Thomas Anderson

FERDINAND AND ELEFANT

TANK DESTROYER

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OSPREY
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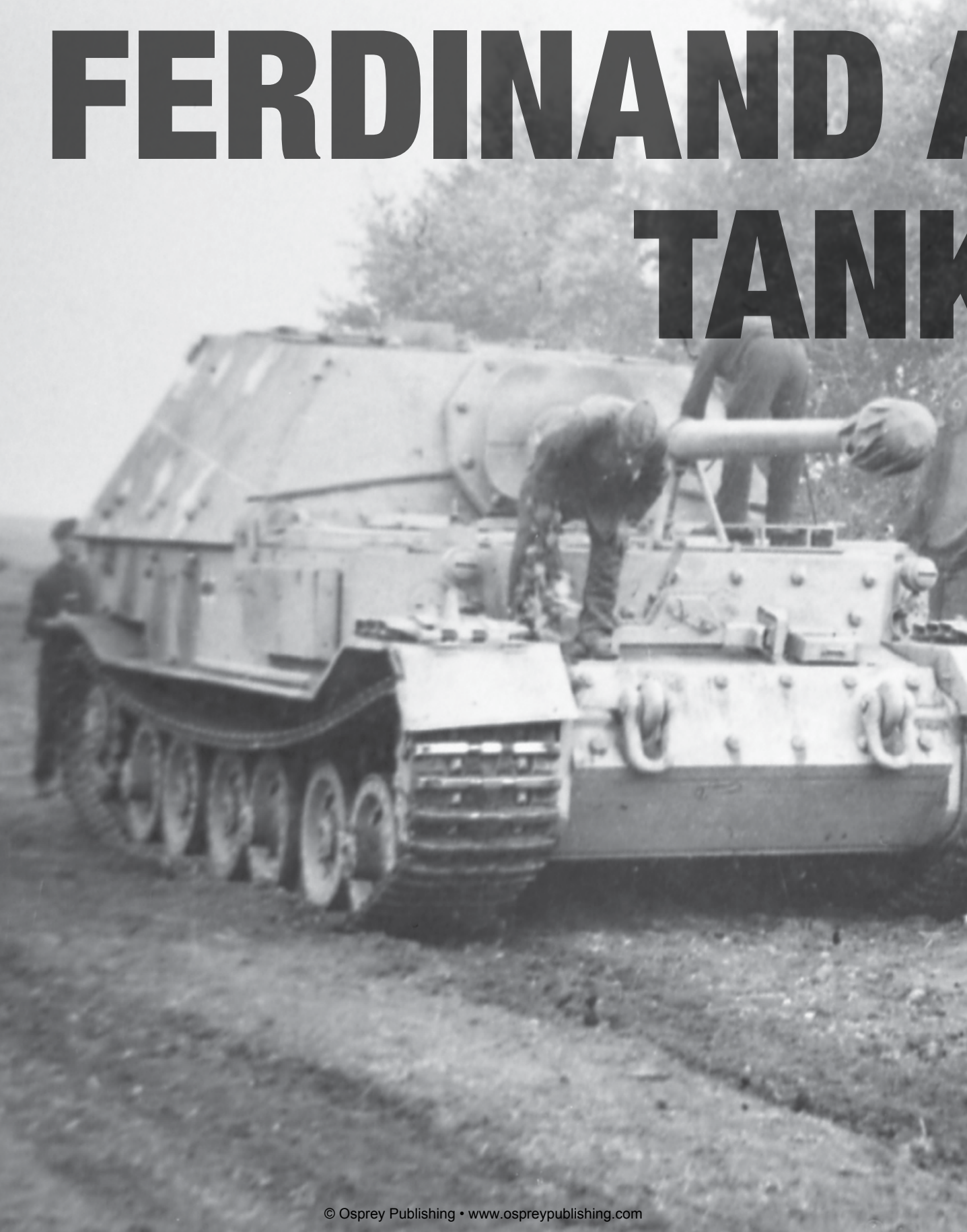
FERDINAND A
TANK



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Introduction

At the beginning of World War II, Germany introduced new military tactics which allowed them to conquered large parts of Europe within a relatively short time. The *Panzerwaffe* was at the forefront this success. However, the equipment was no better than that of the Allies: it was how these weapons were deployed that defined the revolutionary *Blitzkreig* tactics.

It took three long years for the Allies to adopt these tactics. By 1943, British and US forces had developed methods to defend against this type of attack. Most importantly, they had developed aircraft and the weapons to gain absolute air superiority over the battlefield.

On the Eastern Front matters were different. The Soviets had activated the enormous manufacturing potential of their country. As a consequence, their armaments industry was able to produce war material in ever increasing numbers. Together with an abundant supply of fighting men (and women) they managed to halt the German offensive.

Due to this situation Germany initiated the manufacture of high-quality and technically superior weapons. On the battlefield, new and better weapons, heavy and super-heavy tanks would decide the war.

Among them was the Ferdinand, later called *Elefant* (Elephant). This heavy tank destroyer emerged from the work which finally led to the famous PzKpfw VI Tiger tank. The development of this sophisticated support weapon was expedited under the orders of Adolf Hitler.

Also there were the assault tanks, or Sturmpanzer. Often referred to as *Brummbär* (grizzly bear, grouch, so far this nickname has not been verified), these vehicles with 15cm guns were intended to destroy hardened targets with one or two rounds. Even these heavy weapons would be outperformed by a new development based on the Tiger tank – the *Sturmmörser* mounting the 38cm *Raketenwerfer* rocket launcher.

Left:
A *sPanzerjäger* Ferdinand being inspected by Adolf Hitler and *Reichsminister* Speer accompanied by senior military personnel; Ferdinand Porsche is visible in the background. (bpk Images)

Overleaf:
As Minister of Armaments, *Reichsminister* Albert Speer took a personal interest in tank development and took any opportunity drive a new design. Here, Speer is at the controls of a prototype chassis accompanied by its designer Ferdinand Porsche (right). (bpk Images)

Reichsmarschall Hermann Göring inspects a PzKpfw VI Tiger (P) in the company of Ferdinand Porsche (centre). (bpk Images)

Pioneer weapons were always an effective means to support an advance by infantry troops. For this the Germans invented remote-controlled tanks, the 'original drones'. These explosive-charge carriers were to be used to blow up minefields, anti-tank obstacles and enemy positions without endangering German troops.

The book deals with these three weapon systems: weapons, which were intended to help Germany's armoured forces to win the war. Where and how were they used in combat? Were they efficient? Were there any countermeasures? And were they worth the effort?

The author has exclusively used archival information. Documents and files found in the *Bundesarchiv/Militärarchiv*, Freiburg (Germany) and the National Archives (NARA) in Washington, DC (USA) were evaluated. Interestingly, in the context of this book both archives are basically identical.

However, the author believes that archive information only allows an objective view of incidents which took place some 70 years ago.

While the *Bundesarchiv* has much detail on the German action, there is no comparable access for the Allied side.

I have always been disappointed by the lack of information available regarding the Soviet side. We know that German tanks suffered problems regarding the drivetrain in particular. But, how reliable was the T-34?

The wartime recollections of veterans have been used on several occasions, even if many of those personal stories told to the author appeared to be misty or exaggerated, or simply imprecise after all this time. Any author should be always aware that these reports can easily be taken out of context. But nevertheless these reminiscences tell interesting and very private stories.

The author deliberately uses German terms as often as possible. Translations tend to be only weak shadows of the original meanings. These terms are italicized, when used as official designations

Far more that the text, photographs allow direct access to times long past, and those used for this book are from archives and private collections. All have have been digitally stored, but not re-mastered or retouched.

Hitler made repeated visits to the Nibenlungenwerke. This photograph was taken on occasion of his second visit, 4 April 1943. Among his entourage is *Reichsminister* Albert Speer (right) and *Haupdienststellenleiter* Karl-Otto Sau (left). (bpk Images)

Overleaf:
An early *sPanzerjäger* Ferdinand displayed for Hitler, at theKrupp Works. In the background is a *schwerer Eisenbahngeschütz* 80cm *Kanone* 'Gustav' ('Dora') railway gun; the largest and most costly gun ever produced. (bpk Images)

1 New Weapons

When the SdKfz 184 (*Sonderkraftfahrzeug* – special-purpose vehicle) known as the Ferdinand entered service in World War II, it was the heaviest fighting vehicle deployed operationally. It is not surprising that a number of stories have been built up around this enormous vehicle by both the Germans and their adversaries.

Development and production of the *schwerer Panzerjäger* (sPzJg) Ferdinand was closely supervised by Professor Dr. Ferdinand Porsche. He was appointed chairman of the *Panzerkommission* (tank commission) in September 1939, and was in charge of the group producing the specifications for future tank designs. Being head of the commission it is not surprising that his team of engineers had the opportunity to participate in many important projects. The fact that he had personal contact with Adolf Hitler allowed Porsche to work independently from *Heereswaffenamt Prüfwesen* 6 (WaPrüf – Army Ordnance Bureau).

In 1940, the company Henschel und Sohn was contracted to develop a new heavy tank (VK 30.01[H]) in the 30-ton class to support the main types of tank as a *Durchbruchswagen* (breakthrough vehicle). Porsche, certainly backed by Hitler, grasped the opportunity and began the design and development of the Porsche *Typ* 100 designated VK 30.01(P). The turret, common to both designs, was to be manufactured by Krupp.

After the production of two prototypes, a decision was made to enhance the main armament of the future tank. Porsche was ordered to use the 8.8cm *Kampfwagenkanone* (KwK) 36 a high-performance weapon developed from the famous 8.8cm *Flugzeugabwehrkanone* (8.8cm FlaK). Henschel chose to install the 7.5cm *Panzerabwehrkanone* 41 (7.5cm PaK) a taper-bore gun and although it had a smaller calibre than the KwK 36 it had extraordinary penetration performance. However, the ammunition for this required substantial amounts of tungsten in its manufacture and since the supply of this strategic material was not ensured, the project was

The impressive Ferdinand. Note the towing cables fitted to the massive shackles. The vehicle jack is mounted on the glacis plate, an awkward position as it would be easily blown off by an enemy shell. (Historyfacts)

One of the two VK 30.01(P) or Porsche *Typ* 100 prototypes produced and tested at St. Augustin during the winter of 1941/42. The brackets visible on the front of the vehicle were possibly for mounting and testing a bulldozer blade. (Historyfacts)

terminated. Subsequently, the 8.8cm KwK 36 was chosen as the main gun for both tanks.

During a meeting on 26 May 1941, at Hitler's country residence the *Berghof* only a short time before the invasion of Russia began, all existing tank designs were altered. Initiated by Hitler and his cohorts the *Panzerprogramm* (tank programme) 41 set new standards. The thickness of the frontal armour was to be increased to 100mm, and the 8.8cm KwK was to be retained, but with improved ballistic performance.

But no decision was made as to which of the competing tanks was to be selected for production. By the beginning of 1942, both new tank designs, the VK 45.01(P) and the VK 45.01(H), were ordered into production. The Porsche tank was selected to equip the newly-formed *schwere Panzer-Abteilung* (sPzAbt) 501 and 503 heavy-tank units which were to be sent to North Africa, as it was thought that the air-cooled engines and electric drive in the VK 45.01(P) would be more reliable in desert conditions.

Preparing for production at the Nibelungenwerke

The *Anschluss* (annexation) of Austria allowed Germany to take control of the country's industry, as had previously happened in Czechoslovakia. Both were of utmost importance for Hitler´s plans.

In 1941, the Soviet KV-1 heavy tank came as a big surprise to German forces fighting in Russia. Together with the T-34 medium tank it led to a re-think of all contemporary German tank development, thus initiating *Panzerprogramm* (tank programme) 41. This particular vehicle was sent to Kummersdorf for testing. (Historyfacts)

The captured KV-1 was sent to St. Valentin, where the development trials of the VK 45.01(P) were being carried out. (Historyfacts)

Porsche No.150001 on trials: Despite the vehicle's number, this was not the first of the type to be completed. A PzKpfw IV-type *Gepäckkasten* (stowage bin) is fitted on the rear of the turret. (Historyfacts)

In early 1939, the building of a new tank production facility in Austria was discussed. The town of Sankt (St.) Valentin near to the city of Steyr was chosen as the location for a modern industrial complex. The steel manufacturer Eisenwerke Oberdonau, was located in the area.

Two years later, the Nibelungenwerke began production as a supplier of components to Krupp-Gruson, which was, at that time the sole manufacturer of the most important German tank, the *Panzerkampfwagen* (PzKpfw) IV. By mid-1941, orders were forthcoming from different companies and included the manufacture of road wheels for the PzKpfw II, III and IV.

The Nibelungenwerke factory was enlarged, to facilitate the production of PzKpfw IV tanks. In October 1941, the first, a PzKpfw IV Ausf F, left the assembly line.

The Nibelungenwerke was then contracted to produce the new heavy tank developed by Ferdinand Porsche. In late 1941, the company received an order for the production of six 'Porsche-*Kampfwagen*' under the designation VK 30.01(P), or Porsche *Typ* 100. The vehicle was powered by a petrol-electric drive system: two 210hp Porsche *Typ* 101/3 air-cooled V-10 petrol engines each driving a dynamo which generated current for two Siemens-Schuckert direct-drive motors mounted in the rear of the chassis. The vehicle had six road wheels, each mounted externally on a torsion bar suspension system.

However, only two prototypes, P1 and P2, were completed by August/September 1941. The proposed turret mounting the 8.8cm KwK was never used. The fundamental design changes decided in May (increase in frontal armour) caused the cancellation of the VK 30.01 programme. While Henschel had begun to design a new tank (VK 45.01[H]) to meet the new requirements, Porsche decided to develop the *Typ* 100. This decision was possibly made due to the extreme time pressure and the basic problems with the petrol-electric drive the team had to overcome. Subsequently, new specifications were set for the redesigned VK 45.01(P), or Porsche *Typ* 101. The thickness of the frontal armour was increased to 100mm, and the side and rear armour increased to 80mm. To improve performance, two Porsche 310hp *Typ* 101/1 V-10 air-cooled petrol engines were installed.

Series production of the new tank was scheduled to start in February 1943. However, the situation on the Eastern Front at the end of 1941 led to an unequalled acceleration of the programme as the first ten vehicles were now to be delivered as early as May 1942. The Porsche team worked hard on the design and production.

A certain state of competition existed between Porsche and Henschel as it was still planned to produce both designs. The situation was aggravated by the wish of Karl-Otto Saur, a state secretary and official deputy to *Reichsminister* Speer, to have both tanks demonstrated on the occasion of Hitler´s birthday on 20 April 1942.

Overleaf:
An Alkett-built Ferdinand on acceptance trials at Kummersdorf; the deflector plate in front of the vulnerable ball mounting has not been fitted. The large clamps which secure the superstructure to the chassis are not in place. Note, the side escape hatch has been plated over. (BAMA)

The first VK 45.01(P) being loaded for transport to the *Wolfsschanze* (Wolf's Lair) Hitler's headquarters at Rastenburg. At that time all production vehicles differed in some detail. The side escape hatches were plugged by a cover plate. (Historyfacts)

On 18 April 1942, after working day and night shifts the Nibelungenwerke was able to complete one VK 45.01(P), (Porsche *Typ* 101). Two days later the vehicle, still painted in red primer, was sent by rail to the *Wolfsschanze*, Hitler´s military headquarters in East Prussia. Some final welding work was carried out during the journey. The VK 45.01(P) and the VK 45.01(H) were demonstrated in a series of comparative tests. Hitler clearly favoured the Porsche design, as during the presentation he apparently paid no attention to the Henschel tank. However, whereas the VK 45.01(H) manoeuvred easily through the deep mud, the Porsche vehicle failed completely. The conditions were too difficult for the petrol-electric drive system which suffered many mechanical problems.

By July 1942, the tanks underwent more elaborate tests at Kummersdorf proving ground. The results were similar and definite. In September, the critical situation concerning the many problems with the Tiger (P) was discussed during a *Führerbesprechung* (leader's briefing). *Reichsminister* Speer and others called for production of this ill-fated development to be suspended, despite Hitler´s obvious friendly attitude to Ferdinand Porsche. However, Krupp had already completed the order for the production of 100 hulls, which had already been delivered and were now stored at the Nibelungenwerke.

Above:
A VK 45.01(P) test vehicle climbing a slope during trials; this particular vehicle carries a 'slave' weight in place of the turret. The track guards have been fitted with dust shields and a protective cover has been fitted over the rear cooling gratings. (Historyfacts)

Left:
Reichsminister Albert Speer was renowned for personally testing the tanks. Here he is driving Porsche Tiger No.150007 during trials, followed by a PzKpfw IV test vehicle. (Historyfacts)

The production line for the *schwerer Panzerjäger* Ferdinand at the Nibelungwerke; a number of 8.8cm *Panzerabwehrkanonen* 43/2 (8.8cm PaK 43/2) and fighting compartments are ready for fitting on the hulls. (Historyfacts)

At a subsequent meeting it was proposed to produce a *Panzerjäger* (tank hunter) Tiger (P), which was also designated *schwere Sturmgeschütz* (heavy assault gun) using the existing Krupp-built hulls following the probable cancellation of the VK 45.01(P). The outcome of this meeting was the specification for a very heavy turret-less vehicle with maximum armour of 200mm and fitted with the new 8.8cm *Panzerabwehrkanone* 43/2 (8.8cm PaK 43/2), at that time the most powerful anti-tank (AT) gun available.

The reason for this decision is easy to understand. At that time German *Sturmartillerie* (assault artillery) had shown enormous combat value in numerous battles. Originally, *Sturmgeschütze* (StuG) were intended to directly assist the advancing infantry with combat against enemy tanks only a subsidiary task. With the attack on the Soviet Union the situation had changed almost totally. The appearance of new superior types of Soviet tanks demanded the assignment of all available German armoured vehicles to the front. Here the *Sturmgeschütze* mounting the 7.5cm short-barreled gun in a very low-silhouette hull proved to be outstandingly effective. The *Sturmartillerie* units had to adopt this new role, and evolved

as valuable tank destroyers. The *Sturmgeschütze* had enough potential to be developed. During a *Führerbesprechung* in early 1942, Hitler and his entourage demanded that the StuG be fitted with increased of frontal armour and for the StuG III to be fitted with the 7.5cm *Sturmkanone* 40 L/43 or L/48 (7.5cm StuK 40 L/43 or L/48), regardless of any reduction of speed or mobility caused by the increase in weight.

Analyzing these facts, the creation of a *schwere Sturmgeschütz* (heavy assault gun), was only logical from the point of view of Hitler and his ministers. The type's tactical purpose was simple – an armoured 'sledgehammer' to destroy enemy strongpoints and due to its very heavy armour protection be able to penetrate the defences undamaged by any enemy fire and clear the way for the infantry. Its powerful gun should destroy any enemy armour at very long range.

The development of such a heavy vehicle was an unknown area. It is quite obvious that Hitler's later liability to megalomania in respect of superior weaponry possibly began with his support for this very vehicle. Altmärkische Kettenwerke GmbH (Alkett), was at that time the sole manufacturer of the *Sturmgeschütz* III, and it was thought had

Overleaf:
The 8.8cm PaK 43/2 (L/71) mounting inside the Ferdinand; the front the roof section of the vehicle is visible, and the commander's hatch is open. In the background are a number of stored PzKpfw IV turrets. (Historyfacts)

Approximately, 40 Ferdinands on the final fitting-out line; the casemates have been mounted, but the engine covers have not been fitted. (Historyfacts)

The heavy gantry crane in the assembly hall at the Nibelungenwerke transports a Ferdinand to the next work station. Note that the tracks are different to those on the Porsche *Typ* 101, having guide horns at every second link. (Historyfacts)

enough experience to carry through the design of the new up-armoured superstructure. But the manufacture of the new heavy assault gun was assigned to Krupp.

On 27 August 1942, *Reichsminister* Albert Speer (Minister of Armaments and War Production) visited the Nibelungenwerke and took the opportunity to drive a prototype of the Tiger (P). In October 1942, the programme was officially halted, and the Nibelungenwerke was contracted to convert 90 of the 100 Krupp-built hulls to a *Panzerjäger* Tiger (P). Final assembly would take place in St. Valentin.

From the war diary of the armament district Linz:

> 'By order of the *Reichsminister* for armament and ammunitions the *Sturmgeschütz* 'Ferdinand' will not be completed by Alkett in Berlin, but by the Nibelungenwerke in St. Valentin… 120 metalworkers under the facility manager Hahne [later awarded the Knight´s Cross] will be transferred to Austria…

On 31 March 1943, *Reichsminister* Speer visited Nibelungenwerke, on the occasion of a test drive. After he commented very favourably on the 'Ferdinand'…

…. By January 1943, 15 Tiger (P)-conversions had been completed, followed by 26 in February and 37 in March…

On 25 May 1943, *Generaloberst* Guderian visited Nibelungenwerke…

The preliminary stages for the Tiger *Umbau* (Tiger conversion) were not finalized by February 1943, resulting in only 15 units being completed in that month. However, new technical changes resulted in production dropping from 35 to 20 in March. By this time, it was decided that the conversion work was to be undertaken only by the Nibelungenwerke. The fitting of the heavy superstructure to the Ferdinand chassis was carried out by the team of 120 highly-skilled workers sent by Alkett.

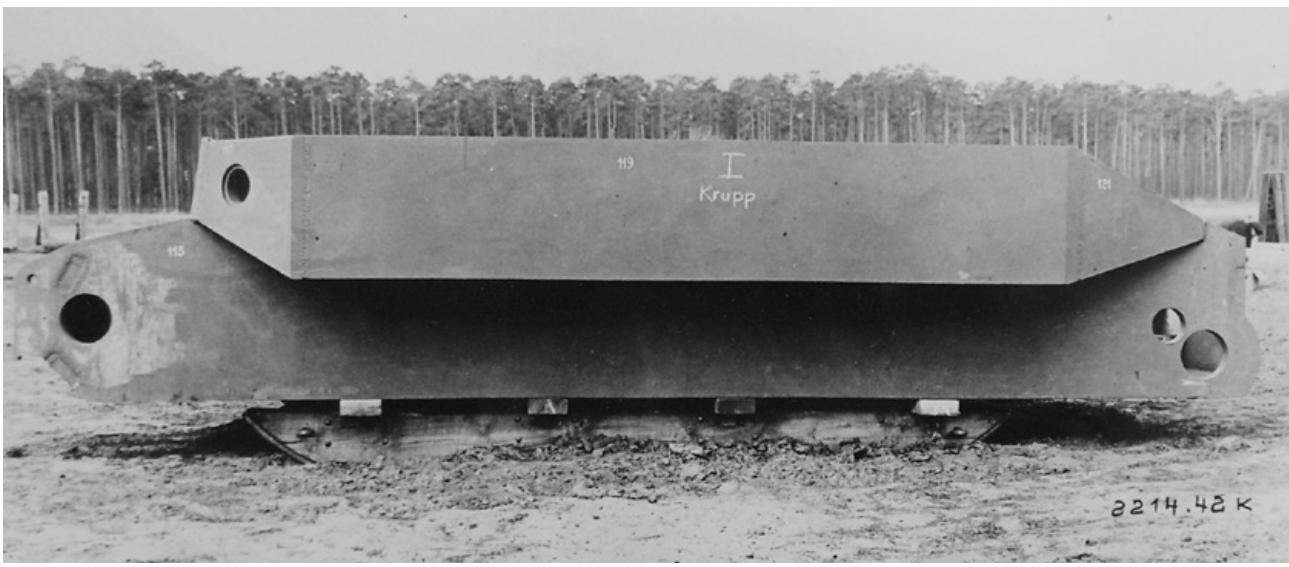
On 12 May 1943, the armaments district Linz reported:

'The last Ferdinand vehicles were handed over on 12 May 1943 (86 in total). A further four were held back and will be provided to the troop for training purposes.

Ferdinand – a technical description

General layout

Without any doubt, the SdKfz 184 should have been the heaviest and best protected armoured vehicle of the time. The hull of the Tiger (P) was of conventional construction, but was designed as a main-battle tank with the typical German arrangement of the driver at the front, a fighting



The VK45.01 (P) hull was produced by Krupp. This unit was one of a number used for ballistic trials.

A completed Ferdinand parked outside the production hall, prior to being taken on running trials. The vehicle is unpainted, but will soon receive the standard dark yellow base colour. Note that the armoured deflector shield for the gun mounting is not yet fitted. This vital piece of armour was retrofitted before the beginning of the Kursk campaign. (Historyfacts)

compartment in the centre and the engine/transmission mounted in a rear compartment. For the new design some changes had to be accepted. Thus it was decided to place the 8.8cm PaK 43/2 in a heavy casemate toward the rear of the chassis meaning that the general arrangement of most components in the power train had to be relocated. The two engines and the electric generators plus cooling system were moved forward. The electric-drive motors remained in the rear of the hull. To accommodate the large and heavy casemate (casement), the hull had to be widened by including sidewalls which were reinforced at the rear end of the hull. The work was carried out executed by Eisenwerke Oberdonau between January and April 1943.

Armour

The requirements published in September 1942 required thicker armour than that on the original Tiger (P). The front armour on this tank was an impressive 100mm, very good by 1942 standards. The new heavy assault

Automotive performances, basic data, comparison (*Fahrzenglängsneigungen*)

	PzKpfw VI Tiger (P)	PzKPfw VI Tiger (H)	Ferdinand SdKfz 184	Pzkpfw V Panther	PzKpfw IV Ausf G	StuG III Ausf G	T-34 Mod 43	KV-1 Mod 43
Weight	60t	56t	60t	46t	23.6t	24t	28t	46t
Transmission	Rear drive, electric	Front drive	Rear drive, electric	Front drive	Front drive	Front drive	Rear drive Model V-2	Rear drive Model V-2
Engine	Two Porsche petrol engine	Maybach petrol engine	Two Maybach petrol engines	Maybach petrol engine	Maybach petrol engine	Maybach petrol engine	Diesel engine	Diesel engine
Performance	310hp	700hp	265hp	700hp	265hp	265hp	500hp	600hp
Max. speed	35kph	40kph	30kph	46kph	40kph	40kph	53kph	35kph
Power	10.3 hp/t	12.5 hp/t	8.2 hp/t	15.2 hp/t	11.2 hp/t	11 hp/t	19 hp/t	12.7 hp/t

gun, however, was required to be fitted with front armour of 200mm. This was achieved by bolting an additional 100mm rolled-steel plate on the front of the superstructure and the upper part of the hull front. (It is unknown whether the original apertures for the driver and bow machine gun in the Tiger (P) hull were retained and simply covered by the new plate).

The front plate of the superstructure, which was designed specifically for the SdKfz 184, had a thickness of of 200mm. The sides and rear of the superstructure were fabricated from 80mm armour plate which at that time a very good level of protection.

Suspension and Mobility

Ferdinand Porsche broke with the conventions of contemporary German tank design in many ways. His *Typ* 100 and *Typ* 101 had a six road-wheel suspension and was not fitted with return rollers. The steel-tyred (to save valuable rubber) road wheels were similar in manufacture to those used on the Russian KV-1 heavy tank. The rubber-saving wheels were later introduced on the PzKpfw VI Tiger and PzKpfw V Panther, a result of shortages of raw materials and also the problems caused by the excessive weight of heavy tanks. Two road wheels were mounted in pairs on longitudinal torsion bars which saved precious space in the interior and made repair and maintenance simpler. On the other hand the suspension´s reliability was far from perfect. The longitudinal inclinations of the vehicle were moderate at the utmost, as the graphic *Fahrzeuglängsneigungen* shows. At speeds between 20 and 30kph, the Tiger (P) was more stable than the PzKpfw III, IV and Tiger/E also it performed better than the Russian-built T-34, but was seriously inferior to the Panther.

Three new Ferdinands, painted and fully equipped awaiting final approval and acceptance by the *Heereswaffenamt*. (Historyfacts)

Power

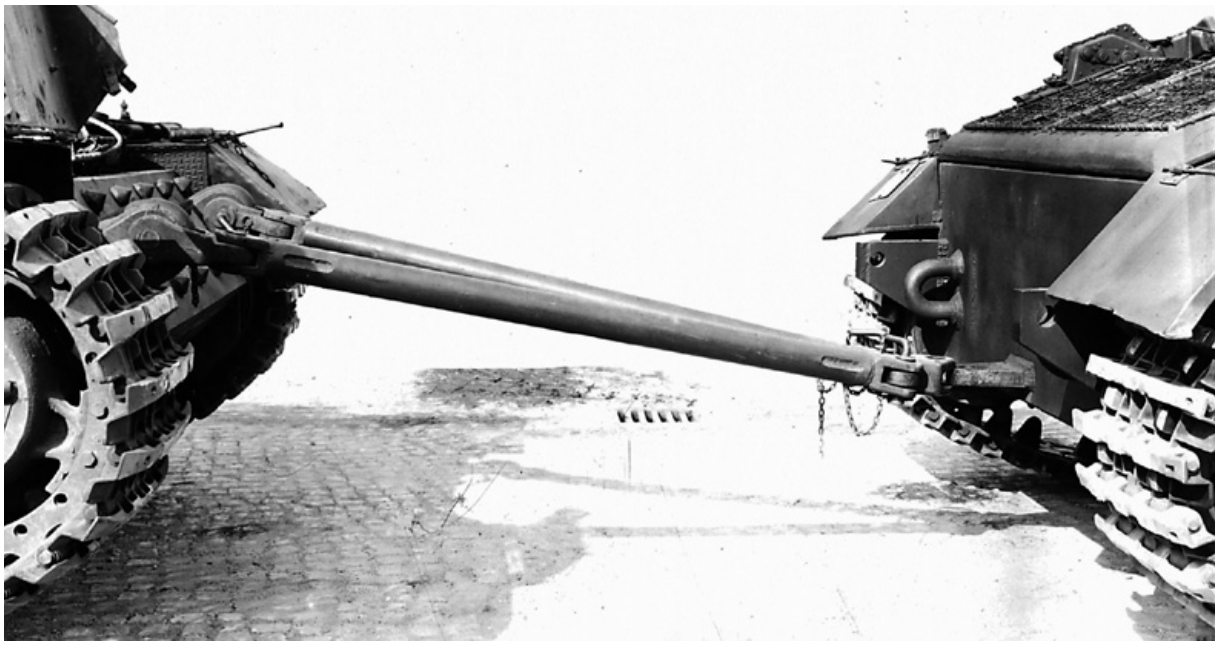
Being developed from the Tiger (P), the *schwerer Panzerjäger* Tiger (P) retained the 'unique' drive system. Two electric motors mounted at the rear of the vehicle powered the track-drive sprockets. These were supplied with electric current from two generators driven by conventional air-cooled four-stroke petrol engines. Both the Porsche *Typ* 100 and 101 had relied on Porsche-designed engines, which proved to be ill-fated. To provide the necessary electric power, the engines had to be run at full throttle which frequently caused them to overheat: A problem that was never solved by Porsche engineers. For this reason it was decided to install the battle-proven 265hp Maybach HL120, a V-12 cylinder petrol engine as used in the PzKpfw III and IV. However, this engine was water-cooled engines and installing the cooling system in the cramped hull was very difficult.

The use of electric traction was certainly not new: trams, electric-powered locomotives and goods vehicles relied on this reliable method for many years. A number of World War I military vehicles, such as the Austro-Daimler M-12/16/17 tractors to tow the Škoda 24cm howitzer, or the French-built Canon de 194 mle GPF, had been petrol-electric powered.

Porsche´s design went further; for the first time a petrol-electric powered heavy tank was to be deployed on the frontline. The electric components chosen for the powertrain were proven and reliable, as were the Maybach engines. However, in case of the Tiger (P), and subsequently the *Panzerjäger* Tiger (P), the engines, the fuel tanks, generators and drive motors had to be tightly packed in the engine compartment which was to result in numerous problems. The supply of air to the engine carburettors was inadequate. Even after water-cooled engines had been fitted overheating remained a serious problem. Both generators also suffered from insufficient cooling.

Armament

Both the Tiger (P) and the Henschel Tiger (H) were to be armed with the same gun mounted in the Krupp turret. The Tiger Ausf E, the new heavy tank which entered production in 1942, mounted the deadly 8.8cm KwK 36. The armour-piercing (AP) shells for this gun had superior penetration to standard anti-tank weapons, the HE shells had also a substantial impact when fighting soft targets. Apparently, the German army ordnance bureau was still not satisfied. In 1942, design work began on a new anti-tank weapon which resulted in the towed



Rigid tow bars could be fitted to the front towing brackets on the Ferdinand, but there were no brackets at the rear of the vehicle. Here a Ferdinand is coupled to a Porsche *Typ* 101. (BAMA)

8.8cm PaK 43/41, and the 8.8cm PaK 43/2 for installation in armoured vehicles. This version was chosen for the new *Panzerjäger* Tiger (P). The slightly modified PaK 43/3 was later selected for the famous Jagdpanther tank hunter.

The technical manual D 2030 gives some information:

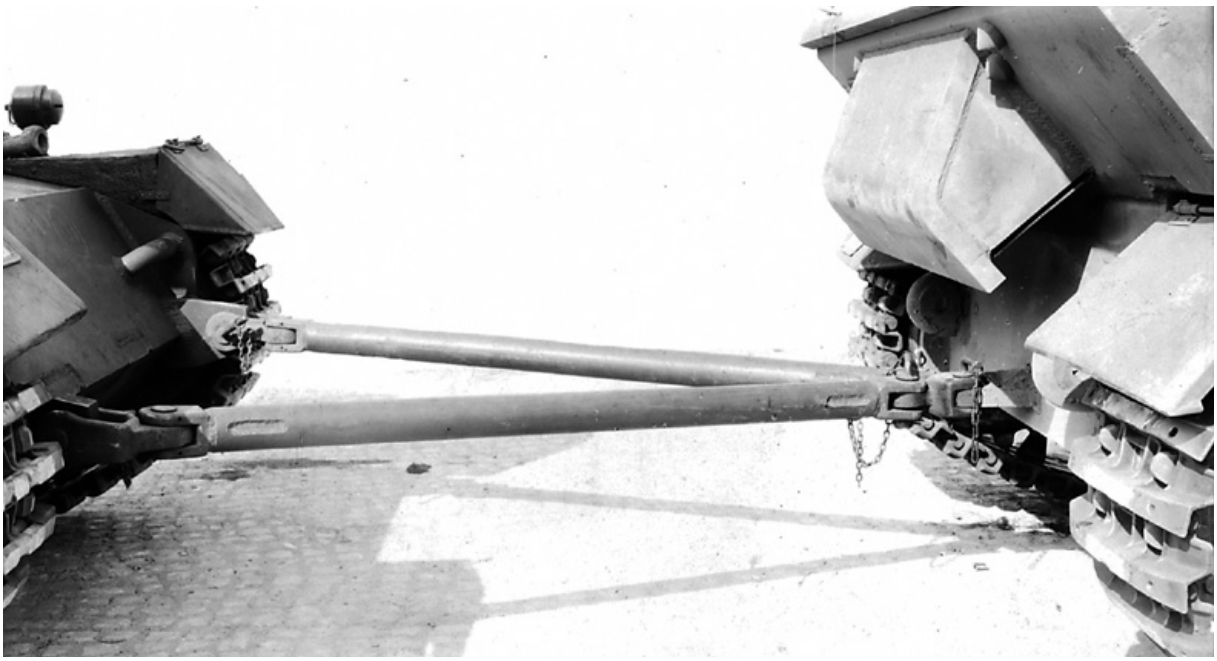
> 'The 8.8cm *Panzerjägerkanone* [sic] 43/2 L/71 (8.8cm PaK 43/2) is a semi-automatic weapon with electrical firing. The gun is mounted on the *Sturmgeschützlafette*. The gun fires AP and HE projectiles. For direct fire the Sfl *Zielfernrohr* 1a [telescopic gun sight for SP vehicles] is available, for indirect fire the *Rundblickfernrohr* 36 [periscope sight].'

The *Sturmgeschützlafette* (mounting for assault gun) consisted of the main gun being carried on a ball-type mounting located directly behind the front plate. The load of the gun was divided between the pivot and a traversing rail at the rear of the mounting. The gun could be traversed to 15° to each side and elevated to +18° or depressed to -8°.

A travel lock was mounted on the superstructure to secure the long gun barrel against vibrations and road shocks when in transit.

The sighting equipment consisted of a telescopic Sfl ZF1a which had graduations for different types of ammunition:

PzGr 39/1	from 0 – 4,000m
SprGr	from 0 – 5,400m
Gr 39 HL	from 0 – 3,000m
PzGr 40/43	from 0 – 4,000m



A single towing bracket was welded on the rear plate of the Ferdinand which allowed it to tow a tank. Note the massive armoured-exhaust cover; the deflector plate for which has not been fitted to this vehicle. (BAMA)

The 8.8cm *Sprenggranate* (SprGr) high-explosive (HE) shell was used to engage 'soft' targets such as gun positions, entrenched infantry, or vehicles. The maximum effective range was around 5,000 to 6,000m, but in general targets were engaged only, when a hit was likely. Unlike the towed 8.8cm PaK 43/41, the gun on the *Panzerjäger* Tiger (P) was not to be used as artillery, although it was possible.

Of greater importance was combat against armoured targets and for this three other types of ammunition were available.

The 8.8cm *Panzergranate* 39/1 (PzGr 39/1) was the standard APCBC round which penetrated armour due to kinetic energy before the small HE charge detonated. The PzGr 39/1 had good performance and was used as the standard AP round. The shell was produced in different calibres to suit various German artillery weapons.

The 8.8cm *Panzergranate* 40/43 (PzGr 40/43) APCBC round was a very powerful AP fitted with a tungsten core. Armour penetration was some 15 percent higher than the PzGr 39/1, and accuracy was very good. Due to the shortage of tungsten this shell was only available in very small numbers. By late 1943, production was reduced to very small quantities, and subsequently ceased.

The 8.8cm *Granate* 39 *Hohlladung* (Gr 39 HL – *Hohlladung*, shaped charge) HEAT round was introduced in 1942 to improve armour penetration with the short-barreled 7.5cm KwK/StuK. HEAT rounds penetrate very thick armour plate with a stream of high-velocity metal particles. This round was able to penetrate approximately 100mm of armour at any range. Due to a low velocity, accuracy was limited; a higher velocity would have resulted in an increased spinning of the shell, and this would deplete the effect of the metal particles. However, combat reports

stated that the HL rounds proved effective, at ranges of around 500m. Wa Prüf 6 did send an interesting note to the inspector for armament by February 1943:

> 'The *Abteilung* 1 understands that all guns which are able to fire PzGr 39 and HL-rounds, will be predominantly provided with shaped charge rounds.
>
> The department refers with emphasis that this plan does not correspond with the application of the respective high-performance anti-tank guns and tank guns. Until today, the performance of the shaped-charge rounds is too weak when compared to that of AP rounds. For these guns, HEAT rounds can only be a stopgap. Even if we do not underestimate the production problems with AP rounds, we advise by all means to provide these weapons with both types at a ratio of 1:1 AP rounds to HEAT rounds at minimum dependent on production output.
> First of all, this refers to:
> 7.5cm PaK 40
> 7.5cm KwK and StuK 40,
> and furthermore to
> 7.5cm KwK 42
> 7.62cm PaK 36
> 8.8cm PaK 43
> 8.8cm KwK and StuK 43'

In order to save the more costly PzGr 39/1, crews were instructed to use the HL round as often as possible, when the enemy tank was close enough that a hit was certain. Understandably, the crews preferred the high-velocity AP round. However, protection against shaped-charge shells was possible, as a note from the general staff of the army gives states:

> 'Interrogations of POWs unfolded it became clear that the Russians are striving to produce tanks with *Schottpanzerungen* [spaced armour] with an asbestos inlay. If the Russians succeed in switching their production of tanks to this technology, the impact of our shaped charges will be affected…'

To the knowledge of the author no Russian tank was produced with spaced armour during World War II. The Soviets had enough to do keeping up manufacturing of the existing tank designs.

Like any other German battle tank, the proposed Tiger (P) heavy tank had machine guns for close defence and to combat enemy infantry. This secondary armament was very important. The weapon was usually mounted at the front of the vehicle, and fitted in a ball mounting allowing it to be fired in all directions. The machine gun was the best protection against enemy anti-tank guns in particular the very effective Soviet close-combat anti-tank rifles. The latter, equipped with heavy-calibre rifles which were capable of penetrating the relatively thin side armour on the PzKpfw III and IV, and also the StuG III. For this very reason the Germans introduced *Panzerschürzen* by 1943, armour plates fitted to protect the turret and

hull sides, a cheap and effective countermeasure against AT weapons. The anti-tank rifle could inflict damage on a heavy tank, too. Although the armour would too thick to be penetrated, parts of the running gear, the crew´s vision glass blocks and other attached parts could be damaged.

The *Panzerjäger* Tiger (P), however, was not provided with any close-defence weapon installed in the vehicle. (For accuracy, the author wishes to state that there were five pistol ports in the superstructure.) Bearing in mind the countless experiences of the previous years of war, this fact is more than incomprehensible. The designer of the casemate, Alkett, also knew about the shortcomings on the *Sturmgeschütz* III, which had no close-defence weapon.

Observation means

One of the most important points of World War II German armoured-vehicle design was the provision of effective observation devices. The commander had full all-round vision to from the cupola on top of the turret, essential when involved in a battle.

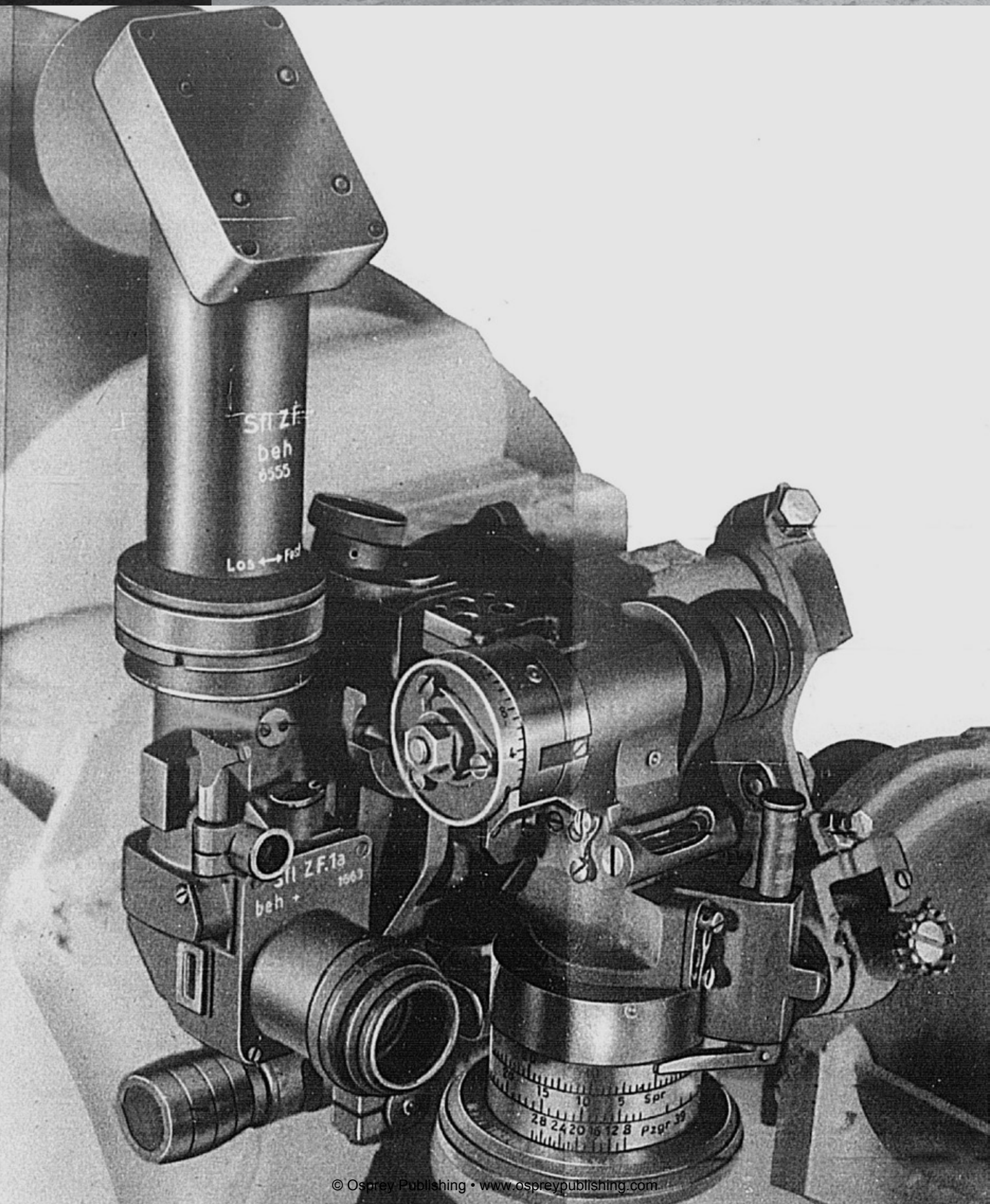
The *Panzerjäger* Tiger (P), as were all close-support weapons, was fitted with basic observation equipment. The commander of the vehicle had to open his hatches to make use of the *Scherenfernrohr* (scissors periscope), which did not even give a 360° view. The gunner relied only on the Sfl Zf 1a telescopic sight which had a narrow field of view. Only the loader had two retractable *Turmbeobachtungsfernrohr* (turret observation periscopes) at the rear of the casemate.

Possibly the time frame for development and production was too short to incorporate effective close-defence weapons and better observation equipment.

Testing the Tiger (P)

The development of the 'heavy *Sturmgeschütz*' was constantly scrutinized by the army ordnance bureau, WaPrüf 6. This department consequently ordered tests on the Tiger (P), even after the production of the type had been cancelled. An order for continued trials of the 'Tiger P1' was signed on 10 December 1942, when Oberst von Wilcke of WaPrüf 6 made an application for the transfer of test vehicles:

> 'From of the first series of Tiger (P), other than the 90 assault tanks to be manufactured, WaPrüf 6 requires the following vehicles:
>
> a. One complete vehicle, electric drive with Porsche engines (Berka vehicle, already at hand in Kummersdorf).
> b. Two vehicles with Porsche engines, electric drive (to be transferred by sPzAbt 503 for test firing purposes).
> c. Three hulls, electric drive with Maybach engines, on hull with hydraulic drive, plus a surplus hydraulic drive.
> d. One complete vehicle, electric or hydraulic drive for test firing purposes.
> e. Two hulls with attached armour reinforcements for test firing purposes.
> The parts not necessary for these vehicles can be used as spare parts…'



The Tiger (P), Porsche *Typ* 101 test vehicles were sent to WaPrüf 6. Two *Panzerjäger* Tiger (P) chassis, No.150010 and 150011, were produced by Alkett. These vehicles were also sent to WaPrüf 6 for trials at Magdeburg and Kummersdorf. After development and production of the schwerer *Sturmgeschütz* began, new tests were ordered repeatedly.

17 February 1943, Kummersdorf: Tests comprising temperature sensing on the Ferdinand

14 April 1943, Kummersdorf: Tests comprising standard ratings pertaining to automotive mechanics:

a. Climbing power and manoeuverability on road and off road
b. Maximum and average speed
c. Brake rating
d. Evaluation of operating
e. Gun travel lock
f. Springing
g. Sensitivity of the electric appliances against dust
h. Effects of frost and heat on engine start and operating
i. Accessibility for maintenance and repairs
j. Fuel and oil consumption
k. Leak tightness of fuel tanks
l. Fire or explosion hazard
m. Improvement by modified final drives

The test vehicle No.150011 displayed countless deficiencies, excerpts from a report dated 23 February 1943:

- 'The Telecine shafts, which were installed instead of the throttle linkages cause variable resistance. This causes unequal engine speeds …
- The fuel lines of the left fuel tanks run too close to the exhaust pipe…
- The electric-powered Pallas fuel pumps are not reliable…
- *Fuchsgerät* (cold-starting system) is difficult to handle. The heating torch cannot be inserted without problems in the cramped interior.
- The cooling fluid pipes are placed incorrectly, frequent damage is likely.
- To drain the cooling fluid, 48 screws have to be undone. We demand this be corrected by adding a simple lid.
- Checking the oil level of the air compressor pump is too complicated.
- The length of the cooling system drive belts is wrong. They have to be lengthened by force so we expect their life span to be short.
- The drive to the cooling fans failed after 200km.
- The V-belt for the cooling-fluid pump on the Maybach engine runs to close to the exhaust pipe, damage is likely.
- Exhaust. The absence of baffles seems critical for tactical reasons.
- The locking of the handbrake is too sluggish and does not grip properly.
- The lid of the electrical control box is too thin; a short circuit is possible should a crewmen step on it.

Overleaf:
Engine cover castings ready for final machining. The shape of the grating slots proved to be unsatisfactory as shell splinters could get through into the engine compartment. (Historyfacts)

Left:
The *Selbstfahrlafette Zielfernrohr 1a* (Slf ZF 1a) gunsight was mounted on the breach of the 8.8cm PaK 43/2 in the Ferdinand. (D 2030)

- Starting the engines by electric power provided by another vehicle is not possible, but desirable.
- The electric control assembly must be better adjusted in order to avoid one sided decline of the motor speed.
- The towing hooks used at present do not fit on the available towing bars
- We suggest the addition of a horizontal central towing hook with adequate linkage for the towing bar on the Tiger (H).
- Usage of a jack is very difficult as there is no way to apply it. We demand a similar appliance as available for the Tiger (H).
- We discovered spring breakages at the running gear on the Tiger (P) during road tests. It is more than likely that this will occur more often in the case of the much heavier Tiger-*Sturmgeschütz*.
- A device for removal of the bogies is required and has to be urgently developed.
- The method for the removal of the engine/generator, the electric motors, the cooling system, the gun assembly and the superstructure is still unclear. According to our specialists a Fries gantry crane is absolutely essential for any maintenance.'

This report proves that the *Panzerjäger* Tiger (P) was not fit for front-line action in March 1943. As with the Porsche *Typ* 101, countless deficiencies and shortcomings remained, and a quick remedy was doubtful. However, by the time sPzJgRgt 656 was established in Russia, the outcome of the trials had led to the production of *Formveränderungen* (modification kits), which were made available to the unit.

On 23 February 1943, WaPrüf 6 complained the unsolved recovery question:

'For being towed the Tiger (P) is fitted with two curved tubular-steel bars. Since vehicles of this weight class can be hauled only poorly using steel towing ropes, rigid tow bars were developed. These tow bars can be used by the Tiger (H), but cannot be coupled neither to the Tiger (P) nor to the Tiger-*Sturmgeschütz*. We ask for the creation of a suitable tow coupling.'

Apparently this problem was examined, and a replacement coupling was produced. There is, however no photographic evidence that these were actually used on the Ferdinand.

WaPrüf 6 commenced the trials. The standard protocol was complemented by the results of troop experiences. Preliminary reports were sent continuously. If possible, modifications were developed, with working drawings and material sent to workshop units at the front.

18 August 1943:

'Conclusion
Due to splinters entering the engine compartment trough the gratings a number of losses of *Panzerjäger* Tiger (P) Ferdinand were reported [by the troop: Author].

In order to avoid such losses new grating designs were tested. It turned out that only the improved gratings developed by Alkett (with streamlined baffle plates and reduced slot width could meet the requirements.'

25 August 1943:

"Conclusion:

The PzJg Tiger (P) Ferdinand (chassis No.150011) was driven 911km until 25 August …

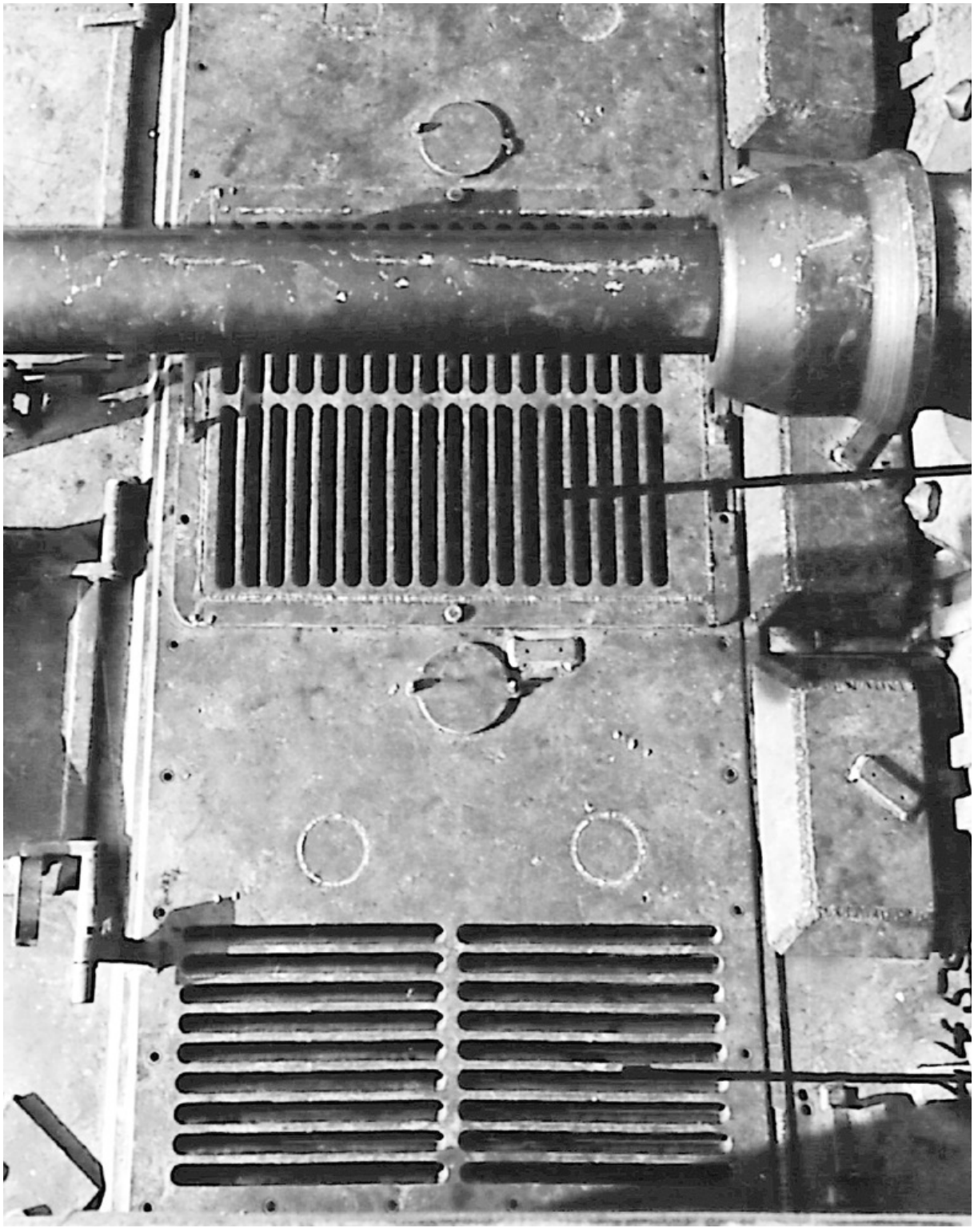
1. We determined the overall weight at 64,370kg (without ammunition, radio equipment and crew. Preliminary fuel consumption (on road 867.9 litre/100km, off road 1,620 litre/100 km).
2. Due to the abnormal entry of dust in the fighting compartment the air filters clogged up completely after 100km.
3. After 900km a very high wear and tear was discovered in both engines. This occurred due to the engines operating at very high rpm and having insufficient air filters.
4. The attrition of alternator V-belts is high (lifespan 227km).
5. The compressed-air system failed completely after 765km.
6. After a service life of 700km damage occurred at unions and pipework of the compressed-air system.
7. The life span of the rubber engine mountings amounted for 700km in average.
8. After a service life of 911km both petrol-engines had to be replaced. On this occasion a complete inspection was performed. All *Formänderungen* (modifications) developed and intended for the Ferdinand at the front were completed.

2 September 1943 (re-assessed trials regarding the suspension):

'Conclusion.

After a distance of 911km the *Sturmgeschütz* 43/1 Ferdinand, chassis No.150011 was completely inspected. On that occasion it was noticed:

1. Strong deterioration of the petrol engines by entering of sand and dust via the air filters.
2. The engine ventilator´s shafts and bearings were worn out after 911km.
3. Heavy smoke stains on the generators, all brushes became stuck in the sockets.
4. The generator´s brushes wore down by 1.5mm after 911km.
5. The suspension showed the following damage after 911km
a. Five of six trunnions show cracks
b. Some taper-roller bearings on the front and rear trunnions were damaged by entry of sand.
c. A number of felt gasket rings on the main road wheels (long hubs) were destroyed by sand and dust entering.



Remedy of these problems, which also occurred on the Tiger (P), is only possible by fundamental design changes.'

The original layout of the engine and cooling system gratings proved to be ill-fated. Splinters from artillery shells and close combat weapons could enter the engine compartment. (BAMA)

The tests continued. On 10 January 1944, six months after the combat debut of the sPzJg Ferdinand, a final report on chassis No.150011 was presented:

'B) Testing

The sPzJg Tiger (P) Ferdinand, chassis No.150011 was tested at Verskraft from 13 May 1943 to 25 December 1943…

B I) Petrol engines (including cooling system)
Accessibility is insufficient. Standard maintenance and minor repair works take disproportionately long…

Damage: After 900km abnormal oil consumption of 63.7 litre at 90 litre/100km. After 911km water entered the right engine… Both engines were changed.

Cooling system: After 538km the driveshaft of the front left cooling fan showed damage, at 648km the other failed. Cooling fans rotated with great slippage. Remedy: Exact alignment of all components…

B II) Electric generators
Damages: At 911km the generators were examined. All parts were heavily soiled, the brushes and the brush carrier rings were stuck…The generator was sent to Siemens-Schuckert for further evaluation…

B III) Electric motors
Damages: At 522km both tracks climbed up on their sprocket, thereby both friction clutches were destroyed. Subsequently both electric motors burnt out and had to be replaced. After further 425km the brushes of these motors were completely destroyed, possibly by over-speeding during road travel…

Cooling system: Cooling of both electric motors is insufficient, since the cooling air channel runs parallel to the exhaust pipe. Thus the cooling air is being warmed up to 34° above the normal temperature. A deflector shield was installed, resulting in a slight improvement. Temperature gauges are not installed due to engine layout…

B: IV) Operating unit…

B: V) Suspension
Track: At slow speed in wet sand the track climbed up on the sprocket, resulting in the destruction of the friction clutches… On boggy ground the tracks slipped through due to the tail-heaviness of the vehicle.

The prototype chassis for the Ferdinand on trials at St. Valentin: The vehicle had a good 'climbing' ability very useful for crossing enemy defences and heavily cratered ground. (Münch)

Ferdinand No.150011. Note the exposed mounting position of the massive vehicle jack. (BAMA)

> Trunnions: During maintenance of the vehicle (at 911km) cracks in the trunnions of the bogies were detected, an examination of the material did not give any information. This was possible caused by vibration strains or lateral thrusts during turns. A redesign of these trunnions is necessary…'

The final report criticized the lack of accessibility for maintenance, which was regarded as being most aggravating. Even smaller repairs required a great expenditure of time and manpower. To replace the electric motors the complete superstructure had to be lifted off, impossible without a large gantry crane. The petrol engines had a short lifespan due to the carburetor air filters becoming blocked by sand and dust.

Late creation of a recovery tank

During the hasty development and production of the sPzJg Ferdinand, and its planned predecessor VK 45.01(P), there apparently was no time to design a suitable recovery vehicle. In fact, this was never a priority for German military planners. While the *schwerer Zugmaschinen* (sZgKw) 18t (SdKfz 9) proved to be adequate for the recovery of medium tanks i.e. the PzKpfw III and IV, plus derivatives), it certainly was dangerously inadequate when the PzKpfw VI Tiger heavy tank, and later the PzKpfw

A total of three Bergepanzer Ferdinands were produced at the Nibelungenwerke in summer 1943. A hull-machine gun was not fitted, the opening being plated over. For close defence, a ball-mounted 7.92mm *Maschinengewehr* 34 (MG 34) was fitted in the small armoured superstructure. No extra armour was added to the basic VK 45.01(P) chassis. (Historyfacts)

V Panther medium tank entered service. By April 1943, it was decided to introduce the *Bergepanther*, a special variant of the Panther chassis.

The two battalions issued with sPzJg Ferdinand had to move into their assembly areas north of Kursk without any armoured recovery vehicle. However, two Panther Ausf D hulls were sent as *Bergewannen* (recovery hulls) during the campaign.

By June 1943, Nibelungenwerke was given orders to convert three out the ten available VK 45.01(P) chassis to recovery vehicles. The basic vehicles were fitted with a small crew compartment at the rear. Other than a jib-boom crane no specialized recovery equipment was carried on the vehicles.

By August 1943, the vehicles were ready for delivery to sPzJgAbt 653.

Organization:

The organizational structure of sPzJgAbt 653 and 654

By 31 March 1943, new organizational structures for the sPzJg Ferdinand, were introduced, the *Kriegsstärkenachweisung* (KStN – table of organization) 1106c (staff), 1155 (staff company) and 1148c (combat company). The unit was issued with 45 new *Panzerjäger* (P).

These organizational structures for the sPzJgAbt Tiger (P) were derived from the respective KStN of a *Sturmgeschütz-Abteilung* (assault gun battalion). As units created to assist a full-scale infantry division, their operational capabilities were limited. The fundamental orders were given by the commander of the superior division. Reconnaissance orders necessary for combat were issued by the division. For this reason the heavy tank-destroyer battalion had a rather slim organization. There were only rudimentary reconnaissance and signals elements.

For comparison, the sPzAbt Tiger (with 45 tiger tanks) had far more efficient signals and armoured reconnaissance sections.

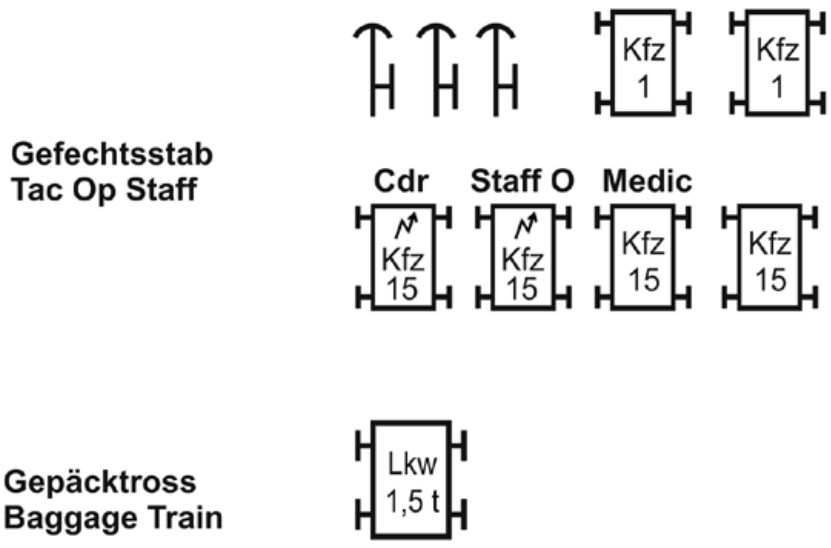
In contrast, the sPzJgAbt Tiger (P) had a quite well equipped anti-aircraft (AA) section, resulting from the lessons learnt in North Africa. The supply sub-units were almost identical to the sPzAbt Tiger, as were the recovery and workshop sections.

The question of recovery of the very heavy *Panzerjäger* Tiger (P) remained unsolved by March 1943. The organizational structure suggests two *Bergeschlepper* 35t (SdKfz 20) heavy recovery tractors (these vehicles were never produced). Again as in the Tiger units, these were replaced by three sZgKw 18t (SdKfz 9) each.

As noted in the regiment´s strength report of 4 July 1943, the three battalions were reinforced with command tanks *Panzerbefehlswagen* (PzBefWg) III Ausf J and escort tanks (PzKpfw III, 5cm KwK 38 L/42) from the regimental staff

Stab einer PzJgAbt Tiger (P)

Theoretical organization structure according to KStN.1106c dated 31 March 1943



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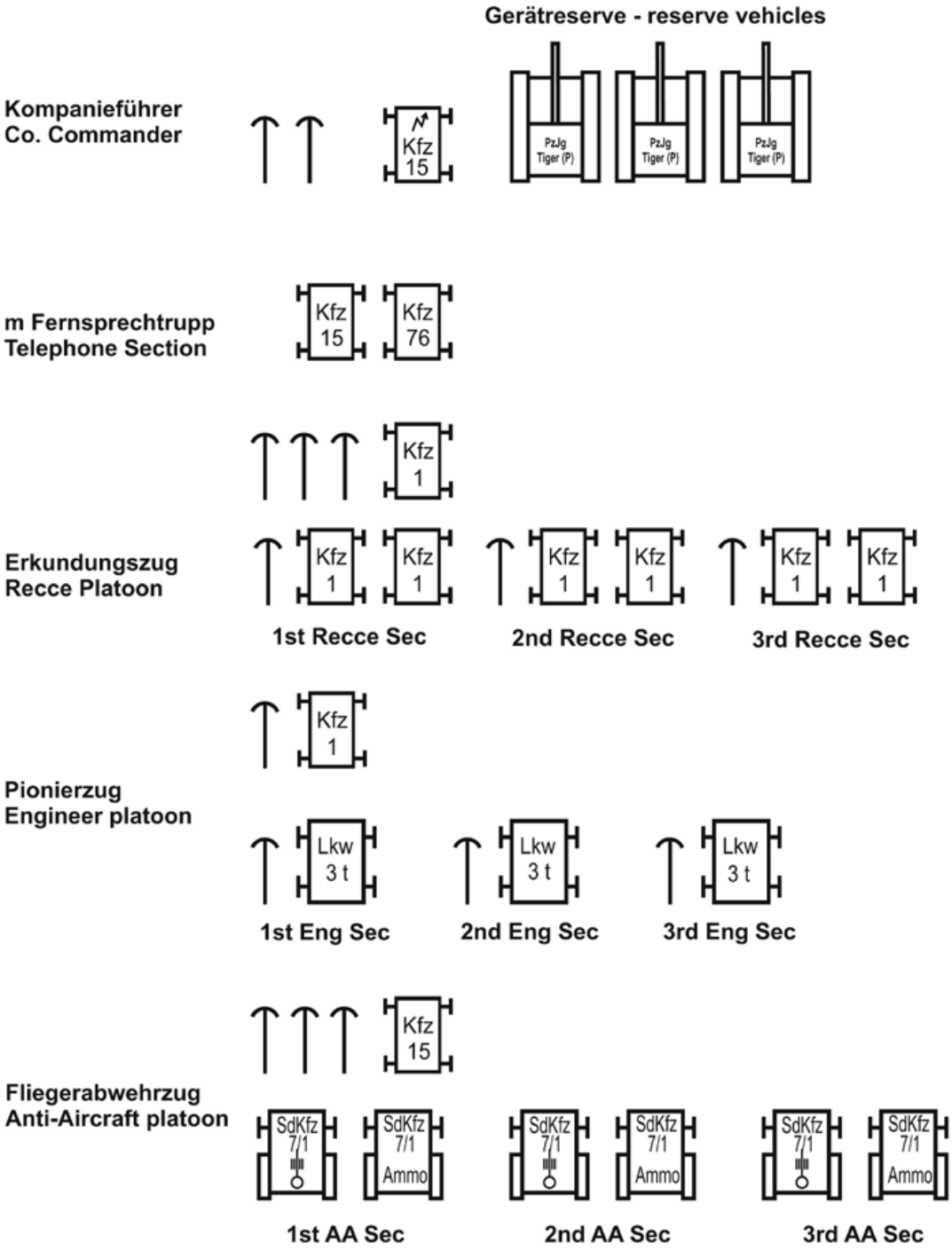
Theoretical organization structure accord



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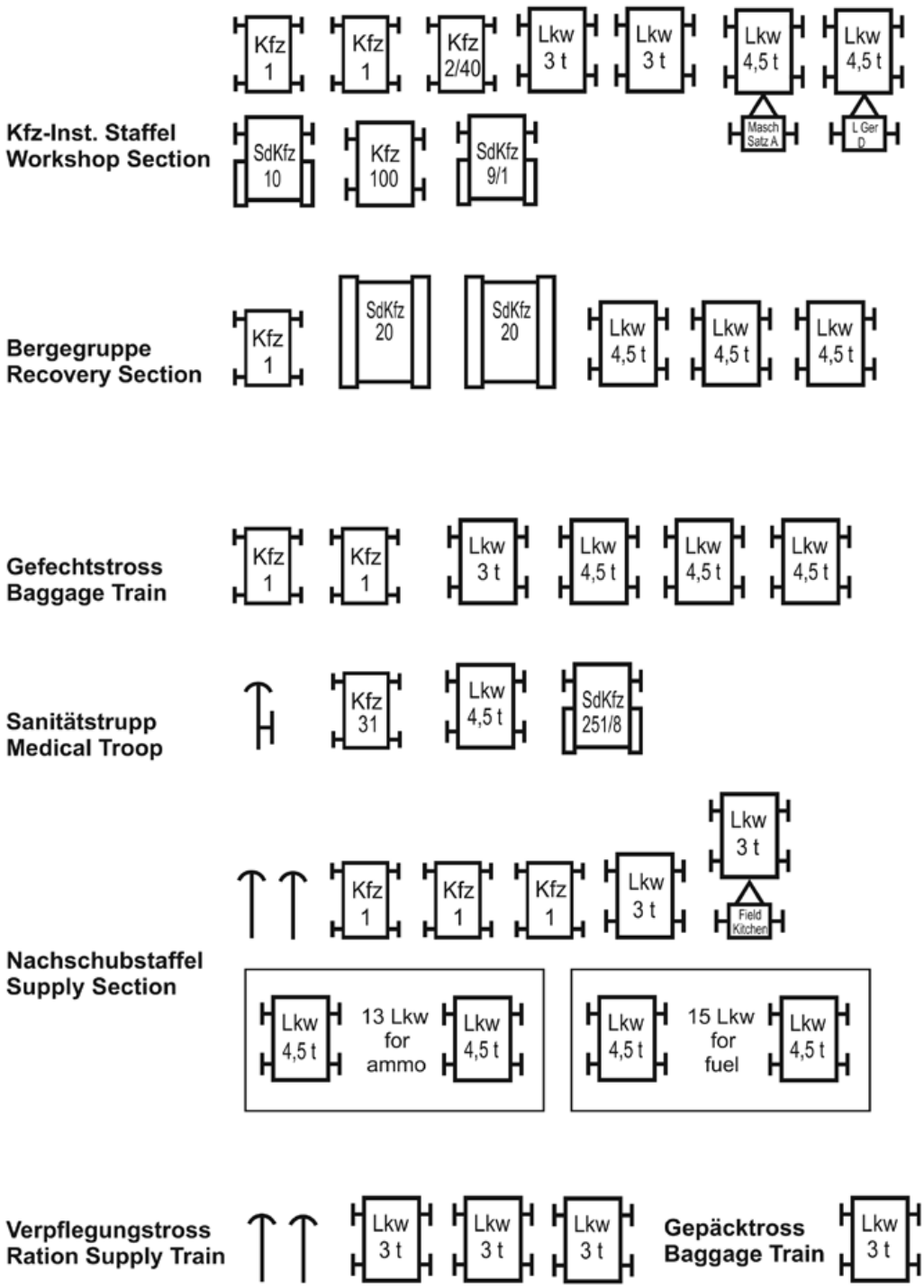
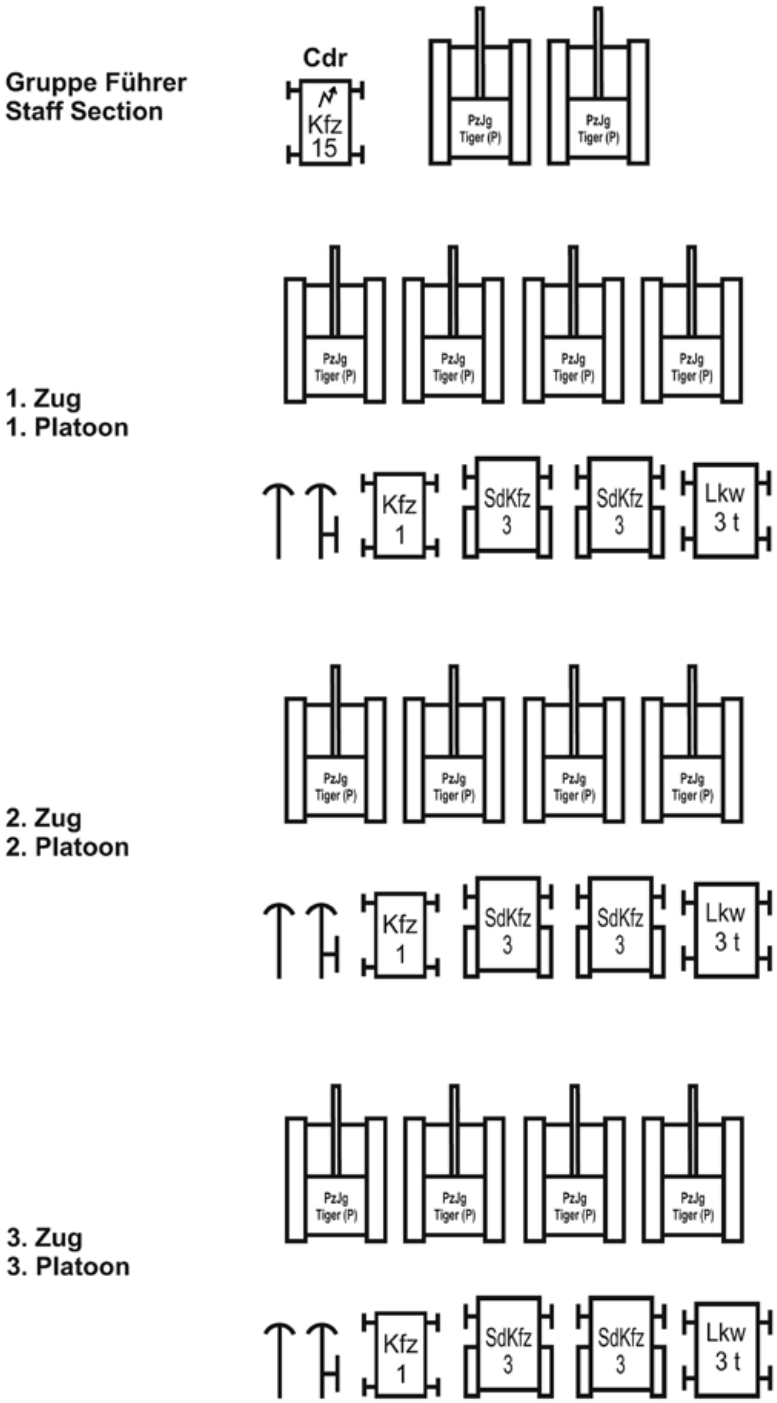


Panzerjägerkompanie

Theoretical organization structure accord



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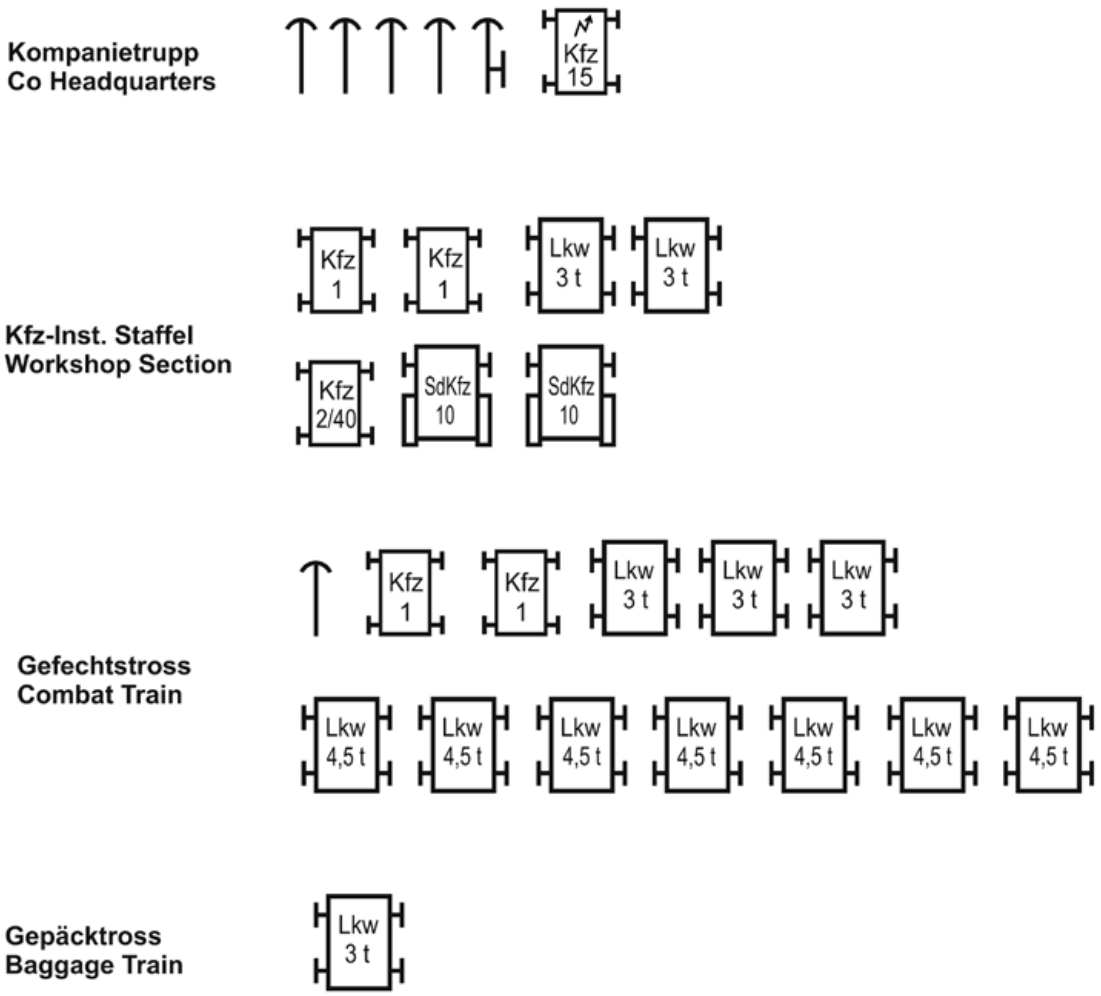


Sturmpanzer

During the planning for *Unternehmen Zitadelle* (Operation Citadel) it was decided that *Sturmpanzer-Abteilung* 216 would be deployed in a major role.

Primarily, German military doctrine was based on attack tactics. Even with inferior means – it was quite normal on the Eastern Front that a concentrated attack could result in success. However, any attack against heavily-fortified defences required the deployment of specialist pioneer troops. The Soviets were masters of the preparation of their side of the battlefront. Dug in anti-tank or infantry gun positions, large mine fields and anti-tank ditches were simple but effective measures to halt the pace of an enemy attack.

Thus the necessity for specialized vehicles arose able to defeat known enemy positions or targets which could not be engaged by tanks with their high-performance guns (firing HE rounds with only limited explosive impact), or by the conventional divisional or regimental artillery.

In late 1942, the first *Sturmgeschütze* were mounted with a modified 10.5cm le Fh 18; the type was later designated *Sturmhaubitze* (assault howitzer). The more destructive explosive impact of the 10.5cm ordnance (compared to the 7.5cm HE shell) allowed targets such as dug-in anti-tank gun positions to be knocked out.

The first combat reports from *Sturmartillerie* units equipped with *Sturmhaubitzen* were very positive. However, the more 10.5cm *Sturmgeschütze* were used in the tank destroyer role, the requirement for *Sturmhaubitze* was reduced.

A 15cm *Sturminfanterie-geschutz* 33/1 (15cm sIG33/1) fitted with standard-type winter tracks. Track links have been fitted to the front of the vehicle as added armour protection; a number of spare road wheels are also carried. Note the commander's Scherenfernrohr (scissors periscope) on the rear of the superstructure. (Anderson)

When the *Heereswaffenamt* (HWA - army ordnance bureau), influenced by Hitler demanded the development of a vehicle able to destroy entire buildings, the 10.5cm ordnance was thought not to have sufficient destructive power. For this reason the 15cm sIG 33, the standard artillery weapon in infantry regiments, was chosen. However, this gun was not suited for mounting in a closed superstructure. Alkett, as the most important manufacturer of the *Sturmgeschütz*, was contracted to develop and produce of a limited number of heavy *Selbstfahrlafette* (SP – self-propelled) guns. The first 12 were built on refurbished PzKpfw III hulls. Within two days a simple box-like superstructure had been designed, which completely housed the gun and the crew. Very strong amour protection was demanded able to withstand even the heaviest enemy fire at close ranges. For this the superstructure was 80mm thick at the front and 50mm at the sides. The ammunition (30 rounds) for the 15cm sIG 33/1 was carried inside the vehicle and a *Maschinengehwehr* 34 (MG 34) was installed in the front of the superstructure for close-defence.

The front-heavy vehicle's reduced mobility and poor driving characteristics had to be accepted, bearing in mind its very specific deployment.

The new vehicle, designated *Sturminfanteriegeschütz* (infantry-support gun), was put under the command of the *Sturmartillerie*. This decision was understandable due to the offensive tactics used by artillery units. Thus the first production run of 12 vehicles was divided between two units involved in the fighting for Stalingrad – StuGAbt 177 and 244. Both units were annihilated during the final days of the 6th Army.

Sadly, no documents regarding the deployment of the *Sturminfanterie-geschütze* at Stalingrad have been found.

The second batch of 12 vehicles was issued to sIG Bttr Lehr Btl 17 (a training unit established at the *Artillerieschule* ([artillery school] in Burg at Magdeburg), which was part of the force trying to relieve the 6th Army at Stalingrad. During this commitment, a further five *Sturminfanteriegeschütze* were lost. The remaining seven were combined in a combat group, G*ruppe* Burgstaller. In April 1943, after the besieged troops had surrendered, the battered 23.Panzerdivision (PzDiv) made an application to take over this combat group, which had 17 tanks, one *gepanzerte Panzergrenadier-Kompanie* (GepPzGrenKp – mechanized company), one PzGrenBtl (motorized battalion), one PzJgKp (Sfl) – and the sIG platoon (Sfl) with seven *Sturminfanteriegeschütze*. On 10 April, the combat group was incorporated into the division, which at that time was in the process of being re-equipped with the new PzKpfw V Panther. It has not been ascertained as to whether the assault tanks were used in combat on a regular basis. However, the unit sent a combat report to the *Oberkommando der Heere* (OKH) on 28 May 1943:

'sIG 33 (Sfl)

Experiences of the 23.PzDiv in combat and live-firing exercises

The first batch of 12 *Sturminfanteriegeschütze* were issued to *Sturmartillerie* units. This vehicle, carefully whitewashed seems to be outfitted for the next combat by its crew. Wide winter tracks were fitted to improve mobility in mud or snow. However, the width of these *Winterketten* seem to have been reduced. (Regenberg)

We advise a close cooperation with tanks, since the effective range of the SP gun destroys AT gun and artillery positions at up to 3,500m. Tank assembly positions were effectively destroyed. We noticed a significant effect against built-up areas, infantry and anti-tank rifle positions. The gun did not achieve direct amour penetration when used against tanks.

Essential technical maintenance is ensured only when used within the frame of a tank regiment.

During the assault of own tank forces were located in concealed positions. Advancing in stages was carried out only under cover of accompanying amoured infantry.

New firing tables are essential. HDv 119/541 is unsuitable. New data will have to be determined.

The bolts on the armour plate of the gun cradle are too weak. The commander´s cupola is too small for good observation. The hatch impedes vision to the right.

The vehicle is nose heavy. The second running wheels are overloaded. Engine and clutch are too weak, the brakes wore out quickly.

Tank assembly strength of this platoon. By 11 May 1943 three sIG 33 auf Pz III were reported being intact and four being under repair. From 21 May until 11 July all seven were reported to be ready for action.

Signed Cdr PzRgt 201 via 23. PzDiv'

These observations are not surprising. They relate to the basic reservations of a *Panzermann* (tanker men preferred a tank with a turret) against the turretless *Sturmgeschütz*, when used unwisely by military commanders unaware of the strong points and weaknesses of the type. However, the commander respected the value of the *Sturminfanteriegeschütze*, which was able to execute missions that the PzKpfw III and IV tanks could not.

The unit confirmed in its *Panzerlage* (numerical situation report) the strength of this platoon. On 11 May 1943, three sIG 33 auf Pz III were reported as being operational while four were under repair.

Based on the PzKpfw III, which had been originally designed as a combat tank weighing 15 to 17t, the sIG 33 auf Pz III was too heavy. The fact, that only refurbished tank chassis were used, aggravated the problem. Many components such as brakes and final drives soon failed. Numerous complaints were received from other units issued with vehicles built using refurbished vehicles as a base. These included such types as the *Bergepanzer* and *Panzerbeobachtungswagen* (PzBeobWg – observation tank).

From the tactical point of view it is worth noting that the intended deployment of the type in built-up areas seemed to be the exception. PzRgt.201 used the *Sturminfanteriegeschütze* for textbook assaults, following the advancing tanks to knock-out identified targets. From the few after action reports available, later *Sturmpanzer-Abteilungen* were usually deployed in the same manner.

Development of a new *Sturmpanzer*

The need for a heavy *Sturmgeschütz*, or *Sturmpanzer*, produced further projects. Parallel to these developments, which were to lead to the *schwere Panzerjäger* Ferdinand, a 21cm *Mörser auf* Tiger *Fahrgestell* (Porsche) was considered. This idea, however, was soon cancelled. Instead, Alkett was ordered to start work on a new *Sturmpanzer*: the *Sturminfanteriegeschütz* was produced only as a temporary solution and was produced in limited numbers.

The installation of the 15cm sIG 33/1 in the StuIG was hastily improvised. The gun, which had already been converted for use in an open-topped SP gun, had a massive and space consuming mounting. Due to this, it was decided that a new gun (the 15cm StuH 43) should be based on the chassis of the PzKpfw IV.

Again it was essential for Hitler that this new weapon should be ready for combat for the planned offensive at Kursk. He ordered a *Sonderaktion* (special mission) to relieve the work of overstretched tank manufacturers. This special mission took place at the *Heereszeugamt Wien*, (an army vehicle repair depot in Vienna opened in 1942).

The strained situation forced the use of rebuilt PzKpfw IV chassis instead of new equipment from the production line. The Nibelungenwerke in St.Valentin was contracted to deliver refurbished tank hulls.

In May 1943, *Reichsminister* Speer, sent an order to General Zeitzler, chief of General Staff of the Army:

> 'By order of the Führer, the *Sturmgeschütz* auf Pz IV with the 15cm Skoda sIG ist to be called "*Sturmpanzer*", to identify it from the *Sturmhaubitze* (*Sturmgeschütz* with 10.5cm le Fh).'

The commonly-known designation *Brummbär* (Grouch) cannot be confirmed from any official documentation. However, it is possible that Panzer troops invented the name, as they did the *Panzerjäger* 38(t), Hetzer (Baiter) in late 1944.

By May 1943, a total of 52 *Sturmpanzer* had been built.

The first deployments to the Eastern Front proved that the *Sturmpanzer* was a highly-valued combat valued asset. In November 1943, for this reason the production of a second batch was ordered from *Heereszeugamt Wien*. Again this batch was to be built on refurbished PzKpfw IV hulls. The hulls from differing *Ausfuhrung*, would lead to maintenance problems for workshop engineers at the front.

Technical layout

The hull of the PzKpfw IV tank required no essential modification. After removing the front part of the superstructure, the new casemate could be fitted.

The sloped-fronted superstructure was also designed by Alkett and had even thicker amour than the StuIG: 100mm to the front and 50mm on the sides.

The new purpose-built 15cm StuH 43 was developed by Škoda in Czechoslovakia, and was a more sophisticated design than the 15cm StuIg 33/1; the gun barrel was mounted in a socket-type cradle and fitted to the PzKpfw IV chassis by a baseplate

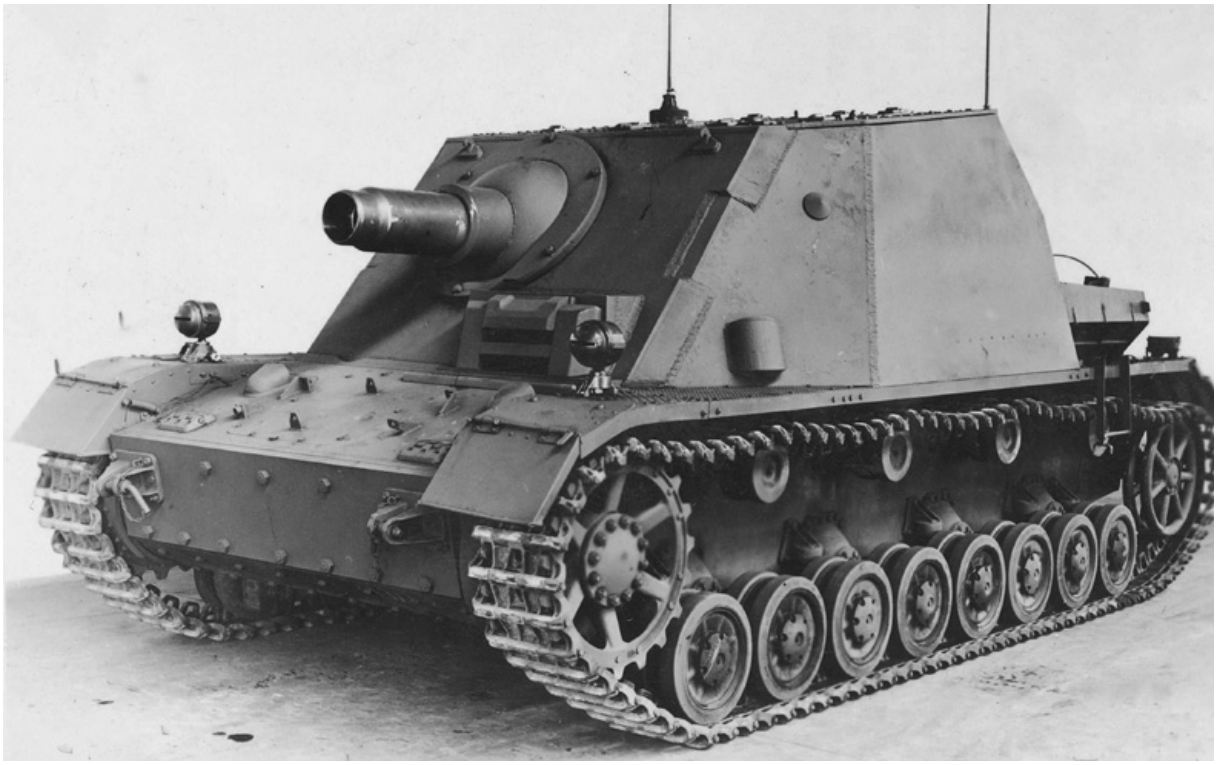
The TM D 2031 states:

> '… The 15 cm *Sturmhaubitze* 43 (L/12) is a weapon with electrical firing installed in the *Sturmpanzer* IV. It fires the 15 cm IGr 33, 15 cm IGr 38 and 15 cm IGr 39 (Hl).'

This was the same ammo fired by the 15 cm sIG 33. Apparently the quality of these rounds was not doubted. The gun was mounted on a massive bar in the PzKpfw IV hull. Again the TM:

> '… the gun mount carries the barrel with the cradle giving the barrel direction of fire by means of the traversing and elevating mechanis. The main parts are:
>
> • Gun cradle with deflector and ball mount
> • Recoil brake with hydraulic emergency switch
> • Recuperator
> • Top carriage with elevating and traverse mechanism
> • Sighting mechanism
> • Electrical firing
> • Base plate'

The 15cm StuH 43 gun had a barrel length of 1801mm. Its complete weight including base plate was 1.85t.



This is one of the first Sturmpanzer. This particular vehicle was finished as a *Panzerbefehlswagen* command tank, as evident by the second antenna on a porcelain insulator mounted in an armoured pot at the superstructure's right rear. An additional 30mm plate was bolted to the hull front. (BAMA)

The IGr 38 had a maximum range of 4,300m and had a very high explosive. Keeping the *Sturmpanzer* close to leading fighting echelons allowed a very fast and pinpoint deployment. In a concentrated attack, fire from the *Sturmpanzer* was readily at hand and therefore far more effective than that of conventional 15cm sFH 18 artillery.

The IGr 39 HL ammunition was developed to allow the *Sturmpanzer* to, in theory, engage enemy tanks. As any other shaped-charge shell of German origin it could penetrate 90mm of amour at an effective range of between 100 and 900m. However, due to a low muzzle velocity the weapon lacked accuracy.

A *Nebelwerfer* (smoke shell) 15cm IGr 38 (Nbl) was available for use with the towed 15cm sIG 33. It is not known if this ammunition was used for the *Sturmpanzer*.

For reasons unknown, no close-defence machine gun was installed. A possible reason could be the lack of time during the manufacture of the first series. However, this shortcoming was not resolved with the next production batch manufactured between November 1943 and May 1944.

Munitionsträger auf Fahrgestell PzKpfw IV

Heeresarsenal Wien (army arsenal Vienna) was authorized to develop and produce an amoured ammunition carrier for the first *Sturmpanzer* unit. It was decided to use only refurbished PzKpfw hulls IV. Possibly only the oldest hulls

were used, one set of photographs is known which shows PzKpfw IV Ausf D hull, chassis No. 80655.

The turret was removed and the turret ring was covered by a circular plate, one half being divided in two opening lids. The complete cover plate was rotatable, the lids allowed access to the interior and the some 70 rounds of stowed 15cm ammunition.

Like the *Sturmpanzer*, the *Munitionsträger* was fitted with side-skirts. The vehicle carried extra equipment (including four spare roadwheels) to support the *Sturmpanzer* on the battlefront.

Six of these ammunition carriers were built and issued to StuPzAbt 216, and were still in use during the fighting in Italy, 1944.

Organization

In April 1943, *Sturmpanzer-Abteilung* 216 was established in Amiens in occupied France. At that time no specific KStN was available, due to the fact that only 52 Sturmpanzer were to be produced. The *Sturmpanzer* were organized according to existing structures: the new *abteilung* had a staff company and three combat companies equipped with a total of 45 *Sturmpanzer*.

The plans for a further extension of the production led to new KStN´s adapted for the *Sturmpanzer*, authorized by 5 May 1943. These original tables of organization (KStN 1156, StbsKp StuPzAbt [Behelf and KStN 1160, StuPzKp [14.Gesch] Behelf), both dating from 5 May 1943 are not available. With the issue of newer editions, the older had to be destroyed.

A *Sturmpanzer* of StuPzKp 216. This vehicle was built on the chassis of a refurbished PzKpfw IV Ausf E hull, as evident by the bolted-on armor plate. (Jaugitz)

The suffix 'Behelf' denotes these as temporary solutions, possibly established for a short time until frontline experience identified any deficiencies. For this reason the exact unit strength cannot be determined exactly. Only the organizational structures dating from 1 November 1943 can be used as a, in parts questionable, guide. The surviving official strength reports give an indication of parts of the original establishment of StuPzAbt 216. However, these reports showed only the 'important' armoured vehicles. A workshop platoon was apparently added, not being integral part of the staff company. No details are known about its exact formation.

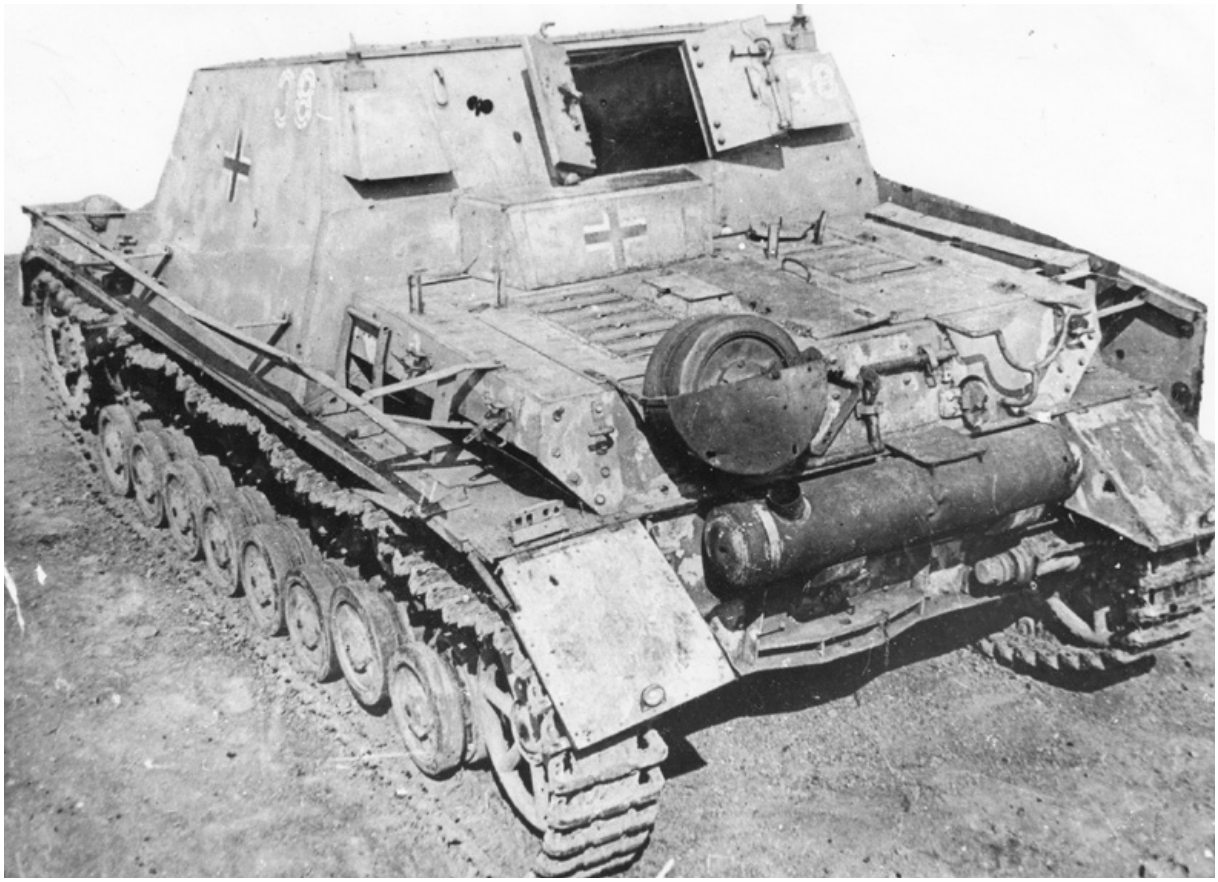
Stabskompanie/Staff company

The *Stabskompanie* shows some peculiarities when compared to similar units. The telephone section was issued with three *Sturmpanzer* command tanks fitted with long-range radio equipment to ensure contact between the combat companies and the battalion commander.

The reconnaissance platoon was issued with motorcycles and field cars.

The establishment of the workshop section was only rudimentary. Strength reports from 1944 show that StuPzAbt 216 was strengthened by an additional workshop platoon.

The supply section had a very large number of Lkw 3t and 4.5t trucks for the transport and supply of ammunition. In this schematic organizational structure another interesting feature is not recorded. During the engagement at Kursk, the unit received a number of *Munitionpanzer* IV to supply ammunition.



Sturmpanzer '38' was captured intact, and is now on display in the Russian tank school Kubinka. The rear view is interesting. Again based on a PzKpfw IV Ausf E, the tank shows the early wide exhaust muffler. The split rear doors are ope, flanked by the big armored air inlets and the antennae. (Netrebenko)

Sturmpanzerkompanie/Sturmpanzer company

Sturmpanzer-Abteilung 216 had three combat companies. The organization of the single companies was similar to the batteries in a *Sturmgeschütz-Abteilung* which were equipped with 45 assault guns. Unlike these, the company had three platoons each equipped with four *Sturmpanzer*.

The number of trucks was adapted for the needs of the *Sturmpanzer.* Of interest is the inclusion of six *Munitionpanzer* IV.

The type and number of supply vehicles depended on where the battle was being fought. Units deployed on the East front were issued with SdKfz 3, *Maultier* (Mule) half-track trucks because of their improved mobility in deep mud or snow. Other units received standard Lkw 3t trucks.

Specialized engineer equipment for *Unternehmen Zitadelle*

The preparations for *Unternehmen Zitadelle* (Operation Citadel) did not go unnoticed by the Soviets. Moreover, the repeated delay to the beginning of the offensive gave the defenders precious time. Over these weeks the

A *Sturmpanzer* of StuPzAbt 216, tactical number 30, during the initial phase of *Unternehmen Zitadelle* (Operation Citadel). The vehicle has lost its *Panzerschürzen*, although the attachment brackets remain. These side plates proved to be very effective against close-range fire from Soviet anti-tank rifles. (Zöllner)

defensive lines were strengthened and reinforced. Extraordinary numbers of artillery and anti-tank guns were deployed and placed in fortified positions. An unknown number of anti-tank mines were laid, intended to stop the attack by German armoured forces.

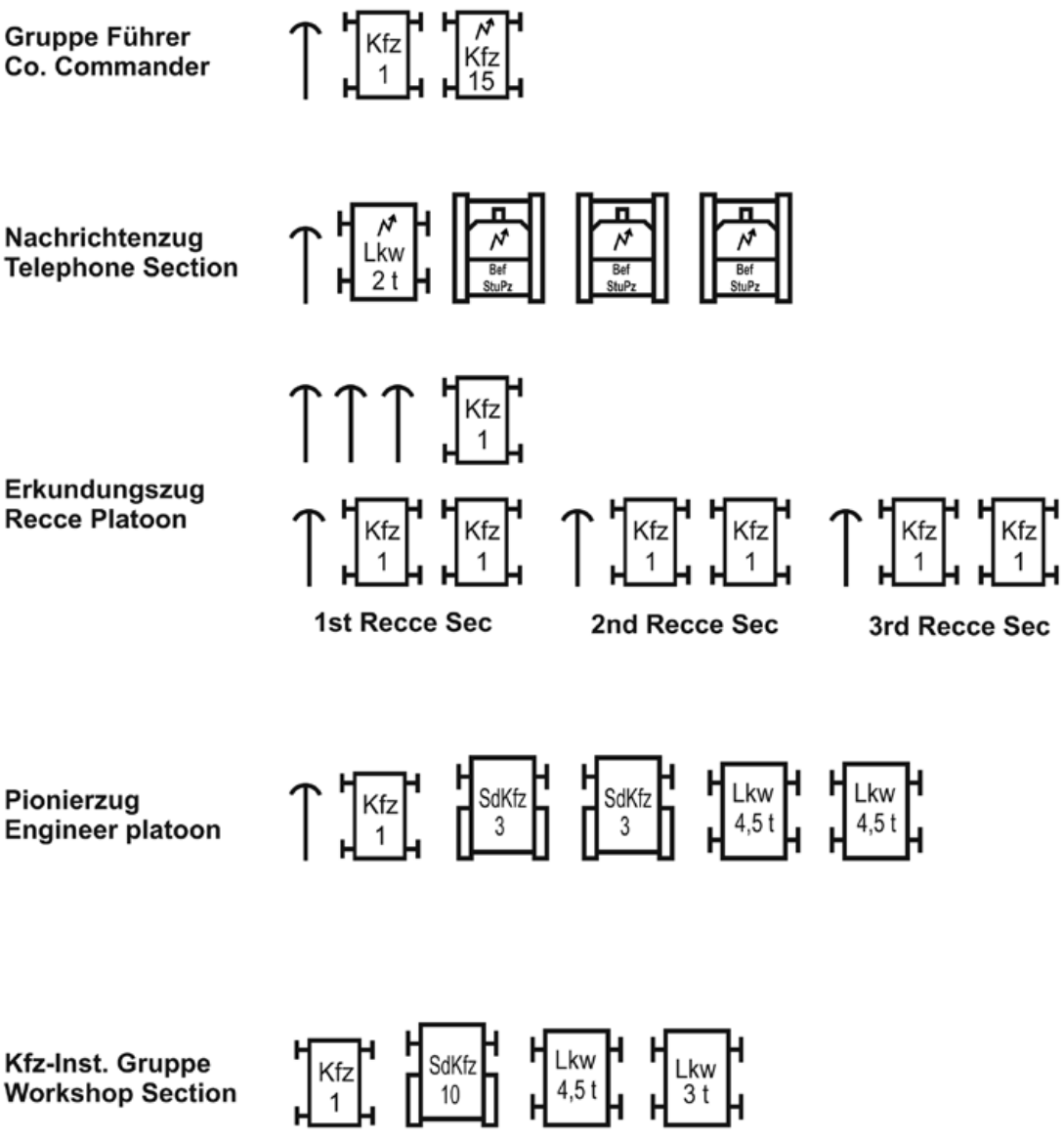
Quite naturally, the Germans anticipated such preparations. Knowing the Soviet´s mastery at preparing fortified positions, further special purpose troops were mobilized to counter this threat.

Before outbreak of the war, the German military planners saw the *Panzerwaffe* as the mainstay for any successful military operation. However, minefields and dug-in anti-tank gun and also artillery positions could not be effectively defeated by the advancing Panzers, whose task was to break through these lines and to gain terrain. It was evident that the tank force needed reliable and competent support by engineers. In his book *Die Panzertruppen*, Heinz Guderian assigned numerous tasks to the *Pioniertruppe* (engineers). He realized early that engineers were of vital importance to assist the advancing Panzers:

> '… The role of the engineers in assisting the *Panzertruppe* is important in both attack and defense. These tasks include the crossing of streams and negotiating of swampy or soft ground. Simple tasks have to be carried out by the Panzer-Battalion´s organic

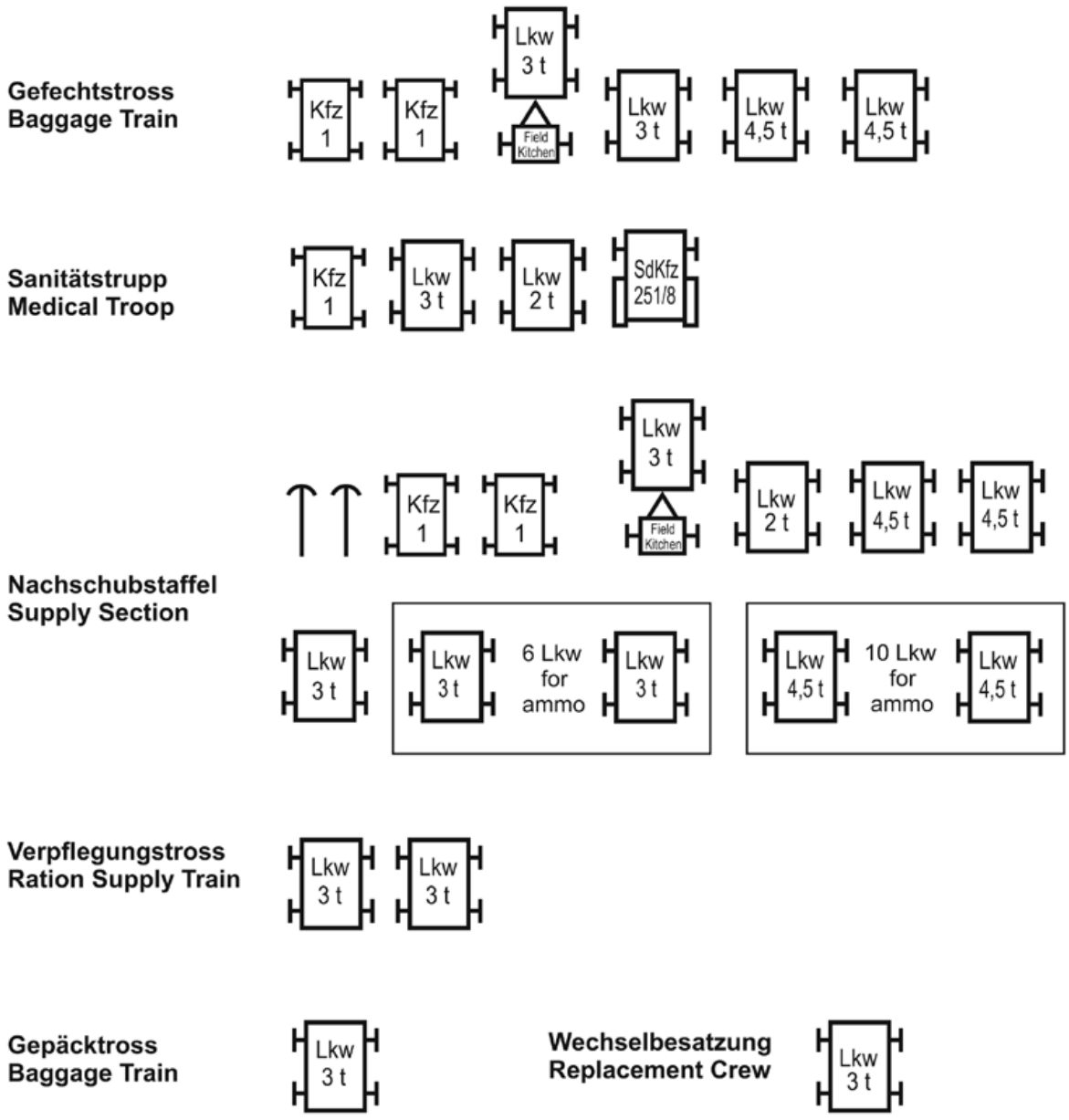
Stabskompanie einer S

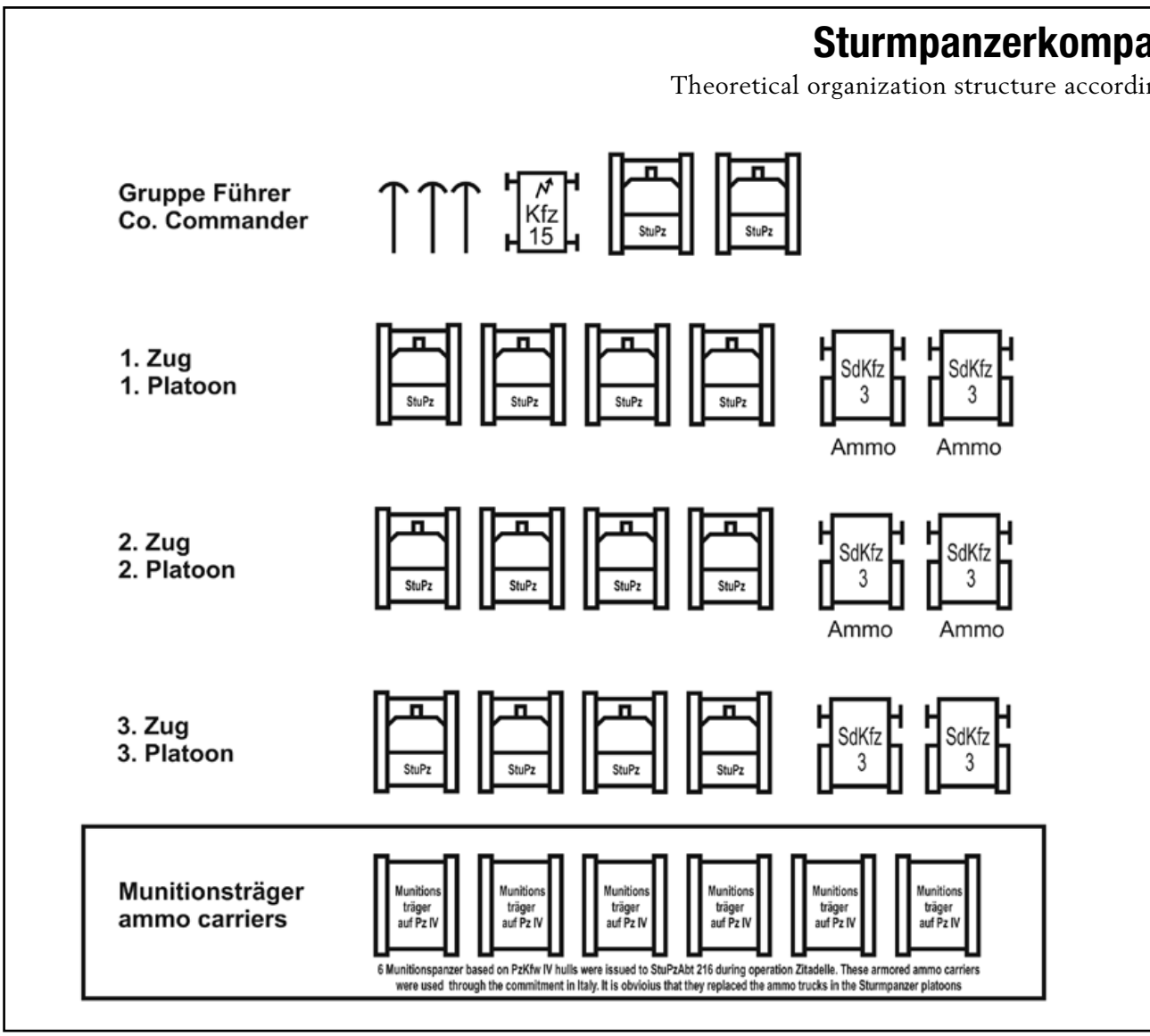
Theoretical organization structure accordi



Sturmpanzerabteilung

ng to KStN.1156 dated 1 November 1943





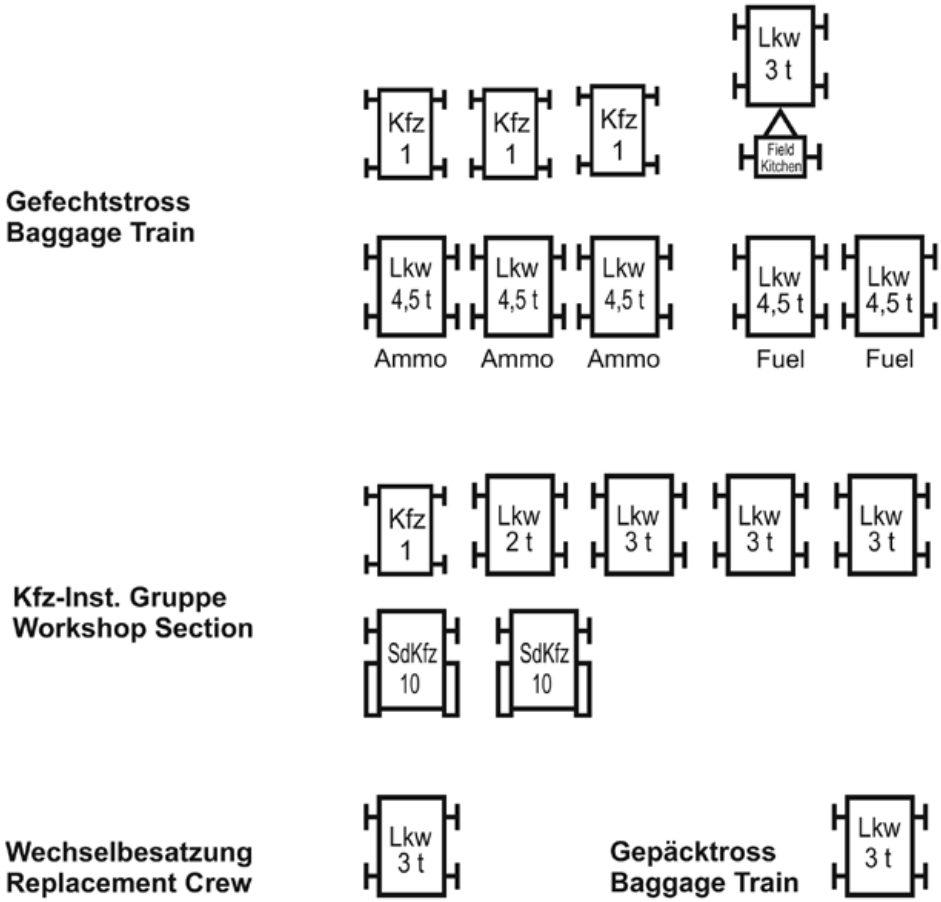
engineers. The clearing of greater problems and obstacles, however, has to be executed by corporate engineer units provided with specialized equipment.'

This 'specialized equipment' had been supplied shortly before the outbreak of the war. The *Heereswaffenamt* ordered the development of armoured bridge-laying vehicles and tanks fitted with explosive charge dropping devices, the latter intended to clear obstacles. However, by September 1939 this equipment was not yet available. In January 1940, the *Armee-Pionier-Führer* of 6th Army reported:

'With its current equipment the *Pioniertruppe* (engineers) are not able to follow the advance of the tanks or the armored infantry, as already

nie (14 Geschütze)

ng to KStN.1160 dated 1 November 1943



experienced in Poland. As quoted in the report of the XVI. *Armeekorps*, the engineer companies have to be issued with armoured vehicles. We repeatedly emphasized that the engineers will be of even greater importance for a possible encounter of a *Panzerdivision* on the Western theatre of war. Unfavorable terrain conditions, an unexpected defense readiness or ambitious equipment and leadership on the side of the enemy call for an immediate cooperation between tanks, infantry and engineers at the frontline. This can only be executed under armor, otherwise the engineers will be left behind… The accoutrement of at least one *Pionierkompanie* of the *Panzer-Pionier-Bataillon* with tanks is indispensably, the accoutrement of the other companies with armored personal carriers is preferable.'

The first requirements for '*Panzer mit Vorrichtung zum Sprengen von Hindernissen*' (tank with a device to blow up obstacles) demanded a rotating extendable rack be fitted (ideally mounted on top of the turret) retaining the full cross-country mobility of the tank. The explosive charge was to be dropped on reaching the objective. A time fuse in the charge allowed the tank to be withdrawn safely. Original design studies show such devices fitted on a PzKpfw IV. However, this was not possible due to the shortage of suitable tank hulls and financial constrictions. The *Zerstörungszüge* were then issued with PzKpfw I (and some PzKpfw II) fitted with a far more simplified rack. The demolition charge was carried in a metal container mounted in a rack mounted over the rear of the tank; a steel plate offered some protection against small arms fire. When the obstacle was reached, the commander used a control cable to release the charge before the tank was reversed away from the target.

The elimination of densely-laid mine fields during a surprise attack was a difficult task for *Panzer-Division* engineer units. The explosive charges had an immense impact, but could not safely clear a path through the mined terrain. There was no way to mark the opened path for the tanks and armoured personal carriers to follow. Furthermore, the lightly armoured demolition tanks could easily become victims to anti-tank guns and even anti-tank rifles.

New technology was necessary. While many other nations searched for mechanical appliances to be fitted to standard tanks (mine rollers, flail devices), the Germans chose a different way.

However, for the sake of completeness, the author has to note that there was similar research being undertaken in the Reich. An experimental mine roller was fitted to a PzKpfw IV Ausf C. To the knowledge of the author, this development was not continued with and only one prototype was built and tested. Possibly the automotive performance of the PzKpfw IV was too poor to move the triple set of rollers through rough terrain. Towards end of the war the HWA reported on a PzKpfw V Panther which was fitted with flails. Unlike the Allies equipment, which relied on flails driven by external engines, the flails on German-designed mine clearers were driven by chains connected to the drive sprocket on the tank. A test report revealed the vulnerability of this type of device, as when the drive chains were attached steering the tank was impossible. It is questionable that this development would have been successful.

Instead, Germany concentrated on a more sophisticated technology to clear mines. Specialized radio-controlled vehicles were developed. Controlled from the security of an armoured vehicle positioned a safe distance away, the vehicle would be guided through the main line of defence to destroy objectives like gun positions, obstacles and mine fields. The first such vehicle was the *Minenräumwagen* B I developed by Borgward. The B I was a small, tracked vehicle with a concrete hull. It towed a set of heavy 'teethed' rollers designed to detonate mines. This development was not a success, as the rollers were towed behind the *Minenräumwagen*; all too often the towing vehicle was blown up by the mines it was intended to clear.

Above:
A PzKpfw I Ausf B *mit Abwurfvorrichtung* passes through the lines of German forward infantry before crossing a small bridge placed by pioneer units. When used responsibly, the type had a certain combat value. (Anderson)

Left:
A PzKpfw I Ausf B of 1.PzDiv fitted with an *Abwurfvorrichtung*. The armoured shield to the rear of the box is visible. The fabrication of the outriggers was not standardized, and differed from unit to unit. (Wilhelm)

The later Borgward B II (SdKfz 300) was slightly larger and had a hull fabricated from steel. Unlike the B I, the new type carried up to 500kg of explosives. The SdKfz 300 was controlled from a kleine Panzer Befelswagen (klPzBefWg [SdKfz 265]) and guided to the objective and detonated. The subsequent explosion destroyed mines in an area up to 40m in diameter, or any enemy position. Both vehicles, however, lacked of cross-country mobility and speed.

In 1940, the development of a new light demolition carrier was begun. This remotely-controlled vehicle carried an explosive charge of 60kg and was steered by signals transmitted by wires from a controller. The vehicle was only suitable for use against smaller targets. The vehicle entered service as the SdKfz 302/ 303 and was known as the 'Goliath'.

In 1937, the motor manufacturer Borgward had been contracted to develop an armoured ammunition carrier intended for use by the infantry. The result was the VK 302, a small vehicle designed to carry a payload of 50kg; a further 50kg could be towed behind in a small trailer (SdAnh 32). The VK 302 was ordered into production at the end of 1940. However, after completion of 20 vehicles, production was halted. The vehicles were tested and subsequently used by gepMunTrspKp 801 with the 1.InfDiv on the East front. Although available after action reports dating from 1942 and 1943 were very positive, the vehicle did not enter series production. In 1941, when Borgward was called upon to develop a demolition-charge carrier the company decided to utilize components from the VK 302: The result was the Borgward B IV (SdKfz 301).

Technical layout

The B IV Ausf A was a fully-tracked vehicle. The suspension and transmission followed proven German practice already used on half-tracked tractors and armoured personal carriers, which were being produced in large numbers. The tracks were fitted with rubber-padded links allowing a soft ride and high-speed travel over firm ground.

A 2,300cc Borgward 49hp water-cooled petrol engine was mounted in the rear, with the fuel tanks located in front: the radio-control unit was mounted to the right. The 'conventional' driver (who drove the vehicle to a combat location) was positioned on the right-hand side, ahead of the engine compartment, and protected by three foldable, 8mm steel plates first fitted on the Ausf B).

The container for the explosive charge was carried on the sloping front plate. When released the container slid down, then the B IV was reversed away and be guided back and prepared for a further mission.

The vehicle had basic mild-steel armour just 5mm thick. It was decided that this level of protection seemed to be too weak and additional 8mm plates were bolted to the sides, above the suspension. Between April 1942 and June 1943, a total of 628 were produced.

In July 1943, the Ausf B entered service and was almost identical to its predecessor. However, a number of improvements had been incorporated. The

A PzKpfw II Ausf C, possibly from 1.PzDiv, fitted with a simple mine-clearance roller; possibly a conversion made by troops in Poland during 1939. The method of steering the mine roller is certainly novel; perhaps the commander came from a farming family. (Anderson)

thickness of the hull side plates was increased to 10mm; the additional 8mm armour plate was retained. A small escape hatch was incorporated next to the driver´s position,.

The rubber-padded tracks used on the Ausf A and B were often criticized, and so during the production of the Ausf B a new all-steel track was introduced. A total of 260 were manufactured.

By December 1943, the Ausf C, which incorporated a large number of design changes, entered service. Following requests from frontline forces, the armour was increased to 20mm as defence against fire from light weapons. The weight of the vehicle increased to 4.6t, which meant that more motive power was required. The vehicle was then fitted with the more powerful 3,800cc Borgward 78hp petrol engine thus improving overall mobility..

Deployment of Panzer (Fkl)

The preliminary bulletin (Merkblatt 27/1) for the deployment of *Funklenk-Panzer* dated 2 April 1943 gives precious information on the vehicle:

'Preliminary remarks

The leaflet`s guiding principles for the commitment [deployment] of Panzer (Fkl) applies to the current technical standards (March 1943). Although the Panzer (Fkl)

A PzKpfw IV Ausf C fitted with mine-clearance rollers for testing purposes. To the knowledge of the author this idea was not followed up, but there were some conversions carried out on the frontline. (BAMA)

is serviceable for use in the field, the development of the ordnance has not been completed yet. Experiences in winter are not to hand…

Nature of the weapon

1.

The Panzer (Fkl) is a special type of ordnance for the *Panzertruppe*, which is merged in company strength within the frame of the PzRgt or in independent battalion's (*Heerestruppe* – GHQ troop). The largest unit, which can be deployed complete, is a company…

2.

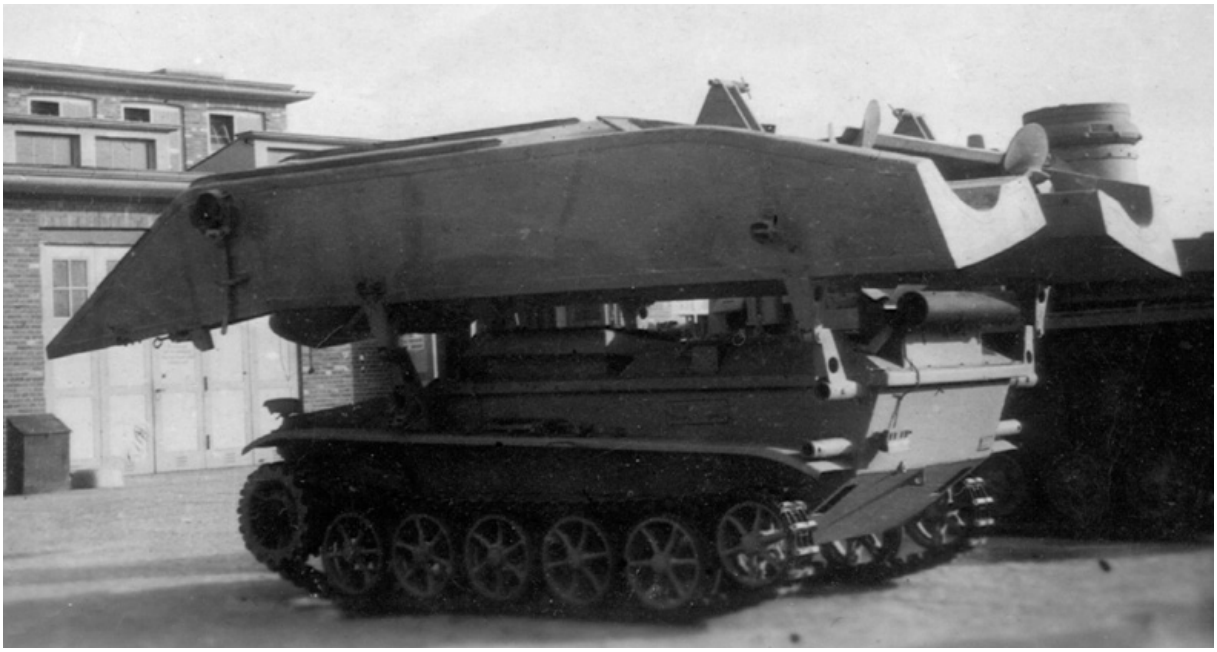
On the march the Panzer (Fkl) will be controlled manually by its driver, in combat it will be operated by remote control from a *Leitpanzer* (control tank, a Panzer III, IV or *Sturmgeschütz*). The otherwise unarmed vehicle carries a 450kg jettisonable demolition charge and can be provided with a smoke generator.

3.

The driving characteristics of the Panzer (Fkl) exclude a commitment, the case of where the terrain between the *Leitpanzer* and the objective has been cratered by heavy bombs or artillery, or interrupted by consecutively established trenches. Any commitment in swampy terrain or unclear woodland or scrubland is impossible, too.

4.

The Panzer (Fkl) is reconnaissance and attack weapon at the same time. Its deployment saves men and material. In line with the tank assault the Panzer (Fkl) has to attack objectives which endanger this assault, which cannot be attacked by other weapons.



An unknown number of B IVs were fitted with pontoons to allow the crossing of open water to a target. To the author's knowledge, this version of the radio-controlled demolition charge carrier was never used in combat. (Anderson)

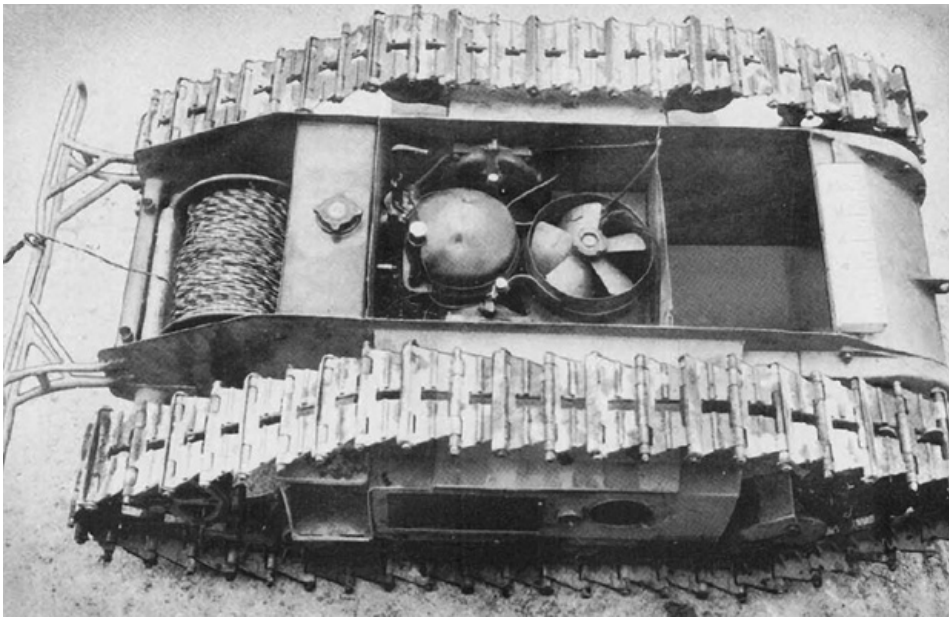
5.
In particular the Panzer (Fkl) is suited for the following mission within its control range of 2,000m:

Commitment as reconnaissance vehicle:
a) Reconnaissance of the enemy defences, in front of an armoured spearhead, by attracting defensive fire and activating mines.
b) Exploration of the terrain in respects of drivability (swamps, steep slopes or narrow paths…

Commitment as demolition charge carrier:
c) Eliminating of obstacles and barricades on and off road.
d) Destruction of strongly-fortified defence positions.
e) Annihilation of the troops in enemy positions (within a lethal range of 40m; temporarily disabled at up to 80m).
f) Destruction of enemy heavy tanks, in case these cannot be defeated by other weapons…
g) Detonation of bridges and other obstructions, in case destruction by engineers is impossible due to enemy fire.

Commitment as smoke generator:
h Concealing the demolition carrier, blinding of single targets by smoke, covering the terrain sections with smoke.
i) Establishment of decontaminated areas in contaminated terrain…

Above:
Members of a British Army bomb-disposal team inspect three Goliaths abandoned after the fighting in the Nettuno area of Italy.
(US Signal Corps)



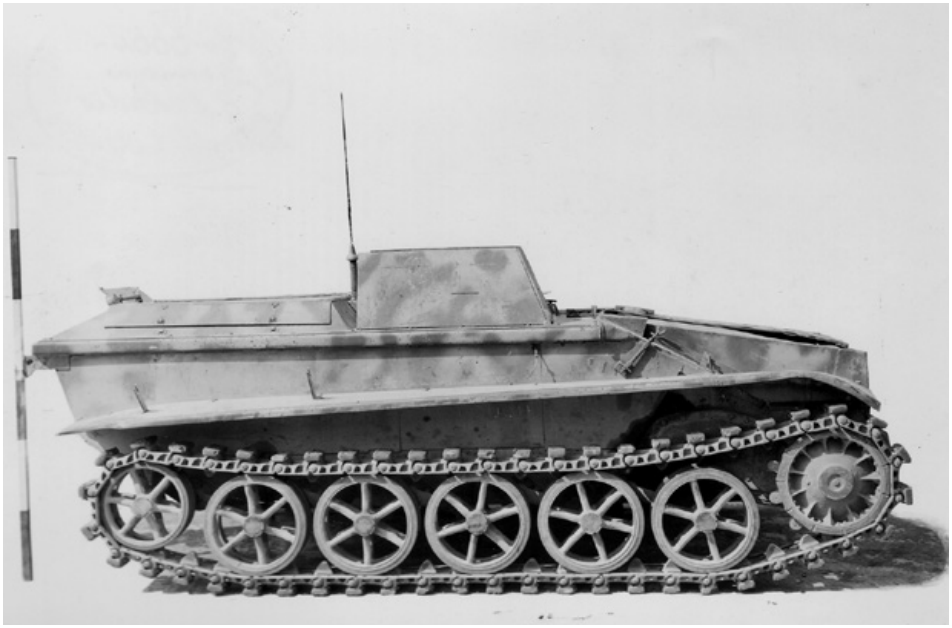
Righte:
The interior of a petrol-engined Goliath (SdKfz 302). The explosive charge has been removed from the front compartment.

6.
If the demolition charge carrier is hit by a mine, the detonation will be transferred to the 450kg droppable charge, destroying the complete vehicle, whereby all mines within a circle of 15m will be detonated. So the Panzer (Fkl) is only able to denote the existence of mines by detonation and to neutralize a limited number of mines. It has not the ability to clear mines methodically…
8.
The *Leitpanzer* is a PzKpfw III, PzKpfw IV or *Sturmgeschütz*. It carries the FKL radio transmitter, its ordnance (KwK and MGs) remains workable. With its transmitter, the *Leitpanzer* is able to control only one Panzer (Fkl) at a time.
9.
The radio transmitter of the *Leitpanzer* and the receiver of the Panzer (Fkl) allow transmission and accomplishment of the following commands: Start, stop, right, left, faster, slower, ahead, reverse, ignition, dropping, fogging.
10.
During the march or in shelter the demolition charge is safe to handle as long as the detonator is not inserted. In this case the charge will explode only after a direct hit by bombs or large calibre shells. Smaller calibre shells will only penetrate. If the Panzer (Fkl) catches fire, the demolition charge will slowly burn down. A safety distance of 20m from the Panzer (Fkl) has to be kept on the march, in shelter and in the assembly area…'

This proves that under normal conditions the risks when operating the Panzer (Fkl) were controllable. However, the troop did report several fatal accidents. The Merkblatt 27/1 gives further valuable information:

A Borgward B IV Ausf B with a Goliath alongside at a demonstration of armoured vehicles arranged for Hitler and senior army officials. The Borgward has been fitted with later type unlubricated tracks. (bpk images)

The Borgward VK 302 was developed as an armoured ammunition carrier. The vehicle was rear engined and fitted with the same type of tracks (with rubber pads and greased links) as those used on German halftracks. (Anderson)



A captured (by US troops) B IV Ausf B fitted with the original rubber-padded tracks. On both the Ausf A and B, the driver was positioned on the right-hand side of the vehicle. (NARA)

A Borgward VK 302 with the rear compartment open. The engine has been removed, possibly to facilitate the repair of the transmission. The engine and fuel tank filled half of the compartment. (Anderson)

'Principles for the commitment

17.
Panzer (Fkl) units fight within the scope of Panzer - or *PzGren-Divisionen*. During combat the Panzer (Fkl) company will normally be subordinated under a tank regiment, the Panzer (Fkl) platoon under a Panzer battalion.
18.
The smallest combat unit is the platoon. Subordination of single echelons is not permissible for tactical reasons, since the echelon can only control one Panzer (Fkl) at a time. Furthermore neither leading nor supply is ensured at a segregation of the platoon.
19.
The drivability and natural cover of the terrain have a decisive influence on the deployment of the Panzer (Fkl). A level and clearly visible terrain without any obstacles relieves the simultaneous commitment of a greater number of Panzer (Fkl), but does favour defence measures of the enemy. A covered terrain with depressed areas and limited visibility forces the commitment of single Panzer (Fkl) in most cases. The same applies for the commitment on roads.

A B IV Ausf B, being examined by Hitler. The vehicle is fitted with a small television camera which allowed the controller to guide it to the target without having a 'direct' view. (bpk images)

20.
A good cooperation between the superordinate commander and the leader of the Panzer (Fkl) units is of decisive importance for the success of the Panzer (Fkl). Before beginning combat the leader of the Panzer (Fkl) unit has to be heard, he will make suggestions of his unit. During the commitment a very close communication between him and the superordinate commander will assure the immediate exploitation of the results achieved by his Panzer (Fkl).
21.
The deployment of even the smallest Panzer (Fkl) combat units must be methodically prepared and requires the support of other weapons. Alongside the close defence of the *Leitpanzer*, this support must comprise a very strong fire protection for the advance of the Panzer (Fkl) in all types of combat. The forces assigned for this mission must supervise all movements of the Panzer (Fkl) in that way, that all identified enemy defence weapons can be defeated promptly. The *Leitpanzer* is not able to fulfill this task with its ordnance alone.
22.
Absolute surprise to the enemy is an essential premise for the deployment of this special service arm. It will confine his defence readiness by the general impression of the great explosive impact.

23.
The usage of artificial fog by the supporting artillery to blind the enemy defence weapons and observation posts can be practical for all types of combat. The Panzer (Fkl) and its target must however remain in sight of the controller.
24.
Ground strips intended to be used for Panzer (Fkl) missions have to be left open, as far as possible our own artillery must not lay fire here to avoid additional shell-holes.
25.
Prior to the deployment, Panzer (Fkl) have to attend a short halt for maintenance to retain their operational readiness. After combat the Panzer (Fkl) units, like any other Panzer unit, must get opportunity to assemble and maintain their vehicles. The Panzer (Fkl) unit is not able to exploit a tactical success or to keep the gained terrain.
26.
The commitment of Panzer (Fkl) must not end with its loss (detonation). All vehicles used for reconnaissance missions will be recovered and repaired, in case they cannot be moved back under their own power. Panzer (Fkl) must not fall into the hands of the enemy. In imminent danger they will be destroyed by detonation or own fire….'

The usage of artificial smoke was one of the tasks suitable for the Panzer (Fkl); laying a smoke screen in areas and under conditions where it was not possible to be laid by conventional artillery. Thus smoke was available faster and reliably. Again from the manual:

'11.
A smoke discharger unit can be attached additionally to the Panzer (Fkl). It can carry eight *Langnebelkerzen* 42 (smoke grenades) each with a duration of 25 to 30 minutes. By remote control each smoke grenade can be separately dropped and ignited, or ignited by the driver of the Panzer (Fkl)…'
32.
The general principles of the application of smoke also apply for the Panzer (Fkl. There are, however, special advantages:

a) By laying the screen from the moving vehicle.
b) By dropping the smoke grenades at exactly determined places.
c) By laying smoke screens or zones alongside determined lines by consecutive dropping of smoke grenades.

This versatile commitment of smoke enables the Panzer (Fkl) to blind enemy weapons in the flanks which cannot be neutralized, and during disengagement from the enemy…'

The performance of the B IV Ausf A is described in the same manual:

'7. The Panzer (Fkl) Type B IV is a fully-tracked vehicle.

Above:
After reaching the target, the 450kg charge would be released from the B IV by remote control and slide gently to the ground. The vehicle would be guided back to German lines. (bpk Images)

Right:
A B IV Ausf C captured by US troops in 1944. The container for the explosive charge has been removed: Note the release arms. The driver for the Ausf C was repositioned to the left-hand side of the vehicle. (NARA)

Height	: 1.25m
Width	: 1.80m
Length	: 3.35m
Weight, combat	: 3.6t
Travelling range	: 150km
Cross-country mobility :	comparable to that of the Panzer III
Ground clearance	: 20cm
Trench crossing	: 1.35m
Step	: 0.45m
Gradient	: 35°
Fording depth	: 0.80m
Armour protection	: proof against heavy infantry weapons only at the front…'

Overleaf:
Ferdinands on the gunnery range. The 8.8 cm KwK are being fired at maximum elevation, to see if the gun was suitable for use as attack artillery. General Guderian is observing the accuracy of fire through a *Scherenfernrohr* (scissors telescope). (bpk Images)

Organization of the Fkl units for the Kursk campaign

As quoted above, by 1940 the first *Minenräumpanzer* were organized in *Minenräum-Kompanie* 1. This unit evolved from an experimental unit, *Kompanie Glieneke*, (a code name as Glieneke is a suburb of Berlin). By 15 September 1940, the unit was increased to a battalion, resulting in *Minenräum-Abteilung* 1 (two companies). The newest unit, at that time under control of the *Pioniertruppe*, would grow slowly. By September 1941, *Minenräumabteilung* 1 was transferred to the *Panzertruppe* and renamed *Panzerabteilung* (FL) 300 (FL – *Funkleit*, radio controlled).

In April 1941, and quite confusingly, a PzKp(FL) 300 was established as part of the *Panzertruppe*. Some six months later the company was renamed to PzAbt (FL) 301, as a battalion. At the beginning of 1943, the suffix (FL) was changed to (Fkl) *Funklenk*. However, both words mean exactly the same (remote controlled).

In January/February 1943, *Panzerabteilung* 301 (Fkl) was reorganized. The battalion comprised the staff, the staff company and four light tank companies (instead of three as officially allotted). These four PzKp (Fkl) were not organized as integral parts of the battalion. Since the PzAbt (Fkl) was organized at *Heerestruppen* (GHQ) level, its companies were independent units to be subordinated separately under different tank units. The independent companies were numbered 311, 312, 313 and 314.

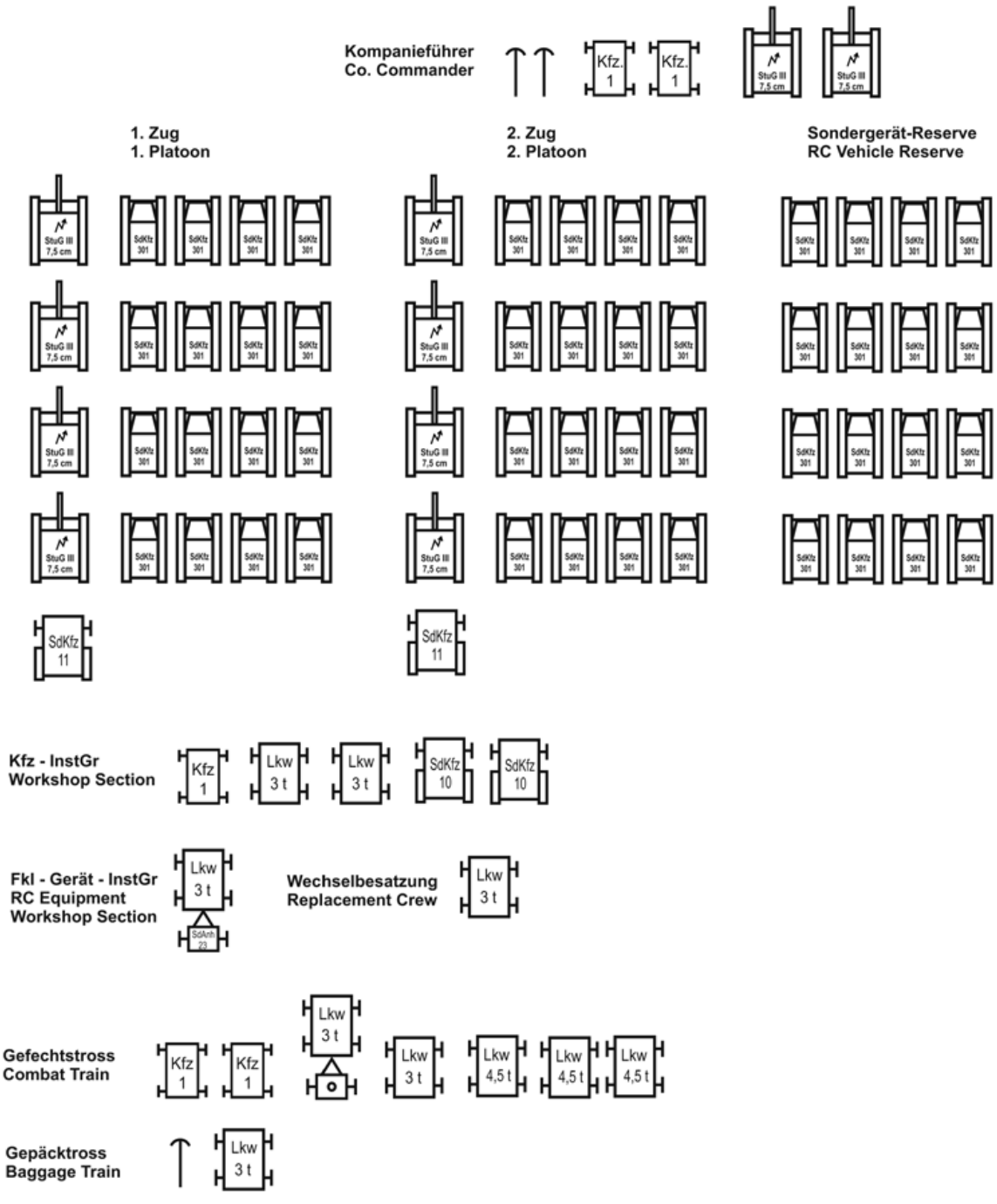
After the Kursk campaign these companies were still independent, the order of battle for September 1943 notes their being sent for refitting: 313 and 314 to Mailly le Camp in France, and 312 to the Oldebroek training grounds in the Netherlands. PzKp (Fkl) 311 was transferred and subordinated to the Tiger-*Abteilung* of the 13.*Panzergrenadierdivision* '*Grossdeutschland*'.

From the official leaflet:

'13. The smallest unit to be committed is the platoon. The platoon is divided in:
Platoon command group (*Zugtrupp*)
Three echelons with each

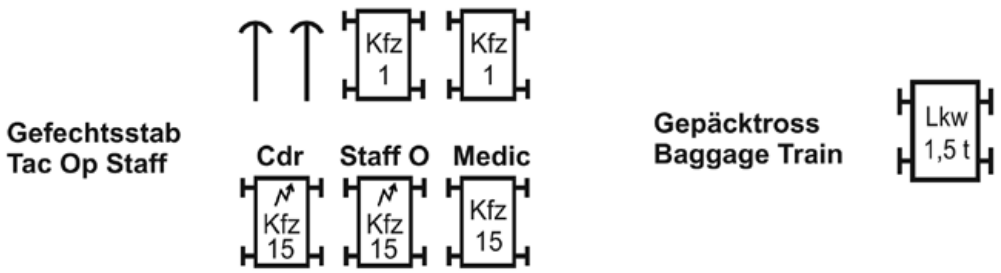
Leichte Panzerkompanie f (Fkl)

Theoretical organization structure according to KStN.1176 dated 1 January 1943



Stab einer PzAbt f (FKL)

Theoretical organization structure according to KStN.1107f
dated 1 January 1943



One *Leitpanzer* (control tank)
Four *Panzerkraftwagen* (Fkl)
One *Zugmaschine* carrying spare demolition charges and smoke discharger equipment.

The company is divided into:
Company command group (*Kompanietrupp*)
Two platoons
Supply train
Workshop services

The Battalion is divided into:
Battalion staff
One Staff Company
Three Panzer (Fkl) companies
One workshop echelon'

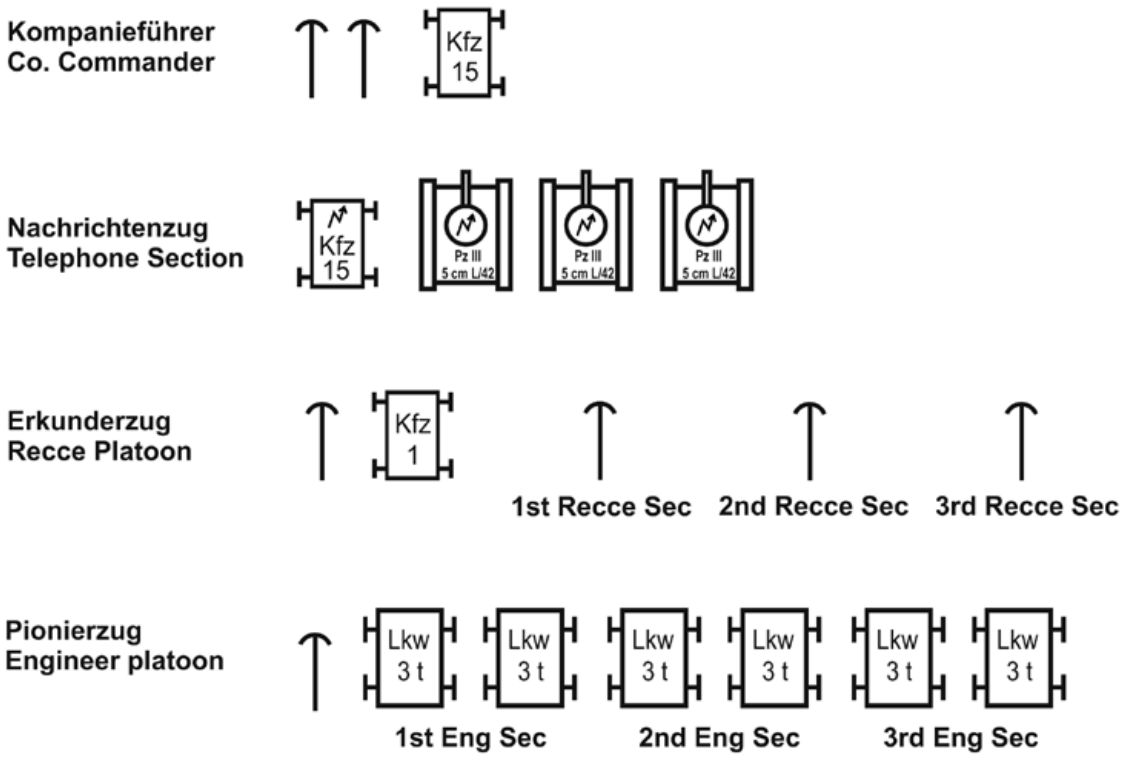
The Borgward B.IV units were organized according to the following KStN:

Stab (staff section) *Panzerabteilung* f	KStN 1107f (dated 1 February 1943)
Stabskompanie (staff company) PzAbt f	KStN 1171f (dated as above)
leichte Panzerkompanie f (light tank company.)	KStN 1176f (Fkl), (dated as above)

The respective KStN tables of organizations were authorized in early 1943. According to battlefront experience, technical developments and availability of material, these were modified from time to time to meet current requirements. The next release was date 30 November 1943, followed by 1 June 1944. Sadly,

Stabskompanie e

Theoretical organization structure accord



the earlier reports were to be destroyed upon release of the latest KStN.

The organizational structures shown are the result of the author's attempts to establish the initial position before the Kursk offensive by using later KStN and all available photographs.

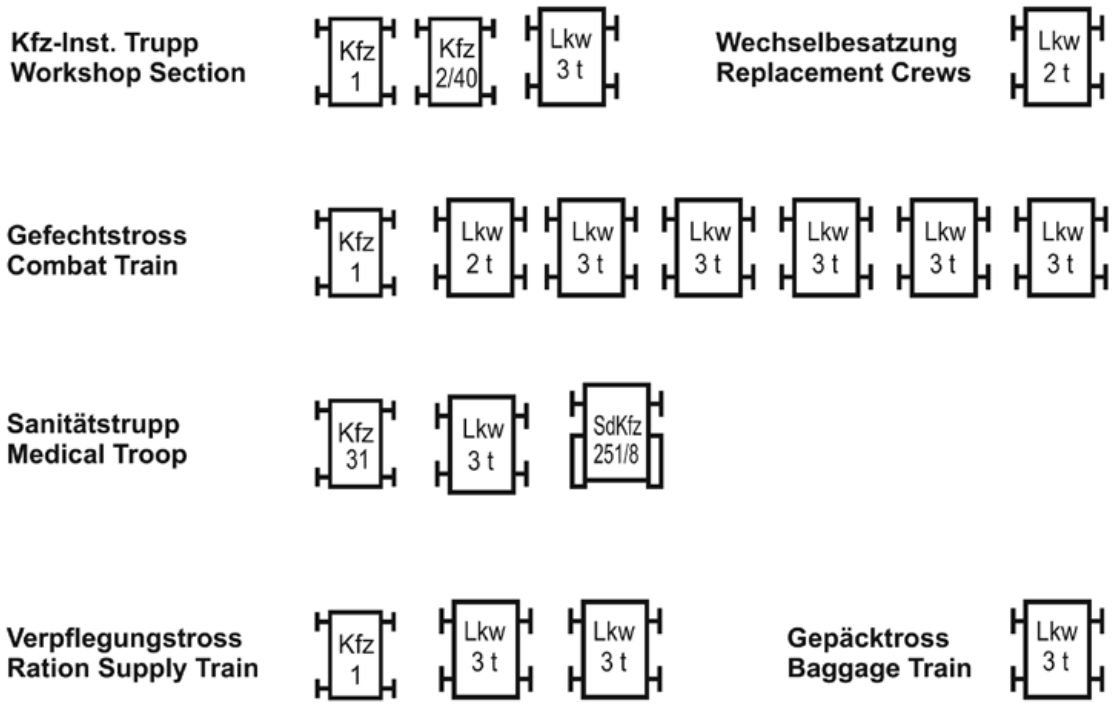
The *Nachrichtenzug* (communications platoon) was issued with three *Panzerbefehlswagen* command tanks (PzKpfw III, 5cm KwK L/42), one for each company, as detailed in the order of battle dated January 1943.

According to KStN 1176f (Fkl), (dated 1 February 1943), each company was to be issued with ten StuG III or PzKpfw III, fitted as *Leitpanzer* (control tanks) each with a radio-control transmitter. The main ordnance remained fully serviceable.

Due to the very specific tasks to which *Panzerabteilung* f (FKl) was assigned, the overall allotment of soft-skinned vehicles was somewhat small. It should be clear that Lkw 1.5t and Lkw 2t trucks were compatible. Units assigned to the eastern front had been issued with NSU *Kettenkrad* (SdKfz 2) instead of motorcycles, some of the Lkw 3t trucks were replaced by half-tracked *Maultier* trucks (SdKfz 3) which had better mobility in mud and snow. To recover the B IV two *leichte Zugkraftwagen* 3t (light half-track vehicles – SdKfz 11) were supplied.

einer PzAbt f (Fkl)

ding to KStN.1171 dated 1 January 1943



With the next KStN release in 1944 the pioneer section received three mittlere *Pinonierpanzerwagen* (medium, armoured half-track vehicle – SdKfz 251/7)

According to troop experiences, by April 1944 some Fkl-units were issued with ten Tiger Ausf E tanks as *Leitpanzer* (control tanks) instead of StuG or PzKpfw III. The organizational structure was partly changed, decreasing the number of SdKfz 301 dramatically to nine per combat company (from 12), and four in the vehicle reserve platoon (from 12).

The preliminary bulletin (Merkblatt 27/1) for the deployment of *Funklenk-Panzer* was updated. The principle for commitment basically remained the same. It is, however, interesting that the Tiger *Leitpanzer* were able to control two BIV at the same time, instead of only one when used with StuG or PzKpfw III.

The former PzKp 313 and 314 /Fkl) were thus changed, 313 was allocated as the 3rd *Kompanie* to sPzAbt 508, 314 as the 3rd Kompanie to sPzAbt 504. Both units fought in Italy. PzAbt (Fkl) 316 was subordinated under the famous *Panzer-Lehr-Division* issued with Tiger Ausf B *Königstiger* (King Tiger).

PzAbt (Fkl) 301 was re-equipped in September 1944, and received 31 Tiger Ausf E. By October/December 1944, the unit was deployed to the west and fought near Aachen.

Birth of a Regiment 2

After the disaster at Stalingrad and the loss of North Africa, leading officials in the general staff of the army demanded that a large operation be launched to regain the strategic initiative in the east. A formidable objective was the vast 'pocket' of territory held by the Russians around Kursk. General Zeitzler, chief of the general staff, came forward with his proposal that both *Heeresgruppe Mitte* (army group centre) and *Heeresgruppe Süd* (army group south) should attack the heavily fortified area, in order to cut off the pocket, to destroy the Soviet armies and thus to shorten the front by some 200km.

Heeresgruppe Süd under *Generaloberst* Hoth was to open the offensive with a heavy assault against the Soviet defenders. Concentrated in the south ready to advance north, via Oboya [Orel] to Kursk, was 4th Panzer Army and *Armee-Abteilung* (army detachment) 'Kempf', comprising nine Panzer and *Panzergrenadier-Divisionen* equipped with more than 1,100 Panzers and *Sturmgeschütze*. *Heeresgruppe Mitte* 9th Army under *Generaloberst* Model was numerically slightly weaker and comprised of eight Panzer- and *Panzergrenadier-Divisionen*.

From the war diary of the 9th Army dated 26 March 1943:

> 'On 26 March 1943, a new phase will begin for AOK 9. The plan was initiated under a directive from *Heeresgruppe Mitte*… According to this, the AOK will be on the attack again after end of the mud period. This is both a calling and an award, filling us with great joy and pride! In operation '*Zitadelle*' – date of attack approx. 1 May – the strong enemy forces positioned in front of 2.Panzer army shall be attacked, encircled and subsequently annihilated by the combined *Heeresgruppe Süd* and 9.*Armee*. The mission for 9.*Armee*: Advance with three rigidly-concentrated *Panzerkorps* in line with the main Orel – Fatesh – Kursk road and the railway line. At the same time a defensive line to the east has to be established. The attacking forces involved: Six PzDiv, one Div (mot), four InfDiv, three StuG Abt and thirteen sArt Abt…'

A Ferdinand climbing a steep gradient clearly illustrates the problems with the suspension system. The first bogie on the left-hand side has the two running wheels hanging useless in the air. Any attempt at the manoeuvre could result in a disaster as the tank could throw a track. (Schneider)

A vehicle from sPzJgAbt 653 carrying the insignia of StuGAbt 197; the lead unit. Rain drains have been fitted in front of the ball-mounting deflector plate to prevent water entering the engine compartment. (Anderson)

These lines show that the responsible staff officers did not plan to use the heavy *Panzerjäger* Ferdinand or any *schwere Panzer-Abteilungen* (Tiger) at the time the diary was written. Furthermore, the war diary lists all enemy forces known to the Germans. The supreme commander of AOK 9 complained about the 'bad condition' of his attacking forces. In particular he called for an additional infantry division and allotment of an unspecified number of tanks. The existing force was equipped with only 159 PzKpfw III and PzKpfw IV tanks. The plan called for all available forces to be deployed, with only one infantry division held in reserve.

On 12 April 1943, General Zeitzler briefed his officers on the details of the operation. At the end of all preparatory planning, the assembly of forces began on 24 April and he expected the attack to commence on 15 May.

From the diary on 14 April 1943:

> 'At 21.40hrs the *Oberkommando der Wehrmacht* informed the *Heeresgruppe* via telephone their approval of operation planning… The attack date would be delayed by ten days (X-day – 1May)… *Chef* 9 complains about this early date… the Panzer situation being difficult…
>
> 16 April 1943
> The die is cast! At 19.00hrs the Führer's directive reaches the AOK, starting with the words; "I decided to carry out *Unternehmen Zitadelle* as the first

offensive of this year… The battle of Kursk shall be beaten with the best units, leaders and weapons and with greatest ammunition effort to achieve a quick and resounding success. The victory at Kursk must be a signal to the entire world…

18 April 1943
… Today the new 9th *Armee* changes its code name '*Festungsstab* 11' (fortress staff 11) in G*ruppe Weiss* (group white)… Reinforcements to come include 900 engineers, the StuG Abt 177 and 20 PzKpfw IV [lang]… Under consideration of our own Panzer situation and strength of the enemy forces, the commander in chief urgently demands allocation of 101 heavy tanks… Another bad surprise is the fact that 4th PzDiv is affected by a typhus epidemic endangering the unit´s efficiency.

19 April 1943
… Unfortunately a message has reached the *Heeresgruppe* that the deployment of heavy tank units already promised were rejected by the OKH.'

How decisive the German offensive against Kursk was, is confirmed by the comments of the Commander-in-Chief (C-in-C), who relentlessly analyzes the overall strategic situation:

'20 April 1943
Führer's birthday. On this occasion the commander in chief holds a parade… The fighting in this summer will get us nearer to a decisive victory in the east. This is, however, necessary. The situation of the German-Italian troops in the bridgehead of North Africa (Tunis) is most severe. An invasion at both the south-european coast and the Atlantic coast gets more and more likely. At the same time the enemy launched a strong airborne offensive against the occupied areas in the west, and western Germany. Our effective trump card is the *U-Boot Waffe* [submarine force]… The strongest and most dangerous adversary, however, remains the Russian, who is not separated from Europe by a protecting ocean, but by the living edge of the German Wehrmacht. This danger in the east, which was glaringly high-lighted by the recent uncovering of the mass murders of Polish officers at Katyn, can only be stopped by a total victory. The battle of Kursk will be an important step on this tough route…'

In an entry on this same day, it was reported that there had been a serious dispute between himself and C-in-C *Heeresgruppe*. While the latter and the OKH refuse any further delays as well as reinforcements with men and material, Model considered one or other of these to be necessary and threatened to resign. After this dispute, *Heeresgruppe* reluctantly agreed with Model wish for a 14 day delay and reported this to the OKH. The decision was backed up with an 'unfavorable' weather forecast.

The war diary continues:

> '21 May 1943
> … *Chef Heeresgruppe* indicates to *Chef* 9 (Model) that the personal and material situation of his units has never been better, with 227 Panzer and 120 *Sturmgeschütze*.
>
> 23 May 1943
> The tension between AOK 9 and its super-ordinated authorities have dissolved… General Zeitzler announced a further *Panzerabteilung* with 50 Panzer IV [lang], a further PzAbt with 20 Tigers and 25 PzKpfw III, a StuG Abt with 40 StuGs and 'some' remote-controlled tanks for 9.*Armee*.'

This is the first hint of the deployment of sPzAbt 505 and PzKp (Fkl) 312 to the 9th Army.

> '26 April 1943
> …*Chef Heeresgruppe* informs of a two days delay for the 'vacation' (beginning of the attack). The AOK is relieved…
>
> 29 April 1943
> … following the special wish of *Reichsmarschall* Göring, half of the AA ordnance of 12 FlaK Div will be placed at the disposal of AOK 9 for ground combat purposes…'

The weather during the following days became worse, heavy rain affected the ground, turning the *Schwarzerde* (black earth) areas into a quagmire. This led to problems with deployment and supply of troops and equipment. The weather forecast did not show any improvement for the next few days; the earliest possible date for the attack would be 9 May.

> '30 April 1943
> … *Heeresgruppe* demands that the combat readiness of Tiger-*Abteilung* 505 be ensured by all means. Possibly the *Panzerwaffe* will be further reinforced: Today a colonel from the inspector of the *Panzerwaffe* arrived. He was ordered to evaluate the attack terrain in relation to the possibility of deploying 90 super-heavy Panzer ("Ferdinand"). According to the result of these evaluations, these shall be deployed either with the 9.Armee or with the attack army of *Heeresgruppe Süd*. Relating to their mobility, these tanks have several technical shortcomings. So they are suited for limited-scale breakthrough missions only; long-range operations are not possible. The haulage of these vehicles will delay a great number of convoys, hindering other important transport; the army looks at this 'gift' with mixed feelings.'

This short paragraph reveals that the deployment of the sPzJg Ferdinand was seen as very critical by the OKW, and 9th Army which would use this

Ferdinand '121', from sPzJgAbt 653, parked under the protective cover of large trees. The number is stencilled in black outline, making it difficult to spot. Contrary to that, vehicles in sPzJgAbt 654 used white numerals, making recognition from a distance easier. (Anderson)

vehicle in combat. The Ferdinand was neither troop-compliant nor ready for action on the Eastern Front. On the other hand it becomes clear that the Germans had exhausted their industrial strength: The Ferdinand had to be sent in to action. Again from the war diary:

'4 May 1943
Cataclysmic news is in the offing! Although 'the date' is still in effect… after a call from C*hef Heeresgruppe* we are made aware that a postponement of '*Zitadelle*' has already been decided by the OKH. The new date is not certain, possibly the attack is delayed by long time, e.g. several weeks.

25 June 1943
This day brings unexpected heavy attacks against the 383.InfDiv… Since we expect the entry of the X-time for *Zitadelle*… we initiated the deployment orders. This comprised the strict orders to carry out any movement only at night; any traffic shall use only on the main roads from Orel – Kromy and Kromy Smijevka. The question, which tanks shall be used on the first assault, is solved. In the first attack only sPzAbt 505 (Tiger) with PzKp (Fkl) 312, furthermore PzJgRgt 656 with two remote-controlled tank units…

> 27 June 1943
> Deployment according to directive '*Zitadelle*' are put into effect… The only reason for a further postponement of the attack is the weather, or a pre-emptive offensive launched by the enemy. It is likely that none of these events will occur. After lasting months, the preparations for the attack are completed, only few items remain to be done. We applied to the army group that sPzAbt 505 can retain the surplus PzKpfw III L/60 which were intended to be given up. Eventually, the orders covering recognition signals for own vehicles against the *Luftwaffe* (swastika flag, orange smoke) were again clarified.'

It seems the commander in chief of 9th Army had to argue to retain even a single tank, evidence of the critical armaments situation.

'29 June 1943
The day proceeded quietly, and so the deployment of the units to their assembly areas near to the front ran smoothly according to the planning. The weather (cloudy with rain) is favourable, since the enemy´s air reconnaissance is hindered and the dust formation of our own vehicles is reduced. A great problem is the noise. This is of great importance because the 'Ferdinands' (Porsche-Tiger), which travel on the Kromy to Smijewka road, have a very loud engine noise which can be heard at a distance of 30km. Deployment of patrolling aircraft over this concentration area is planned…

2 July 1943
… The noise 'camouflage' to cover the approach of the 'Ferdinands' by aircraft succeeded only partially, since these had to stop flying because of

Overleaf:
Members of the workshop company in sPzJgAbt 653, spray-paint a camouflage scheme on a *Panzerjäger* Ferdinand. All the Borgward B IV *Ladungsträger* (demolition charge carrier) are painted in standard dark yellow. Note the dents in the front plate of the explosive charge container, an indication of the thin metal used. The leading vehicle is an Ausf A and is fitted with rubber track pads, the following vehicles are all Ausf B fitted with dry pin-type tracks. (Anderson)

Supplies of fuel and ammunition are delivered from a Büssing-NAG truck. The operational range of the Ferdinand was severely restricted by the excessive fuel consumption of the Maybach HL-120 engines. (Münch)

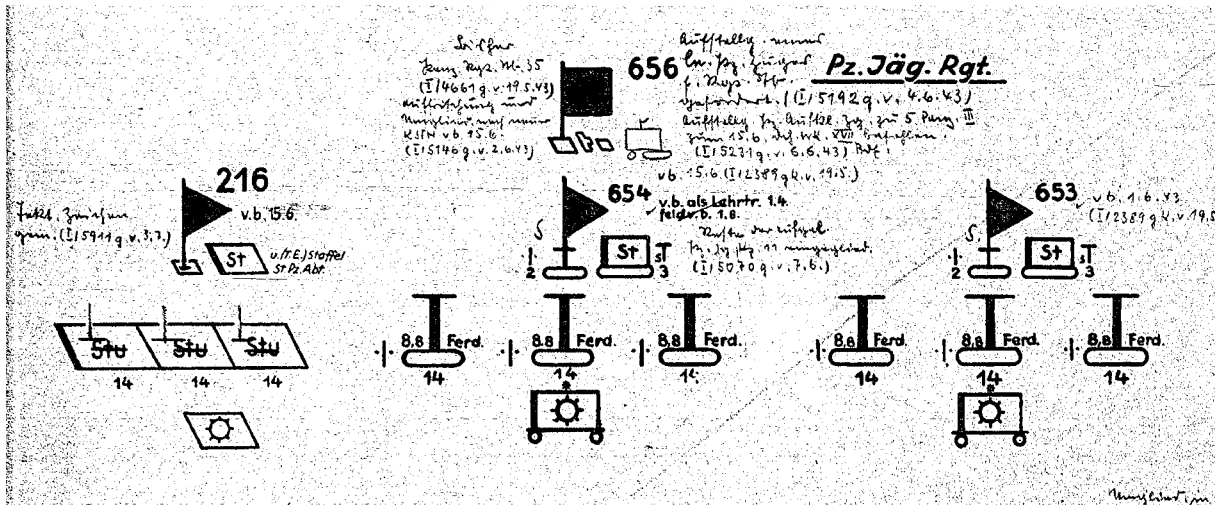
the weather. The weather for the coming night is predicted to be similar, the 'Ferdinands' will remain at their reached objectives… At the same time *Chef 9* has ordered that the *Sturmgeschütze* of 36.InfDiv join the noise 'camouflage'. Despite all achievements we must assume that disguising the noise will not be fully effective.

4 July 1943
During today's night the planned deployment will be finished… The OB (supreme commander) spent all day at the front meeting with commanding generals and division commanders. The representations made by different authorities thought that the enemy will decentralize his artillery forces to the rear to escape the effect of German artillery and air force; this could be confirmed by immediate air reconnaissance…

Heeresgruppe Süd has already started '*Zitadelle*' with one army corps, the planned day´s objectives have been reached without meeting serious enemy resistance… In a few hours the *Gruppe Weiss*, as the new 9th army, will form up for battle. Officers and men will follow the Führer's appeal and are conscious that with this first attack of the year 1943 a struggle of fateful importance will begin. I have full confidence in the newly-developed weapons and that the 9th Army will stand up to the challenge. The campaign will be a hard one, as the enemy is ready to fight and is heavily armed and has great reserves at his disposal…'

Hitler and Zeitzler were sure that the *Panzerwaffe* would be a decisive force during the battle. Both expected a lot from the newly-developed weapons, the PzKpfw V Panther medium tank, the PzKpfw VI Tiger heavy tank and the *schwere Panzerjäger* Tiger (P), or Ferdinand.

In early 1943, it was unclear to what units were to be issued with the sPzJg Ferdinand. The artillery expected the Ferdinand to come under their



Tigers were normally loaded on rail with narrow transport tracks. This tank of sPzAbt 505 has still the wide combat tracks fitted, which considerably exceeded the loading gauge. (Anderson)

control, as was originally decided in December 1942. The designation *schweres Sturmgeschütz* came from this assignment. Three units, StuG-Abt 190, 197 and 600 had been selected to be equipped with 30 Ferdinand each and were re-designated as *schwere Sturmgeschütz-Abteilungen*. The respective organizational structures were adapted.

This decision was understandable, since Ferdinands and *Sturmgeschütze* shared basic characteristics. Both were turret-less vehicles and the armament on both types had only a limited traverse. So the proven tactics of the *Sturmartillerie* would apply perfectly to the Ferdinand. The *Sturmartillerie* would soon receive a new, superior tank with which to attack the increasing number of Russian tanks.

However, the OKW was to decide differently. When Guderian become Inspector General of the armoured forces on 28 February 1943, he demanded the transformation of all tanks, including all *Sturmgeschütze* under his command. This, however, was rejected. Only the heavy StuG-Abt equipped with the Ferdinands were to be transferred to the *Panzerwaffe*.

During the deployment at Kursk, PzKpfw VI Tiger Ausf E tanks in sPzAbt 505 were wrapped around with barbed wire, which effectively prevented Russian close-combat teams from getting near the tank. (Anderson)

Guderian was also successful in calling in the new *Sturmpanzer*. These vehicles were indeed heavy assault guns, and would had perfectly fitted the Sturmartillerie combat tactics. Instead, these offensive support weapons were also put under control of the *Panzerwaffe*.

Guderian subsequently decided to establish two units for the *schwere Panzerjäger* Ferdinand. StuGAbt 190 and 600 were disbanded, but both units remained standard StuG units, and were re-equipped with *Sturmgeschütz* III. The sStuGAbt 197, however, was now re-organized as a tank destroyer battalion designated sPzJgAbt 653. A second unit, PzJgAbt 654 was formed on 22 March 1943, and was subsequently designated sPzJgAbt 654.

Both units were to be used as a combined force. For this reason a command formation, PzJgRgt 656 (tank destroyer regiment), was established on 8 June 1943. It was intended to use this regiment as an ultimate means to break through heavily-fortified enemy positions. The heavily armoured and well-armed sPzJg Ferdinand seemed to be the perfect vehicle for this type of attack. However, the regiment was to be further reinforced by StuPzAbt 216, a unit equipped with the highly-specialized *Sturmpanzer*.

As a result, sPzJgAbt 653 became I./PzJgRgt 656, sPzJgAbt 654 became II./PzJgRgt 656 and StuPzAbt 216 became III./PzJgRgt 656.

Apparently the military planners felt it necessary to reinforce this unit. Thus, immediately before the Kursk campaign, two independent demolition vehicle companies, PzKp (Fkl) 313 and 314 were placed directly under the command of regimental staff.

A Ferdinand being driven at speed, after the attack on the Kursk salient, kicking-up a large cloud of dust. Note the periscopes on the hatch above the driver's head. The muzzle brake has been covered to protect the gun barrel against the ingress of dust. (Hoppe)

The crew of this Ferdinand of 1./sPzJgAbt 653, tactical number 134, examine a B IV Ausf B. Both vehicles are parked under the cover of a line of trees, which allows some protection against reconnaissance aircraft. (Münch)

Kursk – PzJgRgt 656 on the attack

3

In June 1943, the German closed ranks at the Kursk salient. Through to the end of the month the subunits of PzJgRgt 656 arrived at the northern flank near the city of Orel as an important part of 9th Army. Together with sPzAbt 505, the regiment formed the sledgehammer that would enable the German troops to break through the heavily fortified Russian lines. On 4 July, the day before the operation started, PzJgRgt 656 reported its combat strength (armoureded vehicles only):

	Staff 656	I./656	II./656	III./656	PzKp (Fkl) 313	PzKp (Fkl) 314
SdKfz 250/5	5					
SdKfz 251/8		1	1	1		
PzBefWg III/J command tank	3	1	1			
PzKpfw II	3					
PzKpfw III 5 cm L/42	2	5	5			
sPzJg Ferdinand		45	45			
BefStuPz IV command tank				3		
StuPz IV				42		
StuG III					10	
PzKpfw III 5 cm L/60				7		
PzKpw III 7,5 cmL/24				3		
Borgward B IV					36	36

Showing a flag, this Ferdinand of '653', tactical number 131, is damaged and needs help. The large maintenance hatch has either been removed, or blown off by an internal explosion. The large and suspicious recognition marking is evident. (Anderson)

On 20 June 1943, sPzAbt 505 reported their strength near Orel as two companies with around 28 PzKpfw VI Tiger heavy tanks operational and three being repaired in the workshops. Its third company equipped with 14 PzKpfw VI Tigers was expected to move up soon. A strength report dated 5 July 1943, confirms that the abteilung was combat ready with 45 Tigers at the beginning of the operation.

The PzKp (Fkl) 312 with 36 *Funklenkpanzer* (SdKfz 301) and ten StuG III control vehicles was attached to sPzAbt 505.

The attack by the 9th Army under *Generalfeldmarschall* Model started at 03.30hrs on 5 July 1943. From the war diary of AOK 9:

> '5 July 1943.
> In bright summer weather *Gruppe Weiss* has lifted its camouflage coat and started the *Zitadelle* operation as part of *9.Armee*. With the complete assistance of the *Luftwaffe*, 41.*Panzerkorps* and 23.*Armeekorps* launched their advance at 03.30hrs, followed at 06.30hrs by 46. and 47.*Panzerkorps*, also backed by concentrated attack of the combined air force… Despite full defensive readiness the enemy seemed to be fully surprised…
>
> By 07.00hrs, all army corps proceeded with good success… Later reports revealed that as the advance continued resistance by the enemy grew, the corps faced very heavy defensive artillery and grenade launcher fire…
> Sadly, the situation at the 23.*Armeekorps*, which initially gained terrain in rapid advance, decisively worsened during the afternoon. The spearhead of the corps was hit by massive counterattacks, and furthermore attacked in the rear by enemy forces hidden in woodland. This caused severe losses. Since no reserves were at hand, and since no deployment of forces from the second or third encounters were available in order to proceed with the planned attack, the commanding general decided to go on to the defence in a shortened line…'

This entry is not surprising. Despite the concentration of all available German forces, no or only few reserves were at hand to meet any unexpected situations. This, however, was a proof of the irresponsible planning for the complete offensive. While the repeated delays did help to strengthen the German arsenal with new and more sophisticated weaponry, the lost time let the Soviet military discover the operation, enabling them to build-up defensive positions, and, more importantly, mobilize great reserves. Furthermore, the delay should move the battle nearer to the date of the planned Allied landings in the summer of 1943. At the end of operations on the first day of *Zitadelle*, the AOK staff reports:

> '… The corps will carry on the attack tomorrow morning in the same direction; the left flank of the 23.*Armeekorps* will change over to the defence… In all, the 9.*Armee* can be content with the success of the first day. Apart of the setback to 23.*Armeekorps* (which was expected), the spearhead at the focal points made good progress. The first line of resistance was defeated, the raid in the second line succeeded, all enemy divisions deployed in forward positions have been annihilated… The army looks forward to the coming days of combat…'

Ferdinand '702' of sPzJgAbt 654 is driven at speed to the 'jump-off' position for an attack. The gun has been released from the travelling cradle. The tactical number painted in white is clearly visible; the vehicle is painted in the unit's 'spider's web' camouflage scheme. (Jaugitz)

This spearhead into the Soviet defensive lines was made possible by deploying the Ferdinand and *Sturmpanzer*. These 'wonder weapons', with impenetrable armour and very powerful armament, allowed the German attack to 'punch through' the Soviet frontline defences. But was the situation really that simple? At the end of the day, the German assault halted at the second line, while the flanking forces were in the remnants of the first line. The flanks of the Soviet line became the scene of localized, but grueling counterattacks, especially from the east. At the end of the day, the Ferdinands and *Sturmpanzer* remained where they were at the front after the attack. A retreat was not possible without giving up any of the vital ground terrain gained during the fierce fighting. The new weapons had no means of self-defence – each tank had to be guarded by accompanying infantry – soft targets for any Soviet weapon: This first night of *Zitadelle* must have been hell. The Soviet defenders had time to react – tanks and anti-tank artillery were concentrated at the breaks in the front. Again the war diary:

> '6 July 1943
> The second day of the German offensive was characterized by very heavy tank encounters, building up to an immense tank battle in front of the corps at the focal point. With surprising speed, the enemy was able to throw his regional reserves, but also great parts of his operative reserves into the battle. Obviously he tries to halt the German success, and waits to decide before a (German) breakthrough into

the open field. From the German point of view this development is appreciated, although it temporarily avoids an expansion of the succeeded breakthrough. It is better to have the decisive battle, without the strong enemy reserves especially his tank formations, now in its initial phase. At this time German tank units are at their full strength, our supply routes are short, also the flanks are short.

Already by 09.00hrs the 1c (operations officer) receives evidence that an entire Russian tank corps with at least 100 tanks are to assemble in the region of Olchovatka. This report is enhanced at 11.05hrs by the identification of the units, namely the 16. and 19.Tank corps with 150 tanks, which have already attacked the German bridgehead at Ssaborovka…

In the main the army must be content with the combat success of the second day. Even if we could not gain terrain, we managed to deepen the wedge in the focal point and could improve the situation at the screening flanks…. The German soldier and the new German attack weapons, especially the heavy tanks Tiger and Ferdinand, proved again to be superior…'

This appreciation of the situation on the second day of the attack is indeed surprising. It contains, more or less, parts of an early confession of a failure. The assault at Kursk was planned using proven German assault tactics. With the greatest possible number of armoured forces, backed by a concentration of the *Luftwaffe* never seen since the French campaign or the Battle of Britain, a quick breakthrough of the Soviet defensive lines should be achievable. This was to be followed by a rapid encirclement and pursuit designed to annihilate enemy forces. Obviously, *Zitadelle* was intended to be a 'textbook' German attack.

The crew of this Ferdinand from sPzJgAbt 653 has camouflaged their vehicle by covering it with foliage. It appears that a purpose-made tarpaulin has been placed over the grilles on the engine compartment to prevent water entering. (Münch)

However, there was never a 'Plan B'. The Germans knew that they did not have enough operational reserves to react when something went wrong:

'7 July 1943
The tank battle starting at the German focal point yesterday has not yet ended. In this conflict the enemy has experienced severe losses regarding men and tanks to reasonable own losses. The 47.P*anzerkorps* alone scored 157 enemy tanks destroyed … In the course of the afternoon the enemy has to give way to our spearheading tanks after heavy losses, although the enemy's tank front could not be fully penetrated. After all, the third enemy position was captured, we hope to make best used of this situation during the next days…

8 July 1943
This day brings the prosecution of the great *Panzerschlacht* (tank combat) in the focal point, and ends with a very strained situation, which can broaden to the first crisis of this battle. The attack by the 47.*Panzerkorps* in the early morning hours, with the engagement of the fresh 4.PzDiv, gained terrain at the beginning… During the second half of the day the resistance of the enemy is getting more and more resolute. Air photographs and a captured enemy map show that the decisive ridge south-west of Olchovatka, which was today´s objective, has been reinforced by dug-in tanks, artillery and anti-tank gun positions in a strongly fortified system. In a first assault by our Panzers these positions could not be taken. To capture this ridge, which blocks the breakthrough, we will need a thoroughly planned attack by strong artillery and combined air power. A change in the weather during the afternoon totally halts the commitment of the *Luftwaffe*. At the same time the Panzer spearhead is faced by strong concentrated enemy tank attacks. For this reason the Panzer attack was cancelled. In the following hours, the tanks stood inactive in front of the Russian positions, which fired from the ridge with all guns blazing – an undeniable failure of the brigade commander. This resulted in severe losses, including Tigers. Furthermore, due to the enemy's counterattacks the single Panzer units dispersed, as the respective leaders lost control…

The *Oberbefehlshaber* Model, (OB – supreme commander) has to face the question, as to whether on the coming day:
a. the attack shall continue according to plan
b. or with a changed approach,
c. or a temporary transition to the defensive to prepare a new attack by 10 July…'

This was in fact the end of the offensive by the 9th Army in the north of the Kursk salient. The momentum of the attack was lost; the flanks of the spearhead were harassed. While the few German reserves melted away, the Russians were able to bring up new forces. According the war diary, the western flank was menaced by 70 Soviet tanks, and the eastern flank by 100 enemy tanks.

'… The OB came to the grave decision, to halt the attack on the ridge in this fatal situation to reorganize the units by pulling out parts of 4.PzDiv and to improve

A Ferdinand of sPzJgAbt 653 begins to move up to the battlefront, leaving behind the customary thick cloud of dust. A Ford *Maultier* (Mule) supply truck is parked near a line of trees; the battle readiness of *schwere Panzerjäger* units relied on a regular supply fuel, lubricants, and ammunition. Workshop facilities were also vitally important. (Anderson)

the initial situation for a new successful attack on 10 July… The critical situation at Ponyri can be solved with the help of the Ferdinands…

9 July 1943
The fifth day of the battle brings a pause, which has been caused by yesterday´s development of the situation…'

Model, Zeitzler and Busch, the supreme commander of *Heeresgruppe Mitte* (Army Group, Centre) realized that the fierce and skillful Soviet resistance and the very special conditions found at Kursk had thwarted the previously successful German combat tactics. Model demanded a further concentration of the depleted German forces to break through the ridge positions. However, it was obvious that a further advance would be slowed down.

From the war diary:

'… Even after the clearing the ridge we expect only a very slow advance, accordingly we will not be able to reach the final objective Kursk in time. The battle constitutes a new character of a 'rolling war of attrition' as it is a question of the sheer number of men, material and ammunition. Without a continuous and sufficient supply a successful conclusion of this operation will not be possible… The army group agrees of this evaluation, but underlines the necessity to win this battle in order to annihilate the growing number of Russian reserves…'

A tragic misrepresentation of the facts! On 10 July 1943, the war diary noted:

'Today is the sixth day of the battle and the tense situation turned into a crisis, which began to show yesterday. It is the first crisis in this battle. Despite

re-arranging and re-organization of the attack forces, despite all artillery guns being brought up and despite being combined with the deployment of the *Luftwaffe*, we have not succeeded in reaching the objectives at the focal point… We must admit that the German assault became stuck…'

11 July 1943
… However, the brisk and successful counterattack of 23.*Armeekorps* (78. *Sturmdivision*), supported by Ferdinands in the Trosna area shows the speed and the superiority of the German troops over the 'Red' adversary…

13 July 1943
… Within 12 hours the 9.Armee had make deep reductions regarding its subunits: 12.PzDiv, 36.InfDiv, 18.PzDiv, 20PzDiv and sArtAbt 848 were released to 2.PzArmee… We feel that the dissolution of this focal point will lead to a long-term pause, if not the cancellation of the operation (*Zitadelle*)…'

On 10 July 1943, the Allies launched Operation *Husky*, the invasion of Sicily. The OKH was forced to reinforce the troops stationed in Italy, and dispatched units from the Russian Front causing the Kursk offensive to be cancelled.

A tri-tone camouflage was used on some Ferdinands of sPzJgAbt 653. Unlike sPzJgAbt 654 its tactical numbers were stenciled in black outlined, which were very difficult to recognize. (Anderson)

The repeated delays in operational planning and to the launch date proved to be decisive. The failed offensive at the Kursk salient must be seen as a serious setback, if not a defeat. Although overall German losses were not that grave, the counter-offensive by Soviet forces, launched almost immediately, heralded the slow, but inevitable retreat of all German formations from the eastern front.

Ferdinand and *Sturmpanzer* – a first evaluation

Looking in retrospect at the 'special weaponry' introduced at Kursk, it is interesting to note the reactions of respective units contained in the few after action reports available. On 17 July 1943, the inspector general of the armoured troops, Guderian, sent a memorandum to the chief of the general staff of the army, General Zeitzler. In his report he describes the shortcomings of the new weapons during combat at Kursk:

'Combat experiences of the sPzJgRgt 656 (Tiger Porsche and *Sturmpanzer*)

I. Combat

The sPzJgRgt 656, employed with the 9.*Armee*, was integrated with the 86.InfDiv for the attack. Two *Panzerkompanien* (Fkl) were subordinated under the regiment to establish mine alleys through the anticipated mine fields. The very heavy artillery barrage (on the first day 100 heavy and 172 light guns, 386 rocket launchers and countless grenade launchers) smashed the attack by our infantry. The Ferdinands and *Sturmpanzer* were not able to push their attack in the depths

of the enemy positions, as the infantry had been halted. Thus the tanks had to stop in the middle of the battlefield, attracting concentrated artillery fire. The enemy artillery always found time to regroup and to reinforce. The missing secondary armament on the tanks negatively affected the tanks in combat. Subsequently, losses were high.

Total losses:

19 Ferdinand	most occurred due to direct artillery hits on the air-intake gratings, four vehicles burnt out following electrical short-circuiting without enemy effort.
10 *Sturmpanzer*	most losses due to self-destruction by the crew after mine damageor artillery hits.

Temporary losses due to mine damage:

40 Ferdinands: 20 had been repaired by 11 July.
17 *Sturmpanzer*: nine had been repaired by 11 July.

At the beginning of the attack only a few track links and some running wheels and suspension arms were damaged by mine damage. These losses took place on vehicles deployed with the two PzKp (Fkl) radio-controlled demolition vehicle companies.

The PzKp (Fkl) could not be operated due to the massive artillery barrage. A number of the control and demolition vehicles were put out of action in the

An 8.8cm *Fliegerabwehrkanone* 36 (8.8cm FlaK 36) towed by an SdKfz 7 half-track vehicle passes engineers working to repair a Ferdinand. (PK photo)

assembly area. Each company cleared two mine lanes each. The marking of these lanes was not possible due to heavy artillery fire. Hence, the lanes could not be observed by Ferdinand crews.

We require a further development of the Fkl-*Waffe*, and the construction of mine rollers.

Despite high losses, the Ferdinands and *Sturmpanzer* always reached the assigned objectives. The StuPzAbt could penetrate the third line of positions, 5km ahead their own infantry. This successful advance had to be abandoned, because neither Panzer reserves nor infantry could follow.

These facts show clearly that a deciding success against an enemy in deeply-staggered battle position and covered by heavy artillery fire cannot be achieved by cooperation with standard infantry formations.

If the sPzJgRgt would have been linked with a *Panzerdivision* and *Panzergrenadiere* (with armoured personnel carriers) to rapidly follow in several waves, the assault would have been successful with far fewer losses.'

A Ferdinand, tactical number 722, of sPzJgAbt 654 is parked in a hollow, which offers some protection against being spotted by the enemy. (Jaugitz)

To identify Ferdinands from behind on the battlefield, a complex system of geometric markings was introduced. In the background is a Fries 15-ton gantry crane folded down ready to be moved to another location. (PK-photo)

In his report, Guderian shows that German total losses were not that catastrophic. However, he did harshly criticize the tactics which were chosen for the deployment of the new weapons, of which so much was expected. Both *Sturmpanzer* and Ferdinand were able to penetrate two Russian defensive lines and broke into a third and last one. Thus these weapons were able to do what they were intended for – were they at last a complete, or at least a partial success? On the technical side, the report continues:

'Detailed experiences of the deployment of sPzJgRgt 656

1.) Weaponry:
The main gun did fully prove effective. The absence of an MG turned out to be a mistake. To counter this disadvantage, 12 PzKpfw III were deployed alongside the Ferdinands as a close-protection measure to neutralize soft [infantry] targets.

2.) Armour:
No cases of the frontal armour being penetrated have been reported. The side armour has been penetrated, in some cases by 7.62cm at close ranges. The engine cover and the roof of the fighting compartment was occasionally penetrated by artillery hits.
Request: Covering of the gratings by armoured plates of 15 – 20mm, the open sides must be protected by a wire mesh. These armoured covers simultaneously protect the engine compartment against rain and also prevent the failure of the electric components by short circuiting.

Ferdinand, tactical number 534, from sPzJgAbt 654 on the Ukrainian steppe; the small engine access hatches in front of the superstructure have been opened to allow more air into the compartment. The deflector plate in front of the ball mount was fitted on all Ferdinands shortly before the Kursk campaign. (Anderson)

3.) Radio system
The operation of the radio was severely jammed by the electrical equipment. This was a continuous problem.

4.) *Sturmpanzer*
The weapon has absolutely proved its worth. The missing MG is disadvantageous. Single soft targets were either engaged with the 15cm gun or not all.

5.) *Panzerschürzen*
The *Panzerschürzen* for PzKpfw III, IV and *Sturmgeschütz* were refused by the troop before beginning of the operation, because they were easily lost due to the weakness of their attachments. However, soon after operations began the need for extra protection against anti-tank rifles emerged. The troop is now convinced. The attachments were provisionally improved.'

Like the PzKpfw VI Tiger Ausf E heavy tank, the sPzJg Ferdinand mounted superior anti-tank ordnance. The 8.8cm PaK 43/2, already used in the highly-successful *Panzerjäger Hornisse* (SdKfz 164), showed extraordinary performance. Even heavy enemy tanks such as the Soviet KV could be engaged at ranges of more than 2,000m; veterans remember that on average only two or three shells were necessary for a kill.

The missing close-defence weapon was a great disadvantage. Except some pistol ports for a light weapons, there was no way to stop enemy infantry getting near to the tank. Some vehicles were provided with a fitment for the open breech, to allow an MG to be fired through the barrel. The MG was aimed by the gunner via *Selbstfahrlafette Zielfernrohr* 1a (Sfl ZF 1a) gun sight. Indeed a strange situation.

The armoured protection was basically very good. Even large calibre ordnance failed to penetrate the 200mm front armour. However, the alleged smaller design flaws proved to be more dangerous. A number of Ferdinands were destroyed because the protective grilles in the engine cover plates were too open. Direct hits, shell splinters or the ubiquitous 'Molotov Cocktail' (a bottle filled with flammable liquid) could damage the delicate cooling system or other parts in the cramped engine compartment. If an engine was set on fire, an explosion was likely since the fuel tanks were placed at the sides of the engine compartment.

The driving characteristics of the Ferdinand can only be described as being delicate. The Russian trench system was deeply staggered. Anti-tank ditches were dug wherever possible. The vehicle could cross a trench some 2.6m wide and due to a good climbing ability these and other obstacles were not a problem. However, a serious problem was heavily cratered ground which made any movement dangerous, since the driver had only limited vision. Steep inclines could halt the tank. After action reports (see bibliography, Münch, *Operational History of sPzAbt 653*) tell that the frequent rain, typical for the Ukrainian summer, quickly turned the black earth in quagmire. The excessive weight of the Ferdinand pressed the tank into the mud, and when the hull touched the ground it became inevitably stuck. While the German recovery services did an exceptionally good job and managed to haul back most bogged-down Ferdinands, some of these precious vehicles remained in the frontline and had to be destroyed. Others, being immobilized and separated from accompanying support tanks or infantry, fell victim to enemy artillery or anti-tank teams.

A great disadvantage was the fact that the Ferdinand could not turn tightly around its centre point. If the driver attempted to do so in deep mud or it was likely that a track would break or thrown off the drive sprocket. Often enough, final drives or even worse, the electric motors would be damaged.

Sturmpanzer

The 15cm *Sturmpanzer* was to be deployed as a breakthrough weapon in the same manner as the Ferdinand. While the latter could defeat both armoured vehicles and soft targets, the *Sturmpanzer* mounting the 15cm *Sturmhaubitze* 43 was designed to destroy even the most heavily-fortified positions. Direct gun-laying was standard and the impact of its ordnance was very efficient. Thus the firepower of a heavy infantry gun was available where and when it was needed.

Again the level of armoured protection was regarded to be most important. While the front armour and that of the superstructure was thick enough to withstand the average Russian 7.62cm anti-tank weapon; the hull was not.

A Ferdinand of sPzJgRgt 656 and one of the PzKpfw III *Begleitpanzer* attached to 12.Pz Div being prepared for combat. The PzKpfw III was attached to provide close-support fire for the Ferdinand and *Sturmpanzer*. At left is a *Leitpanzer* III (7.5cm L/24) of PzKp 313 (Fkl). (Wilhelm)

The vehicles mobility was comparable to that of the Ferdinand. The vehicles weight and associated high ground pressure lead to the same problems in mud or snow. Furthermore, since most *Sturmpanzer* were built on refurbished PzKPfw IV hulls, the drive train was prone to frequent mechanical breakdowns.

The Fkl weapon

A decisive role was given to the radio-controlled demolition charge carriers of PzAbt (Fkl) 301. The vehicle was intended to clear lines through minefields, which were expected in great numbers. How did they perform?

The commander of PzAbt (Fkl) 301, Major Reinel, wrote in an after action report, dated 23 July 1943, of experience gained in the Kursk campaign.

> 'Memorandum about the further deployment of the Fkl-*Waffe*; also the evaluation of its deployment on *Unternehmen Zitadelle* from 3 until 8 July 1943.
>
> In the attack sector of AOK 9 three independent PzKp (Fkl) were deployed during the attack south of Orel. Two companies were subordinated to PzJgRgt 656 and one company to sPzAbt 505. The companies were deployed completely under leadership of the companies commanders, which coordinated the platoons with the commander of the lead unit at the front. Their tactical mission was identical for all companies – pressing ahead active combat reconnaissance, detecting of mine fields and blowing up mines to make paths, destruction of targets difficult to fight such as dug-in anti-tank weapons and super heavy enemy tanks.

The inquiry made at the troop after the deployment showed the following results:

1) Deployment of PzKp (Fkl) 314 with I./PzJgRgt 656
A dense and deeply staggered mine field blocked the access to the Russian main line of resistance, which was at the same time covered by a heavy artillery barrage. According to the attack order the company started clearing three mine paths. Due to the great depth of the mine fields 12 B IV were destroyed. The paths created were crossed by the Leitpanzer (control vehicles) without being damaged by mines. Due to the heavy artillery fire the pioneers were not able to follow, the marking of the paths by the pioneers according to the attack order, was not carried out. This caused the attack to halt. The slowly following sPzJg (Ferdinand) were unable to detect the cleared mine paths, since artillery impacts covered them over. On firm ground the traces of the B IV´s tracks were not recognizable either. Now several Ferdinands were damaged by mines despite the cleared mine paths.
In the further course of the attack, seven B IVs were totally destroyed. Of these, one fell into a ditch occupied by enemy infantry, which attacked the B IV with hand grenades and close combat munitions. All were killed when the B IV exploded.
Two B IVs were guided into a small wood strongly held by enemy infantry and detonated. After that no further resistance was noticed.
During the attack, four B IVs were lost due to artillery hits, one with inert fuses detonated, three without fuses slowly burnt out.

The Orel to Kursk railway line was of vital importance to both sides, and was the site of heavy fighting as German forces sought to retain this vital transport link. (Jaugitz)

2) Deployment of PzKp (Fkl) 313 with II./PzJgRgt 656:
The deployment took place under the same circumstances. While approaching the main line of resistance, one section ran into an unmarked own mine field, four B IVs were lost. Another section had to clear the path in the Russian minefield; four further B IVs were expended. One B IV in an assembly position was hit by enemy artillery and detonated. This caused two other B IVs to catch fire and then explode. The reason for these losses could not be entirely identified, since the respective drivers and pioneers also died. It is anticipated that the fuses had already been inserted in the explosive charge, and were ignited by the heat of the fire.

A further B IV was hit by artillery shells while being guided through the minefield and exploded.
During the further course of the attack fortified anti-tank gun positions and a bunker were destroyed by three B IVs, securing both an actual and morale success.

2) Deployment of PzKp (Fkl) 312 with s PzAbt 505:
The company was deployed ahead of the Tiger tanks for combat reconnaissance in accordance to tactical requirements and shows the following successful outcome:

One B IV was deployed at 800m range against an emplacement of two or three anti-tank guns. The guns were totally destroyed by the detonation including some infantry forces.

One B IV was deployed at 400m range against a T-34. The T-34 was rammed and totally destroyed in the subsequent detonation.

Two B IVs were guided to a 400 – 600m range against three heavy gun bunkers, which were totally destroyed in the detonation. One B IV reached and destroyed the target although being set on fire.

Two B IVs were deployed against an AT gun and an infantry gun position at range of 800m, both were destroyed.

One B IV reached an enemy position, where it was set on fire by a 'Molotov cocktail'. The following explosion had a devastating effect on the enemy position.

On four occasions B IVs were put out of action while being guided. The unit was able to retrieve two Fkl-devices, the remaining two burnt out. Over a period of two days, 20 B IVs were used in combat.

Two Ferdinands and two *Sturmpanzer* advance the wide open steppe battlefield. Columns of smoke rise from targets hit by German forces. (Jaugitz)

Tactical evaluation of the combat:

1) The Fkl companies are a superb attack weapon. Deployments took place in two cases with sPzJg and only once case with a dedicated attack weapon, a Tiger Abt. When linked with sPzJg, the reduced mobility of the Ferdinands proved to be impeding for the progress of the attacking Fkl unit. The latter rapidly gained ground. Due to the slowly following Ferdinands this success could not be exploited. The distant control tanks had to wait for the Ferdinands before advancing, and were exposed to enemy fire resulting in heavy losses.

Cooperation with the Tiger-Abt, a thoroughbred tank unit, proceeded much more favourably. Technically and tactically the Tigers were the better attack weapon, and gained ground effectively. The employment proved that the Fkl-*Waffe*, when linked with a thoroughbred tank unit, will guarantee full success.

2) The combat of the Fkl-companies 313 and 314 in combination with the sPzJgRgt 656 alongside the Orel-Kursk railway line took place against deeply-staggered enemy positions, which were heavily mined. The massive enemy artillery aggravated the attack considerably. Our own forces at this point could not suffice, compared with the strength of the enemy forces. This applies especially for the Fkl units. Both companies were deployed very broadly in the combat sector and each subordinated to a Ferdinand-Abteilung. They wore out their forces too quickly; the losses at the frontline could not be restored. There were no reserve forces to carry the thrust into the depths of the enemy´s main line of resistance. Even more, there were no mobile reserves for the Fkl leader to advance through the recognized weak points. The cooperation with the Ferdinand, essential for the overall performance, was in principle thoroughly practised. However, during combat this cooperation fractured caused by the heavy enemy fire. Instead of the energetic achievements of the Fkl leader, this cooperation could not be re-established over the complete course of action. The Fkl leader was unable to make clear his views to the commanders of the sPzJgAbt. Only a senior Fkl leader could have ensured the success.

Out of 12 control tanks eight were deployed in the frontlines. The remaining four had to be called up to follow to replace losses. Due to the absence of further reserves the attack trickled away and became stuck in the enemy's positions.

The investigations ensured that all responsible officers agreed on the fact that this focal point task would require the concentrated attack of the combined PzAbt (Fkl) 301:

Deployment of the entire Fkl-Abt with 2.Kp at the front lines and brisk tracking of the 3.Kp as reserve directly behind the frontally used companies. These companies will be used with two-thirds of their offensive power – four control tanks each positioned side by side – spaced over a distance of 2 to 3km. On a combat sector of this width, losses of control tanks can be easily replaced by the following reserves. Four to six breaches of sufficient width and depth in the

This Ferdinand from sPzJgAbt 652 has been hit several times by enemy artillery. The deflector plate for the ball mounting has been shattered, but it appears that the 200mm front armour has not been penetrated. (Netrebenko)

minefield can be cleared (during the Glasunovka mission only four breaches were cleared over a total width of 6km).

For a recognized focal point the foremost company has to be relieved by quickly locating the reserve company, when it loses its momentum. When this company has passed the mine breach, the thrust will be carried on into the depth of the combat sector. The relieved company will collect all parts still fit for combat and will now be classified as a reserve company.
Thanks to it being sufficiently equipped with leading and supply subunits (staff company, workshop section, etc.) efficient command is possible. Close connection, procurement of reserve material and the quick repair of broken down control tanks and radio-controlled demolition vehicles allow new combat in the shortest time. When employed within the scale of the Abteilung, the Fkl companies will not impose on the support echelons of other units, which cannot help them anyway due to their different equipment. All leaders of the subordinated Fkl-companies complained that they never found understanding or support in this so important fact by the officers of the command units. All would have preferred an employment within the entire Fkl *Abteilung*.

Thus the deployment of the complete Fkl-Abt would have had more success, however under the following premises:

Two knocked-out Ferdinands from sPzJgAbt 654 being inspected by Soviet infantry. Both have received multiple hits which have removed almost all external fittings. (Netrebenko)

3) During the attack at Glazunovka the little understanding of the larger unit (sPzJgRgt 656 Ferdinand) and the deficient cooperation were reason for the missing overall success. Although thoroughly prepared by map exercises and preliminary discussions no cooperation took place. However, under the impact of heavy enemy fire this will be always difficult. For this reason we demand further:

The Fkl-unit (*Abteilung*/battalion) has to be established powerful enough to achieve the initial success alone. This has to be held until the following troops can finally safeguard the terrain. For this reason the Fkl-unit has to be equipped with heavy and fast tanks (Tiger). With this material it can at the same time fight as a tank formation. The homogeneous equipment guarantees that the enemy cannot identify the control tanks guiding the demolition vehicles (during the Glazunovka mission the guiding *Sturmgeschütz* were quickly identified and engaged). Furthermore, the *Sturmgeschütze* cannot fulfill the dual role of control vehicle and main battle tank due to the non-rotating turret, the cramped interior (radio-control operator is also the gun loader) and the inadequate view out of the commander´s small cupola…
… During such dangerous missions the secret and precious Fkl transmitter devices has to be protected by installation in the best available tank…

Technical evaluation of the commitment:

In general, the Fkl equipment fulfilled the expectations. However, several single shortcomings emerged:

1) Control devices:
It is absolutely essential that the Fkl-device works at ranges up to 2,000m at minimum. The equipment available at present designed by Hell does not meet these demands. The practical range varies, and does not exceed 800 to 1,000m. The demolition vehicles can become uncontrollable and subsequently lost.

The receivers manufactured by Braun currently tested with PzAbt 301 (Fkl) fulfill these requirements.

The existing receivers suffered during the rail transport, they are not sufficiently secured against shocks… Remedy was possible by the troop´s workshop, but this demanded precious time before deployment.

The transmitter of the group leader (one control tank for four B IVs) must be furnished with a switchable set. Only in this way can other control tanks can take over command of the B IV if the leader's tank is knocked out, and thus carry on the attack.

2) Pioneer equipment:
The explosive devices on demolition tanks were repeatedly set on fire by hits. When the fuses were not inserted, the tanks slowly burnt out. However, with fuses inserted an immense explosion followed. Thus it is consequent to insert the fuses as late as possible, at beginning of the remote-control mission. To insert the three fuses, the driver has to lean out onto the front of the vehicle. During this time he is in danger, he could be killed or make mistakes while inserting the fuses due to nervous stress. We therefore demand the construction of a device which allows the insertion of the fuses in one movement from inside the vehicle.

The detonation while running over mines did not work properly in all cases. Some 25 percent of all vehicles which had run over mines did not explode as planned. The mistake could so far not be detected, since all the respective B IVs were lost.

The breaches in the minefield can be effectively marked by simple means. Either a coloured pigment can be put in the explosive charge, or the breach can be marked by a coloured tape released from behind the vehicle.

3) Losses:
Twenty percent of all deployed B IVs were lost due to direct enemy fire. This must be reduced by newly designed vehicles with increased speed and better cross-country mobility. This and increased armour protection, to make it safe against armour-piercing rounds, must be demanded on all new developments (B IVc, 'Springer').

4) Frequencies:
For a deployment of the complete *Abteilung* for a pinpoint effort, an increase in the number of available control frequencies from four to at least six is desirable to make tactical command more mobile.

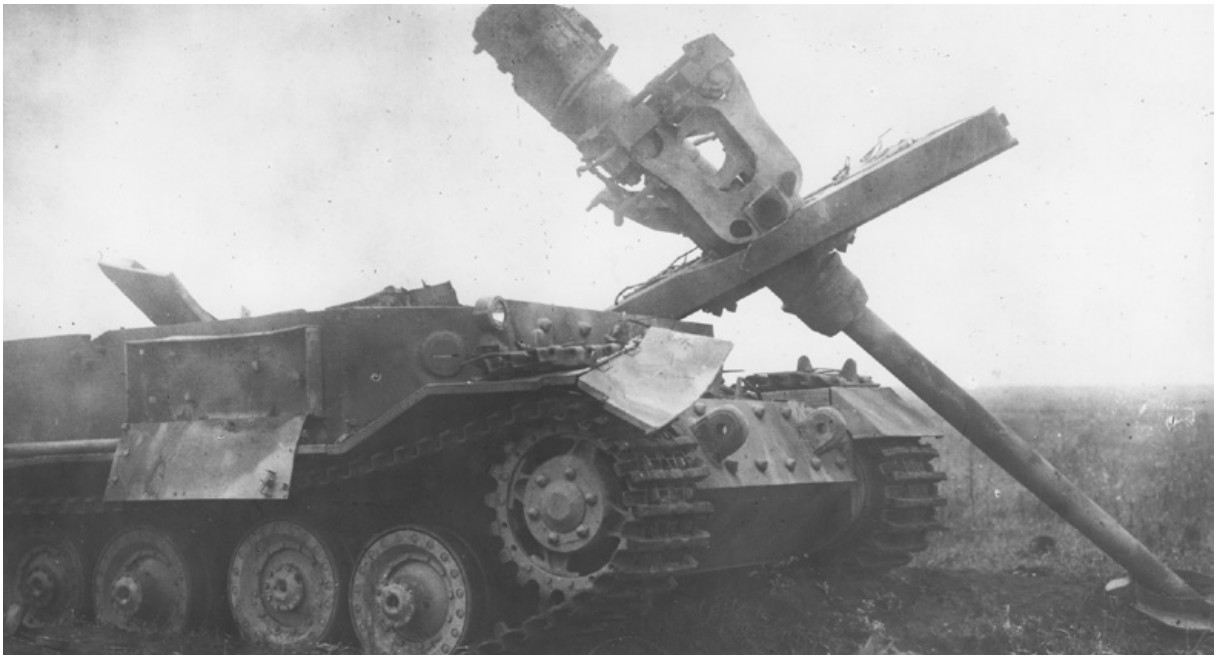
Ferdinand, tactical number 623, from sPzJgAbt 654 has been abandoned intact. Recovery teams, often under heavy enemy fire, retrieved many damaged vehicles which, where possible, were repaired and returned to the frontline. The vehicle is painted in sPzJgAbt 654 typical 'spider's web' camouflage scheme. (Netrebenko)

Previous pages:
Ferdinand tactical number 723 and 702 from sPzJgAbt 654 abandoned on the battlefield. The vehicles appear to have been immobilized by mines then attacked by Soviet anti-tank teams or heavy field artillery. (Netrebenko)

Conclusion:
The deployment of the Fkl-*Waffe* in July 1943, took place within the scope of an enhanced troop trial by the separate commitment of three independent Fkl-companies. The progression of the greater tactical situation and the transition from attack to defence, limited the deployment to a few days. The gained success met the expectations completely. The lack of a decisive breakthrough cannot be blamed on the Fkl-*Waffe* in particular. The reasons for this can be found in a too weak deployment when compared to the enemy´s strength. The deficient cooperation with other arms and the opportunities missed to quickly take advantage of the effects of a detonation neutralized any success.
Based on the combat experiences made, we suggest a troop trial to determine rules for the future commitment of the Fkl-*Waffe*:
Deployment of the PzAbt 301 with Tigers as control tanks, inclusion of an entire Abteilung within the scope of a greater Panzer-formation.
Reinel'

Remote-controlled units had been in use since the French campaign. Sadly only few after action reports have been found so far (see bibliography, Jaugitz). The statement of Major Reinel, although giving interesting detail, seems to lack of objectivity. He belittles the actual technical shortcomings and the problems occurring when guiding radio-controlled tanks over long distances in very difficult terrain. All this was foreseeable.

His notice to a lack of understanding from commanders of the Ferdinand-*Abteilungen* seems to be correct. However, in the heat of fierce combat with constantly changing conditions, cooperation between two weapon systems of



The crew of a Ferdinand was under strict orders to blow up their damaged vehicle rather than allow it to fall into enemy hand. The crew of this vehicle appears to have obeyed that order. (Netrebenko)

completely different basic design and performance could not be considered as being easy.

Reinel opposes the general principles of the deployment of Fkl-units stated in the official pamphlet, suggesting that action within a complete *Abteilung* rather than individual companies. This, however, would mean the consecutive use of more than 100 Panzer (Fkl) at the point of main attack.

On the other hand, he is correct in identifying the type as an attack weapon. With the transition to the defence, the Panzer (Fkl) became obsolete and had to be withdrawn. This, however, influenced the combat use of the Fkl-*Waffe* during the latter years of the war.

After Kursk – the new weapon systems on trial

The Kursk offensive was affected by a multiplicity of wrong decisions. The repeated moving of the start date for the offensive was caused by many reasons, one being the high expectations Hitler and the OKH put in the new weapon systems. There were many high-ranking officers demanding that the offensive was started as early as possible. This would have given the prospect of a surprise attack carried out with military means strong enough to overwhelm an enemy, who had no reasons to reinforce his military strength with reserves at this place and at this time.

Forgetting the squandered time, the hasty deployment of the new weapons at Kursk was very risky. The sPzJg Ferdinand was affected to the same degree as the new medium Panther tank – a prime example of technology that had not been thoroughly tested.

From Kursk to Nikopol 4

After the battle, a critical conclusion of the Kursk commitment

The failure of the German assault at Kursk was due to a number of reasons. It is now obvious that the forces the Soviets could field were recklessly underestimated, as was the strength of their resistance. On 12 July, the defenders started a counter-offensive advancing towards Orel and Brjansk which threatened the German northern flank. Hitler now decided to assign *Generaloberst* Model to command both 9th Army and 2nd Panzer Army. From the war diary of 9th Army on 13 July 1943:

> '*Generaloberst* Model takes charge of 9th Army and 2nd Panzer Army. The army staffs remain in their original positions. Order: Defense against the Russian assault on the Orel salient, a retaking of the hitherto existing main line of resistance is not explicitly required… To save the situation the OB (supreme commander) is forced to withdraw units and GHQ troops from the positions held by the 9th Army… Losses will accrue, and these have to be accepted to meet a greater danger at 2nd Panzer Army… Sadly, the prospect of continuing Operation *Zitadelle* at a later, have receded due to the regroupings. However, the main effort of the German attack was reached - the erosion of the enemy´s personal and material power.'

However, this was wishful thinking. *Zitadelle* had to be halted, despite the masses of German troops and tanks which had been massed on the Kursk salient. Including sophisticated weapons such as the Ferdinand, the *Sturmpanzer* and the remote-control units available in the 9th Army area. Model was now forced to order a survey of defensive artillery emplacements and search for alternative positions. In the following month, the 2nd Panzer Army was withdrawn for deployment to the Balkans.

Most damage had to be repaired in the field. This Ferdinand was immobilized by damage to the first bogie, possibly inflicted by a mine or a direct heavy artillery hit. Exchanging parts of the suspension was difficult without the help of a crane truck. Here, the crew apparently dug a hole under the bogie to dismount the running wheel. (Anderson)

Exhausted men on top of their exhausted *sPanzerjäger*. The track guards are badly damaged. A hit from a small caliber gun has left a notch at the superstrutrure's front plate, wiping off parts of the rain drain (Münch)

The situation in the south of Italy aggravated the situation. Although anticipated by the Germans, the launch of Operation *Husky* was a further threat which influenced the situation at Kursk in so far, that a number of units had to be transferred to Italy. From that moment the Germans were forced to begin their retreat in the east.

PzJgRgt 656, German losses at Kursk

On 7 July, after two days of hard fighting since the beginning of the offensive, the operations department reported the following losses to *Heeresgruppe Mitte*:

Total losses:
11 PzKpfw IV (lang)
Two Ferdinand
Three *Sturmpanzer*
Two Tiger Ausf E

Temporary losses by enemy fire:
20 PzKpfw IV (lang)
Five PzKpfw IV (kurz)
Two PzKpfw III
Four *Sturmpanzer*
16 Tiger Ausf E

Partisan action was a constant danger on the Eastern Front. Supplied and tacticaly led by the Soviets, the Germans had to allot units in battalion strength to root out and fight these noncombatants. This particular transport train was hit by an explosion, derailing some wagons. One *Sturmpanzer* of StuPzAbt 216 fell off and was turned over. Although the tank will have been repaired soon, the crew will have been severely wounded. (Jaugitz)

Temporary losses by technical breakdowns:
29 PzKpfwg IV (lang)
Five PzKpfw IV (kurz)
15 PzKPfw III
49 Ferdinand
12 *Sturmpanzer*
Five Tiger Ausf E

These figures for losses are astonishing. At a first glance the overall number of destroyed tanks seems to be low. Although no comparable Russian count is available, the number of destroyed Russian tanks will have been higher, much higher.

More interesting is the high number of Ferdinands and *Sturmpanzer* temporarily out of service due to technical problems. In case of the Ferdinand, the continuing engine problems led to a short-term drop in availability of more than 50 percent. Although most could be brought back into service within a short time, the problem led to a constantly low number of available Ferdinands.

On 8 July, a further two Ferdinand had to be written off, all four had been hit by heavy artillery fire and burnt out. A further radio message on the same day informed the operations department:

'1)
Commitment of the Ferdinand at the second day of combat was successful. In general, losses were inflicted by enemy artillery (Four Ferdinand and two *Sturmpanzer* totally destroyed)

Panzer situation at the end of the second day of combat:

Losses:
Ferdinand : Seven total, 46 in repair
Sturmpanzer : Five total, 15 in repair

Ready for action:
36 Ferdinand
25 *Sturmpanzer*

2.)
Replacement for the seriously wounded Hauptman Noak, commander II./sPzJgAbt 656 is urgently requested: But only by an officer from the Panzerwaffe.

3.)
70 new 12V, 105A batteries for Ferdinands are requested for delivery by air transport.'

After the cancellation of *Unternehmen Zitadelle*, Guderian summarized the losses to the regiment during the battle: 19 Ferdinand and 10 *Sturmpanzer* had to be completely written off: 40 Ferdinand and 17 *Sturmpanzer* were

The three subunits of sPzJgRgt 656 were deployed with AA sections, ideally consisting of three SdKfz 7/1, medium half-tracked tractors with 2cm *Flakvierling* quadruple guns. These vehicles combined good cross-country manoeuverability with high firepower, but lacked of armour protection for the crew. (Anderson)

temporarily disabled, of which 20 and nine, respectively, could be repaired and ready for action by 11 July.

The commitment of the Ferdinand in the fighting around Kursk cannot be reliably defined by using official figures. All available kill numbers are either taken from longer periods, or personal recollections. Furthermore, the official numbers differ.

Since July 1941, the Soviets had been on the defensive. The threat of being totally annihilated by an aggressor driven by a dangerous ideology forced the Soviet government to expand the armaments industry by building more production facilities. Although the high number of weapons produced it was not until 1943 that the Soviets began to produce advanced weaponry. However, the appearance of the German Tiger and Panther tanks forced them to develop more effective tanks and anti-tank guns. Many of these improved weapons were used during the battle of Kursk.

In terms of firepower and armour protection the new German tanks outclassed their Russian counterparts in almost every aspect.

In the 9th Army area, the attack on Kursk was at no time a 'classic' tank-versus-tank battle, and cannot be compared with the fighting in the southern sector. While the far superior German combat tactics played a major role in the south (although a breakthrough was not possible here, either), the tanks of the 9th Army tanks became bogged-down in the fortified positions prepared by the Soviets.

To the knowledge of the author, no official document has been found giving exact figures on the number of kills by the Ferdinand. In his book, Karlheinz Münch notes the following numbers for the period of 5 July to 16 July:

> '320 Russian tanks destroyed, a "great number" of guns and trucks destroyed. 13 Ferdinands were lost totally.'

The report by Guderian (see above) states that 19 Ferdinands had been destroyed during the fighting by 11 July. Taking this number as a base, the resulting ratio would amount to 1:16.7.

A comparison to a report on successes of *Sturmgeschütze* in the *Sturmartillerie* (without SS formations) for July 1943 is surprising. The report scores 1,880 enemy tanks destroyed – and an incredibly low number of assault guns lost (101), giving a ratio of 1:18.6. For the period between 5 July and 14 July, *Heeresgruppe Mitte* reported that 17 of their 299 StuGs had been destroyed; *Heeresgruppe Süd* lost 19 out of 202. Both technically and in matters of their design, the *Sturmgeschütze* were certainly not superior to the Soviet T-34 or KV heavy tanks of 1943. In the author's opinion, the overwhelming success presented by these kill numbers show the importance of the tactical planning, and the clear superiority of the German *Auftragstaktik* (mission tactics), as in July 1943. For the sake of completeness the author wishes to add that this report was authorized by the *General der Artillerie*, who could have been biased. Furthermore, the related units had a stated strength of 300 *Sturmgeschütze*, approximately three times the number in sPzJgAbt 653 and 654.

The losses inflicted on the two sPzJgAbt in July were high, by the end of the month almost half (39) of the Ferdinands had been destroyed,.

By 1 August 1943 *schwere Panzerjäger-Regiment* 653 reported its inventory as follows:

sPzJgAbt 653	Ferdinand	SdKfz 251/8	PzKpw III	ZgKw
Target	45	–	5	28
Ready for action	12	–	4	25
In workshop	17	–	1	3
Total losses	16	–	–	–

The commander, Major Steinwachs, added a comment:

'The *Abteilung* is, except for its wheeled vehicle, ready for action but only with small numbers. A general overhaul of the Ferdinands is absolutely necessary.'

The sPzAbt 654 reported:

sPzJgAbt 654	Ferdinand	SdKfz 251/8	PzKpw III	ZgKw
Target	45	1	7	34
Ready for action	13	1	4	22
In workshop	6	–	2	6
Total losses	26	–	1	6

The commander, Hauptman Henning, added his comment:

'The state of training and weapon knowledge are partly not sufficient, since time for instruction before commitment was only short, personal replacements were supplied rather late. Thanks to repair works of all kinds, the workshop company got thoroughly used to the Ferdinands… The 19 remaining Ferdinands and six PzKpfw III are in need of a general overhaul. Tanks being repaired by the workshop occasionally breakdown during their next commitment due to other damages… The troop has full confidence in the weapon. The troop´s mood is good.'

StuPzAbt 216 had a nominal strength of 45 *Sturmpanzer*. However, only short time after the beginning of the offensive a further 10 were sent to the unit from Vienna. The unit´s total losses cannot be totally proven, as usual the available figures differ. A document dated 14 July, reported 10 *Sturmpanzer* as complete losses. Another covering the period between 5 and 12 July, reported 26 total losses (possibly an error), a third one dated 12 July, reported 16 lost.
Major Kahl, commander of StuPzAbt 216 sent the actual strength in his report dated 1 August 1943.

StuPzAbt 216	*Sturmpanzer*	SdKfz 251/8	ZgKw
Target	45 (+10)	No figure given	12
Ready for action	18	–	10
In workshop	20	–	2
Total losses	17	–	1

This last count appears to be correct. The report does not list the *Munitionspanzer* IV ammunition tank.

The *Funklenk* units

The PzKp (Fkl) 312, 313 and 314 were deployed to assist sPzJgAbt 653 and 654, sPzAbt 505 in the initial phase of the assault on Kursk. Sadly, there are only few records providing details of successes or losses. The personal diary of a soldier from PzKp 312 (Fkl) confirms the above loss report of the operations department:

The sPzJgAbt had a large gantry crane in their inventory. This heavy hoisting device was indispensable for any major repair work. While simple services could be accomplished by removing the engine cover plate, the exchange of the Otto engines was only possible by dismantling the complete superstructure. and shifting it backwards. Accordingly, to replace the electric engines the superstructure had to be shifted forward. (Münch)

The maintenance of the *sPanzerjäger* was hindered by the vehicle's general layout. The engines were installed under very cramped conditions, partly covered by the overstrained cooling system. Here the engine cover plate is being removed by Kfz 100 with a 3t rotary crane. (Anderson)

'At Podoljan, Werch-Tagino…, Glasunovka… the enemy has to absorb the impact of our weapons. The company scores 56 tank kills (T-34 and KV), 28 anti-tank guns and other artillery, three trucks, five gun tractors, six *Stalinorgeln* [rocket launchers], 30 field fortifications, 60 enemy troops captured and an estimated 1,000 dead. Thank God, we lost only three comrades:

Feldwebel Helmut Ellenbeck
Gefreiter Alwin Klauck
Gefreiter Karlheinz Leszak…'

While combat against enemy fortifications was the basic task for Fkl units, it is interesting to learn that the remote-controlled explosive charge carriers were also used to fight Soviet tanks. However, this type of combat could hardly be called economical. The low number of casualties during the fighting around Kursk sounds even more surprising. However, this could be due to the desired effect of the remote-controlled weapon system – saving German lives.

After the conclusion of *Zitadelle* the PzKp (Fkl) companies, being dedicated attack units, were not required in this sector anymore – the Germans having been forced onto the defensive. The PzKp (Fkl) were withdrawn and kept in reserve until beginning of August. Then all units were loaded on railway wagons

Spare engines were in short supply at all time. Due to the engine compartment's cramped conditions, the Maybach HL 120 had a service life of 800km at maximum. To keep the valuable vehicles running, the engines were delivered to the unit via air transport, if necessary and possible. (Anderson)

in Brjansk and transported to training areas in Germany. On 1 October 1943, the *Generalstab* decided:

> '1.) Contrary to the former regulation, we herewith request to reduce the formation of one PzKp (Fkl) per month.
>
> 2.) A restoration of the PzKp (Fkl) 312, 313, 314 will not take place for the time being.'

After Kursk - Defence at the Orel salient

On 12 July, only two days after the Allied landing in Sicily, the Soviets launched their offensive against Orel and Brjansk. This skillful but predictable attack threatened and then finally halted the attack by the 9th Army. Model was forced to relocate parts of his forces to the north to assist the 2nd Panzer Army. On 17 July, the Soviets attacked German positions across the entire front. Despite the poor mechanical condition of the Ferdinands, the regiment sent nine from sPzJgAbt 653 and all remaining operational Ferdinands from sPzJgAbt 654 to established defensive positions north of Kromy, some 30km south of Orel, as part of the Orel-Riegel line.

Here the Ferdinands and *Sturmpanzer* were in constant combat to defend the Orel-Kursk railway line. On 24 July 1943, the commander of the regiment,

Obertleutnant von Jungenfeld sent an urgent request to the 2nd Army:

> 'The regiment has been permanently in combat since 5 July... The Ferdinand, as well as the *Sturmpanzer*, suffered numerous technical problems. Initially it was planned to withdraw the tanks for 2-3 days after a 4-5 day commitment to undergo maintenance and repair work. This was not possible… All tanks need now an overhaul requiring 14 to 20 days… I herewith report to the 2nd Army that within a short time the regiment will no longer be combat ready…'

According to the suggestion of von Jungenfeld, the regiment established two combat groups deployed some distance east and southeast of Orel. These groups consisted of a mixed establishment with only a few vehicles, which were to be continuously replaced by tanks which have been provisionally serviced by the workshops. When deployed in carefully-prepared defensive positions, the Ferdinand helped slow the Soviet offensive.

Realizing that Orel could not be held, the 2nd Panzer Army established the Hagen-Stellung line to the east of Brjansk. All German units in the pocket were to be moved west in the *Hagen-Bewegung* (Hagen-move) by the end of July when Orel was abandoned. Subsequently, the Orel main railway station, the line to Brjansk and all bridges were being prepared for demolition.

From the war diary of 2nd Army:

> 'Radio message Ia/XXXV. AK, 29 July 1943: 21.30hrs.
> XXXV. Armykorps intends to transport the "Ferdinand" via the railway junction Orel. Point of time: 24 hours before X-time. XXXV. AK asks to synchronize with blowing up of the railway bridge and main station Orel…'

The Kfz 100, a 4,5t truck with 3t rotary crane was of vital importance for the workshop and repair sections. Here the final drive is being repaired, the drive sprocket has been already removed. In the foreground a SdKfz 251/8 is visible. The regiment had only one m SPW as an armored ambulance (SdKfz 251/8) in its inventory, so it was possibly used for purposes other than intended. (Anderson)

A *Befehls-Sturmpanzer* (command tank) leading a column of trucks of the staff section of StuPzAbt 216, or III./656. The *Stumpanzer* shows a rain guard refitted over the Tiger E style driver's visor, one of the many details improvements added to compensate for deficits of the poor design. (PK photo)

In this context it is interesting to read the report of the commander at Orel:

'Subject: Destruction of all important military objects in Orel
…all objectives were blown up on 4 August 1943… The following buildings were explicitly excluded from this order:

The local museum, the municipal museum and archives, all refurbished churches and all civil hospitals, the children´s hospital for the tuberculosis, the orphanage.'

From the war diary of 9th Army on15 August 1943:

'The allocation of the most important mobile anti-tank weapons in the *Hagen-Stellung* will be announced in written form by 15.30hrs… Expecting an enemy offensive against the northern flank of 2nd Army, the *Panzerabwehrschwerpunkt* (centre of anti-tank defence) is to be established by transferring sPzAbt 505 (Tiger) and sPzJgAbt 654 (Ferdinand).'

It is obvious that after the failed commitment at Kursk, the Ferdinand was primarily deployed in the defensive role. By mid-August, sPzJgRgt 656 was withdrawn from the Orel salient. Since the combat strength of

The regiment was authorized with heavy recovery equipment. Two *Bergepanther* recovery tanks were allocated to the unit by July and three *Bergepanzer* Tiger (P) by October. Here one of the *Bergepanther* is visible, these vehicles were of the early production, lacking the valuable winch. The purpose of the 'chariots' loaded behind the tank is unknown. (Anderson)

sPzJgAbt 654 was almost zero, only 19 Ferdinand had survived the heavy fighting, the unit was ordered to move to Orleans, France, where it was to be re-equipped with the *Jagdpanzer* V, *Jagdpanther* (SdKfz 173). The unit´s 19 Ferdinands were passed to sPzJgAbt 653. Deviating from normal procedure, the unit´s surviving equipment was not passed to other units, but sent to France. sPzJgAbt 653 was ordered to assemble at Brjansk and entrain for Dnepropetrovsk, where their vehicles would undergo the desperately needed maintenance.

Dnepropetrovsk, repair and defence

During the deployment in the Orel-Brjansk area a complete overhaul of the Ferdinand and *Sturmpanzer* was not possible. All available weapons were needed to fight against the attacking Soviet forces, the military leaders including *Feldmarschall* Model demanded a maximum number of tanks to fight at the front. On the other hand the state of the regiment´s vehicles was very poor, even a minimal operational readiness could not be guaranteed. Single tanks were provisionally repaired by cannibalizing others, and were then prone to further failures.

Facilities for a complete heavy overhaul such as large buildings and lifting gear were not available. The K-Werk at Dnepropetrovsk, a former steelworks, seemed to be perfect for this task.

On 18 August 1943, the regiment received orders to transfer to Dnepropetrovsk. Ten days later GenStab d H summarized the proceedings:

'1. Arrival of orders to transfer to Dnepro on 18 August.
2. Parts of the unit are possibly still in combat in the old deployment area. It is confirmed, that on 26 August a battle group was in combat.
3. Great transport problems, the trains were blocked on the way, partly up to 24 hours
4. First transport left on 21 August.
5. So far dispatched: nine transports out of 22, four reached Dnepro.
6. Begin of overhaul: Probably on 1 September.
7. Perpetuity of overhaul: 4 – 6 weeks.
8. All armoured vehicle are in need of repair.
9. Overhauling will take place by:
   a) The troop itself.
   b) Two workshops additionally went to Dnepro.
   c) K-Werk South, Dnepro only minor parts. (K-Werk blocked by other work).'

On 27 August 1943, the *Panzeroffizier* at OKH sent a telex message to sPzJgRgt 656 and the K-Werk in Dnjepropetrovsk:

'I demand a report concerning the state of the vehicles (ready for action or in need of repair) of sPzJgAbt 653 and StuPzAbt 216, which currently are in Dnjepropetrovsk to be preferentially repaired by the K-Werk. When will the bulk of the vehicles be combat ready? When will the rest be ready?'

On 31 August 1943, the *Panzeroffizier* reported:

'Situation at repair works of the Ferdinand and *Sturmpanzer Abteilung*.

1.) Under the scheme for the planned complete heavy overhaul we can provisionally repair:
a) Seven days after arrival in Dnjepropetrovsk:-
   Ten Ferdinand
b) Ten days after arrival at Dnjepropetrovsk:-
   38 *Sturmpanzer* (all)
2.) The remaining Ferdinand have to be completely refurbished, furthermore *Formveränderungen* are necessary.
3.) 10 of 38 *Sturmpanzer* are ready for combat now.
4.) The overhaul of the Ferdinand has started on 31 August at Dnjepropetrovsk, the 10 *Sturmpanzer* were already repaired before being loaded at Brjansk. So far no *Sturmpanzer* have arrived at Dnjepropetrovsk.
5.) The transport situation is difficult. The trains are delayed up to 20 hours …
6.) The fighting commitment of parts of both *Abteilungen* (653 and 654) did not delay transportation up until 29 August.'

Waiting in the cover of some peasants' huts, this Ferdinand (tactical no. 134) shows the damage of the last fighting. Except for the towing ropes no further tools are visible. (Anderson)

Formänderungen – design improvements

The *Heereswaffenamt* (HWA) had established a system to constantly monitor and improve the technical capabilities of military equipment. Reports from units at the front were collected and passed to higher level. The ordnance industry was also involved in this process. Such requests emerging from the experiences of simple soldiers, officers and workshop engineers were combined with the more specific suggestions for improvements.

In the ideal case these ideas led to respective changes on the assembly lines. Refurbishing kits were also provided to add these improvements for tanks in service on the frontline.

As a result of the first battles, sPzJgAbt 653 assembled an interesting list of the shortcomings which emerged from combat at Kursk. The remaining Ferdinands were in need of a thorough overhaul, the officer suggested that all work be carried out at facilities near to the front:

> 'The following measures improving the fighting power and the operational reliability are of utmost importance:
>
> A. Fire-fighting measures
> 1. Modification of the gratings to improve protection against shell splinters.
> 2. Shielding of the fuel lines from the exhaust pipes.
> 3. Modification of the exhaust fittings.
> 5. Preventing foliage from settling in the exhaust pipes.
> 6. Improving the access to the engines from the fighting compartment.

7. Installation of a fire-fighting system consisting of two carbon-dioxide extinguishers each of 5lt capacity.

B. Remedial measures against mine damage:
1. Installation of flexible mountings for the batteries.
2. Removal of the generator housing base fastening.
3. Improvement of the generators´ mounts.

C. Elimination of malfunctions at the low tension installation…

D. Suspension:
1. Disconnection of the friction clutch.
2. Installation of a higher final-drive gear ratio.
3. Fitting of new tracks.
4. Replacement of rubber suspension mounting blocks.

E. Improvements to the high tension electrical installation…

F. Superstructure:
1. Fitting of rain drains to the superstructure front.

A good portrait of the *sPanzerjäger* Ferdinand. Instead of the jack, spare track links are carried on the glacis plate. Many parts, which have been altered, replaced or refitted after delivery (gun deflector shield, the gun barrel, the area behind the removed tool box) seem to show an improvised coat of color.

2. Sealing of driver´s and radio operator´s hatches and engine cover plate.
3. Sealing of the joint between hull and superstructure.
4. Mounting of mesh over the gratings.
5. Adjustment of the balance spring of driver´s and radio operator´s hatches.
6. Mounting of "*Fühlstücke*" (possibly "*Füllstücke*", filling parts) to the hull on the front of superstructure.
7. Fitting of spare track links, tools and tool box on the rear plate of the superstructure.
8. Mounting of rain drains and anti-glare shields to the visors.
9. Installation of a metal deflector sheet under the rear exhaust hood.
10. Re-welding of the hatch hinges over the engine compartment.

G. Further alterations:

1. Modification and inclination of gun mantlet.
2. Armoured protection on the ball mounting.
3. Strengthening of superstructure´s roof plate. (Proposal: Welding up of the gunner´s hatch, only in case of completion of Point 4).
4. Emergency exit through the rear maintenance hatch.
5. Installation of commander´s cupola with periscopes.
6. Installation of an MG aligned with the gun barrel.
7. Dismantling of gun travel rest from inside the driver´s compartment.
8. Installation of periscope for wireless operator.
9. Installation of engine telegraph between commander and driver.
10. Improved rubber mounting for periscopes.
11. Improvement of cooling system and fan drive.
12. Improvement of water fillers.
13. Improvement and fitting of rear deflector.
14. Replace nuts on the shafts on the intake fans.
15. Change of exhaust outlet with strong track deflectors.

The preceding works can be accomplished by our combined workshops within six weeks upon receipt of all spare parts and material, assuming good working conditions.

Signed'

On 27 August, the *Generalstab des Heeres*, (GenSt d H – General Staff of the Army) enquired as to the operational readiness of the tanks in sPzJgAbt 653 and StuPzAbt 216. The desperate need for even a single vehicle highlights the poor state of the German forces on the eastern front.

Two days later, on 31 August, GenSt d H was informed of the situation:

'Situation of repairs of Ferdinand and *Sturmpanzer*:

1. Abandoning the planned long-term general overhaul, provisional repairs can be completed by:

Fuel supply was possibly the most essential problem for the unit, which was all too often spread over wide distances. This Ferdinand (tactical no. 121) is heavily soiled with mud. (Schneider)

a) Seven days after arrival at Dnjepro:
10 Ferdinands
b) 10 days after arrival at Dnjepro:
38 *Sturmpanzer* (all of them)
2. All further Ferdinands have to undergo a major overhaul, including some *Formveränderungen*.'

This, however, was not possible at Dnepropetrovsk. In a further telex message dated 14 September 1943, sPzJgRgt 656 complained of problems in regard to the supply:

'The further repair if the Ferdinand is questionable, since only 10 of the 60 promised Maybach engines were delivered from Magdeburg. We demand an acceleration in the delivery system.'

On 18 September 1943, the commander of sPzJgRgt 656 handed in his report, disclosing the complete mess and time wasted in these difficult days:

'Due to the regiment´s transfer from Brjansk to Dnjepropetrovsk, and the arrangement for the overhaul and the deployment of a battle group immediately following the unloading, the regiment had not been able to present an after action report. Herewith this report follows:

Transfer from Brjansk to Dnepropetrovsk proceeded extremely slowly, since it was carried out in single rather than in consolidated transports. These single transports took up to nine days.

The accomplishment of the general overhaul at the K-Werk, or dependence on this (delete these words) was impossible due to congestion at the facility. Thus the regiment commandeered a large hall at the Dnepropetrovsk steel company and equipped it ready for repair work to begin.

At the same time the immediate deployment of a mixed battle group was ordered. By utilizing all facilities, 15 Ferdinand and 15 *Sturmpanzer* were refurbished in a rapid concerted action. All men of the workshops gave their best, working longer than 12 hours per day. The tanks received no *Formveränderungen*, but were repaired and fitted with new tracks (of the old design) and new engines, etc. The results of this rapid repair arose only short time later, when three Ferdinand and two *Sturmpanzer* failed on their way from the workshop to the railway station prior to loading.

The *Einsatzgruppe* (task force) was led by *Hauptman* Baumunk, commander of I./PzJgRgt 656. The commander of the regiment was also with the task force. It was intended to split the task force in two groups, one to be deployed in Ssinelnikovo, one in Pavlograd. During transport to Ssinelnikovo the Ssinelnikovo-Pavlograd railway line was occupied. Four Ferdinand and 12 *Sturmpanzer* were unloaded, and with the assistance of a reinforced infantry battalion the line was retaken. During the 40km march, through pouring rain and very heavy mud, there was no contact with the enemy; no shot was fired in anger. After another 2km, the regimental commander decided to remove the Ferdinands and three *Sturmpanzer* from the march in order to prevent any unnecessary wear and tear.

In the meantime orders were given to assemble the complete battle group in Pavlograd. The retained Ferdinand and *Sturmpanzer* were loaded again. From the remaining eight *Sturmpanzer* four reached their destination, four broke down, but were recovered.

Due to the hastiness four battle group transports had to move in visual range. One of the transport trains drove into another, causing the destruction of one crane truck and two goods trucks. Casualties: one dead and one injured. During the same night the entire *Kampfgruppe* was deployed in cooperation with InfRgt 420 to relieve the Pavlograd-Dmitrijenka railway line. Again a distance of 40km, eight Ferdinands and 12 *Sturmpanzer* were used for this mission. There was only little contact with the enemy. One armoured car was shot to pieces, and five 7.62cm anti-tank guns were captured. All eight Ferdinands reached their destination, three *Sturmpanzer* failed. The next day was used for maintenance. In the evening, orders were given to return the Ferdinands to Pavlograd and load them again for transport to Ssinelnikovo. Thanks to the workshop the number of *Sturmpanzer* available increased to 16. The *Sturmpanzer*s, subordinated to 23.PzDiv, experienced intense enemy contact during the march to Vassilkovka-Grigerjovka on the next day and made best use of their howitzers. Again *Hauptman* Baumunk, I./PzJgRgt 656, led the *Kampfgruppe*, the regimental commander remained with the Ferdinands.

The *Sturmpanzer*s had several further deployments with 9. and 23.PzDiv, while

the Ferdinands remained inactive at Ssinelnikovo. After intensive negotiations with 1st Panzer Army, it was decided to retain the entire *Kampfgruppe* in the so-called 'forward bridgehead' at Dnepropetrovsk…

Since it is now clear that the front will reach the banks of the river (Dnieper) around 25-30 September, all workshop services will leave the city now…

The regiment, subordinated under XVII.Armykoprs, will stay in Dnjepropetrovsk, the bridgehead must be hold over the winter… In Dnepropetrovsk very serious decisions have to be made…

Major repair works: After establishing the *Kampfgruppe*, a further 14 Ferdinands were brought in for repair. These had to be completely refurbished with all *Formveränderungen*. At the start work, various parts are still missing. Reports say the transports have already left the *Reich*, but it is questionable that these will reach us in time. Anyway, it should be possible to repair these Ferdinand within 5 or 6 days. The regimental commander ordered some tanks to be completed using old parts to driving condition, so that these can be loaded on trains.

The next 13 *Sturmpanzer* are near completion. Due to the impending evacuation of the repair facilities, this repair work have to be regarded as being only superficial, and certainly will not be exhaustive.

To accommodate the workshop services for general reconditioning, the regiment launched a reconnaissance towards of Krivoj Rog. Most facilities in the region are already used, suitable halls for the reconditioning could not be found… Upon advice of the war economy bureau further investigations were made in the Nikopol region… One especially suitable hall belonging to *Luftgau* 25 was currently being cleared. Negotiations are in progress.

The transport of the remaining 42 Ferdinand (eight Ferdinand are at present in combat) will cause problems, since reputedly no SSyms wagons are at hand. An overland transport route from Dnepropetrovsk-Zaporozhe was reconnoitered. In the case of imminent danger the vehicle column could take this route, and then train from Zaporozhe to Nikopol… Precious spare parts have to be removed from Dnepropetrovsk. Suitable halls were found west of Zaporozhe…

At the same time sites for command posts and gun positions for the regiment and both battalions were reconnoitered to the east of the river (Dnieper), the baggage train and all supply units will find accommodation at places on the western side of the river. The final explorations will be ended by the evening of 19 September. We hope to receive a decision from the OKH, as to whether the regiment will be deployed over the winter in Zaporozhe. In this case the regiment would transfer minus the combat echelons. The regiment would explore positions and accommodation from 5 to 8km behind the *Hauptkampflinie*, (Hkl – main line of resistance). Radial routes leading to the Hkl have to be reconnoitered and if

needed be prepared. Using this allocation the regiment can be thrown in combat when and where it will be needed to meet any identified enemy attack.

It is obvious that the regiment will have prepared suitable accommodation for the tanks to prevent them from freezing in winter and becoming immobilized.

We have to emphasize that in the next few weeks and months the regiment can only send one battle group of varying strength, while the other is in repair… It has to be clearly stated that, due to the order to clear the previous repair facilities, no Ferdinand underwent a major overhaul including all planned *Formveränderungen*. The first batch of 15 repaired tanks, and also the next batch of 14 tanks are ready for combat in their current state. All vehicles lack the intended *Formveränderungen*, for this reason they will have to go into the workshop again. The same is for the *Sturmpanzer*. Since their deployment will decrease in winter, we urge that the whole regiment has to undergo major overhaul at beginning of next year. At the time the regiment´s situation is as follows:

Kampfgruppe Baumunk:
Eight Ferdinand
All ready for combat
14 *Sturmpanzer*
These are not combat-ready… the recovery of these tanks is under way using all available recovery vehicles. We hope to stop them being captured by the enemy.

At Dnepropetrovsk:
42 Ferdinand
Seven will be ready within 3 to 4 days after rapid repairs, a further 14 within 6 to 7 days. The rest require long term repair.
10 *Sturmpanzer*
These will presumably be ready by 20 or 21 of September after rapid repairs.

Intention of the regiment:
A battle group will be established for the bridgehead Zaporoshe, consisting of:
Seven Ferdinand
10 *Sturmpanzer*

After return of the Baumunk battle group all combat ready elements will be sent to the battle group at Zaporozhe.'

Combat at the Zaporozhe bridgehead

Overleaf:
Ferdinands of sPzJgAbt 654 undergoing a heavy overhaul at Werkstatt Dnepro, a former steel-works at Dnepropetrovsk. (Anderson)

On 20 September 1943, *Heeresgruppe Süd* was informed about the transfer of PzJgRgt 656:

'PzJgRgt 656 (staff)
sPzJgAbt 653 (Ferdinand)
StuPzAbt 216

All are to be subordinated under *Heeresgruppe Süd* for immediate action on the Saporshje bridgehead.'

By 24 September, the transport situation improved. From the report of a transport officer:

'Good routes for transports to the west. Enough empty wagons at hand. All claims of military users can be settled. Those SSyms Wagons having been held at Zaporozhe due to the collapse of the bridge are slowly arriving. These wagons had to be transported individually over the (Dnieper) dam. Loading of the Ferdinand, *Sturmpanzer* and other damaged tanks will proceed as follows:

1.) Ferdinands of PzJgRgt 656 ready for combat to Zaporozhe.
2.) Damaged Ferdinands from both battalions to Nikopol…'

The commander of the PzJgRgt 656 sent a report from the Panzeroffizer to the C-in-C of the general staff of the army dated 27 September 1943:

'Preliminary report of the sPzJgRgt 656:

After receiving the message from OKH dated 19 September 1943, that the entire regiment was to be subordinated under *Heeresgruppe Süd*, the order was given to deploy all available forces in the bridgehead. The rest were to be repaired…

This Ferdinand belonged to the small battle group ferried over the river Dnepr. This was one of the last deployments of PzJgRgt 656 before being sent to Austria for refitting. (Schneider)

All employable forces in the bridgehead are to be used as mobile reserve. Two battle groups are to be formed, which will be under command of the battalion commanders. *Heeresgruppe Nord* is to be led by Major Baumunk, and *Heeresgruppe Süd* by Major Kahl. Each group will receive approximately 12 to 14 Ferdinands and 10 to 12 *Sturmpanzer*s A further small group of Ferdinands will be deployed in the streets of Zaporozhe. The Ferdinands of the battle groups have been provisionally repaired to a passable state to enable them to fulfill the mission of a mobile tank defense force at local focal points. They are considered to be the last reserve; the 'fire brigade'.

All vehicles must be stationed on the outskirts of the city. The battle groups have fixed sectors in which they will be deployed as required. Routes of advance and the surrounding area have already been reconnoitered. Lateral access is cleared, so one battle group can be deployed in the other groups' sector.

This mobile tank defence will be an essential factor to retain the bridgehead…

Maintenance and Repair:
After long negotiations with the Luftwaffe the large halls at Nikopol could be obtained and provide the facilities for the final repair work on the Ferdinands. However, major constructional alterations are necessary and accommodation for the workshop company will have to be provided. I have requested personnel from Organization *Todt* to accelerate the process.

As a result the transfer of the repair work started in Dnjepropetrovsk could not be continued. Furthermore, the transport of the Ferdinands was delayed due to the very busy railway lines. The workshop company will support the works at Nikopol until the Ferdinands reach the town. When the accommodation is completed, the repair of Ferdinands can continue at Nikopol.

We hope to start the repair work by 1 October. We made arrangements to repair a complete tank company each. When the repair work and the planned *Formveränderungen*, the company will be replaced by another company. Thus the complete Ferdinand-*Abteilung* will be repaired in due course. The deployment in the bridgehead is not endangered.

The regiment asks for the rapid shipment of all spare parts and all supplies for the Ferdinands be sent to Nikopol.

The *Sturmpanzer-Abteilung's* own workshop platoon is reasonably accommodated west of the river. Here smaller and medium-scale repair work is accomplished to enable readiness for action with the fighting companies. We arranged with Panzer AOK 1 (supreme command of 1st Panzer Army) that a tank workshop company will be provided to completely repair the *Sturmpanzer-Kompanien* in succession. We expect to be informed of which company will be selected in the coming days.

Even very short journeys were undertaken using railway transport. The protection of the sensitive equipment was of utmost importance. However, loading and unloading was a severe problem, head or side ramps were essential. All too often the crews had to improvise. (Münch)

This general overhaul work is absolutely necessary. The last deployments had shown that the previous rapid repairs were not sufficient. The *Sturmpanzers* have endured extraordinary usage, and now break down in great numbers. An effective general overhaul is essential. In doing so it must be closely examined whether those *Sturmpanzer*, which were damaged by mines in the Orel salient and subsequently were repaired including a complete change of the running gear, have twisted hulls. At present we note an increasing number of such repaired vehicles breaking down.

Thanks to this disposition we keep two thirds of the regiment in combat, and one third undergoing a thorough general overhaul. So far the deployments in the bridgehead have proceeded without any serious breakdowns.

During the last deployment at the Dnepropetrovsk bridgehead one *Sturmpanzer* had to be destroyed. It had been heavily damaged by a direct hit and we failed to retrieve it during the withdrawal.

During this last deployment two T-34 tanks and three anti-tank guns were destroyed.

The exact tank strength will be reported after arrival of all armoured sections. Since the largest numbers of tanks are in transit, either by rail or road, we cannot survey the situation completely.

Right now, 11 Ferdinands and three *Sturmpanzer*s are in action here.'

While the Ferdinands fought in small battle groups at the bridgehead, the repair work continued. On 2 October 1943, the PzJgRgt reported about the advance of the repair works:

'List of difficulties during restoration of the Ferdinand:

1.) Engines:
There are still 24 engines awaiting repair. For repairing of all 54 Ferdinands, additional engines will be needed. The Nibelungenwerk has at most 10 engines in stock, and their early delivery cannot be guaranteed. For this reason 30 Maybach HL 120 engines taken from the production line of the PzKpfw III and IV appears a necessary expedient.

On 24 September, 26 engines in need for general overhaul were sent from Dnjepropetrovsk via Panzer spare parts store B to Magdeburg. The accelerated repair of these engines is essential. The Ferdinands being repaired at Dnjepropetrovsk have an engine service life of 400km. The engines will at a maximum last for 800km…

We suggest the overhaul the engines by ourselves, although the workshop have neither spare parts, nor the respective tools.

2.) Spare parts and conversion parts:
Due to the relocation of the spare parts depot to Tchudnov near Berdichev, the delivery of spare parts has stagnated. Transport trains from Vienna and Magdeburg were occasionally intercepted by the *Reichsbahn* or misrouted. To accomplish the repairs all spare and conversion parts must be brought from Tchudnow to Nikopol. All transport from home must be directed to Nikopol.

3.) Tracks:
All Ferdinands were provided with new type of tracks. The older tracks show a large number of indentations, which lead to breakages. Furthermore, the latest combat reports show that the Russian gunners primarily aim at the tracks. The regiment has no more new-type tracks in stock. For this reason delivery of the outstanding 180 sets has to be accelerated. Additionally, with the delivery of the new improved tracks 5,000 ice cleats have to be included. The PzKpfw IV-style ice cleats, which were used with the old tracks, will not fit on the new type.

4.) Winter gear:
For the existing old tracks, 5,000 sets of PzKpfw IV-style ice cleats will be needed. These cleats must come very soon, since they have to be flame-cut and bevelled to be used with the Ferdinands. To ensure a quick conversion, we request delivery of 20 grinding wheels, which neither the workshop nor the spare parts depot have in stock. The Ferdinands have no winter gear except connections for the cooling-

fluid transfer device. For this reason we need heated-air blowers and warm-water tank trailers…

5.) Final drives:
Our stocks of Škoda-converted final drives with a ratio of 1:16.8 are exhausted. Škoda confirmed that 75 sets were delivered to Magdeburg. Up until now we fitted 30 Ferdinand with the new sets, the location of the missing delivery is unknown. For further repairs we will need at least 25 more sets.

6.) Lifting gear:
The Ferdinand-*Abteilung* should have two 3t cranes. The Abteilung received only two 6t and two 3t cranes. For repair work only one rotary 3t crane (Kfz 100) and one 6t crane (SdKfz 9/1) are available, since one Kfz100 was destroyed in a train accident, and one SdKfz 9/1 that went missing during the evacuation of Orel by rail transport. The forthcoming duties cannot be accomplished, in any way, with the remaining cranes. Work groups have to wait on each other only because of the missing lifting gear. The forward workshop sections have no cranes at all.

7.) Suspension parts:
The deliveries of suspension parts, still outstanding from the manufacturers, have to be accelerated. During combat more suspension parts will get damaged by enemy fire, the regiment lacks of spare parts.

8.) Gratings:
The next batch of refurbished Ferdinands can be ready by 20 September. However, it is necessary that 10 sets of gratings and armour plates for the fuel tanks arrive in Nikopol by 15 September.

9.) Supply with spare parts:
It proved to be necessary that escort troops accompany the transports from Vienna and Magdeburg. Any delays to the transports these will reported directly to *Heeresgruppe Süd*.'

This report again shows the great technical problems the regiment had to face. The necessary general overhaul of Ferdinands and *Sturmpanzer* was slowed by the slow and inefficient delivery of spare parts. Even units of great importance could not be supplied with important vehicles such as truck-mounted rotary cranes.

On 4 October 1943, a short status report of *Heeresgruppe Süd* noted:

'*Panzerjäger-Regiment* 656
Transfer from (*Heeresgruppe*) *Mitte* to *Süd* took 11 days, some parts are still missing.
Ferdinand:

Ready for action on 2 October: 14.00hrs	13
Limited Readiness	One
Short-term repair, less than six days	Eight

Direct hit in superstructure	One
Long term repair	26
Total loss	One

	49

Sturmpanzer:	
Ready for action	10
Total number	37

Abteilung is in need for many spare parts

One company accomplished their general overhaul by 25 September 1943, and hoped to have 30 Ferdinand continuously ready for combat in 14 days. At the end of the year all will be refurbished. Railway ramps have to be constantly issued. At the bridgehead four SSyms wagons have to be permanently available.

Abteilung requires gun barrels, after 300 rounds the rifling will fail and have a maximum life span of 500 rounds. P*anzergranate* 39 ammunitions is sufficient, *Panzergranate* 40 can be cancelled.

Sturmpanzer 43 has good effect in the target, but is a faulty design'

This short report confirms the described transport problems. The regiment had 13 Ferdinand, ready for action. The aim of boosting this number to 30 operational vehicles was ambitious. On 1 November 1943, sPzJgAbt 653 reported its strength. The discrepancy between the target and the actual number is interesting, the *Abteilung* had 48 Ferdinands, two Bergepanther (under repair) and three *Bergepanzer* Ferdinands, and many more Maultier-type trucks than the official allocation:

sPzJgAbt 653	Ferdinand	SdKfz 251/8	PzKpw III	MunPz IIIw
Target	45	1	–	–
Ready for action	9	–	5	5
In workshop	39	1	1	–
Total losses	–	–	–	–

sPzJgAbt 653	Bergepanther	Bergepanzer Ferdinand	ZgKw	2cm Vierling
Target	–	–	27	3
Ready for action	–	3	19	3
In workshop	2	–	7	–
Total losses	–	–	–	–

This grim picture shows the absolute problems in recovering failed Ferdinand tanks. Here a *Bergepanzer*, assisted by another sPzJg, tries to tow a vehicle through the mud. (Münch)

The commander added his combat value judgment:

'Personnel situation gets worse due to further losses. There are no replacements. Great lack of officers due to heavy combat.
Condition of motorized vehicles is poor due to heavy wear. Very heavy wear to trucks and passenger cars.
Panzer-situation very bad. *Abteilung* needs time to rest. The breaking up of the Abteilung; in the period of 25 to 30 October it was deployed at three different corps over a distance of 150km, made smooth supply and responsible leading impossible. The subunits were torn apart, the company commanders, who are partly new, lost track. Thanks to this fragmented deployment the combat value decreased to a minimum. If the tactical combat is not be changed in the near future, the *Abteilung* will not have any intact vehicle soon.'

One day later, on 2 November 1943, the commander of the PzJgRgt 656 presented his report on the situation:

'Lagebericht of the PzJgRgt 656:

Ferdinand:
Since the last report dated 17 September 1943, the regiment was continuously in combat. Since the regiment had to assist the defensive fighting in the areas of both XVII also XXX. *Armeekorps*, longer marches were necessary from one focal point to the other. Repeated marches of 60 to 80km within a very short time affected the

equipment and led to repeated temporary technical breakdowns. The maintenance sections and the workshop worked well, so that always a number of guns were firing at the enemy.

The number of guns aimed at the enemy alternated seriously. On some occasions we had 20 gun barrels, sometimes the number dropped to four, referring to the type of action and the marches mentioned above. Even the deployment of a north-south battle group could not solve this drawback, at important focal points we had to call up the complete available forces.

At one day the *Grossreparatur* (grand restoration) provided 10 guns and the rapid repair Nikopol a further four. These 14 Ferdinands were sent to the heaviest fighting at Krivoj Rog with the LVII.*Panzerkorps*, where they were immediately sent into action. Enemy losses were: 21 tanks, 34 anti-tank guns and eight artillery guns (captured). Thus the Ferdinand made a great contribution to this success. At the same time four guns were deployed at XXX.*Armeekorps* and further three guns at the XVII.*Armeekorps*. In these days the regiment was divided between III.*Korps* and over a front 150km wide. Also due to the tactical situation, the regimental command had serious problems with providing supply, recovery and repair services.

With the end of the defensive fighting at Krivoj Rog the regiment will again be deployed in the area of XXX. and XVII.*Armeekorps*, it will remain army reserve at the centre of both corps to be deployed at urgent focal points. On the appointed date 5 November 1943, 14 Ferdinand are ready for combat, a further 10 guns will be ready by 8 November and will be sent from Nikopol to the regimental assembly area. We hope that by 12 November a further three or four guns will be ready for combat.

In comparison to other tank unit's inventory we assert that the regiment, despite the many technical breakdowns, which will be explained later, could face the enemy with a remarkably great number of guns. This was possible only thanks to the purposeful and dedicated work by workshops, repair sections and maintenance teams: The achievements by these men are above reproach. Under leadership of *Oberleutnant* d R and Dipl Ing Römer and also the KVR *Schaffranek* these services played a decisive role in the success of the regiment…

Repairs:
The regiment asserts that at the time engines, tracks and the suspension represent the main problems.

Engines:
The engine's life span is about 800km. At this point the engines are worn out and have to be replaced or repaired. Those engines being newly installed by mid-September have a life span of 600 to 700km, so we need, frankly speaking, 90 engines for the available 48 Ferdinands. Failing this, all the tanks will be lost. Due to the present engine situation in the *Reich* this will be not possible, so we attempt to

accomplish the necessary repair in the field by ourselves. The regiment was forced to send a teletype message directly to the *Herr Generalinspekteur*:

To *Generalinspekteur der Panzertruppen*, Lötzen

Require urgent supply of 30 sets pistons and cylinder liners for Ferdinand engines including four tool sets to install them, to be delivered via air transport. Due to the lack of engines the running repair works and thus operational readiness is at stake. A report will follow…

Signed, v. Jungenfeld, *Obertleutnant* and regimental commander, PzJgRgt 656

We hope that the necessary material will reach us by Ju-52 transport. Since we do not have one single replacement engine at hand, daily occurring engine failures cannot be repaired – the respective tanks will finally stop. The regiment has indicated this problem at an early stage.

Tracks and running gear:
The tracks delivered recently are of very poor quality, breakages of track links were a daily occurrence. At marches of 40 to 50km some 12 to 15 track failures are not unusual. Tracks of an entirely new design are supposed to be ready in November. It is important to expedite this delivery, since we urgently need this new track. Track damage can result in the destruction of the complete tank by the crew. The defective track can damage the suspension, causing many problems as a consequence. The enemy realizes that his guns cannot penetrate the Ferdinand´s armour, and fires only at the suspension. For this reason there is an extraordinarily great need for these parts. At present 10 out of 15 Ferdinands are in the workshop because of track failures. We expect large amounts of spare parts, which will be delivered by truck convoys due to the problems with the rail transport.

The engine problem remains most urgent. The regiment can only overcome this by immediate delivery of all spare parts and tools.

Sturmpanzer:
Major Kahl has personally reported on the *Sturmpanzer* situation. In the meantime the regiment has sent 14 *Sturmpanzer* to Vienna. This was necessary, because no less than 32 damaged *Sturmpanzer* are immobilized, which run the risk of being blown up or lost to the enemy due to a lack of transport facilities. At present only three *Sturmpanzer* are in combat. We expect *Sturmpanzer* spare parts, too, so that in the near future 10 vehicle canbe brought back into action.

We again advise that a total overhaul of the *Abteilung* at a suitable place is essential. Major Kahl did repeatedly discuss this question with the responsible authorities.

Achievements:
Again, the regiment has recently contributed to reinforce the defensive front. The

regiment is now well known to both friend and foe. For the period 5 July until 5 November the achievements of the regiment sum up to:

582 tanks
344 anti-tank guns
133 artillery guns
103 anti-tank rifles
Three aircraft
Three scout cars
Three assault guns

The above-mentioned figures are based on after action accounts. A more exact verification was not possible due to the defensive fighting and disengagements…'

On 10 November 1943, sPzJgRgt 656 left its positions near Petropol, northwest of Zaporozhe and moved south to Nikopol. Ten days later, the Ferdinand came into action at Miropol, some 50km north of Nikopol. Here more than 50 Soviet tanks were destroyed in tactically brilliant defensive fighting, accomplished in mechanically worn out vehicles. From the *Wehrmachtsbericht* dated 26 November 1942:

'The OKH reports:
Russian attacks at the Nikopol bridgehead and at the bend of the river Dnieper could be effectively repulsed in bitter fighting which lasted into the night. Combat continues at a breakthrough southwest of Krementschuk. The enemy has lost 112 tanks. The sPzJgRgt 656 under *Obertleutnant* von Jungenfeld destroyed 54 tanks. *Leutnant* Kretschmer distinguished himself during the fighting by destroying 21 enemy tanks with his *Panzerjäger.*'

On 2 December 1943, the regiment received orders to travel back to Austria for the long-expected general overhaul:

'To HGr *Süd*

sPzJgRgt 656 with sPzJgAbt (Ferdinand) 653, and StuPzAbt 216 will be routed directly from the sector of *Heeresgruppe Süd* to the Vienna – Linz area for general overhaul.

Delousing is ordered before the start of transport and before arrival at the destination.'

On 16 December 1943, the first trains left for Austria. However, as this began the Soviets started a second offensive against the Nikopol bridgehead. In this situation the regiment had to establish a battle group of more or less intact Ferdinands and *Sturmpanzer* to relieve the German infantry trapped on the east side of the river. A 1,000-ton ferry was used to transport the tanks to the

Failed *sPanzerjäger* were a real problem for the recce sections. Specialized recovery vehicles were available in small numbers only. And even this *Bergepanzer* Tiger (P) had problems in moving the Ferdinand through muddy terrain. (Münch)

Dnieper. After the mission was completed, the last vehicles were ferried back by 26 December. It is highly probable that they were immediately loaded on train.

The last information in regard to the original s PzJgAbt 654 dates from 30 January 1944 when the unit was waiting to be re-equipped with the *Jagdpanther*. Apart from one PzKpfw III, which served as command and driving-training tank, and an armoured ambulance, no further armoured vehicles were allocated. The unit´s strength report:

sPzJgAbt 654	Ferdinand	SdKfz 251/8	PzKpw III	ZgKw
Target	45	1	1	32
Ready for action	–	1	1	22
In workshop	–	–	–	10

The commander added his comment:

> 'The unit continued with combat training. Parallel to that the drivers were trained on the Panzer IIII, the halftracks, trucks and motorcycles. Parts of the unit were attending training courses in the Reich on the orders of the inspector general of the *Panzertruppe*. The situation for motor vehicles is good, *Panzerjäger* SP guns are missing. Accommodation is good, as well as the health situation. Provisions are not sufficient for some good fighting men.'

Reconditioning in the Reich 5

By early 1944, all the *Sturmpanzer* and Ferdinands in sPzJgRgt 656 were mechanically unsound. Many vehicles had to be kept at the workshop or stored on railway wagons in order to stop them from being captured by Soviet counter offensives. The lack of sufficient spare parts, from single electrical condenser to a complete engine, led to a permanent lack of combat-ready tanks. Furthermore, the situation at the battlefront did allow for the necessary general overhauls to be carried out. Also it was not possible to transport damaged vehicles back to the *Reich*.

The strength report of sPzJgAbt 653 dated 1 November 1943, shows it to be equipped with vehicles not authorized by the official KStN, and more worryingly, the low number of combat ready Ferdinands.

The Nibelungenwerke was working at maximum capacity, and the delivery of the Ferdinand caused many problems. After arrival the vehicles were stored in areas around the assembly halls. The large geometric symbol on the rear of the vehicle was used at Kursk to allow recognition of an individual vehicle. (Historyfacts)

s PzJgAbt 653	Ferdinand	SdKfz 251/8	Bergepanther	Berge Ferdinand	Escort Pz III	Mun Pz III
Target	45	1	–	–	–	–
Ready for action	9	–	–	3	5	5
In workshop	39	1	2	–	1	–
Total losses	–	–	–	–	–	–

The state of StuPzAbt 216 is illustrated by the last strength report written on 6 January 1944:

StuPzAbt 216	Sturmpanzer	MunPz IV	SdKfz 251/8	ZgKw
Target	45	4	1	6
Ready for action	–	4	1	3
In workshop	35	–	–	3
Total losses	10	–	–	–

A line of battle-worn Ferdinands awaiting refurbishment parked in the grounds around the Nibelungenwerke. The crews of the vehicles and unit engineers were enlisted to assist in the refurbishment programme. (Historyfacts)

The long-awaited general overhaul of PzJgRgt 656 began in early 1944, which caused numerous problems both at the battlefront and at the companies in Austria contracted to complete the work. It had been noted that there was a severe lack of capacity at all production plants, and that there was a lack of spare parts.

A progress report from Inspector Zacherle (*Abteilung* V) dated 12 January 1944 highlights some of the problems caused when the regiment was moved:

> 'On 14 December 1943, I was ordered by the Adjudant, in presence of the advance party of sPzJgRgt 656, to direct the movement of RgtSt 656 (staff), sPzJgAbt 653, StuPzAbt 216 and *WerkstattKompanie* (workshop company) 654 to the marshaling yard Strasshof … It was intended to send the PzKpfw Ferdinand to the Nibelungenwerke at St.Valentin, and the *Sturmpanzer*, the *Panzerbefehlswagen* (command tanks) and *Munitionspanzer* (armoured ammunitions carriers) to the *Heeres-Kfz-Werkstatt* Wien-Arsenal. All soft-skinned vehicles… were to be directed to depots in St. Pölten…
>
> The first transports of the *Werkstatt-Kompanie* arrived Strasshof on 19 December, the second on 20 December. Those wagons containing spare parts and special tools for the Ferdinands were transferred to Nibelungenwerke…
>
> I requested for an exceptional long-distance call with the *Führerhauptquartier* to present the following overhaul suggestions:
>
> 1. For the overhaul of the Ferdinand a special workshop department and a production group to produce the required spare parts have to be established. *Werkstatt-Kompanie* 653 will assist.
> 2. The available working force and workshop machinery have to be removed

from the production lines established by *Reichsminister* Speer, and urgently made available for the overhaul of the *Sturmpanzer* and the *Munitionspanzer* at the *Heeres-Kfz-Werkstatt* Vienna (Wien)-Arsenal…

These demands were forwarded to the *Führerhauptquartier* by *Hauptman* Sokol. Until today no answer has been given. In the meantime the *Heeres-Kfz-Werkstatt* Wien-Arsenal… has accepted the repair of 20 StuPz for the month January on its own authority…

On 12 January, we received a written note confirming that the overhaul of all *Sturmpanzer* has to be completed by 31 January using all means available… To accelerate the programme all available *Panzerwarte* (armoured maintenance team) from [several] *Panzerjäger* replacement and training battalions were detached to the Arsenal…'

The suspension on all *Sturmpanzers* was replaced with factory-new parts. The reliability of the final drives was a constant problem (also on the PzKpfw IV in general), and was aggravated by the increased weight of the heavily-armoured *Sturmpanzer*. This also affected the durability of the rubber tyres on the running wheels bands and also the bogies. Since it was not possible to change the basic design of the *Sturmpanzer*, the only alternative was to frequently replace these components and to provide the fighting units with sufficient stocks of spare parts. The addition of a *Zimmerit* anti-magnetic coating was obligatory.

Apart from the thorough overhaul of the petrol-electric drive and the running gear, the Ferdinands were to undergo a far-reaching programme of modifications, many the result of front-line operational experience.

The impressive list comprised:

Adding a ball-mounted machine gun for close defence, to be fired by the radio operator.

Replacement of the ventilation gratings over the engines by a new design.

Installation of a commander's cupola with seven vision blocks (as used on the *Sturmgeschütz III*) on top of the superstructure.

Of minor importance:

The application of *Zimmerit* to prevent the attachment of magnetic mines.

Reverse the deflector shield in front of the ball-mounting on the main gun.

The overhaul work at St. Valentin proceeded slower than planned. On 19 January 1944, Major Baumunk reported:

'Reconditioning situation:

Up until now eight Ferdinands have been completely dismantled at the Nibelungenwerke, and their re-assembly started recently. This is due to missing spare parts (the delivery from Schutno has not arrived so far, the location is still unknown) a further hold-up to the overhaul is likely. The absence of truck-mounted cranes is concerning, the spare parts available at Army Depot Linz cannot be loaded. We insist on an urgent allotment of a greater number of cross-country cars and trucks and also the missing welding equipment and cranes for the workshop company… Allotment of new soft-

skinned vehicles was denied by the organization's department in Berlin; the reason is that the origin of the order to disperse all soft-skinned vehicles in Russia was unclear.'

Aside from problems with the supply of spare and replacement parts, even specialized vehicles like truck-mounted cranes were not available, thus endangering the important repair work. However, on 25 January the commander of *Panzertruppen Wehrkreis* (defence sector) XVII summarized the situation:

'… Between 16 December 1943 and 10 January 1944, 21 rail transports of sPzJgRgt 656 arrived in Austria… The *Heeres-Kraftfahrzeug-Werkstatt* (Heeres-Kfz-Werkstatt – army motor-vehicle workshop) Wien-Arsenal had completed seven StuPz by 24 January 1944. The rest of the StuPz will be repaired by 29 February. It is possible that some of the more heavily damaged StuPz will have to be pulled out of the accelerated repair programme; their completion will be carried out later. The new Sturmpanzer produced by *Heeres-Kfz-Werkstatt* Wien-Arsenal were delivered on 22 January 1944…

Until now, 19 Ferdinand have been dismantled at St. Valentin and are in the process of re-assembly. To assist in this work, skilled mechanics from *Panzer-Werkstatt-Kompanie* 654 with all their tools and workshop equipment was transferred to St. Valentin …

The complete overhaul of the Ferdinand depends on the on-time supply of the spare parts allegedly on their way from Schutno, and also on delivery of the replacement Maybach HL-120 engines. Under these conditions we can guarantee at the most the completion of 43 PzKpfw Ferdinand by 15 March 1944…'

On 22 January, US forces launched landings operations at Anzio and Nettuno, only 50km south of Rome. Alarmed by this, the OKW decided on the same day the accelerated deployment of StuPzAbt 216 and sPzJgAbt 653. As for the *Sturmpanzer-Abteilung*:

'By staff sPzJgRgt 656 the StuPzAbt 216 has to be deployed at an accelerated rate… The valid organizational structures are:

Stab PzAbt	KStN.1107, dated 1 November 1943
Stabskompanie StuPzAbt	KStN.1156, dated 1 November 1943
3 StuPzKp (each 14 vehicles)	KStN.1160, dated 1 November 1943
PzWerkstzug, workshop section	KStN.1185, dated 1 June 1942

After replenishment the StuPzAbt will be established under the *Heerestruppen* (HQ troops) as an independent *Abteilung*…'

As sPzJgAbt 654 had already been transferred to France replenish and re-equip, this subordination of StuPzAbt 216 could be seen as the disbandment of sPzJgRgt 656. Due to this, in the summer of 1944, the regimental staff was dismissed and ordered to establish PzBrig 101 at the Mielau training ground.

A Ferdinand being craned (note the special lifting cradle) to a position on the repair line. The track guards are badly damaged, and one track is missing. The tank is being lifted over the PzKpfw IV production line. (Historyfacts)

On 29 January, the orders were more specific:

'The 1st company of StuPzAbt 216, which is in the process of redeployment, has to be made ready for combat by all means on 31 January 1944 at 12.00pm.

Formation: 18 StuPz in four platoons of four vehicles each
Two *Kompaniechefwagen* (company command tanks)
Five PzKpfwz II (from workshop Vienna)
Workshop section…'

On 1 February, the *Kommandeur der Panzertruppen Wehrkreis* XVII received a telex message from the inspector of the armoured troops in plain language:

'1.) The *Kommandeur der Panzertruppen Wehrkreis* XVII was ordered to have a telephone manned by an officer at all hours. The commander must report this by 1 February 1944. One Ferdinand-*Kompanie* has to be assembled immediately.
2.) On 5 February 1944, one StuPa-*Kompanie* has to be assembled.
3.) On 5 February 1944, *Abteilungsstab* (battalion staff section), the first company has to follow as rapidly as possible.'

In a memorandum dated 1 February, the deployment of the reinforced 1.Kp/StuPzAbt 216 was again specified:

Previous pages:
A Ferdinand in the Nibelungenwerke factory; the vehicle is covered in witty slogans chalked on by workers. The Leopard insignia of sPzJgAbt 656 has been drawn on the right-hand trackguard.

'*Kommandeur der Panzertruppen Wehrkreis* XVII will establish one reinforced StuPa company of StuPzAbt 216.

a) Personnel from StuPzAbt 216, for PzKpfw II by *Kommandeur der Panzertruppen Wehrkreis* XVII
b) Panzer from *Heeres-Kfz Werkstätte* Wien: 18 *Sturmpanzer* 43… equipped with weapons and Fu 5 radio set
(One vehicle with a 30W transmitter and an Fu 5), two Panzer *Schulfahrgestelle* Pz III (driver-training vehicles), one *Munitions-Träger* IV. Inspection 5 will provide five PzKpfw II with full equipment.
c) Wheeled vehicles:
14 medium trucks, Six heavy trucks, Three Zgkw 1t (SdKfz 10), Four Volkswagen Four light motorcycles, One Kfz 12 or 15 will be provided upon orders of AHA/In 6.
d) Five *Maultier* trucks by PzErs- u AusbAbt 33, St. Pölten.
e) Workshop section.
f) Winter clothing will not be provided.
g) The company has to be ready to march on 5 February 1944 by all means…'

The same document adds:

'Combat and march-readiness has to be arranged by sPzJgRgt for:
a) The remnants of StuPzAbt 216.
b) One Ferdinand-*Kompanie* consisting of 10 – 12 tanks'

These changing requirements considerably influenced the reconditioning work being undertaken at St. Valentin and Vienna. Both the Nibelungenwerke and the *Heeres-*

Arsenal-Wien complained repeatedly about delays caused by numerous reasons. Now the accelerated completion of 1/3 of the regiment was ordered, an ambitious plan.

In his next report dated 2 February 1944, on the situation of the overhaul Major Baumunk noted:

> 'Until now 24 Ferdinands have been dismantled, final assembly of the first series (eight units) will be completed by 10 February. The orders of *Chef* H. Rüst… referring to the accelerated readiness for action of one company with 10-12 Ferdinand will seriously affect the on-going repair work. Furthermore, a workshop section will have to be transferred and attached to the unit. This will delay work at Nibelungenwerke by at least five weeks. We will not be able to complete the work until 31 March 1944…'

The general overhaul programme for the *Sturmpanzer* and the Ferdinand highlighted the failing economic strength of the Third Reich. The country no longer had the industrial capacity; the leaders responsible for the economy and the engineers had to improvise. All this was aggravated by repeated changes in the command structure due to the desperate strategic situation.

On 15 February 1944, 1./sPzJgAbt 653 was issued with 11 newly-refurbished *Panzerjäger* Ferdinands, this was three vehicles less than the 14 ordered from the Nibelungenwerke. Furthermore, 1./sPzJgAbt 653 was issued with all the required supply and workshop elements. On next day the company was loaded onto rail transport for the journey to Italy.

At around the same time, StuPzAbt 216 was entrained to Italy. For some reason the Abteilung was formed with four combat companies, and equipped with 57 *Sturmpanzer*..

After completion, the Ferdinands, now renamed *Elefant*, were parked on a field near the Nibelungenwerke. Note the vehicles now have a self-defence *Maschinengehwehr* 34 (MG 34) and are coated with *Zimmerit* anti-magnetic mine paste. (Historyfacts)

Combat in Italy 6

The Allied advance in Italy was accompanied by fierce fighting. The Germans were in a difficult situation, the attackers had a vast numerical superiority on land, and what proved to be more important, in the air. With the landing on the Italian mainland the slow but steady German retreat began. Favoured by the geographic conditions, the Germans under *Generalfeldmarschall* Kesselring established various defensive lines. These lines were held until to the last moment, followed by a withdrawal to new positions which had already been prepared. The Allied advance was slow, especially in mountain region. German counter offensives, if launched at all, were destined to fail. The Allies had a decisive superiority of men and equipment. The RAF and US Air Force dominated the skies, and strafing aircraft were a constant menace to the German and Italian defenders. The Allied artillery had more guns which were supplied by a steady flow of ammunition.

On 22 January 1944, Allied forces landed at Anzio, to the south of Rome, in order to relieve the slow advance in the south. This second front was a serious threat to the German military, which had to deploy more reinforcements to Italy.

The Allied decision to land at Anzio was considerable risk. The region south of Rome had once been marshland. The marshes of Agro Pontino, were drained in 1930 by digging a series of canals to collect the rainfall from the coastal mountains and direct it into the Tyrrhenian Sea.

The terrain remained boggy any spring rain could easily turn the ground into a quagmire. This certainly impeded the advance of Allied forces, but also deterred the commitment of German heavy weapons.

Kesselring was forced to transfer units from the struggling southern front to Anzio. As a temporary measure *Luftwaffe-Feldeinheiten* (air force field units, among them elements of *Fallschirmjäger-Panzer-Division* 'Herman Göring') were deployed. Only three days later these forces were relieved by the 14th Army.

An offensive to destroy the Allied bridgehead was prepared around 10 February under the codename '*Fischfang*'. Four large units (3.PzGrenDiv; 114.JgDiv, 715.InfDiv and FallschPzDiv 'Herman Göring', initially without

A *Sturmpanzer* from StuPzAbt 216: This is recognizable as an early production vehicle by the PzKpfw VI Tiger Ausf E-style driver's visor. Like most of the type which had been refurbished in Austria, many components, particularly the drive train, had not been replaced. This when combined with the difficult terrain led to many breakdowns. (Anderson)

A Ferdinand parked alongside a wall on the outskirts of the eternal city, Rome. The gun barrel is not in the travel rest. (Anderson)

tanks) were to be assisted by army troops (including StuPzAbt 216, PzAbt 301 (Fkl) and two *Panzer-Pionier-Kompanie* (PzPiKp 811 and 813) equipped with Goliath demolition-charge carriers.

Realising the condition at the front, the OKW sent a telex message on 12 February (from war diary of 14th Army):

> 'The *Führer* agrees to the 16 February as time of attack. Unfavourable flying weather is absolutely necessary for the fixing of the definite date. Availability of all tanks is not necessary since a massed commitment of tanks is not possible… Tanks have to be held in the reserve. It is absolutely necessary to avoid heavy tank losses by massed anti-tank weapons, mine fields, anti-tank ditches or swampy terrain. We cannot afford such waste…'

Two days before the attack, the OKW ordered in a telex message that PzAbt 301 (FKL) equipped with Borgward BIV demolition carriers were to be committed combined with the Goliaths of PzPiKp 811 and 813.

The assault was launched at 06.30hrs on 16 February. The war diary reports an initial success by 1.FallschJgKp, which was engaged after a short artillery barrage. However, the following assault of 76.*Panzerkorps* was held up by the very heavy naval bombardment. The accompanying *Sturmpanzer* and radio-controlled tanks (BIV and Goliath) could not assist, since the terrain on both sides of the access roads was still swampy despite the dry weather of recent days. The transverse drain ditches were a further obstacle. The assault had to be led by infantry forces, which suffered high losses due to lacking support. The war diary of 14th Army criticizes the poorly-trained infantry, for being unable to deal with enemy artillery and snipers.

FallschPzDiv '*Herman Göring*' gained only 1km of terrain, before this assault became stuck. Strafing by enemy aircraft took its toll on the slow-moving German tanks, even during the following night Allied bombers attacked vehicle columns.

A note in the war diary shines a telling light on the supply problems:

'… The high ammunition consumption during the first day of the assault is out of all proportion to the any gained success…'

And, contrary to that:

'… we noted no decrease of the intensity in enemy artillery fire, he launched his artillery barrage with utmost usage of ammunition…'

The Germans had to realize that their large-scale assault did not have the desired success.

First of all, the loss of control of the skies was decisive. Backed by the naval bombardment, any attack by German forces soon disintegrated. A short note in the war diary of 14th Army dated 5 March 1944 recapitulates:

'…Based on the hitherto fighting we have to accept:

Parked under an avenue of trees, the crew is apparently not concerned by patrolling Allied aircraft. The track on the right-hand side of the Ferdinand has a damaged link, which indicates that this did not seriously affect the vehicle's mobility.

a. Without any doubt the enemy intends to defend his bridgehead, even an attack from his bridgehead is possible when weather will turn better and supply with further forces will commence…
b. Our own troops have suffered severe losses in the last weeks…
c. One reason for the failure of the last advance was the extremely bad terrain conditions. Our Panzers were confined to roads and could not be effective… To make best use of the Panzer, the ground must dry out. This will not be the case until 24 March…
f. The enemy artillery is far superior, and cannot be contained during daylight. Our attack must take place at night (under moonlight). Night attacks are essential due to the enemy´s air superiority…'

StuPzAbt 216 in Italy

StuPzAbt 216 reached Italy with 57 *Sturmpanzer*, five PzKpfw II and three *Munitionpanzer*. This unit was over strength, so a fourth company was established. On 21 January 1944, StuPzAbt 216 made a request for the delivery of ammunition. This initial request was for 4,500 rounds of 15cm IGr 38 and 600 rounds of IGr 39 (Hl) plus 5,100 fuses. Also listed were 360 hand-grenades, some 2,000 signal cartridges and 129 self-destruction charges were required. The strength report sent in after the assault on the bridgehead (dated 1 March 1944) unveils the true state of the *Abteilung*.

StuPzAbt 216	Sturmpanzer	MunPz IV	MunPz III	PzKpfw II
Target	45 (+12)	6	–	–
Ready for action	28	2	1	4
In workshop (up to 3 weeks)	22	2	1	1
Total losses	7	2	–	–

The unit had 18 half-track vehicles authorized, of which only 10 were ready for action. Due to allied air superiority two 2cm *Flakvierling* and four 2cm Flak 38 which were not covered by the official table of organization had been issued. The number of total losses included those tanks that had been immobilized and might be possible to recover and repair.

The commander in his personal statement:

'… twenty-eight *Sturmpanzer* ready for action, repair of further vehicles possible upon successful recovery and arrival of spare parts.

Prime movers: Due to heavy enemy action the available prime movers cannot be used to recover material from the battlefield.
Wheeled vehicles: Spare parts situation regarding the Volkswagen is not certain.
Personnel: Despite heavy losses during the first days of combat at the Nettuno bridgehead, the mood is good. Replacements are well trained.

The powerful *Bergepanzer* Ferdinand (*Elefant*) was strong enough to recover a broken-down *Panzerjäger* on firm ground, but easily became bogged-down in heavy mud; a problem which affected most German heavy armoured vehicles. (Münch)

Overleaf:
A Ferdinand (*Elefant*) and two Volkswagen Type 82 Kfz 1 *Kübelwagen*, light cross-country vehicles have been captured intact by (or surrendered to) British troops in Italy.

> Technical service: Workshop is used to capacity and is efficient. Assuming an assured spare parts situation the *Abteilung* can repair the entire vehicle pool by their own means…'

All German tank movements were hindered by the heavy rains, which turned the terrain into a morass of deep mud. Any movement of the heavy tanks was possible only on firm roads, thus reducing the impact of any Panzer assault. On 3 March 1944, the commander of StuPzAbt 216 submitted a progress report:

> 'According to the orders the *Abteilung* had to assign two companies of 10 *Sturmpanzer* each to both *Panzerkampfgruppen* (combat groups), one to sPzAbt 508 and one to PzRgt 26. Four replacements were sent by 3.*Kompanie* were to have been delivered the *Abteilung*. 3.*Kompanie* with seven combat-ready *Sturmpanzer* and two *Befehlspanzer* (command tanks) under command of *Hauptman* Schulz was sent to Cecchina to be available for the running attack. I was the responsible officer for these remaining elements of the *Abteilung*…
>
> Both company leaders established contact with the battalion commander. Three days before the beginning of the attack, tactical training was conducted with the platoon leaders. I instructed the StuPz company leaders and informed them not to leave the roads under any circumstances. I have personally discussed this fact with the superior officers and attempted to explain the *Sturmpanzer*s limited range of missions… I had at no time any influence on the attack and its proceeding'

A Borgward B IV Ausf B with the smaller *leichter Landungsträger* Goliath SdKfz 303 (the petrol-engined version), both vehicles performed well under favourable conditions particularly when used for a surprise attack. However, the B IVs, especially, could all too frequently not be used on the Italian battlefront due to ground conditions. Note the second SdKfz 303 on a purpose-built transport trailer. (Zöllner)

This was the answer to many uncomfortable questions asked of the 14th Army after the failed assault.

On 1 April, the number of combat-ready *Sturmpanzer* raised:

StuPzAbt 216	Sturmpanzer	MunPz IV	MunPz III	PzKpfw II
Target	45	6	–	–
Ready for action	37	2	2	1
In workshop (up to 3 weeks)	10	2	–	3

The commander reported of problems:

> 'Comments by the commander:
> 37 *Sturmpanzer* are ready for action. Repair of more vehicles impossible due to lack of spare parts.
> Special problems:
> It proved to be extremely difficult to acquire the great amount of spare parts necessary for the *Sturmpanzer* (final drives, lateral shafts).'

PzAbt (Fkl) 301

After the deployment at Kursk the three Fkl combat companies were sent back to Grafenwöhr in Germany to be refitted. Apparently the performance of *Funklenpanzer*-units was rated as very restricted. Despite the support of these well-equipped units no decisive breakthrough could be achieved at Kursk. The

commander of PzFkl (Fkl) 301 made the weakness of the *Leitpanzer* (StuG III, PzKpfw III) responsible for the lack of success, and claimed that PzKpfw VI Tiger heavy tanks should have been used.

On 1 September 1943, the general staff decided:

> 'Deployment of PzKp (Fkl)
> 1. Differing from recent orders we request to reduce further deployment of PzKp (Fkl) to a rate of one per month.
> 2. The PzKp (Fkl) 312, 313 and 314 will not be refurbished for the time being.'

Apparently the OKH assessed the facts in a similar way, as on 1 February 1944 a new version of the KStN 1176f was published, the sPzKp(Fkl) was issued with 36 B IV and 14 PzKpfw VI Tigers as *Leitpanzer*.

Subsequently, PzKp(Fkl) 313 and 314 were integrated into Tiger units, 313 as 3.(Fkl)/sPzAbt 508, and 314 as 3.(Fkl)/sPzAbt 504.

Immediately after Kursk, the Fkl companies (314 and 315) had been transferred to Mailly le Camp, France and 312 to Oldebroek in the Netherlands. All three units were subordinated under 58.*Reserve-Panzerkorps*. By end of 1943, all other German *Funklenpanzer* units followed, and were transferred back to the *Reich*. Only PzKp 311(Fkl) remained in Russia as part of PzGrenDiv '*Grossdeutschland*'. The following report dated 27 October 1943 is of interest:

> 'So far there no conclusions could be made concerning the cooperation between the Fkl-*Kompanie* within a Tiger-*Abteilung*. During the retreat no occasion for their deployment arose. Beside this, only a few Tigers were ready for combat.

A Borgward B IV from PzAbt (Fkl) 301 captured by British troops near Nettuno, Italy, is loaded on a transport vehicle to be taken away for evaluation. The tracks are badly damaged due, probably, to the vehicle being guided in to clear a minefield. The bay for the 450kg explosive charge is empty. (NARA)

The B IV performed well on the march, despite exceeding the compulsory 1,000km by 500km. Almost all of the vehicles are still combat ready. A single *Sturmgeschütze* (from the Fkl unit) had to be deployed in combat away from the Fkl Kp. In the near future, combat with the company is intended within the Panzer regiment. An after action report dealing with deployments of single explosive charge carriers is attached.

PzKp (Fkl) 311 25 October 1943:

Report about the commitment of a single B IV for armed reconnaissance at Belsk on 14 August and the destruction of a bridge on the same day.

1. Mission: Armed reconnaissance against Belsk in cooperation with a Fkl platoon and *Grenadier* platoon.
After tactical moves both platoons gathered in a wooded glade to the west of the locality. The Fkl platoon took up a reverse slope position. The *Grenadier* platoon advanced under covering fire of the *Sturmgeschütze* to positions 600m from the outskirts. At the same time three B IVs were employed on reconnaissance, and one reached the outskirts… The enemy appeared to be puzzled. At the same time the *Grenadiere* came under heavy fire from grenade launchers and artillery. The B IV dropped its explosive charge and was retrieved. The detonation of the charge dazzled the Soviets and caused a pause of five to seven minutes, allowing the *Grenadiere* to retreat safely.
Achievements: The reconnaissance mission was accomplished. The enemy lost countless men. Several machine guns and three grenade launchers were destroyed.
Losses: None
Experiences: The commitment of the B IV was possible due to the fact that all *Leitpanzer* and B IV were thoroughly prepared in the assembly area. For each combat mission some six hours of technical preparation will be necessary. If there is a march (10km) or a period of more than twelve hours between missions, further control tuning is essential. The terrain was also favourable for commitment of B IVs. In a low area near to the objective all the necessary check on the B IVs could be accomplished (duration ten minutes). The steady sloping terrain allowed remote control up to 1,200m. Obstacles like shell craters, road cuts or vegetation were not present. The failure of two B IVs could be traced back to faulty controlling. In one case the signal to a B IV was blocked.

2. Mission: Detonation of the bridge at Cholovdevtshina by deploying a B IV.
The bridge to be blown up was covered by heavy enemy fire. The detonation by a B IV was necessary. The B IV was directed from a reverse slope position. The enemy acted cautiously and appeared content, so the B IV was able to approach the bridge. The radio command to drop the charge failed, consequently the charge was detonated and the B IV destroyed.
Achievement: The mission was accomplished.
Losses: None
Experience: The B IV was controlled from a reverse slope position at a distance of 500m, without any problems, to the bridge. The enemy seemed to be surprised and

kept calm. The bridge was completely destroyed. All the supports, including those deep under the water, were destroyed. The length of the bridge was 25m…'

The situation in the east forced to use the *Leitpanzer* of the Fkl-*Kompanie* to fill the gaps in combat elements. This is understandable, since the B IVs could not always be used in their intended role, but tied up valuable troops and resources. PzKp(Fkl) 311 remained in the east until it was transferred to Eisenach for being refurbishment in May 1944.

PzAbt (Fkl) 301 – deployment to Italy

Following refurbishment, PzAbt (Fkl) 301 was transferred at the end of February to assembly areas near Rome. The unit as part of PzRgt 69, was deployed to the Nettuno bridgehead. The *Abteilung* was fully equipped with 30 StuG III and 108 B IV FklPz (SdKfz 301) according to KStN 1171f (dated 1 February 1943). The rules for the organization and commitment of *Funklenkpanzer* had been changed by end of 1943. According to the relevant organizational structures, Pzkpfw III and StuG III were to be used as *Leitpanzer* (control vehicles). However, after the commitment at Kursk, demands were made to provide the FklPz units with more heavily-armoured vehicles. Thus PzAbt (Fkl) 301 was attached to sPzAbt 508, which already was issued with a Fkl company. The war diary of 14th Army notes that all *Heerestruppen* (HQ troops) were fully equipped before the 'decisive' attack, which was planned for 26 February 1944. However, the Tiger-*Abteilung* had received heavy losses on the march though the mountain regions. More than 60 percent of the Tigers broke down.

On 27 February, the assault was postponed for two days, and then on 29 February the Allied positions were attacked. The commander of I./PzRgt 26 notes:

'Following the order of PzRgt 69, the *Abteilung* moved to its assembly positions… It had rained for the past hours… According to the experiences of III.PzRgt *Herman Göring* leaving the roads was impossible due to the heavy rain which had fallen for days. Furthermore they advised us not to use the Fkl-Panzer for mine clearing. Any detonation would result in deep cratering of the thin road surface, making it completely impassable for the tanks…'

In the course of the following night, an attack by an advance element of the Panther *Abteilung* became lost. When retreating to their original position, it closed up with the following elements. The area offered little natural cover. When Allied artillery opened fire, one tank was hit and immobilized at a road junction; a second was immobilized after striking a mine. With only two remaining tanks the task was not achievable, so further tanks were sent by the second platoon. By that time, six tanks had been immobilized by artillery fire or mines, and the attack was cancelled.

The incident proved that the commitment of the heavy German tanks in the mountain regions was almost impossible. Driving the steep winding overstressed final drives, tracks and steering brakes of German tanks, and especially those of the heavy Tiger, Ferdinand and *Sturmpanzer*. The combat strength of the German

units was severely depleted; the recovery and repair of tanks gave the little rest to pioneer units. Parallel to this chaos the USAF and RAF flew their missions almost unchallenged. The 14th Army was barely able to contain the landing force at the bridgehead, until retreating to a new frontline established farther north.

After the third assault on Nettuno and Aprilia by German forces had failed, the troops were moved back to their previous positions. The planned large-scale commitment of radio-controlled explosive charge carriers had not been possible. Major Reinel, commander of PzAbt (Fkl) 301 had to divide his unit:

'Activities of the commander on 29 February 1944:

According to the experiences had during the second attack on Aprilia we decided not to line up with a closed formation of the *Abteilung* or even smaller parts of it, especially on the roads near to Aprilia, which proved to be unsuitable for the Fkl-*Waffe*. Beginning on 28 February, the following elements were subordinated:

One third of 3.Kp (three StuG and eight B IVs) to 715.InfDiv, *Kampfgruppe von Schellerer*
One third of 3.Kp (two StuG and eight B IVs) to Div.*Hermann Göring*, PzAbt *Sandrock*

Men of a *Luftwaffe* field unit pass a damaged Ferdinand near Nettuno, Italy. Under normal circumstances this valuable asset would have been recovered by all means; the towing cables have been attached in preparation. If recovery was not possible, the vehicle would have been blown up by the crew or the recovery team. (BA 101I-311-0940-35)

Above:
A *Sturmpanzer* with almost intact side skirts; the front segment is stored on the superstructure. (Anderson)

Previous pages:
A *Sturmpanzer* surrounded by jubilant crowds after being abandoned by its crew in an Italian city. US troops prepare to guard the vehicle before it is removed to a compound for captured vehicles. (Anderson)

One third of 4.Kp (three StuG and eight B IVs) to 26.PzDiv, PzAbt *Steiger*
One third of 4.Kp (three StuG and eight B IVs) to *Hermann Göring, Kampfgruppe Ecker*
One third of 3.Kp (unknown) to *Hermann Göring*, Panther-*Abt Förster.*

According to the orders, Fkl platoons were intended to assist the battle groups with action by single vehicles on their way to the access roads (to Aprilia). In particular the B IVs should detect and destroy enemy mines. Those B IVs assigned to 715. InfDiv had the mission to confuse the enemy by using single Fkl advances beginning on 28 February. Despite that I did not have the authority about the fragmented demploy Fkl platoons, I tried to assist the commitment of my units…

The 3.*Kompanie* did entirely accomplish its mission on 29 February. 4.*Kompanie* was not deployed, because the advance elements of all other Panzer units became stuck on the muddy roads. The B IVs were not able to pass these vehicles…

Except for the 3.*Kompanie* no Fkl-reconnaissance took place, because all tank units became stuck, before other objectives in the sector of 4. *Kompanie* could be assigned. Early on the morning of 29 February, the roads east of the *Panzerwald* (tank wood) had to be arduously cleared of bogged-down Ferdinand and Tiger tanks just to direct one B IV into the wood. After having destroyed mines, the advancing Tigers and Ferdinands again became stuck in the mud. It was not in the lower authorities´ power to order the advance to be halted again.

On 1 March, unit strength was reported as follows:

PzAbt (Fkl) 301	StuG III Leitpanzer	PzBefWg III command tank	SdKfz 301
Target	30	2	108
Ready for action	22	2	61
In workshop (up to 3 weeks)	5	–	18
Total losses	–	–	18

In his personal report the commander also complained of the lack of winter protection for the power-steering units, which would not operate below -15°C. During fighting in the Aprilia sector the unit lost 25 men and 18 B IVs

Due to the relatively high weight of the B IV, neither PzAbt (Fkl) 301 nor the sPzAbt 504 and 508 often made use of this equipment. The much smaller wire-guided Goliath, supplied to pioneer companies, performed much better under these conditions. The war diary of 14th Army reports of several successful Goliath engagements against enemy positions in houses or dug-in positions.

The deployment of PzAbt (Fkl) 301 has to be considered a failure. The unit was intended to assist large-scale assaults, but this had not been possible in Italy. The difficult terrain hindered any combat; the vehicles rarely reached their area of operation. Control tanks were easily recognizable when travelling on the roads. Away from paved roads most B IVs became stuck in muddy farmland, and any controller would be able to observe lateral ditches from a distance.

The well-organized enemy, having tanks and also effective supporting artillery, could easily knock out a single demolition-charge carrier before it reached the target. On 10 March, PzAbt 301(Fkl) was transferred to Etrepagny, France, where it was subordinated to 2.PzDiv (*Heeresgruppe B*).

Ferdinand (*Elefant*) of 1./sPzJgAbt 653 in Italy

By the end of February, 1944, 1./sPzJgAbt 653 arrived to Italy with 11 of its planned 14 *schwere Panzerjäger.*

Three had to be left at St. Valentin, since they were awaiting repair. On 24 February, the unit was deployed to assist the 14th Army, which subsequently subordinated the 11 Ferdinands to sPzAbt 508.

A short time later the Ferdinands of 1./sPzJgAbt 653 were ordered to the front for the first time. A frontal attack by the lead vehicle soon led to a problem, when the crossing of a small stream led to a breakdown. A recovery attempt by a Tiger from sPzAbt 508 also resulted in the loss of this vehicle. A second Ferdinand was lost due to straying into a minefield. Steady and heavy enemy artillery fire forced both tanks to be destroyed by using explosive charges (see Münch for more detail).

Sadly, no archive information on the deployment of Ferdinands around Nettuno could be found.

After the failed third attack on the bridgehead the 76.PzKorps noted:

'Enemy
The enemy has reinforced his strongpoints with barbed wire and mines, offering stiff and strong resistance… We have to reckon with an attempt to fight back his old positions.

Conduct of battle
The positions have to be held. Any local breakthrough by the enemy has to be repulsed by an immediate counterattack. This fight is not a defensive one the enemy must be continuously inflicted with heavy losses…
… The lack of success after our own offensive operations is due to defective training of own troops and a lack of coordination between the infantry and heavy weapons and also the artillery…
During the nights of between 2 and 4 March 1944, the Panzer-units under the command of PzRgt 69 will be transferred to their assembly areas south and east of Rome:

PzAbt (Fkl) 301
Tiger-Abt 508 (including the Ferdinand company)
I./PzRgt 4
PzAbt 216…'

Undetected mines were a constant danger to any armoured vehicle. This *Elefant* struck a mine, near Nettuno, which destroyed the front running wheel. Although such damage was repairable, an immobilized tank was a soft target for enemy artillery. (BA 101I-313-1004-25)

On 7 March 1944, 1./sPzJgAbt 653 submitted a first strength report:

sPzJgAbt 653	Ferdinand	Berge Ferdinand	MunPz III
Target	14 (-3)	1	2
Ready for action	6	1	2
In workshop (up to 3 weeks)	4	–	–
Total losses	–	–	–

The *Abteilung* commander noted in his personal statement:

'State of training : Very good.
Mood of the troop : Very good.
Mobility : The Ferdinand's mobility during the combat at Nettuno was made difficult by swampy ground. Only firm roads are suitable.
Special problems : Terrain problems.
Combat value : Especially suited to fight enemy tanks and anti-tank weapons.'

The commander of PzRgt 69 added his judgment:

'The company has proved its outstanding value during this short period of combat… The many breakdowns of Ferdinands with their very good armour were caused only by the susceptible electric installation.'

Again, so far no records were found proving any combat success of the heavy *Sturmgeschütze*.

Furthermore, the report unveils that during the fighting at Anzio:

'On 11 March, all units were transferred to their assembly areas (PzAbt [Fkl] 301 transported to France), except one reserve battle group of sPzAbt 508 which is to be committed near Velletri. Again, this was an admission of the lack of ability by the dedicated units to fight under these conditions.'

sPzJgAbt 653	Ferdinand	Berge Ferdinand	MunPz III
Target	14 (-3)	1	2
Ready for action	9	1	2
In workshop (up to 3 weeks)	–	–	–
Total losses	2	–	–

Apparently this vehicle was used as a training target for US tank gunners. Numerous hits are visible on the glacis plate, but none appear to have penetrated the heavy armour. (NARA)

On 1 April 1944, a further strength report was submitted:

The commander concluded his report complaining of the terrain and mine fields, which reduced the mobility of his Ferdinands to zero. Furthermore, the supply of 'special' spare parts had not been confirmed. Any repair of the heavy tanks took extraordinary long time.

The frontline could be held by the Germans for another two months. The Ferdinands of 1./sPzJgAbt 653 remained in their assembly area until 20 May. Combat readiness was restored without any further losses or mechanical breakdowns.

The Ferdinand company was to be kept near Nettuno, subordinated to the 2./sPzAbt 508, the Tiger-*Abteilung*.

The war diary of 14th Army notes that 1./sPzJgAbt 653 was subordinated to 362.Inf.Div. The Ferdinands were positioned in prepared emplacements ready to intercept enemy forces. On 19 May, nine operational Ferdinands left the assembly area and moved south; three days later they moved into their defensive positions.

On 23 May 1944, the Allies launched a heavy artillery barrage, which was followed by the start of Operation *Diadem*. After a massive assault, the Gustav line was penetrated and Allied forces, despite heavy losses, headed towards their bridgehead at Nettuno.

The war diary of 14th Army noted:

'23 May 1944
… Local enemy attack repulsed. 17 enemy tanks destroyed, six by Ferdinand, three by PaK [anti-tank guns].

25 May 1944
Enemy advances from southwest with the help of amphibious vehicles and tanks against 29 PzGrenDiv. All attacks were repulsed…'

The Allied breakout

The operational readiness of 1/sPzJgAbt 653 decreased from day to day. In June, the unit had on average only two to three tanks ready for combat. During the retreat operation a large number of mechanical breakdowns occurred. The workshop and recovery sections were soon overburdened. In emergency broken down or immobilized Ferdinand were blown up by German forces. Most vehicles were lost in this way.

On 1 July 1944, a further strength report detailed the actual situation:

sPzJgAbt 653	Ferdinand	Berge Ferdinand	MunPz III
Target	14	1	2
Ready for action	2	1	–
In workshop (up to 3 weeks)	1	–	1
Total losses	–	–	–

At that time, any damaged Ferdinands and one ammunition tanks had to be written off. The commander notes:

> 'Mood of the troop:
> Very good, confident, not affected by the present retreat.
> Special problems:
> Mountain roads with numerous tight bends and absolutely unclear combat terrain, cause great problems during marches, including many mechanical breakdown.
> Degree of mobility:
> On a stable front adequate, during a retreat operation; too slow.
> Combat value:
> …perfectly suited against tanks and heavy infantry weapons. Far-reaching gun with high-penetration power… Any skirmishes during the retreat through the mountains were not practical.'

The commander of PzRgt 69 agreed on this statement, emphasizing the fact that the Ferdinand was totally unsuitable for combat on the Italian battlefield. He urgently demanded the disengagement of 1/sPzJgAbt 653.

Over the next weeks, Allied forces captured Rome, which was surrender by Kesselring without a battle, and advanced further north. The remnants of 1/sPzJgAbt 653 reached San Marino by the end of July. On 5 August, what remained of the unit was transported back to Germany. Only four armoured vehicles – two Ferdinand (now called *Elefant*), the *Bergepanz-Elefant* and a *Munitionspanzer* III – had survived the Italian campaign.

The long retreat

Following the loss of Rome the 14th Army was pushed further north. The only special-purpose unit that remained was StuPzAbt 216. On 4 April 1944, the

76.PzKorps ordered parts of the army, including StuPzAbt 216 to withdraw:

'Order for the transfer of StuPzAbt 216 to the Pisa-Lucca region

1. StuPzAbt 216 will travel on own tracks to Pisa 200km north of Rome as army reserves on 5 April…
4. All movement will take place during the hours of darkness, covering 60km per night…
5. Immobile vehicles will be retrieved according to the transport situation…
6. The final quarters will be found outside areas endangered by air raids…
8. After reaching the final quarters the complete battle readiness has to be restored by all means. If necessary, the workshop of FschPzDiv *Hermann Göring* will help…'

On 1 July 1944, the following strength report was sent.

StuPzAbt 216	StuPz	PzKpfw II escort tank	PzKpfw IV ammo carrier	SdKfz 251/8
Target	45	5	6	2
Ready for action	6	–	1	1
In workshop (up to 3 weeks)	8	–		
In workshop (over 3 weeks)	7	–		
Total losses	24			

The personal statement of the commander:

'Panzer situation
The *Abteilung* has 21 *Sturmpanzer*, of which six are operational, eight in short-time repair and seven in long-term repair.
State of crew´s training:
Fighting quality of the crews is excellent.
Special problems:
Missing recovery means during the withdrawal forced the unit to blow up broken down tanks. Two tractors are combat ready but only to a limited extent.
Degree of mobility:
Guaranteed ready.
Combat value of the *Abteilung*:
Weakened due to high losses; The few combat-ready StuPz are of immense importance to the higher-level leadership.
Mood of the troop:
Excellent.'

One month later the situation for StuPzAbt 216 had not improved. The unit was still located to the west of Bologna, waiting to be supplied with new tanks.

An *Elefant*, on a street in Nettuno: It appears that the vehicle has been disabled by hits on the tracks and also an internal explosion. (NARA)

All ammunitions tanks had been lost. The *Abteilung* was spread over a wide area, which hindered any tactical commitment. Two immobilized *Sturmpanzer* were sited in dug-in positions on the Massa-Riegel defensive line, which had been established to protect the port of La Spezia.

On 18 August, 10 *Sturmpanzer* were sent as reinforcements, as noted in the strength report:

StuPzAbt 216	StuPz	PzKpfw II escort tank
Target	45	1
Ready for action	26	–
In workshop	7	–

The commander complained that the *Sturmpanzer* delivered were based on PzKpfw IV of five different versions, thus complicating the spares situation.

On 16 September, StuPzAbt 216 was issued with further 10 *Sturmpanzer* delivered from Germany. With 40 combat ready StuPz and six in the workshop, the unit was now fully established.

The D-Day landings in Normandy and the following advance towards Germany tied down Allied forces, allowing German forces in Italy to hold the Gothen line, denying Allied forces entry to the Po valley. During the winter of 1944, StuPzAbt 216 was deployed along this last major defensive line until the fighting stopped. The war in Italy ended soon after the spring offensive of 1945 had begun.

Back in Russia 7

In late 1943, the situation on the eastern front became desperate. In the south, the Soviets had managed to cross the river Dniester at several locations and penetrated the hastily established Wotan defensive line. From these bridgeheads follow-on offensives were launched in December, driving a massive wedge between the German *Heeresgruppe Mitte* and *Süd*. After a series of fierce battles the river was reached and partly crossed. PzJgRgt 656 with its worn-out Ferdinands and *Sturmpanzer* had already been withdrawn by the end of 1943, a complete overhaul was ordered. Since the beginning of 1944, Nibelungenwerke had been heavily involved with PzKpfw IV production, which took up manufacturing capacity, making the situation very grave. However, together with the *Heeresarsenal* Vienna a production plan was established.

The equipping of 1./sPzJgAbt 653 and the accelerated transport to the Italian Front affected the OKH's planning in the east. The proposed schedule for a redeployment of the Ferdinands in Russia – mid-March – could not be met by the company despite the mobilizing its entire workforce. On 1 March 1944, sPzJgAbt 653 reported to the still existent staff of PzJgRgt 656:

'To *Panzerjäger-Regiment* 656:

1.) State of reconditioning:

Eight Ferdinand were finished by 26 February and sent to St. Pölten. They were handed over to the 2nd company for deployment and training. The guns will be calibrated here. The remaining 25 Ferdinand (minus four) and two *Abschlepp*-Ferdinands (recovery vehicles) are dismantled, and will be refurbished on Line 2 of Hall 8 after production of the Draisines (armoured railway cars) is finished.

The crew of this vehicle is working on the brake unit for the front-left idler wheel, work like this was virtually impossible without a crane vehicle; a rare piece of equipment in the unit. The roof of the casemate was not always watertight, and is covered with a tarpaulin. (Anderson)

A Büssing-NAG 4.5-ton truck (Kfz 100), mounted with a 3-ton Bilstein turntable crane is used to remove the engine cover plate on a Ferdinand. The Maybach engines frequently overheated, and any serious repair work was only possible by removing this plate. (Anderson)

> Despite delegation of all available manpower from *Abteilung* 653, 93 skilled employees from the Nibelungenwerke and 30 armoured-maintenance men from Mielau and a further 21 from Munich, the overall number will not be sufficient. For this reason the workshop company of sPzJgAbt 654 with their Ferdinand-specialists was called in…
> By 1 March 1944, the commander of PzTr XVII assured allotment of 60 POW´s for the transport and cleaning of heavy parts could not be sent due to the bombing raid on Steyr…'

The loss of the Nibelungenwerke's only available shunting locomotive and a longer power blackouts had affected the refurbishing, the time lost had to be made up by working longer hours. The spare parts situation was critical: A delivery of new-design intake gratings was lost during rail transport, and replacements had to be ordered. There was also a shortage of new running gear, sufficient only for the Ferdinands currently under repair. Under the best possible circumstances, the commander of sPzJgAbt 653 expected the completion of a further eight vehicles by 8 March. Finishing of the remaining 19 Ferdinands was dependent on the delivery of new gratings and running gear components; these had to be parked until

The Bilstein turntable crane mounted on the Kfz 100 was a vital and efficient piece of equipment. Heavy tank units were issued with one Kfz 100 and an SdKfz 9/1, 18-ton half-track vehicle mounted with a 6-ton crane. The SdKfz 9/1 was never produced in sufficient numbers to fulfill the needs of armoured units. (Anderson)

the necessary parts arrived. A further four heavily damaged Ferdinand chassis were waiting to be dismantled and repaired at the *Heeresarsenal* Wien.

Two *Bergepanther* and three *Munitionspanzer* III had already been finished by 1 March, a further two PzKpfw III and two *Munitionspanzer* were promised by *Heeresarsenal* Wien to be ready on 10 March. The sPzJgAbt 653 sought approval for the two Ferdinands stored at Kummersdorf proving ground to be refurbished and fitted with all *Formveränderungen* (design improvements). In this same request, the *Abteilung* asked for the allotment of 'two hydraulic tanks' as recovery vehicles, without giving further detail. It is possible that these vehicles were those Tiger (P) hulls fitted with the hydraulic-drive system. Apparently this request was not authorized; it is very unlikely that these prototypes were serviceable.

The tense supply situation made it impossible to allot the unit with a new complement of soft-skinned vehicles. The remaining soft-skinned vehicles in the *Abteilung* were in bad condition, the number of serviceable trucks was so low that even routine transport duties could not be maintained. New truck-mounted cranes and heavy tractors were not available, forcing the unit to wait for new vehicles to be issued.

April 1944
Shipment to Russia

In March 1944, the important railway junction at Tarnopol was menaced by the Soviet advance. In order to relieve Tarnopol, three infantry and two tank divisions were dispatched to *Heeresgruppe Süd*, which was now renamed to *Heeresgruppe Nordukraine* (Army Group North Ukraine). The remaining two companies of sPzJgAbt 653 were subordinated as army troops.

During early April 1944, 2 and 3.sPzJgAbt 653 was loaded for transport to Russia. On 8 April 1944, the Ferdinand-*Abteilung* was unloaded at Brezany some 30km west of Tarnopol. The vehicle strength was as follows:

A Ferdinand being refuelled and loaded with ammunition delivered by a *Maultier* (Mule) half-tracked truck: the only type of truck that was able move supplies under all conditions on the battlefront. Note the badge of sPzJgAbt 653 on the front of the superstructure. (Münch)

2. and 3./ sPzJgAbt 653	Ferdinand	Bergepanzer Ferdinand	Bergepanzer Panther	MunPz III
Target	31	2	2	4
Ready for action	30	2	1	2
In workshop (up to 3 weeks)	1 still in Austria		1	2

Each company was issued with 14 Ferdinands and a further three vehicles were kept in reserve.

The situation with the lack of soft-skinned vehicles was still alarming. Many passenger cars and trucks were with the 1st company in Italy. The entire ammunition, fuel and spare parts supply echelons were missing.

Of the requirement for 29 heavy halftracks only 22 could be issued. This low number was further reduced by the fact that any available halftracks had to travel between the front and the rear areas to guarantee the supply of ammunition and fuel.

The number of crane vehicles was not sufficient. Beside the less mobile gantry crane in the workshop only one SdKfz 9/1 mounting a 6-ton crane and one SdKfz 100 with a 3-ton crane were available, not enough for the needs of the heavy Ferdinands. Vital arc-welding equipment was also missing. Thus both workshop and recovery services were worked to their limits.

By mid-April, a battle group was formed from parts of the 9.SS PzDiv and StuGBrig 311, and advanced southeast to Kozova, 20km west of Tarnopol on the same day. Several assaults were launched to relieve the encircled town. The advance was hindered by heavy rain, which turned the terrain into bottomless mud. For both sides, the river Strypa formed a difficult obstacle.

On 17 April 1944, the II.SS PzKp reported in its war diary that two Soviet counterattacks, had been repulsed. An attack on Siemakovce, a town of tactical importance, by the company was ordered for the afternoon. This had to be cancelled, because the Ferdinands of sPzJgAbt 653 were not available in time due to transport problems. The war diary described the overall state of the greater German formations (1.PzDiv 7.PzDiv and 16.PzDiv) as weary. The only available reserve was a weak battle group formed by 19.PzDiv.

On 24 April, a further attack on Siemikovce was ordered. Reconnaissance forces and grenadiers were supported by nine Ferdinands and two *Sturmgeschütze*. The fighting against stiff Soviet resistance lasted for two days. The enemy bridgehead was finally destroyed in the early hours of 26 April.

The Soviets launched further assaults over the Strypa, and all were repulsed. Here the firepower of the Ferdinand proved to be decisive. Indeed so decisive that the Soviet reacted and withdrew their tanks replacing them with a concentration of anti-tank guns and field artillery. These dug-in weapons inflicted heavy damage on the Ferdinands, putting an enormous stress on recovery and workshop elements. However, in the sPzAbt 653 sector the front was stabilized.

Although the Ferdinands were not able to attack over the Strypa, they successfully hindered the Soviet forces in the area. The positions held by sPzJgAbt 653 soon formed a wedge into Soviet held area, while the German forces had to give way at other places.

During an inspection, General Busse criticized that the divisional sectors of 1.Army were only 12km broad, compared to the average 23km held by the other corps and armies. Busse demanded more effort, since a massive Soviet counter-offensive was anticipated.

On 30 April, a local breakthrough was made by 100.JgDiv, supported by heavy fire from the Ferdinands.

When the unit was withdrawn in August 1944, it was sent to assembly areas in the Carpathian Mountains, where every effort was used to repair and maintain the surviving Ferdinands. (Münch)

May 1944

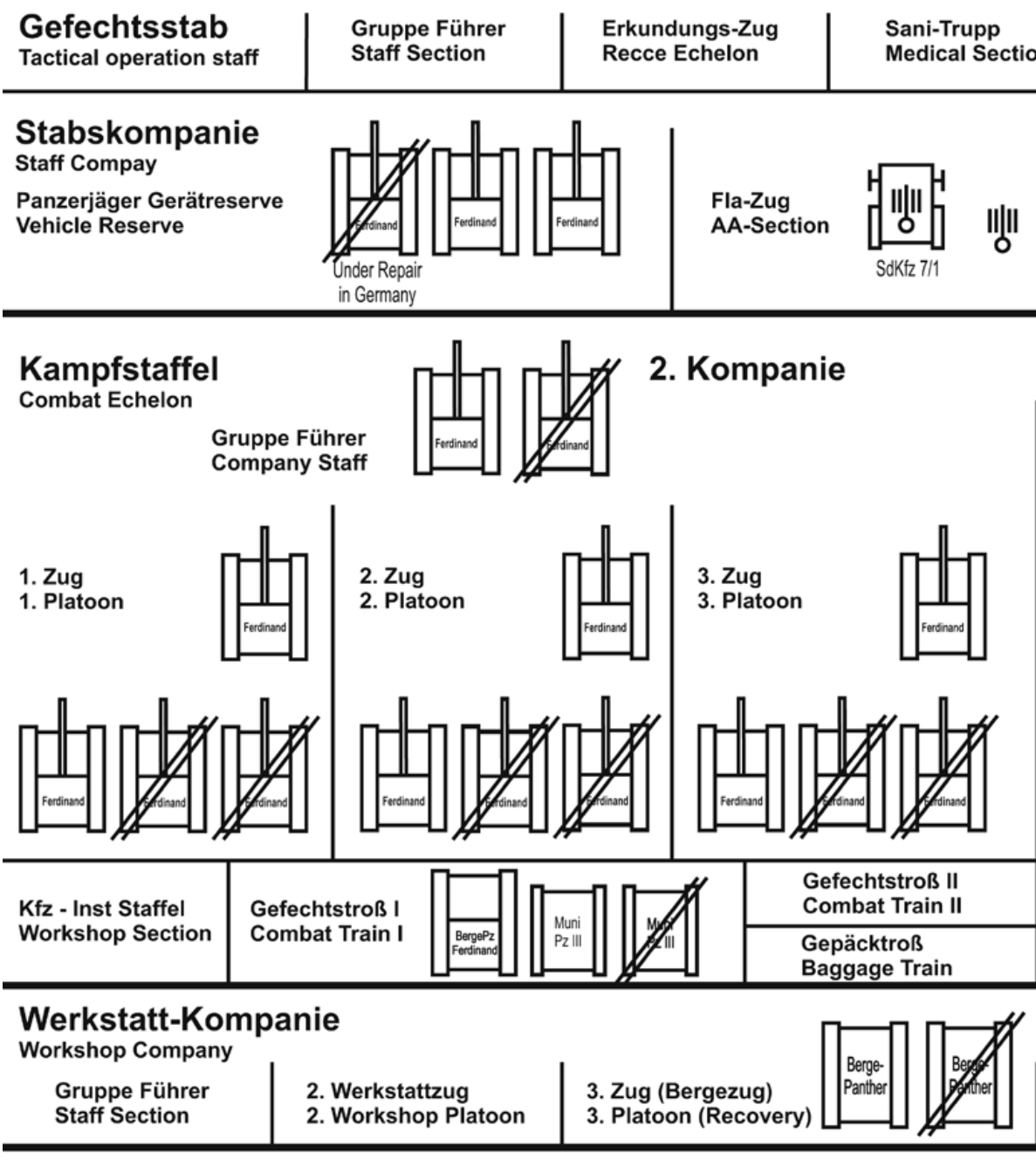
In May 1944, the overall state of the *Abteilung* had worsened. The delicate Ferdinand suffered from the steady wear and tear, thus reducing the number of vehicles ready for action. Half of the Ferdinands were in short-term repair, 60 percent of the sZgKw 18t were immobilized.

The organizational structure shows that more than half of the Ferdinands were under repair. This percentage sounds rather dramatic, but other German units showed even worse figures. Indeed, on 1 October sPzAbt 508 had only 15 combat ready Tigers out of 45, and 13.PzDiv reported by August 1944 only 45 percent of its PzKpfw IV as intact. Even the modern Panther tank did not perform better, 4.PzDiv reported on 1 August 1944 only 50 percent of its medium tanks as combat ready.

The workshop and combat transport trains of 2. and 3./sPzJgAbt 653 had more problems with the excessive weight of the heavy *Panzerjäger*. Weighing some 70 tons, the vehicle was simply too heavy to be recovered when it failed or bogged down in heavy mud. The available two *Bergepanzer* Ferdinand and both Bergepanther (one was in the workshop at that time) were not provided with winches, the only piece of equipment suited for recovering tanks from Ukrainian mud. The heavy SdKfz 9 tractors could be used only in groups of four.

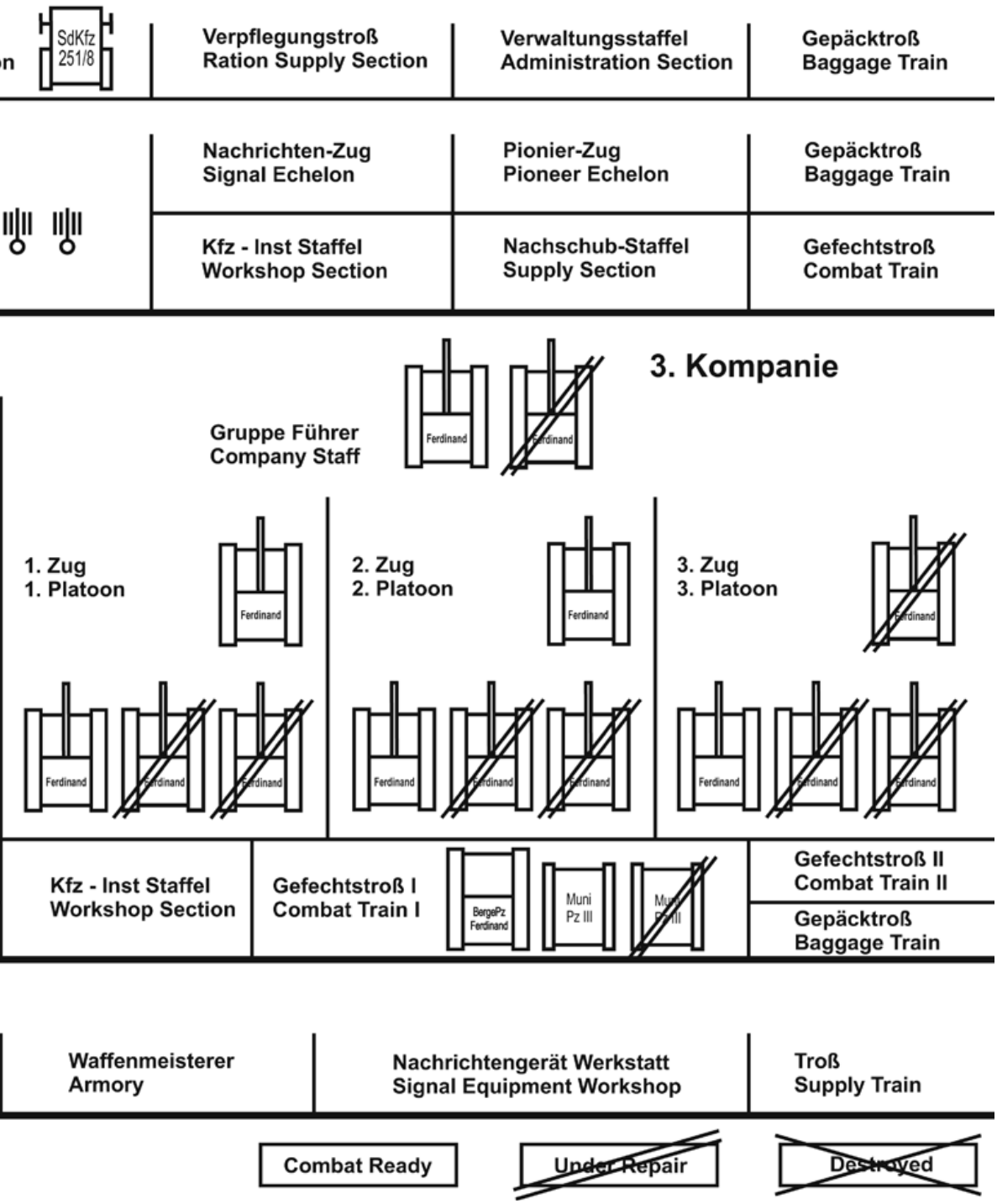
Kriegsliederung der sPz

Actual organization structure, dated 1 May 1944. Acco



zJgAbt 653 (Ferdinand)

outrement with Weapons and Armoured Vehicles only.



A crew member uses the small hatch in the rear plate of the superstructure to pass an 8.8cm round into the interior. Note that the tool box and spare track links have been moved to the rear of the vehicle to protect them from enemy fire and shell splinters. (Münch)

The commander, *Hauptman* Grillenberger, added a long list of complaints to his strength report:

'State of training:
The state of training is good. The *Abteilung* consists by 30 percent of *Sturmgeschütz* men, being in combat in the east since 1941. A further 50 percent joined the *Abteilung* by 1943 and saw military action during all commitments in this year. The remaining 20 percent have no specific experiences.

Mood of the troop:
The troop is enthusiastic; all men are keen to meet a real tank enemy.

Special problems:
The heavy *Panzerjäger* Ferdinand suffers from many problems caused by its excessive weight and delicate drive train. Crews and workshop are struggling hard to deal with the technical problems. However, the incompletely equipped workshop echelon and the missing cranes and arc welding equipment cannot be compensated for… Since 17 heavy trucks, one *Maultier* and four Volkswagen are still delegated to the combat group in Italy, supply with ammunition and fuel can be maintained only by using the recovery vehicles. Due to the great number of mechanical losses mobility of the medical, the signal and workshop echelon and further parts cannot be assured. The situation gets worse by the fact that some Volkswagen had to be returned for other purposes…

Signed Grillenberger'

On 3 May 1944, the 1st Panzer Army reported the destruction of a substantial amount of Soviet equipment: 129 tanks, 14 assault guns, 13 self-propelled anti-tank guns, also 140 artillery guns and 201 anti-tank guns. The Ferdinands of sPzJgAbt 653 were an important part of this success, although exact figures are not available. The question whether this was worth the extreme effort cannot be answered.

The potential combat value of the Ferdinand was high. Its heavy armour was basically indestructible. But the severe problems with the drivetrain on the vehicle, however, put everything into perspective. While it was not recommended to enter a direct combat with the Ferdinand, it was possible for the enemy to outflank a single vehicle or, if possible, a complete unit. Knowing the strengths and weaknesses of the sPanzerjäger, Soviet troops tried to do this repeatedly, and occasionally succeed.

In this context, the recollections of a sPzJgAbt 88 veteran are interesting. This unit, equipped with the *Hornisse Panzerjäger* (SdKfz 164), also saw action near Lemberg in mid-1944. The veteran, a driver, Gefreiter Hoffmann, recalled after the war:

'I never saw this Porsche-thing. Everybody on the front was talking of it, calling it a wonder-weapon, being better than the Tiger… My boss was very proud of

The engine compartment in the Ferdinand was very limited which made any repair work virtually impossible without removing the engine cover plate. A maintenance crew use a truck-mounted 3-ton crane to remove a complete power unit – generator and a Maybach HL 120 engine – out of the vehicle. (Münch)

> our *Hornisse* with its long gun, we were pretty successful. He scoffed at this giant vehicle: "Too heavy to move, to clumsy to steer, what a dreck", he said.'

On 11 May, the sPzJgAbt received orders to move from Kozova to Zborev, a journey of only 15km. Due to the heavy weight of the Ferdinand, the route had to be thoroughly planned. In the warmth of early summer, many Ferdinand broke down due to overheated engines. However, there were no total losses during the months of April and May. By late May, it was officially decided to rename the schwere *Panzerjäger* Ferdinand the *Elefant* (Elephant).

June 1944

On 1 June 1944, the unit was in a very good state. Due to the relative calm situation at the front; the Strypa made the defence of its combat sector quite easy; the unit had only three *Elefants* out of its complement of 31 under repair. Also all the amoured-support vehicles were combat ready.

During May 1944, the chief of the workshop unit had produced a number of interesting customized vehicles.

Because of the heavy weight of the *Elefant*, and its vulnerability to breakdowns, the recovery section of sPzJgAbt 653 was issued with up to ten sZgkw 18t (SdKfz 9) heavy halftracks, two *Berge-Elefant* and two *Bergepanther* recovery tanks. The latter were not provided with the powerful 40-ton winch issued to the majority of the *Bergepanthers*, they had to be used as towing vehicles. However, in this role they did not perform well, since the *Elefant* was simply too heavy to move when bogged down.

To make best use of the highly-mobile vehicles, the two *Bergepanther* were converted by the ingenious men in the unit's workshop. One vehicle was fitted with the turret from a destroyed PzKpfw IV recovered from 19.PzDiv. It is not known whether the turret was installed with a workable turret ring, so possibly it was fixed. However, in the strength report, one 7.5cm KwK 40 was reported as being serviceable. With or without a working gun, the modified vehicle served as a *Befehls*-Panther (command Panther).

The other *Bergepanther* was in the workshop to be mounted with one of the three towed 2cm *Flakvierling* anti-aircraft (AA) guns. This anti-aircraft tank was added to the inventory on 1 July.

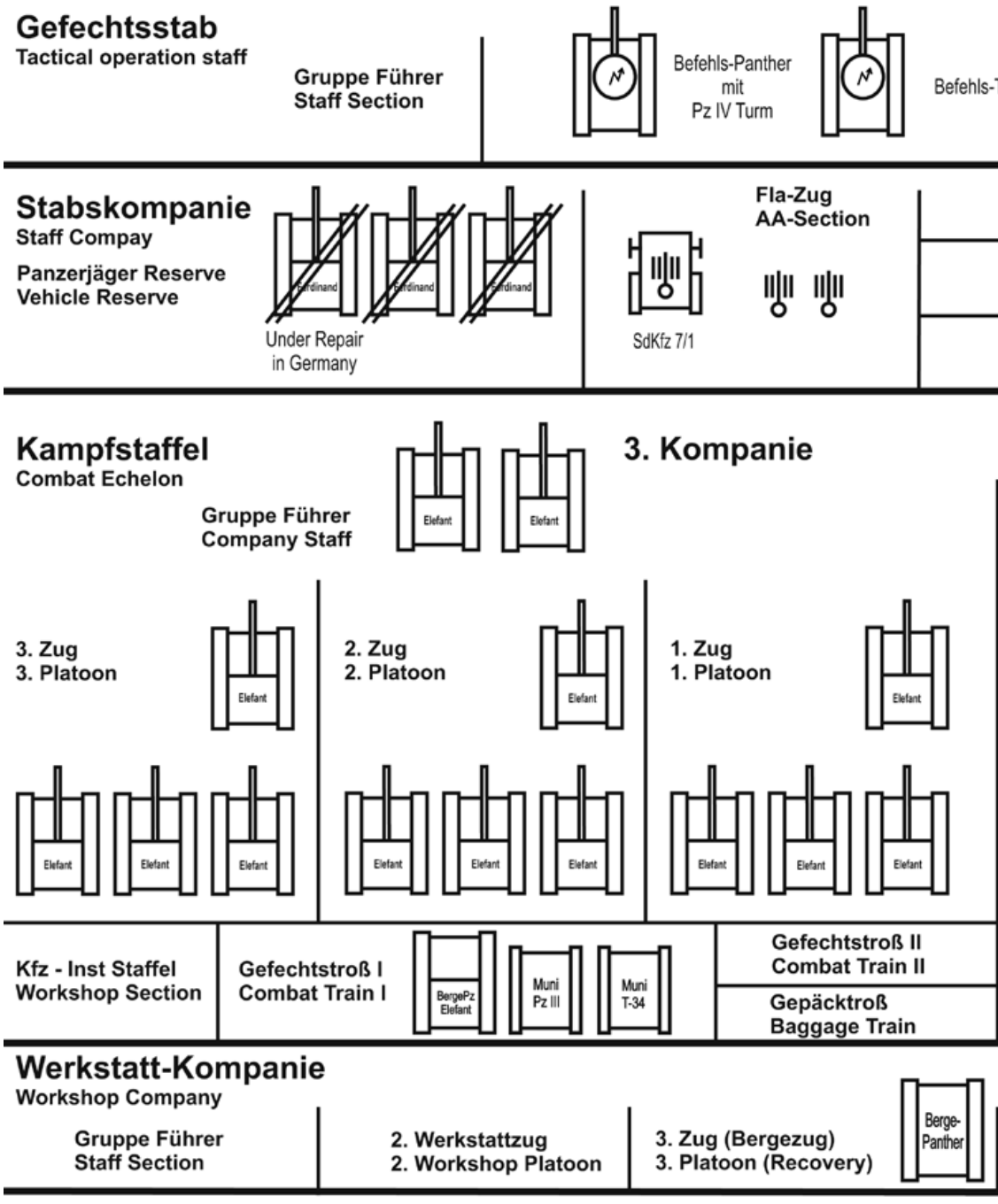
As with many other German units, sPzJgAbt 653 made good use of captured enemy equipment. Two Soviet Army T-34 medium tanks were recovered and reworked. One served as an ammunition carrier to replace one of the Muni-Pz III, lost in May. The other was ingeniously converted to a fully-operational AA tank. A 2cm *Flakvierling* was mounted on the turret ring, in an open-topped turret fabricated from scrap metal.

At the end of May, the unit received a further interesting vehicle from Germany. When the production of the Tiger (P) heavy tank ceased in 1942,

Two *Elefants* parked in small village being prepared for an attack. The large vehicles were easy to spot from the air, but their heavy armour was protection against fire from Soviet heavy machine guns. (Schneider)

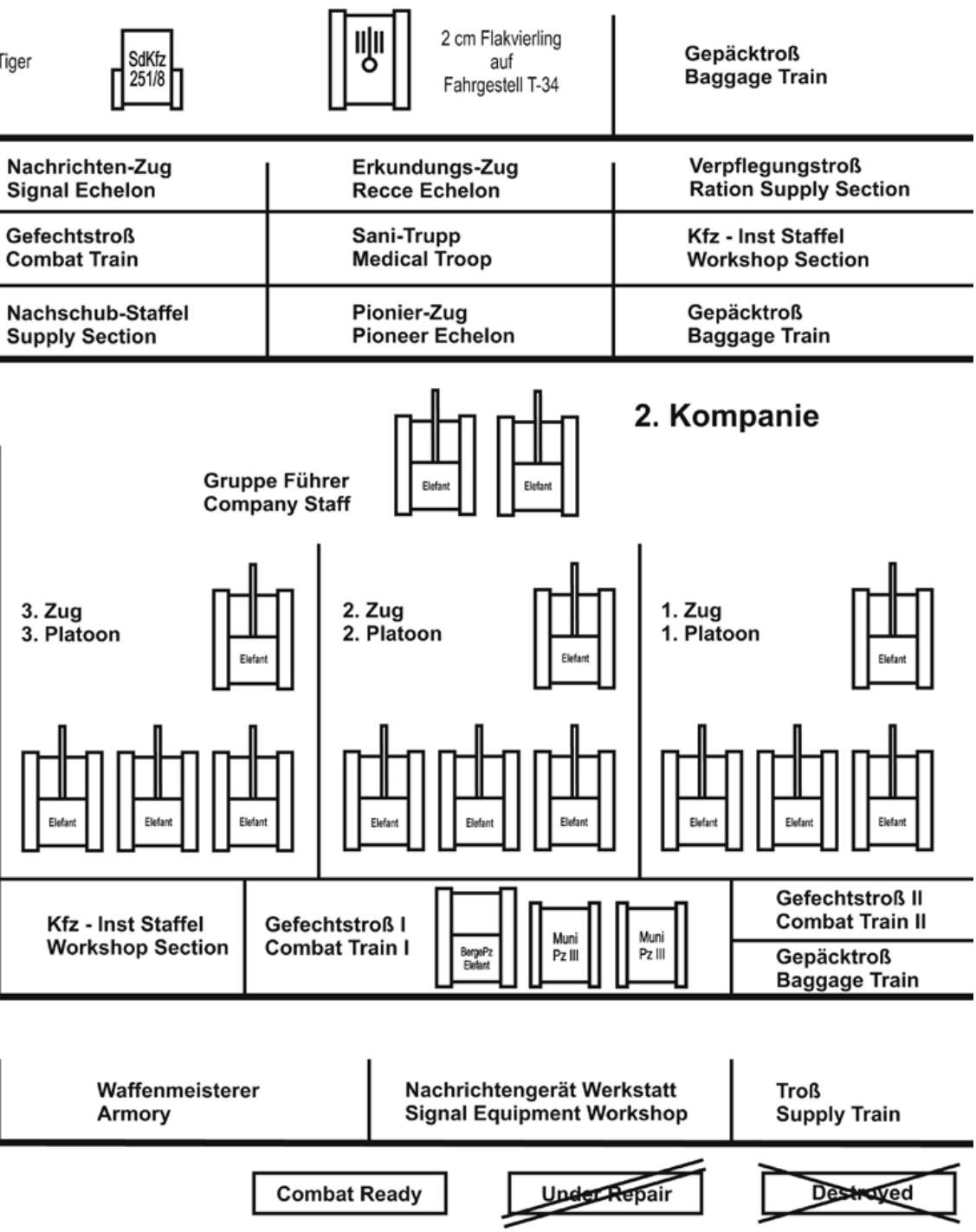
Kriegsliederung der s

Actual organization structure, dated 1 June 1944. Acc



PzJgAbt 653 (Elefant)

outrement with Weapons and Armoured Vehicles only.



In May 1944, the *sPanzerjäger* had been officially renamed as the *Elefant* (Elephant). Note the badge of sPzJgAbt 653 painted on the front plate of the superstructure. (Anderson)

some vehicles were sent to Tiger *Ersatzabteilungen* (replacement units) and subsequently used for the training of crews. Others were used for further testing. In 1944, it was decided to send one Tiger (P) as a command tank to sPzAbt 653. The tank was shipped to Nibelungenwerke where the air-cooled Porsche engines were replaced by Maybach engines. The frontal armour was reinforced by bolting on 100mm thick plates. The vehicle was coated with *Zimmerit* anti-magnetic mine paste. Upon completion, this vehicle was sent to Russia as a *Befehls*-Tiger (command-Tiger).

The commander, *Hauptman* Grillenberger, in his comments to the strength report dated 1 June:

> 'State of training:
> The state of training is good. By the allocation of further commissioned and non-commissioned officers the situation will further improve.
>
> Mood of the troop:
> The troop is enthusiastic; all men are keen to meet a real tank enemy.
>
> Special problems:
> Without the 1.workshop section, which, according to its composition, comprises 70 percent of the workshop´s productivity, and without the SdKfz 9/1 (6-ton rotating crane) the needs of the *Abteilung* cannot be settled. Issued only with a Kfz 100 (3-ton rotating crane truck) and two gantry cranes, proper maintenance and repair is not possible. Welding work can only be carried out with insufficient appliances. The new welding equipment of low quality recently supplied failed after two days. It cannot be repaired. Damage by enemy fire and all further urgent welding work can be carried through only, if two sets of arc-welding apparatus will soon be issued. New spare parts have been ordered, but have not reached the unit. If these parts are not delivered soon then combat readiness for the *Abteilung* will decrease rapidly. The heavy trucks of the supply section still with the combat group in Italy are urgently needed here for transport of ammunition, fuel and spare parts… the *Abteilung* lacks transport capacity.
>
> Mobility:
> After allotment of the missing heavy trucks, the tactical mobility will be 100 percent. At present it is only 75 percent.
>
> Combat value and possible applications:
> Ready for every attack mission with consideration to the above mentioned problems.
>
> Signed Grillenberger'

The fact that such a precious combat unit as sPzJgAbt 653 could not be provided with simple material such as spare parts and trucks proved the

production difficulties with the German armaments industry. Over the month of June, the unit only lost two men in combat.

July 1944

During the final days of June, the unit was slightly reorganized: Four *Elefants* had been delivered from Germany; the *Panzerjäger* reserve echelon was now disbanded, and a new anti-tank section with six *Elefants* and one T-34 ammunition carrier was established. By the end of June, the modified anti-aircraft Panther (2cm *Flakvierling*) was ready and incorporated into the tactical operation staff echelon.

The unit had now 34 *Elefants*, three over the authorized strength. The combat readiness was still very good, with only six *Elefants* being under short time repair in the workshop.

The commander in his personal report dated 1 July 1944:

The wide, treeless steppe of Ukraine was a most difficult terrain for armoured operations. Even in summer, any heavy rain would turn the ground into a quagmire. Two *Elefants* have become immobilized in this bottomless mud and if recovery was impossible then the vehicles would have been blown up. (Schneider)

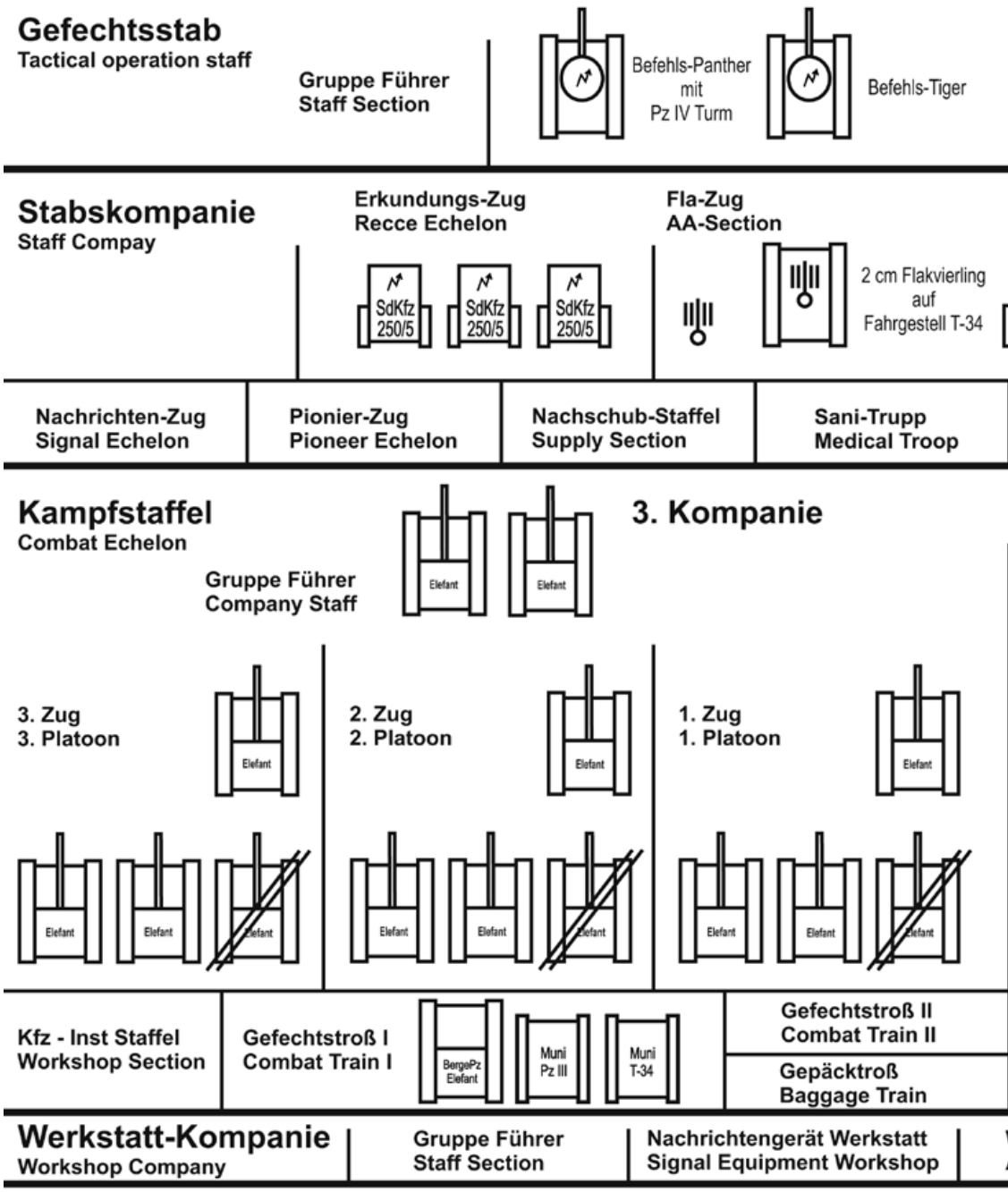
'State of training:
Gaps in the unit´s training could not be completed until 28 June after the end of other courses within the companies. Instructions the pioneer service has been completed in all companies. Due to fuel shortages no training with the tanks was conducted. Instead all officers were instructed at sand table exercises… Summing up, the state of training in the *Abteilung* is good.

Mood of the troop:
The troop is keen to see the decisive action.

Special problems:
The shortcomings of the workshop section and the missing crane vehicles (SdKfz 9/1) and trucks, which are still in Italy, could not be resolved until today. In combat this can be of decisive importance.

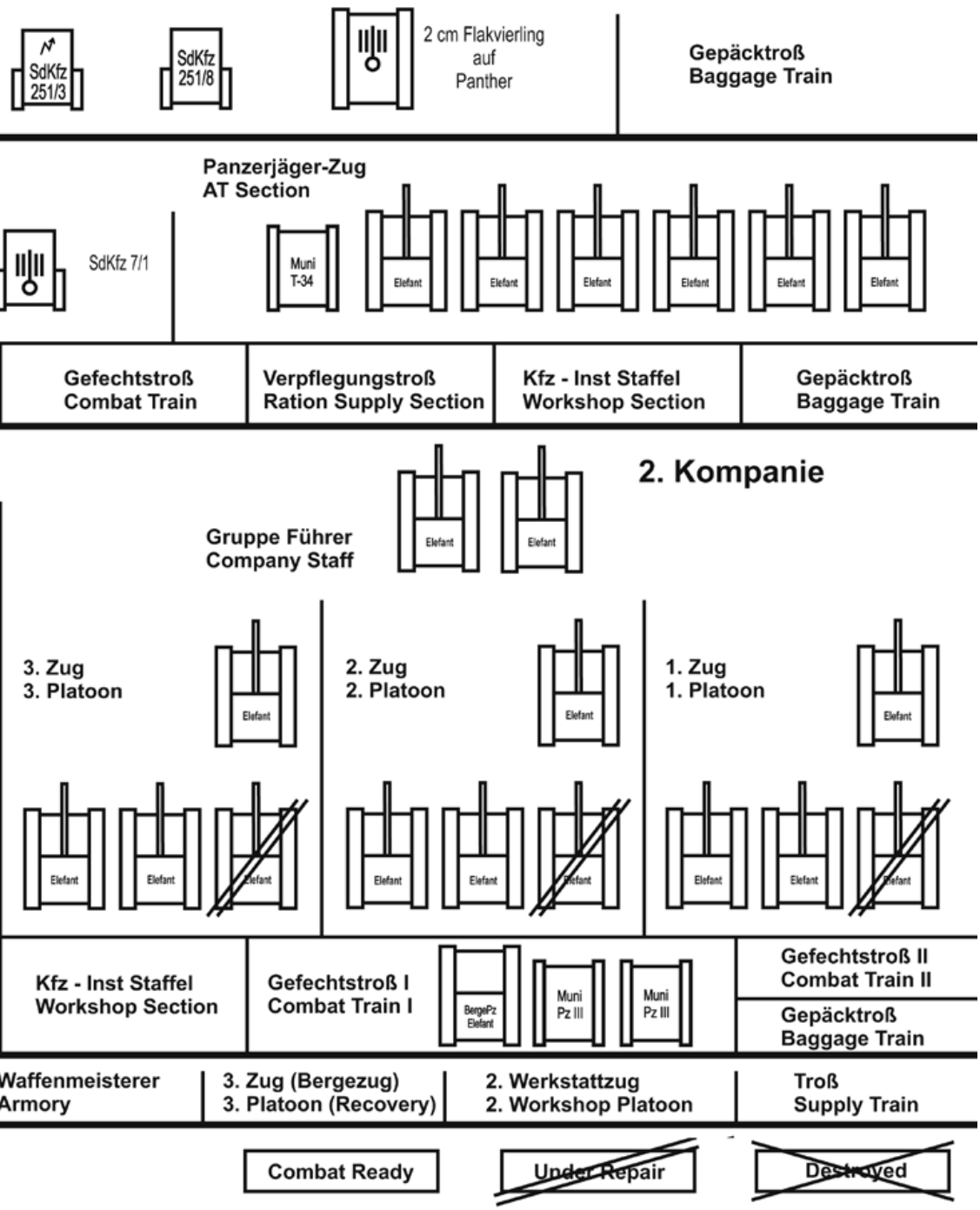
Kriegsliederung der s

Actual organization structure, dated 1 July 1944. Acco



PzJgAbt 653 (Elefant)

outrement with Weapons and Armoured Vehicles only.



Mobility:
The tactical mobility is only 75 percent

Combat value and possible applications:
Ready for every attack mission despite the above mentioned problems.

Signed Grillenberger'

Again, the difficult supply situation impaired the combat readiness of sPzJgAbt 653. Beside spare parts and ammunition, the available fuel was a critical point. Apparently the unit intended to build up stocks for the great battle to come.

After eight weeks of relative calm, July became a black month for sPzJgAbt 653.

On 19 July, the Soviets launched a great 'pincer' movement from Czortkov to Rohatyn, bypassing the XXIV.*Panzerkorps*, and directly menacing the XXXXVIII.*Panzerkorps*. In the meantime, a *schwere Eingreiftruppe Nordukraine* (heavy-deployment force) was established. It consisted of sPzJgAbt 653, the Tigers of sPzAbt 506 and the *Sturmgeschütz* Brigades 300 and 311. The combat group held their positions repelling all assaults. The *Elefants* with their high-performances guns inflicted heavy losses on the Soviet units.

However, further north the Soviets broke through the German lines. The Soviets had forced a wedge between 1st and 4th Panzer Army. Now Lemberg was directly threatened. In this situation the headquarters of *Heeresgruppe Nordukraine* had to be evacuated and relocated west to the city of Landeshut.

The next day Soviet units reached Lemberg, the s*chwere Eingreifgruppe Nordukraine* was almost encircled. Lacking the Tiger *Abteilung*, which was involved further north, sPzJgAbt 653 was positioned between Rohatyn and Brezany. In the very heavy fighting the positions were held. The slow moving *schwere Panzerjäger* were slowed even more by the muddy terrain. Even minor damage to the engines caused them to overheat which led to the vehicle becoming immobilized. Under these conditions recovery was impossible; *Elefant* after *Elefant* had to be blown up by their crews to stop them being used by the Soviets.

Despite the situation, the battle group was not allowed to retreat west. On 21 July, the Soviet 'pincer' was redirected north to assist the attack on Lemberg, thus relieving the situation for sPzJgAbt 653.

Being aware of the new headquarters of *Heeresgruppe Nordukraine*, the Soviets launched a direct assault on Landeshut. Lemberg was almost captured; sPzJgAbt 653 fell dangerously back in the east. When Russian troops marched into Lemberg on 22 July, the Soviets applied pressure to form a 'pocket' to the east and north.

On 24 July, the complete northern sector of *Heeresgruppe Nordukraine* was taken. One day later, a further massive thrust menaced the headquarters

at Landeshut again. The *schwere Eingreifgruppe Nordukraine* was still in their positions east of Lemberg.

The *Elefants* held their positions until 27 July, and the few combat-ready vehicles would show their firepower again. However, the noose on the 'pocket' was further tightened and sPzJgAbt 653 was allowed to move west, before a slow retreat followed.

August 1944

The strength report dated 1 August 1944 shows the catastrophic results of the July fighting.

The number of *Elefants* had reduced down to 12. A total of 22 *sPanzerjäger* and the Porsche-*Befehlstiger* had been lost; most had to be blown up by their crews after being immobilized. The remaining *Elefants* were all awaiting repair, and were withdrawn using all available forces.

The losses in personnel were astonishingly low. In the past month, one officer and 19 non-commissioned men were wounded, only five men died in combat. These facts support the assumption that most of the *Elefants* lost was not due to enemy action.

The 8.8cm KwK gun mounted on the *Elefant* was the best anti-tank weapon of World War II, being very accurate and having extraordinary penetration power. This JSU-152 was destroyed by vehicles of sPzJgAbt 653. Note the hole in the front plate is a pistol port not a shell hole. (Anderson)

Overleaf:
The crew of an *Elefant* uses a *Rohrwischer* (stiff brush) to clean the barrel of the 8.8cm KwK. The high-performance gun on the *Elefant*, was much feared by Soviet forces, and it allowed sPzJgAbt 653 to hold their positions while suffering very few losses in men and material. (Schneider)

An *Elefant* fitted-out as a command tank, note the second radio antenna mounted on the rear of the vehicle. The large box mounted on the exhaust cover contained the gun-cleaning kit. (Schneider)

In his personal report dated 1 August 1944, the commander describes the situation:

'State of training:
… The state of education is good in every aspect. The experiences of the earlier fighting are fully exploited and proved to be fully appropriate for the conduct of combat during the recent *Grosskampftage* (grand battle days). Difficulties arose only due to the demand of the higher command to fight recklessly without consideration for the recommended combat principles for the guns (*Elefants*). Now, during the time of refurbishing the *sPanzerjäger*, all free units are being trained according their duties… If the unit is to be issued with different vehicles, the bulk of the *Abteilung* needs to be retrained.

Mood of the troop:
The troop has no understanding for the way in which the unit had to be deployed. This deployment asked the impossible, over burdening the engines…'

With the number of combat ready *Elefants* decreasing, some personnel of sPzJgAbt 653 were used infantry style to defend the retreat, eliciting further protest:

‘ … The tank crews had repeatedly shown their resolve under combat conditions. For an infantry-type deployment, however, they feel that they are not being used correctly. The troop wants to take part in the decisive battle with repaired or newly-issued tanks.

Special problems:
The shortcomings of the workshop section and the missing crane vehicles (SdKfz 9/1) and 17 trucks proved to be most disadvantageous due to the high fuel and ammunition consumption. A deployment as rearguard of for providing delaying resistance was impossible, since unloading and transport via rail was not possible. Requiring four *schwere Zugmaschinen* (heavy half-tracked tractors) per *Elefant*, any recovery over greater distances was unfeasible, especially when planned disengagements came under fire or were hindered by damaged roads and bridges. The repair works are slowed down by the fact, that many broken-down *Elefants* were still not recovered and transported to the workshop and missing spare parts…’

Again the commander suggested re-equipment with new tanks:

‘… A re-armament with new tanks would be is possible with Tiger tanks if the new *schwere Panzerjäger* (‘*Jagdtiger*’) is not available. In this case a retraining of three to four weeks is necessary…

Mobility:
Except for the tanks, which have to be repaired, the tactical mobility is 80 percent.

The *Berge-Elefant* recovery tank was a powerful vehicle, but it was not fitted with a winch. Any immobilized *Elefant* would have to be towed out of the mud, a procedure which stressed the vehicle’s delicate transmission. (Münch)

Kriegsliederung der s

Actual organization structure, dated 1 August 1944. Ac

Gefechtsstab
Tactical operation staff

Gruppe Führer
Staff Section

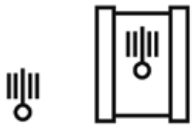
Befehls-Panther
mit
Pz IV Turm

Befehls-Tiger

Stabskompanie
Staff Compay

Erkundungs-Zug
Recce Echelon

Fla-Zug
AA-Section



2 cm Flakvierling
auf
Fahrgestell T-34

Nachrichten-Zug
Signal Echelon

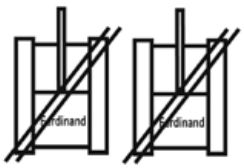
Pionier-Zug
Pioneer Echelon

Nachschub-Staffel
Supply Section

Sani-Trupp
Medical Troop

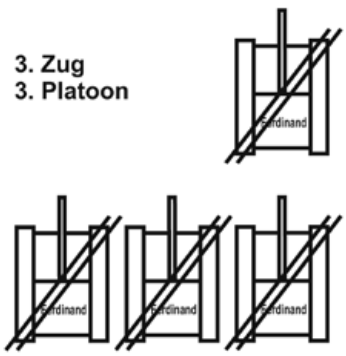
Kampfstaffel
Combat Echelon

Gruppe Führer
Company Staff

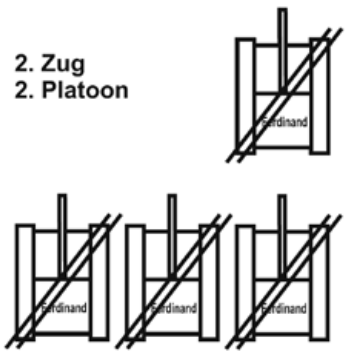


3. Kompanie

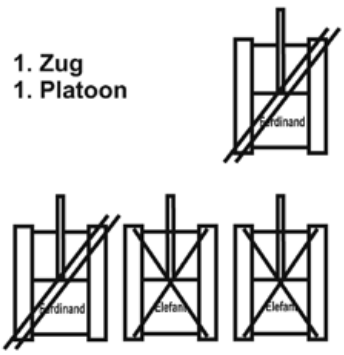
3. Zug
3. Platoon



2. Zug
2. Platoon

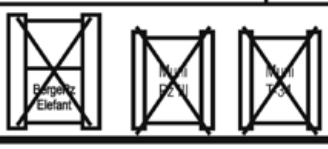


1. Zug
1. Platoon



Kfz - Inst Staffel
Workshop Section

Gefechtstroß I
Combat Train I



Gefechtstroß II
Combat Train II

Gepäcktroß
Baggage Train

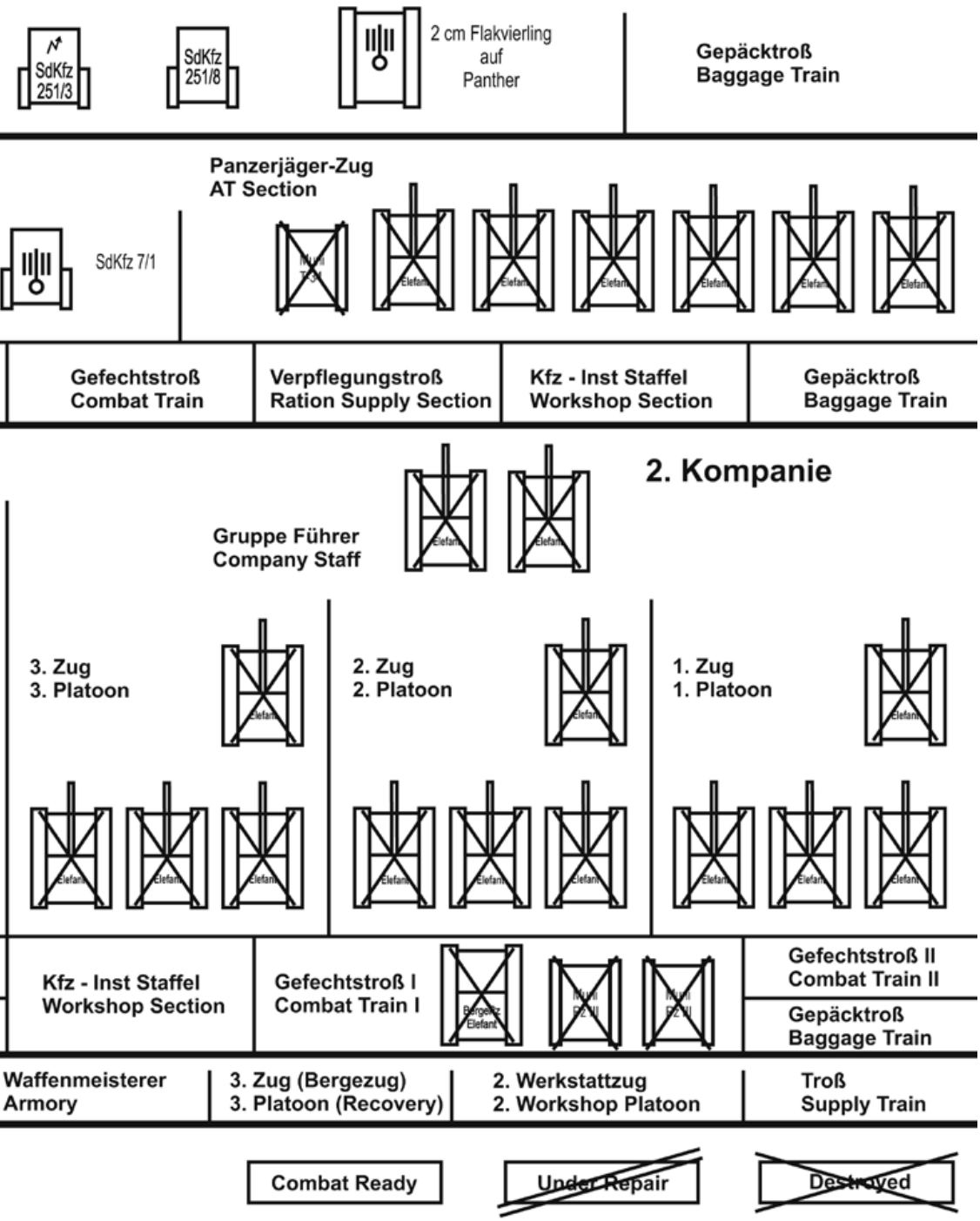
Werkstatt-Kompanie
Workshop Company

Gruppe Führer
Staff Section

Nachrichtengerät Werkstatt
Signal Equipment Workshop

PzJgAbt 653 (Elefant)

coutrement with Weapons and Armoured Vehicles only.



The *Muntionspanzer* III, armoured ammunition carrier was built by using refurbished PzKpfw III hulls and a number were issued to sPzJgAbt 653. This versatile vehicle was used to deliver vital supplies directly to the battlefront. (Anderson)

Combat value and possible applications:
After re-establishment with new tanks and/or repaired tanks and the delivery of supply and maintenance material suited for every attack mission.

Signed Grillenberger'

These comments are a confession that the existence of the sPzJgAbt 653 as a battle-ready unit had ended. Minus it heavy material, the 2nd Company was sent to Fallingbostel in Germany, where it met the 1st returning from

Italy. Again united, the sPzJgAbt 653 expected to be issued with the new super heavy *Jagdtiger Panzerjäger*.

In the east, only 12 *schwere Panzerjäger Elefant* survived the retreat, all the others were destroyed. The remaining vehicles required a large-scale refurbishment, and were merged in the 3rd company.

On 2 August, a massive assault on the positions was repulsed. The war diary of 1st Panzer Army reported of 'very heavy rainfall', thus hindering any movement of the damaged *Elefants*. The unit lost further vehicles. All of them were blown up due to fuel or lack of spare parts or recovery problems.

Loading damaged *Elefants* onto a railway wagon was a very difficult task, and almost impossible without a head ramp. A *Bergepanther* is being used to haul a trackless *Elefant* nearer to the loading platform. (Anderson)

On 4 August, the movement of the bulk of the *Abteilung* was ordered, the destination Krakov in Poland, some 150km west of Lemberg. Here the *Elefants* were to be repaired. This was a slow process, since spare parts had to be tdelivereded by road transport from Austria. Two *Elefants* arrived from Austria to reinforce the remnants of sPzJgAbt 653. With 14 tanks ready for action, 3./sPzJgAbt 653 was ordered to form defensive positions south of Krakov.

Here the miserable remnants of the former *Abteilung* were used as a 'fire brigade'. Long marches over stressed the vehicles, and subsequently caused problems for the recovery and workshop services. By mid-December, 3/sPzJgAbt 653 was renamed as *schwere Heeres Panzerzjägerkompanie* (*Heeres* PzJgKp) 614, because the mother unit was reformed and equipped with the *Jagdtiger*. With less than 10 serviceable vehicles, their status as a battalion was not valid.

On 25 February 1945, the Inspector General of the *Panzertruppen* reported from a F*ührervortrag* concerning the preparations for the defence of Berlin:

'b.) sPzJgKp 614 at Stahnsdorf:
Actual stock: two *Elefant* (all under repair in the workshop. Supply of spare

The crew of *Elefant* '221' assisted by men of the workshop company attempt to repair a damaged bogie; a replacement running wheel is ready to be fitted. (Anderson)

parts by truck initiated. The delivery of *Jagdtiger* (Porsche suspension), which cannot be repaired in the west due to missing spare parts, has been ordered.'

A list showing the state of establishment of the unit, now called sHeeres PzJgKp (*Elefant* and *Jagdtige*r) 614, was published on 26 February. Combat readiness was expected on 10 April.

It is not known whether the 'reinforcements' reached the company in time. The remaining few *Elefants* fought their final battles around Zossen and Wünsdorf to the south of Berlin.

The last document known dealing with Porsche-designed tanks is dated 31 March 1945. In a telex message the establishment of two tank companies (*Panzerkompanie* [PzKp] *Kummersdorf* and PzKp *Berka* was ordered, using all available *Versuchs-Panzerfahrzeuge* (trials tanks) which were being tested at the site. PzKp *Kummersdorf* was authorized with a strange assembly of armoured vehicles:

'Two tank platoons (limited mobility):
One Tiger II
One *Jagdtiger*
Four Panther
Two PzKpfw IV (lang)

Strafing attacks by patrolling Soviet aircraft were a constant danger. This *Elefant* was attacked without being damaged, but the huts in the background were set ablaze by incendiary tracer bullets. Many tank units had the VW *Typ* 166 *Schwimmwagen* in their inventory. (Schneider)

One PzKpfw III (5cm L/60)
One SdKfz 164 *Nashorn*
One SdKfz 165 *Hummel*, with 2cm MG 151/20 (triple mounting)
Two Sherman (lang)

One reconnaissance platoon:
One four-wheeled armoured car (7.5cm KwK L/24)
One four-wheeled armoured car (2 cm)
One captured armoured car (Zwilling, twin gun)
One B IVc (2cm)
Two B IVc (MG)

One tank platoon (immobile):
One Porsche Tiger (8.8 cm L/70)
One *Waffenträger* Steyr (8.8 cm L/70)
One P 40(i)…'

This strange assemblage shows the desperation which heralded the final phase of Hitler's war. Two mixed tank platoons equipped with partly immobile vehicles of different origin, and one platoon issued with immobile tanks were to defend Berlin. The existence of a Porsche-Tiger fitted with the long-barreled 8.8 cm KwK 43 is a mystery, and can be confirmed only by a single photograph, and some documentation.

Both PzKp Kummersdorf and PzKp Berka would surely have been no match for the battle-proven Russian tank units heading for Berlin.

Above:
A Tiger turret fitted with a longer-barreled main gun. The vehicle appears to be dug in 'hull down'. The author, with some caution, believes that this could be the Porsche *Typ* 101 Tiger mounting an 8.8cm KwK 43, that is mentioned in the establishment order for PzKp '*Kummersdorf*'. Note the turret marking 'K01'. (Pasholok)

Left:
Both crew hatches on this *Elefant* are open and the gun has been released from the travelling cradle. Spare track links have been placed on the front of the vehicle for extra protection. (Anderson)

8 Decline

During the heavy defensive battles in the east, units equipped with *sJagdpanzer*, *Sturmpanzer* and remote-controlled tanks remained in active combat.

While the heavy tank destroyers Ferdinand, now called *Elefant*, fought their last battles in the east, the *Funklenkpanzer* and *Sturmpanzer* units were still active combatants, and vital support arms. How did the latter perform?

The *Sturmpanzer Abteilungen* in 1944/45

The *Sturmpanzer* was originally developed for deployment in beleaguered cities, what is now called urban warfare, and were intended to shorten the bloody and bitter street fighting. However, the combination of heavy ordnance and armour protection made the type a valuable support weapon during offensive operations around Kursk. For this reason, after combat at Kursk in the summer of 1943, production of the *Sturmpanzer* was expanded, subsequently new units were established.

During production, the *Sturmpanzer* was continuously modified, as various *Formveränderungen* were introduced. The first three production batches (series I to III) were produced solely at *Heeresarsenal Wien*. A total of 140 vehicles were manufactured on refurbished PzKpfw IV chassis, a further 60 were built using new PzKpfw IV Ausf H chassis. This indicates that a greater emphasis was being put on the *Sturmpanzer*, as refurbished chassis were normally used for less important vehicles. The production of series IV was moved to Stahlindustrie at Duisburg, where 166 *Sturmpanzer* were completed, again on using new chassis. The casemate was simplified, and a StuG-style commander's cupola was fitted, as was a close-defence ball-mounted machine gun in the front plate. To overcome the problems caused by the vehicle's heavy weight, steel-tyred running wheels were introduced. However, the basic shortcoming of these vehicles – limited mobility – was not improved. Any deployment into combat had to be

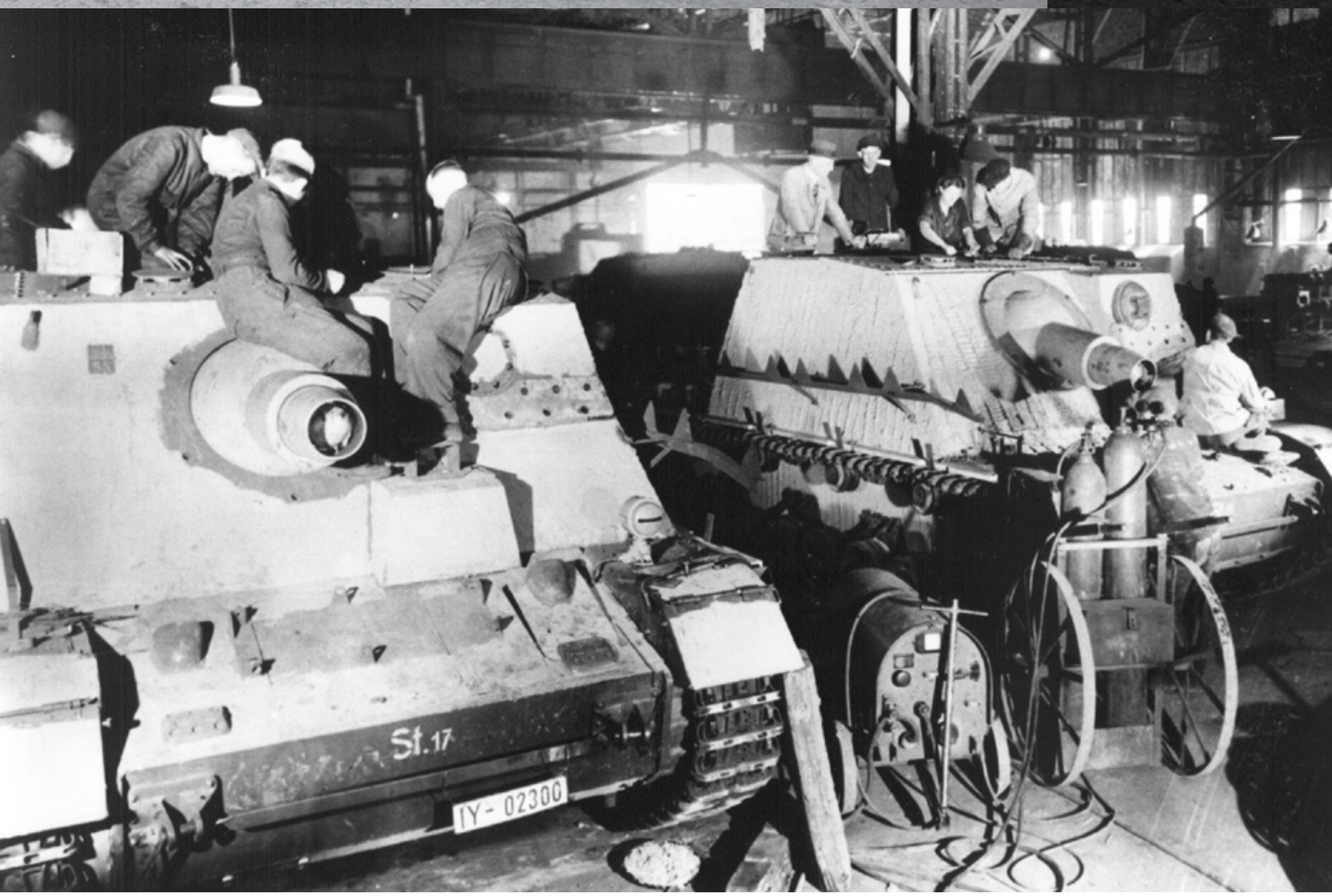
A *Sturmpanzer* of StuPzKp (zbV) 217. The type was ideal for combat in the narrow confines of Warsaw. (Münch)

A line of completed *Sturmpanzer* on the pre-delivery inspection line at Stahlindustrie Werk, Duisburg; all have been coated with *Zimmerit* anti-magnetic mine paste. (Historyfacts)

carefully planned; a good example was the combat at Nettuno, where the *Sturmpanzer* failed.

The first *Sturmpanzer Abteilung*, StuPzAbt 216 saw extensive action during the assault on Kursk and subsequently at Nikopol. During 1944 the unit was in Italy, where it was to remain until end of the war. Further details are unknown to the author.

The next unit to be established was StuPzAbt 217 (May 1944), which was committed into combat during the fighting in Normandy which followed the D-Day landings. During establishment and training at Grafenwöhr, the unit had only 18 *Sturmpanzer*. In his strength report dated 19 August 1944, the commander of the unit complained of this and also of the short instruction time (five weeks), which was not sufficient for the training of his men. Only 30 percent had combat experience. Furthermore he complained about the inadequate supply of ammunition. StuPzAbt 217 reached France with the authorized strength of 45 *Sturmpanzer*. According to the report, the commander also complained about the spare-parts situation, which he considered inadequate in respect of the over-loaded Pz IV chassis. By 19 August 1944, the number of combat ready *Sturmpanzer* had dropped to 17; the other vehicles were in short term repair. In September, StuPzAbt



The *Sturmpanzer* (on the left) was coated with a wash primer. Many important parts are yet to be fitted, including the massive protective shield around the ball mounting, and the housing for the *Maschinengehwehr* 34 defensive machine gun. (Historyfacts)

217 received two deliveries each of 10 *Sturmpanzer*, and a third delivery of four. Soon after this, five tanks were lost in action. At Rouen, 12 damaged *Sturmpanzer* were ferried across the river Seine, where they were repaired by the workshop section. During the journey back to the unit, all the vehicles ran short of fuel and their commander complained bitterly that 5th Army was not even able to deliver fuel. British troops had advanced to positions in the area, and all 12 had to be blown up. By the beginning of October, only 19 *Sturmpanzer* were in service and a further five were under repair.

By the end of the month, only 22 *Sturmpanzer* were serviceable. The 3rd company was send back to the replacement unit in Kamenz for their vehicles to be refurbished. The commander describes the state of the remaining unit as good, despite the desperate spare parts situation.

On 8 December 1944, the unit's 31 *Sturmpanzer* were deployed for the Ardennes offensive. Only three weeks later this number had increased to 36, but only six were combat ready. The commander stated that the high number of non-serviceable vehicles was due to the extraordinary difficult terrain near Hürtgenwald in the Eifel Mountains. In his strength report dated 28 February 1945, the commander states that 28 vehicles were combat ready.

A *Sturmpanzer* series IV. The running wheels are steel-tyred, the original rubber-tyred type were not resilient enough for the excessive weight of the vehicle. (Historyfacts)

In the last months of the war the state of StuPzAbt 217 deteriorated. The men of the unit had limited and badly worn clothing; some did not have shoes. The state of the unit's health was described as very bad and many men were affected with lice. Due to the steady rain, the men suffered from stomach complaints and severe colds. In April 1945, the unit was captured by US forces.

Shortly after of the Warsaw uprising began in August 1944, a further unit, StuPzKp (zbV) (*zur besonderen Verwendung* – for special assignment) 218, was quickly established in company strength. A second company (2/218) was retained at PzErsAbt 18 at Kamenz. In January 1945, it was planned to establish a further battalion (StuPzAbt 218) within these units. This, however, did not happen. Instead, as noted in a telex message dated 1 January 1945, the unit received 43 StuG III Ausf G, and had more or less converted to a *Sturmgeschütz-Abteilung*.

The final unit, StuPzAbt 219 was established in September 1944. The unit fought in Hungary and Austria. The author could only find a few after action reports for the period of February to March 1945. The commander´s notes confirm the experiences of the other *Sturmpanzer* units: Missing spare parts (final-drive units), the badly deteriorated mechanical condition of the vehicles; also the irregular supply of ammunition and fuel.

A heavy *Sturmpanzer*

During a meeting of the *Waffenkommision* (ordnance committee) in May 1943, a new heavy *Sturmpanzer* was proposed. Alkett was contracted to mount a 38cm rocket launcher, developed by Rheinmetall-Borsig, in a casemate housing on the chassis of the Tiger Ausf E. The RW 61 (*Raketenwerfer* – rocket launcher) fired HE rounds (R SprGr 4581) and hollow-charge rounds (R HLGr 4592) to penetrate concrete emplacements. The maximum range was, according to the ballistic data table, 6,000m. In January 1944, firing tests were ordered. In the test report the accuracy of the weapon was described as mediocre. At a range of 1,000m a target measuring 30m x 18m (the dimensions of a town house) was fired at; out of ten rounds only six hit, and four missed.

A prototype vehicle was demonstrated to Hitler as early as October 1943. Consequently the production of 12 of the type, for special missions, was ordered. In August 1944, the first three vehicles were delivered; another ten followed in September, and five were delivered in December. In November 1944, the Inspector General of the Army ordered that after delivery of the 18 Tigermörser production was to be halted.

On 24 February 1945, the *General der Artillerie* noted in a memorandum:

> ' … the current situation is so unstable that no exact planning over longer periods is possible … As for ammunition for the 38cm Wurfmörser; General

The crew of a *Sturmmörser* carefully loads a massive 38cm rocket shell using a turret-mounted gantry crane. The tank is painted in the *Licht-und-Schatten Tarnung* (Light and Shadow camouflage), also known as the ambush scheme. (Historyfacts)

B informed us that in February 150 rounds will be manufactured, but due to the lack of gunpowder only 100 will be finished. I have requested General Hinrici to adjust manufacturing according to the existing 18 guns…'

The *Panzer-Sturmmörser* (Tiger) was deployed in three independent companies, the PzStuMrsKp 1000, 1001 and 1002. These had only rudimentary supply unit and in combat would be dependent on the recovery and workshop section of a Tiger unit.

The prototype of the *Panzersturmmörser* (or *Sturmtiger*) being inspected by Hitler; the vehicle mounted a 38cm rocket launcher firing projectiles with a great explosive impact. Weighing some 65t, the mechanical limits of the Tiger drive train had been reached. (bpk Images)

The *Funklenkpanzer* units in 1944/45

In 1944 only one battalion-size unit was available, PzAbt (Fkl) 301. Its sister battalion, PzAbt (Fkl) 302 was disbanded after the Kursk, the other companies (PzKp (Fkl) 313 and 314) being subordinated under sPzAbt, equipped with the Tiger.

These units fought alongside PzAbt 301 (Fkl) equipped with the B IV, at Nettuno, Italy. Here the deployment of these units proved to be impossible; the swampy terrain was unsuitable for both the heavy *Leitpanzer* and the B IVs, the shared the fate of the *Sturmpanzer* of StuPzAbt 216.

In June 1944, PzAbt (Fkl) 302 was re-established at Vouziers, France. The unit received new B IV Ausf C explosive-charge carriers. In August 1944, PzAbt (Fkl) 302 was ordered to Poland for a *Sonderaufgabe* (special mission).

Sonderaufgabe

Poland had been occupied since September 1939. The situation in the country and its capital Warsaw was depressing. As in other countries, resistance was offered by an underground army. During Operation *Bagration*, the Soviets pushed the front farther west, and in mid-July, their units crossed the Polish border. The situation for the suppressed Polish was difficult. On 1 August, the underground army attacked German occupying forces and due to the fact that only police units and second-line units were in the city, they achieved a stunning success. Even the Panzers of the '*Herman Göring*' division, which was ordered in on 3 August, could not clear the situation.

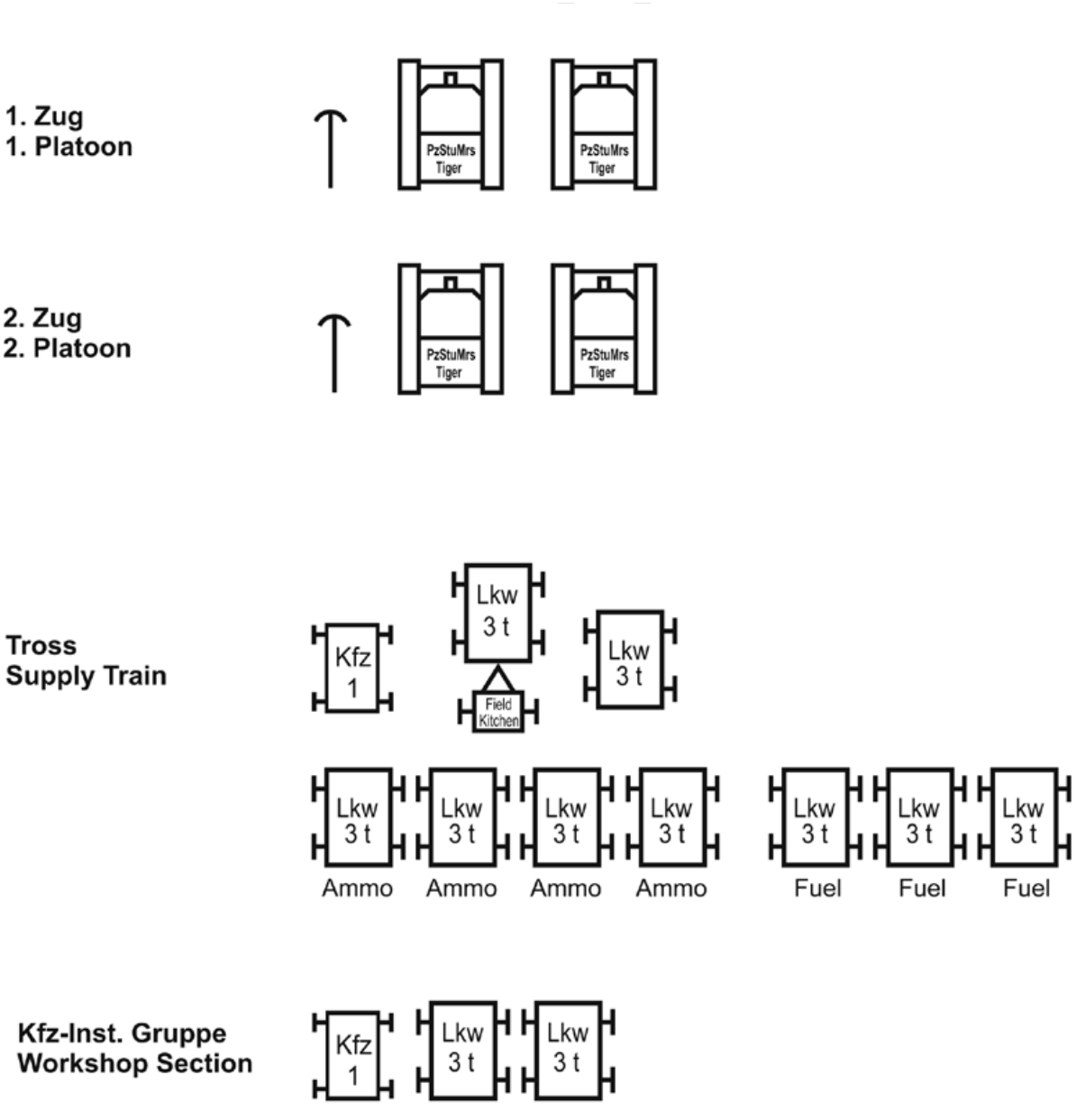
The infamous *Reichsführer-SS*, Heinrich Himmler, received an order to clear the situation and defeat the Polish fighters.

By the time PzAbt (Fkl) 302 arrived in Warsaw, the unit had a full establishment of 108 B IV (all Ausf C), and 84 were ready for combat. The commander was unhappy about the fact that only 24 of the planned 30 *Sturmgeschütze* (as *Leitpanzer*) were available, of which nine were under repair. Six had been lost in previous combat. An interesting fact is that the strength report dated 1 August 1944 notes that three PzKpfw IV authorized to the staff of PzAbt (Fkl) 302 as *Panzerbefehlswagen* (command tank, not control tanks), had not yet been delivered. The retraining for using the newly issued Borgward B IV Ausf C was under way.

In September 1944, PzKp (Fkl) 311 was integrated in the battalion. Thus PzAbt (Fkl) 302 had 144 B IV, with 72 vehicles combat ready.

Panzer Sturmmörserkompanie (Tiger)

Theoretical organization structure according to KStN.1161 dated 15 September 1944



Out of the 40 *Leitpanzer*, eight were under repair. The three PzBefWg were delivered.

On 13 August, the StuPzKp (zbV) 218 arrived with ten *Sturmpanzer*. Six days later, *Panzer-Sturmmörser Kompanie* 1000, equipped with two *Panzer-Sturmmörser* was also sent to Warsaw. Apparently the deployment to the Polish capital was considered to be a perfect trial for the new vehicles. The newsreel '*Wochenschau*' published a film about this vehicle, a perfect propaganda subject.

All three units fought alongside the other German forces. There are no combat or after action reports available regarding this deployment. However, both special purpose weapons – *Funklenkpanzer* and *Sturmpanzer* – were certainly efficient combat vehicles. Occupied houses or concrete roadblocks could be destroyed easily by few shells or a detonated B IV. There was no defence against these vehicles, which could move freely around the built-up areas of the city. The Polish underground army did not have the equipment to fight these heavily armoured vehicles: A sad final 'triumph' for the German arms industry.

On 9 September 1944, both units were released; StuPzKp 218 was transferred to France and PzAbt (Fkl) 302 to the Grafenwöhr training site.

Three weeks later, the Warsaw uprising ended with the surrender of the Polish underground army. At that the time Soviet units held positions on the eastern bank of the Vistula. They did not intervene for political reasons as Stalin wanted to liberate a weak Poland.

PzAbt (Fkl) 302 was subordinated to PzGrenDiv '*Grossdeutschland*' in East Prussia, until the end of the war

Attempt at an evaluation

It is extremely difficult to evaluate the benefits of weapon systems like the schwere *Panzerjäger*, the *Sturmpanzer* or the *Funklenkpanzer* without the availability of more detailed information. All such attempts would automatically end in simple assessments, grading tanks in classifications like 'good', 'powerful', or just 'useless'. There is always a danger when using speculation, which is unfortunately wide spread, even in historical research.

However, a vehicle like the Ferdinand (this being the most common designation of the *sPanzerjäger*) virtually invites a subjective judgment.

The Ferdinand was built up on the chassis of a proposed heavy tank. The Porsche *Typ* 101 was unreliable, and was therefore rejected due to a number of reasons. The *Panzerjäger* emerged from this vehicle, and all available after action reports confirm that it was unreliable. For the deployment in a 'hostile' environment like the eastern battlefield this was not ideal.

The Ferdinand's armour was virtually impenetrable by the Soviet defenders of mid-1943, the 8.8 cm KwK 43 was certainly the best gun in service. But, where was the benefit, if such a heavy vehicle became stuck in the mud or failed due to over-heated engines? The answer to this question seems to be easy. Or is it?

Two *Leitpanzer* (StuG III Ausf G) hold a defensive position amongst the shattered buildings of what had been Warsaw. Some *Sturmgeschütze* in the unit were fitted with the somewhat smaller Pzkpw III-style side skirts. (Anderson)

It cannot be concealed that sPzJgRgt 656 had a very high score during the failed attack on the Kursk salient. Later the few serviceable Ferdinands helped to stabilize the Nikopol front against all odds, and despite their very limited mobility and mechanical weakness.

But did this justify the enormous effort? Can a conversion of such an ill-fated concept as the Porsche *Typ* 101, be it ingenious or not, result in an effective and reliable weapon system. The author tends to disagree.

In combat the heavily-armoured Ferdinand was able to close in on enemy positions, where it could make best use of its powerful gun. However, in combat against enemy tanks it was inferior to the PzKpfw IV, PzKpfw V Panther and PzKpfw VI Tiger. In the attack, or on the defence, these

Overleaf:
German infantry pass a column of *Sturmpanzer* from StuPzAbt 217. The commanding officer, Major Lemor (in the centre background) broke his left leg, and had to continue in combat wearing a plaster cast. (Schneider)

were superior to super-heavy vehicles due to their better mechanical and tactical mobility.

Long-range combat with enemy tanks, if necessary at all, could be provided by the highly-successful *Panzerjäger Hornisse* (SdKfz 164), which had the same main gun as the Ferdinand. However, the effort of keeping a unit equipped with 45 *Hornisse* cannot be compared to that of sPzJgAbt 653.

The *Sturmpanzer* were a development for the highly-successful *Sturmartillerie* equipped with *Sturmgeschütze*. Intended for combat against concrete emplacements and in built up areas, the heavy vehicle was mainly used outside of towns and cities. The *Sturmpanzer* were often praised for

Above:
A *Leitpanzer* (StuG III Ausf G) with a large tarpaulin cover over the gun mantlet. Note the tactical marking on the track guard, the letter 'B' refers to the name of the company commander. (Schneider)

Right:
The roll call before departure: men of PzAbt (Fkl) 302 parade before entraining for Warsaw. (Schneider)

Craters caused by the detonation of the explosion charges now form obstacles for the *Leitpanzer* of PzAbt (Fkl) 302. One StuG has tipped into a crater, and is being recovered by two StuGs. (Schneider)

being useful in both attack and defensive operations. Its main ordnance proved to be most effective, and the heavy armour protected the crew. However, the *Sturmpanzer*, and the heavier *Panzer-Sturmmörser* shared the very same shortcomings as the Ferdinand.

In a defensive situation, poor mobility limited the effectiveness of the *Sturmpanzer*. Dedicated close-support artillery could be effectively provided by highly-mobile self-propelled guns such as the 15cm sIG 33 *Grille* (Cricket).

The *Funklenkpanzer* described in this book were specialized pioneer weapons. The prominent task of all pioneers was, and still is to assist the combat troop during all types of combat operations. For this reason German combat units contained a pioneer echelon to ensure combat support.

However, with the establishment of the *Funklenk-Einheiten* (remote-control tank units), larger formations were created, being embedded at army troop level. These were to be subordinated under the attacking units.

During 1942, PzAbt (FL) 300 was used in combat with some success. Superior tactics by German forces allowed them to make best use of this

Opposite:
A *Sturmpanzer* (series IV) in Warsaw: The side skirts, essential for street fighting, are completely missing. Note the vehicle is fitted with steel-tyred road wheels and the armoured housing for the self-defence MG. (Münch)

weapon, particularly when facing an enemy which lacked organization and fighting skills. In the battle for Sevastopol many bunkers and gun positions were destroyed by using this type of weapon.

However, two years later this situation changed. German unit were involved in 'successfully planned retreat operations' (German propaganda). The technical problems involved when preparing these delicate vehicles for the combat were serious. Before an attack could begin, it took a lengthy amount of time to tune the transmitter and receiver in the *Leitpanzer* to the receiver in the B IV. Using older equipment caused more problems and took more time. Under these conditions, a planned deployment of the B IV became virtually impossible.

As a consequence, the *Leitpanzer* (Tiger and *Sturmgeschütze*) of the Fkl companies were nearly always used as battle tanks. As explained earlier, on some occasions B IV were used to cover the retreat; if detonated at the right time, the explosive charge would dazzle enemy troops, allowing an orderly withdrawal.

The much smaller Goliath proved to be easier to handle. At the beginning, these vehicles were issued only to specialist units. However, since operation and maintenance of the small wire-guided vehicle was simple, they were later issued to the pioneer echelons in field divisions. This was a wise decision, since the weapon would be available where they were needed.

The large-scale usage of remote-controlled weapon system was indeed forward looking. Today, drones are a tried and tested method of delivering ordnance against an enemy target.

Two *Leitpanzer* (StuG III) and a PzKpfw IV *Befehlspanzer* (command tank) of the staff company, undergo repair and maintenance in the ruins of Warsaw. (Hoppe)

Above:
A *Sturmpanzer* of StuPzAbt 217 moves to the front in preparation for the start of operation '*Wacht am Rhein*', the Ardennes offensive. (PK photo)

Right:
The devastated *Strasse unter den Linden*, Berlin, with the Brandenburger Tor in the background. Amongst the debris a Borgward B IV is visible; a number were modified by adding a rack to carry six *Raketenpanzerbüchse* 54. Designated B IV *Panzerjäger*, it was issued to PzVernAbt 1 (Tank Destroyer Btn 1). (Anderson)

Résumé

The Ferdinand (*Elefant*), the *Sturmpanzer* and the *Funklenkpanzer* were purpose-developed weapons which, in part, performed remarkably well. However, all had serious shortcomings which limited, to a point, deployment in combat. Numerous details had to be carefully considered in order to successfully accomplish a mission.

As long as German forces continued to be able to conduct a swift and determined attack operation, the advantage of these weapons prevailed. If the attackers remained in control, the limited tactical mobility of, for instance, a Ferdinand, allowed an assault to be easily contained.

When the initiative was lost, in a defensive situation, this balance could easily turn in to a disaster. When forced to react, mobile warfare was possible only to a limited extend, the lack of mobility proved to be fatal. Slow-moving or bogged-down vehicles such as the Ferdinand and *Sturmpanzer* could be easily avoided; a disabled vehicle which could not be recovered had to be blown-up by the crew or it passed into the hands of the enemy.

However, the design and technical achievements of Ferdinand Porsche and his team were and are still amazing.

INDEX

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