materials for Series 2	4 months
(longer for special m/c tools)	

so that in the case of Pz II, III, and IV the whole job took 2 - 2½ years to get into the hands of the troops.

8. User trials took place in stages. Tanks would be tested without turrets, using balance weights. User trials on the complete vehicle were carried out, but only as a matter of form.

9. A number of different firms would be employed on the same vehicle, each responsible for various sections. The turrets and guns were normally designed by Krupp or Rheinmetall Borsig.

THE PANTHER TANK

10. This is an example of SPEER's way of tackling a similar project. The basic idea was conceived in March 1942. The army wanted a lighter weapon than the Tiger, and its specification was influenced by the Soviet T34 as regards inclined surfaces, suspension and tracks. The Panther Subcommission got alternative designs from Daimler-Benz and MAN and again the MAN was chosen, but this time the selection was made from the drawings, without waiting for prototype manufacture or tests. In this case the motor had already been tried out in the Tiger (the Maybach HL230). The m/c tools and raw materials were immediately ordered, and series production was started in late Autumn 1942.

11. Notwithstanding this, a Nullserie was produced concurrently, and went through its tests without any trouble (the main tests lasted about 6 - 8 weeks, but they were continued afterwards to accumulate experience). Too much reliance was not usually placed on the results of Nullserie tests because there was an element of competition involved, and firms used to make a special effort, using better materials than were specified; thorough tests had therefore to be made on the serial production models. In this particular case the motors gave trouble in series production, because some over-enthusiastic official insisted for economy reasons on replacing the aluminium cylinder heads by steel, which had quite a different heat conductivity. This was an unnecessary alteration, in SPEER's view, as there was plenty of aluminium.

12. However, after 14 - 15 months a usable vehicle was in the field and in mass production, though they had to pay for the speed to some extent on account of the number of complaints about the early models: this is one of the risks which SPEER says must be taken. They used to reckon on about 20% wastage at first, as a rough rule.

13. Asked about their use of captured allied tanks, SPEER said these were tested by the HWA on the same lines as German vehicles; they were also distributed to various firms for examination and material analyses.

14. SPEER stated that the fundamental reason for the rejection of the electric propulsion scheme was the shortage of electrical production facilities, upon which the U-boat and V-2 programmes were making heavy demands.

15. Evidently they never had much difficulty with alloy steels: they were able to get materials from the Balkans, where the TODT organization had opened up new mines and extended old ones, from Turkey, from Russia (Manganese), from Finland (Nickel), and from Spain (Wolfram). HOUDREMENT is said to have managed to keep up the quality of armour and gun steel; they went over from Electro-steel to Siemens-Martin for armour plate with little sacrifice in quality. A reasonable firm could get 90% of the quality with plates from 9 cm upwards: below that the S-M was not so good.

16. Asked whether re-design of tanks was necessary after the ball bearing attack in July 1943, SPEER said that it made things very difficult for a short while. Certain bottleneck types, both large and small, were caught. There had, however, been an expansion of ball bearing production before the first attack, and this continued until 1944. Immediately after the attack Oberst SCHAEDE conducted a ball bearing elimination campaign, in which some of the luxury uses, which according to SPEER were widespread in German designs, were stopped. In aircraft designs, for example, it was found possible to remove 40-50% of the ball bearings. Certain modifications were required in the case of tanks, but the ball bearing attack is said to have had no effect on tank production.

U-BOATS XXI and XXII

17. SPEER claims to have set up something of a record in the development of these U-Boats. A type sketch was made by the Navy in the summer (July) 1943, indicating requirements and rough sizes. From then until September discussions went on with the Navy (in particular, with experienced U-Boat commanders) as to details of armament and general design, preliminary calculations being made by the naval yards. Then in September, SPEER collected together the Drawing Offices of all the yards and installed them as the "Ingenieurbuero Glueckauf" at BLANKENBURG in the Harz Mountains, headed by KORZ of Blohm and Voss. The Ministry, Hauptauschuss and OKM were permanently represented. By December the designs were finished, including full-scale wooden mock-ups. The method of construction was new, involving the manufacture in the shops of a number of near-cylindrical hull sections, each complete with internal piping and fittings, and the subsequent rapid assembly of these sections in the yards. In October the design had so far advanced as to enable the materials to be ordered for the steel shells, known as "U-Schuesse" and all supplies were in hand by December. The first U-Boat ran down the slipway in April 1944.

18. The Navy being the responsible authority for final acceptance, the final drawings were sealed by them, and SPEER insisted on this procedure, not only in the Navy but in the other Services; it was never done by his Ministry.

19. SPEER says that it was impossible in practice to separate Forschung and Entwicklung. Forschung was fundamental research, and Entwicklung was the work associated with a specific apparatus, but they went very much hand-in-hand. (See Addendum of 29 May.)

20. OSENBERG did not control all research: he would have liked to, but did not succeed.

KONZENTRATION

21. SPEER very rapidly approached the subject of KONZENTRATION. There was apparently much unnecessary development, and on each Development Commission one of the members, or a new member, was appointed Konzentrations-Beauftragte, generally the head of the associated Hauptauschuss (the Chairman of the Development Commission was an Entwickler and therefore was not considered impartial). The idea was evidently that this KB, being of an essentially practical disposition, would act as a sobering influence.

22. The modifications in production models, especially of tanks and guns, were a source of considerable delay; SPEER attributes many of them to the lack of other work for the design and D.O. staffs of manufacturers, who would have

nothing to do once a job got into mass production, apart from thinking up modifications. It was for this reason that SPEER got the Fuehrer to rule that modifications could only be made to production types up to a certain stage when they became, on SPEER's ruling, Fertigttypen, i.e., when all the real initial difficulties had been overcome. Thereafter modifications could only be made on SPEER's signed order.

23. Asked about the Schwerpunktbiidung, SPEER pointed out that the fact that a certain development had been scheduled as a "Schwerpunkt" was a guide to their opinion, not of its essential merit, but of its practicability and usefulness at that particular stage in the war. He gave what he remembered of the list of Panzerschwerpunkte:

- (a) Recoil-less gun, to be used on the 38(t) chassis--this was run by Oberst SCHAEDE (who is thought to be in PRAGUE, and likely to try to reach his firm, which is a small organization in SAALFELD, THURINGIA).
- (b) The "Hetzer," a 2-man fast tank, weighing 10-15 tons, with 30° front surface angle and a novel engine and gear.
- (c) The "Maus", a PORSCHE super-heavy tank weighing over 120 tons. This was allowed to continue as a "study project" but not much was expected of it.
- (d) Air-cooled Diesel engines for vehicles up to Tiger size. Developed by TATRA, but also by KHD, DB, and Krupp. Sets were made experimentally for various uses. This was their Hauptschwerpunkt in this field. Diesel was chosen because fuel was easier to obtain, and because the radius of action was greater, and the fire risk small. Air cooling was used to save water (and also the freezing-up risk) for example in Russia.

The first 38(t) models equipped with air-cooled engines were planned for June-July 1945.

24. Col. HOLZHAUER was in charge of these developments; he may be in HUSUM.

25. Another project that went ahead was the S P. mounting for a normal 17 cm gun, giving all-round traverse and completely "absetzbar." It used a Tiger chassis with a thinner hull (of a lighter type). SPEER had seen the first models during a recent visit to Krupps. A 10 cm long-barreled model was also in hand, on a Panther chassis.

26. Developments that were stopped included two weapons designed for use in built-up areas:

- (a) The Ramtiger, a heavy vehicle with no turret or gun but a long snout for pushing down houses in built-up area fighting.
- (b) a 1500 ton (sic) tank mounting a 90 cm gun. This idea was based on a Krupp 90 cm gun (used at SEBASTOPOL) which was transported in several sections by rail, and Krupps developed a special type of connection for coupling the sections. The same type of coupling was used here. SPEER thought this project was not very useful, though its moral effect might have been considerable. It was started before the Concentration scheme. The idea of special street-fighting tanks was born during the STALINGRAD battle.

27. The strategic idea behind much of the tank development was a fully self-contained and uniformly equipped Armored Division, for use in a long range break-through in Russia, and supplied by air. The ARADO Raupenflugzeug was part of the scheme.

28. In the WAFFEN Section the basic development of guns was regarded as complete. The following went on:

- (a) PAK 7.5 cm with a very short barrel, an anti-tank weapon equal in weight to a 5 cm orthodox A/Tk gun, using new propellant. (The "Pueppchen," a small rocket launcher, was dropped.)
- (b) The range of the FAUSTPATRONE was to be raised beyond 100-120 meters.
- (c) K3 and K4 were rebuilt for long range, using ROEHLING ammunition (PFEILGESCHOSS). This was tested in the Maginot line, and had great rock and concrete penetration. It was not used for fear of imitation, which was easy.
- (d) The long-barrel guns at CAP GRIS-NEZ--the COENDERS gun. The principle was to distribute a series of propellant charges along the length of a smooth-bore gun inclined at 55° , and about 150 m long. The charges were electrically ignited as the projectile went up the barrel. The projectile was developed by ROEHLING at WETZLAR; it was "fallstabil" by means of fins at the back. SPEER gave the diameter as 21 cm and although he did not know the length, his sketch, if at all to scale, suggests 130 cm; it also shows a flat base. V_0 was 2,000 m/sec. The construction at CAP GRIS-NEZ was abandoned when tests at MISDROY had shown the principle to be wasteful of propellant; this SPEER explained as due to the gases expanding backwards as well as forwards. He had heard nothing of the suggestion that the shots could not in fact have reached LONDON: theoretically they should have. Sites were also started in the SCHNEIDERWALD but not completed. The project was under KAMLER.

Note: Details of these guns, as of many other projects mentioned by SPEER, are already known.

29. The Electromagnetic gun principle he could say little about--it was a hobby of GEIST's, however.

30. They were carrying on with the Skoda type of recessed-base shot--were going in for it in a big way, in fact (known as SOGNAPF).

31. Additional gun projects sanctioned under the Schwerpunktbiidung included relatively minor modifications to existing light and heavy Field Howitzers.

32. On V-1 and V-2 SPEER has very definite views. He regards V-1 as having no future, but V-2, given a good electrical industry, is "the long-term development."

33. This is notwithstanding his attitude towards the two weapons as used and produced in Germany. The V-2, he estimated, needed 20 times the production effort of V-1 to carry almost the same warhead, and 6 and 7 fighters could have been produced for one V-2. Its cost in mass production was about 250,000 RM apiece (in development 800,000 RM). There was endless trouble with its production, especially with the electrical equipment, which interfered with his requirements for U-boats, and the projected increase from 600 to 900 a month was not achieved. Oxygen was also a bottleneck. He declined to undertake the Wasserfall project, when this was put up.

34. The dispersion of V-2 during trials was 2 km by 3 km (Bearing Range) and he thought this could be reduced in time. They had no information on fall of shot in England, or at best only very doubtful stories. They considered

them both to be invulnerable to countermeasure but were careful to shoot V-1 in bad weather. They had no idea of the British reaction in the firing zones.

35. V-2, an Army (OKH-HWA) development, has a long history. VON BRAUN, who is the leading man, is now 32 and has spent his whole professional life on it (since 1934). V-1 only started late in 1942, when MILCH went to PEENE-MUNDE with SPEER, and got jealous of the Army wanting to shoot so far, and a requirement was issued for an auto-piloted a/c needing little production. It was the Argus propulsive tube that really made it possible. General design was by LUESSE (LUSSER?) of FIESELER, and the propulsion unit was by SCHMIDT. V-1 did not compete with aircraft production (it used steel, not aluminium), in contrast with V-2 which clashed with aircraft, radar, and U-boats. There was considerable opposition to V-1, admittedly a purely propaganda weapon; GOERING was against it. Press publicity in the UK and US cheered up the Nazis, and some sceptics were converted.

36. A large edition of V-2 designed to reach America (which was theoretically possible) had got as far as one-tenth scale drawings when it was stopped.

37. A version of V-1 with increased range to fire from extreme N.W. Germany to the UK was completed but not in time.

38. Miscellaneous sites

WATTEN: Oxygen plant for V-2 supply. Its site was fixed largely by accessibility to electric power supply. They would never have considered a T-stoff plant in the forward areas--the process was much too complicated. Oxygen losses in transport called for production near the sites. Plant capacity (all made by LINDE's) was a big bottle-neck; WATTEN was smaller than had been demanded.

LANDSBERG: Three aircraft buildings; one was abandoned, two went ahead, of which one was for BMW Allach (an engine plant) and the other for aircraft assembly.

MUEHLIDORF: Electrical equipment, primarily.

BLERICHEN: Electro-steel plant for several firms led by VS (Deutsche Edolstahl).

39. SPEER was opposed to this type of construction which is what they called "Verbunkorung;" he would have preferred to go underground. Concrete in his opinion is no use for withstanding air attack.

40. The Norwegian constructional works about which he was questioned might be the heavy water plants, but they were not on the tops of mountains.

41. Mimoyecque: Coender gun (see above under KONZENTRATION).

WEISS, of the O.T. (in HAMBURG) is the best source of information on channel area sites.

42. Various Code Names

Several code names SPEER was not sure about--some he had never heard of, as different names were used at high and low levels:

"Elephant"	21 cm grenade thrower--single tube (a 38 cm model was also in hand)
"Bodenorganisation"	Sundry radio equipment for launching A-4 (V-2)
"Mistel"	a pick-a-back aircraft, for penetration deep into Russia (F.W. 190 on Ju 88)
"Rheinbote"	"almost the same as the Schmetterling"
"Rheintochter"	a partially developed, acoustically controlled A/A rocket

43. General

SPEER suggested that if we were going to see any of his people, he might give us letters to them, which he said would make them stir themselves for our benefit, even though he is "out of office," and also relieve them of any qualms they might feel re breaking official secrets act.

ADDENDUM

LOSENBURG, who is a professor of mechanical engineering, is at VERSAILLES and has been interrogated by G-2 SIAS, from whom (Major GILL) the following information has been obtained. In general, LOSENBURG's story is not very relevant to these notes, but it is necessary to review briefly the connection between his research organization and the SPEER Ministry.

The Reichsforschungsrat (National Research Council) had been formed by GOERING towards the end of 1940 in order to coordinate all German fundamental research including industrial and service organizations. Progress was slow and the major industrial organizations resisted cooperation, and with the exception of OKH, the service organizations had very little contact with RFR.

The President of RFR was STARK and later Professor ESAU (heads of the applied physics section). LOSENBURG was put in charge of the Planungsamt (RFR) by GOERING on July 29, 1943. Up to this time nothing of importance had been achieved.

In the same year when there was a widespread comb-out of manpower, it was decided to withdraw large numbers of scientists from the Armed Forces. LOSENBURG was given the consequent administration and the allocation of the scientists. Six thousand were asked for, of which 3-4,000 were released of all grades from lab-boy to trained scientists, and some 13,000 scientists in academic organizations were reserved, LOSENBURG having had authority to reserve up to 15,000. At this period LOSENBURG appears to have come more and more under the control of SPEER.

Later it became necessary for every research project to be covered by a reference number issued by the SPEER Ministry, and work could only obtain highest priority on SPEER's personal authority, which was sometimes granted for a proportion of the project, the remainder receiving a lower priority. The priority also covered the supply of the necessary material.

On August 24, 1944, the Defense Research Group (Wehrforschungsgemeinschaft) was set up by GOERING with LOSENBURG at the head. LOSENBURG thus obtained larger powers of organization which were exercised towards the very end of the war in the cancellation of research work not directly bearing on the war effort.

Up to this point little direct use appears to have been made of German academic scientific organizations. Thereafter they were gradually brought to bear a little more fully on the war effort and some work was carried out for OKL and OKH (e.g. a few specific items for V-weapons); in the last year of the war contact was also made with the research organizations of some electrical firms, but even so, at the end of 1944 the available staff and knowledge was nowhere near being fully harnessed.