# Panzerkampfwagen MAUS



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# INTRODUCTION

The news that a **Maus** had survived has led to a great deal of interest and associated speculation about the heaviest tank that was ever created. Therefore I was challenged to dig out original records to discover what information had survived that would prove useful in determining the actual history of this super heavy tank. As usual, the standard set for including information in one of my books is that it must be obtained from original records created during the war. Over twenty years of intensive research went into finding the original documents needed to create this history of the development, production, characteristics, and tactical capabilities of the **Maus**. An exhaustive search was made for surviving records from the design/assembly firms (including Krupp and Porsche), the **Heereswaffenamt**, the **Generalinspekteur der Panzertruppen**, and the manuals on the **Maus** chassis and turret.

# **DEVELOPMENT HISTORY**

The earliest notes revealing information on plans to design a super heavy Panzer are found in the minutes of Hitler's conferences with Albert Speer, **Reichsminister fuer Bewaffnung und Munition** (head of the ministry for armaments and ammunition, among other names) as follows:

#### 5-6 March 1942, Item 2

Directive on Krupp that instead of a 72-ton Panzer, a 100-ton Panzer is to be rapidly developed as a trial vehicle. The first trial vehicle should be operational in the shortest time, in all cases before the Spring of 1943.

#### 21-22 March 1942, Item 18

Porsche is to be given the contract for independent design of a 100-ton Panzer.

#### 14-15 April 1942, Item 10

At least 100 rounds of ammunition are to be carried in the 100-ton Panzer. It should have a machine gun in addition to the heavy gun but not a lighter quick firing gun. Remote control of the machine gun is quite acceptable to avoid a penetration in the armor plate.

The turret specifications for this 100-ton were discussed during an internal meeting at Krupp on 18 April 1942 as follows: A new proposal is to be created for a turret with a 15 cm L/40 gun ("L/40" is the caliber length of the gun—15 cm x 40 equals 6.00 meters) with cartridges instead of separate two-piece ammunition in order to achieve a rate of fire of four to five rounds per minute. In addition, the projectile weight is to be reduced from forty-three to thirty-four kilograms with an associated increase in the muzzle velocity to about 845 meters per second. Part of the ammunition is to be stowed in a backpack on the turret out of which one should be able to load the gun at elevations from -8 to +15 degrees. In addition, an attempt should be made to achieve an elevation of up to 40 degrees through 360 degree traverse. The assumption is approved that the Panzer be driven into a position where the gun can be loaded out of the backpack.

This turret is to be offered to the Porsche firm for their VK 100.01 by 15 May. In addition, we should determine if it is more favorable to build a turret with a 12.8 cm L/50 gun firing a 29.3 kilogram projectile with a muzzle velocity of 810 meters per second.

As discussed in Hitler's conferences with Speer on:

#### 13 May 1942, Item 28

Hitler emphasized that it must be calculated that the heaviest Russian tanks will certainly appear already in the

Spring. Therefore he demands that the heavy Panzers currently being designed be energetically carried out and holds the opinion that reducing the weight to 70-tons is incorrect. He has no qualms that instead of 100 tons one could even get up to a weight of 120-tons. Priority is to be given to the heaviest armor connected with a gun with the highest performance. From the start, he wants a gun with a length of L/60 or eventually even L/72.

#### 4 June 1942, Item 40

Hitler is in agreement that the super heavy Panzer be a slow moving vehicle (mobile fortress).

#### 23 June 1942, Items 37 and 38

Hitler has approved the drawings of the heavy Porsche Panzer with several modifications including strengthening the belly to 100 mm and selectively a 15 cm L/37 or a 10.5 cm L/70 gun. Hitler favors the 10.5 cm gun because of the higher rate of fire, the greater ammunition stowage, and better ability to serve the gun. However, he believes that plans can be made for both guns to be selectively mounted in this type of large Panzer. He doesn't consider it necessary to have a secondary turret with a 7.5 cm gun because escorting Panzers must be assigned. He is satisfied with the proposal and in agreement with the model. Professor Porsche promised delivery of the first vehicle by 12 May.

Hitler agrees with the principles for designing a Panzer that first priority is the heaviest armament, second priority high speed, and third priority heavy armor. However, he believes also that heavy armor is unavoidably necessary.

#### 1-3 December 1942, Items 14 and 15

Hitler took great interest in the presentations of Professor Porsche and Dr. Mueller (Krupp) on the preliminary work on the **"Maeuschen"**. He expects completion of the first trial vehicle in the Summer of 1943 followed by production of five each month. These vehicles are to be assembled by Krupp.

For the super heavy Panzer (Maeuschen), Hitler wants information of the penetrating ability of the 15 cm gun, the 12.7 cm naval gun, the 12.8 cm Flak gun, and a 12.8 cm gun with the greatest caliber length. Hitler also requested a review of the Navy's inventory of armor plates by thickness that can be used for the super heavy Panzer.

#### 3-5 January 1943, Items 9 and 10

After thorough consideration and comparison of all the advantages and disadvantages of the Krupp and Porsche proposals for the "Maeuschen", Hitler decided that the Porsche proposal be accepted. Porsche is responsible for the design of the vehicle, Krupp for the production of the hulls and turrets, and Alkett for the assembly. Production of 10 per month is the final goal. Completion of the first vehicle and start of production must be strived for the end of 1943.

Based on the report on the situation of the armor piercing ammunition, Hitler maintains that the 12.8 cm gun is the most suitable gun for the "Maeuschen". However in addition, a turret with a 15 cm gun is to be projected. Firing trials with the 12.8 cm gun are to be immediately conducted with shaped charge, tungsten core, 12.8/8.8 cm and 12.8/10.5 cm discarding sabot and eventually also with different types of propellants. Because the 12.8 cm Flak gun with its sectional design can't be used without modification, tests are to be conducted to determine if a 12.8 cm gun with a caliber length of L/70 is usable instead of L/61.

### 3-5 January 1943, Item 31

Technical superiority can only be assured for a combat period of one year at most. Therefore one must now already plan for achieving superiority for 1944. For this year the Tiger and Panther are superior. The "Maeuschen" and the new Tiger with the 8.8 cm L/71 gun must bring this superiority for 1944.

#### 13-15 May 1943, Item 23

The amount of 12.8 cm ammunition in the Maus must be increased from 50 rounds to 80 rounds. There are no



This sketch marked as **Typ 205**, **Entwurf** (proposal) dated 4 April 1942 depicts a very early conceptual view with numerous details that weren't adopted, including a 15 cm gun paired with a 10 cm gun, a cupola with periscopes for the commander, a hatch in the turret rear, a machine gun ball mount in the glacis plate, and the Porsche torsion bar suspension with ten roadwheels per side. (K3388)



objections when this results in reducing the 7.5 cm ammunition from the previously planned 200 rounds down to 100 rounds.

On 4 November 1943, the **Panzeroffizier beim Chef Gen.St.d.H.** reported that development of the following vehicles by **Wa Pruef 6** (automotive design office of the ordnance department) is to cease: **Maus** (one is to be completed), **Mehrzweck-Panzer**, and **Kaetzchen**. (No reasons were given for this decision.)

## NAME CHANGES

The earliest name for this super heavy Panzer is found in a Krupp report dated 18 April 1942 where they refer to it as the Porsche VK 100.01. The firm of Porsche applied the designation Typ 205 to the design project and used the prefix number 205 in all drawing, component, and part numbers. The cover name Maeuschen (the diminutive, Mousy) appears in early December 1942. This was changed to Maus (Mouse) by 13 February 1943, the name that was retained to the end of the war. As revealed by Wa Pruef 6 on 23 March 1944, the original Maus was referred to as Maus I and an improved model being designed was designated as Maus II.

In an official list of cover names from Wa Pruef Stab Ia dated 22 February 1943, (along with the more familiar names for armored vehicles including Heuschrecke, Grille, Wespe, Hummel, Ferdinand, and Hornisse) the cover name for the ueberschwerster Pz.Kpfw. (super heavy Panzer) was listed as the "Ratte" (Rat).

## **PRODUCTION CONTRACTS FOR KRUPP**

Wa Pruef 6 awarded contracts for the first Maeuschen in December 1942 and January 1943. On 23 December 1942, Wa Pruef 6 awarded Fried.Krupp A.K. contract SS006-4577/42 to complete a full scale wooden model of the Pz.Kpfw."Maeuschen" to be delivered to Wa Pruef 6/IId by the end of January 1943. On 18 January 1943, Wa Pruef 6 awarded Fried.Krupp contract SS006-6387/42 for one armored hull for the Versuchs-Fahrgestell "Maeuschen" produced in accordance with instructions from the firm Dr.Ing.h.c.Porsche K.G., Stuttgart-Zuffenhausen.

The armament to the mounted in the turret was decided in a meeting between Krupp and Wa Pruef 4 on 5 February 1943: As decided by Hitler's directive, the main gun is to be the 12.8 cm Kw.K. L/55 or a 15 cm Kw.K. L/38. The design is to be based on the higher impulse of the 15 cm gun with a muzzle brake so that the 12.8 cm gun can be used without a muzzle brake. A 7.5 cm Kw.K. L/36 is to be mounted in the same cradle as the main gun. The longer gun tube (L/36) is necessary because if the shorter gun tube (L/24) was used the propellant gases would hit the ventilation openings in the hull.

By 11 February 1943, **Wa Pruef 6** had made the decision to increase the number in the **Versuchs-Serie** to six. Krupp was requested to deliver the first armored hull to Alkett Werk Spandau by 15 June, the second by 15 July, two more by 15 August, and the last two by 25 September 1943. The completed turrets were to be delivered two months after the hulls. On 13 February 1943, **Wa Pruef 4** awarded contract SS0004-3253/42 for the guns for the **Pz.Kpfw.''Maus''** to include three complete mounted guns (consisting of **12.8 cm Kw.K. L/55** (Drawing Nr. 5-1208 and **7.5 cm Kw.K. L/36** (Drawing Nr. 5-0776)), two gun tubes with breech (Drawing Nr. 5-1208), five gun tubes (Drawing Nr. 5-1208), two gun tubes with muzzle brakes, breech and breechblocks (**15 cm Kw.K.** (Drawing Nr. 5-1531), and five gun tubes (Drawing Nr. 5-1531) to be delivered to Hillersleben, Germany.

Contracts for the production series were awarded by **WaJRue (WuG) VIIId** for 120 "**Maeuse**" (Mice). On 22 February 1943, Fried.Krupp A.-G., Gusstahlfabrik, Abteilung A.K., Essen/Ruhr was awarded contract SS4911-0210-9801/43 by **WaJRue (WuG) VIIId** for 120 armored hulls, 120 armored turrets, and assembly of 120 complete turrets ready for mounting on the chassis for the **Typ 205** "**Maus**" production series for delivery to Alkett Werk Spandau according to the following schedule:

	Nov	Dec	Jan	Feb	Mar	Apr	May
Hulls	2	4	6	8	10	10	=
Turrets	0	- 2	4	6	8	10	=

The production schedule for the first **Maus** had already slipped by three months by 12 April 1943. The first hull was to be completed for delivery by 15 September, the first gun by 15 September, and the first turret by 15 November 1943.

On 5 May 1943, **WaJRue (WuG6) VIIId** amended contract SS4911-0210-9801/43 to increase the number of turrets and hulls for the **Typ 205 "Maus"** production series from 120 to 135 with delivery to Alkett-Altmaerkisches Kettenwerk-Werk Spandau to begin in November 1943.

The decision had been made by 1 November 1943 to cancel the entire **Maus** production series and all but two chassis and one turret for the **Versuchs-Serie**. The bases for this decision have not been found in the surviving records.

On 1 November 1943, representatives from **Wa Pruef 6** met with Ing. Zadnik from Porsche to discuss the future of the limited **Versuchs-Programm** as follows:

Authorized deliveries for the Versuchs-Programm consisted of:

• 1 Fahrgestell mit Belastungsgewicht (1.Maus) (the first Maus as one chassis with a load weight equal to the weight of the turret)

- 1 kompletter Wagen (2.Maus) (the second Maus as a complete Panzer with operational turret)
- •1 set of replacement parts
- •1 Taucheinrichtung (submersion kit)
- •1 Abschleppvorrichtung (towing kit)

The first factory tests were to be conducted by Porsche on a race track for trotters in the presence of Wa Pruef 6 representatives. The extended test drive, submersion trials, and towing trials were to be conducted at the Kraftfahrversuchsstelle Kummersdorf (automotive proving grounds at Kummersdorf, Germany) in the presence of representatives from Porsche. Firing trials were to be conducted in Hillersleben by Wa Pruef.

On 5 November 1943, Krupp received notice from **WaJRue WuG6** that contract SS4911-0210-9801/43 for the **Maus** turrets and hulls was canceled. On 9 November 1943, Krupp was informed that contract 006-4575/42 for six turrets was reduced to one turret and that only one gun was to be completed. On 12 November 1943, **Wa Pruef 6** informed Krupp that contract SS006-6387/42 was reduced to two hulls for the **Versuchs-Fahrgestell "Maeuschen**".

At a meeting on 17 November 1943, **Wa Pruef** discussed with Krupp the contracts for the **12,8 cm Kw.K.**, **12,8 cm Pjk 44** and **Maus** as follows: As a result of halting **Maus** production, the following contracts are to be amended:

- 1. Contract WaPruef6/III SS-4911-0006-6387/42 for six hulls for Versuchs-Fahrgestell. The contract has already been canceled except for three hulls (refer to change order dated 10 November).
- 2. Contract WaPruef6/IId SS-0006-4575/42 for six turrets. The contract is to be canceled except for three turrets.
- 3. Contract WaPruef4/II SS-0004-3253/42 for eight 12,8 cm Kw.K. guns. The contract is to continue until further decisions by the Waffenamt.
- 4. Contract WaJRue (WuG6/VIIId) SS-4911-0210-9801/43 for fifty-eight turrets and hulls. The contract has already been halted by change order dated 10 November.
- 5. Contract WaJRue (WuG2/VIIa) SS-4915-0166-0830/42 for fifty-eight complete 12.8 cm Kw.K. guns, as well as nine gun tubes with breeches and twelve breechblocks. Production is to continue with the exception of the parts (twin gun mount) that can't be used for the 12.8 cm Pjk 44. The useable parts are to be transferred to contracts 41/320049-51 and 41/320080-84 for the 12,8 cm Pjk 44.

The state of completion of the hulls and armored components for the turrets for the above contracts as of 24 November 1943 was: two hulls had been shipped; one hull and one turret had been completely worked; four hulls and six turrets had been welded together; and the armor for eight hulls and two turrets had been cut. On 7 February 1944, **Wa Pruef 6** wrote Krupp stating that because the third hull had been completed, the contract would be altered for three hulls instead of two. **Wa Pruef 6** requested that Krupp store the third hull at their facilities in Essen.

On 23 March 1944, the head of **Wa Pruef 6**, Oberst Holzhaeuer, wrote to the **Generalinspekteur der Panzertruppen**, General Guderian, about continuing the **Maus** project as follows: According to Prof. Porsche, Hitler has ordered the acceleration of the driving trials and further development of the **Maus**. In addition, Porsche has contacted Krupp to deliver a second turret for the **Maus I** and to deliver the first turret for the **Maus II**. Orders are requested, if the previous decision has been lifted to complete only two chassis, one with a turret. (The reply to this request has not been found, but other Krupp documents show that design work was started on a Maus II turret.

## FAHRGESTELL ASSEMBLY BY ALKETT

The Altmaerkisches Kettenwerk G.m.b.H. (Alkett), Werk Spandau, Berlin-Spandau was awarded the contracts for assembly of all **Maus Fahrgestelle** (chassis). After the test drives of operational chassis were completed, Alkett was to mount the operational turrets delivered from Krupp onto the chassis and present the completed **Pz.Kpfw.Maus** for acceptance tests

As stated in the report on the testing of the Maus, the assemby of the 1.Fahrzeug (first vehicle) began after the



The **1.Fahrzeug** (**Fahrgestell mit Belastungsgewicht**) (first Maus vehicle, chassis with load equal to turret weight) being prepared for test drives at Boeblingen. (TTM)





The **1.Fahrzeug** (**Fahrgestell mit Belastungsgewicht**) (first Maus vehicle, chassis with load equal to turret weight) being prepared for test drives at Boeblingen. (TTM)



first hull was delivered to Alkett, Werk Spandau in mid-September 1943. Assembly was completed by 22 December and the operational **Fahrgestell** was driven at the factory on 23 December 1943. This first **Maus Fahrgestell** was loaded on a railcar and began the trip to Boeblingen on 10 January where it arrived on 14 January 1944.

On 10 January, Werk Spandau reported that assembly on the **2.Fahrzeug** was to begin on 8 January 1944. One month later on 7 February, Alkett reported that: As a result of more urgent Sturmgeschuetz production, work on the **2.Fahrzeug** has been delayed and completely stopped for the last fourteen days. In the interim, it was decided to transfer the entire assembly work to Boeblingen. Restarting the work in Boeblingen will stretch out to the end of February. The 2.Fahrzeug (only the hull with suspension components and mechanical brakes installed) was loaded on a railcar and began the trip to Boeblingen on 7 March, arriving on 10 March.

## **ASSEMBLY AND TESTING AT BOEBLINGEN**

As reported on 6 April 1944, the **1.Fahrzeug** had been driven fifty-nine kilometers and the motor ran for 49.5 hours by 1 April. This **1.Maus Fahrgestell** was dismantled and examined starting on 20 March 1944. The **2.Fahrzeug** was still being assembled at the time of the report.

The situation on the Maus trials program as of 1 April 1944 was reported as:

1. Transport Question:

a. It is possible to rapidly load the Maus on the available 14-axle Verladewaggon (27 meters long) with the six meter x three meter loading area.

b. The associated loading ramp and rails are still too weakly built and were severely bent during the trials. 2. *Fuel and Oil:* 

a. The Daimler-Benz MB 509 Motor (created from the DB 603 aircraft engine) requires fuel with an octane of at least 77 MOZ if as a motor vehicle engine it is to be driven at full throttle at speeds as low as 1700-1800 rpm. Commercial gasoline has been used for the test drives either mixed with aircraft fuel B 4 (1/3) or C 3 (1/5) or Lead-Tetra-Ethyl (0.09% by volume).

b. To ensure sufficient lubrication of the engine including the upper piston rings, the MB 509 has to use Luftwaffe **Rot-Ringoel** (red-ring oil).

3. Driving Experience and Power Rating:

a. The driver's view is poor. This has been improved by increasing the driver's height with cushions. However, driving using the periscope is not possible with these cushions and therefore still hasn't been tested.

b. Steering control on firm ground as well as on slippery clay is good due to the separate drive for each track and the curved form of the track links. The smallest turning circle is 14.5 meters with both tracks moving forward. Turning within its own profile is possible with one track driving forward and the other in reverse. Steering in sand has not been tested.

c. Tracks sink in about ten centimeters. Displacing earth to the side during steering maneuvers is acceptable.

- d. Climbing ability has been demonstrated up to 45%.
- e. Trench crossing ability is about four meters.
- f. Mechanical brakes have been sufficient to stop the vehicle.
- g. Power rating at external temperatures at +3 degrees C after driving cross country for ten kilometers: •Maximum electrical output of about 600 KW for both electric motors

•Current for each electric motor on flat ground of about 200 Amps at about 700 Volts.

•Maximum current during steering and climbing of about 1500 Amps at about 200 Volts.

4. Necessary Modifications:

a. Running Gear: The steel tires on the present roadwheels slip. New roadwheels are being installed.

b. Track Adjusters: The adjusting spindles are jammed by track pounding. A complete redesign is planned.

c. Transfer from Road to Cross-Country Gear: Too much power is required for hydraulic operation. Therefore



The **1.Fahrzeug** (**Fahrgestell mit Belastungsgewicht**) after digging itself in, managed to extricate itself after minimal digging. There was a large rectangular opening in the top of the **Belastungsgewicht**. Camouflage paint was applied, towing lugs were welded to the front and rear hull, and a red star and hammer and sickle were painted on both sides. (TTM)



until the transfer gear is rebuilt, the gear will only be operated by hand.

d. Easier assembly of the gears, engine, and generators is necessary.

## 5. <u>Repairability:</u>

a. Towing is only possible with two of the same type of vehicles.

b. Lifting the vehicle for work on the suspension requires at least two 100-ton hydraulic jacks on each side that are resting on large steel plates.

c. To mount the tracks the mounting cable must be fed over the upper track guides. This is difficult because there is little room available in the running gear tunnel.

## **DELIVERY OF THE MAUS I TURRET**

Prior to shipment from Essen to Boeblingen, Wa Pruef 6 inspected the Maus I turret for acceptance and made the following remarks:

- 1. The elevation arc was measured as -7 to +24 degrees and found to be adequate. The elevation mechanism couldn't be tested because work on balancing the gun hadn't been completed.
- 2. The electrical traverse was inspected. The traversing time wasn't determinable because a temporary source of power had to be used. The final inspection is to occur in Boeblingen. The hand wheel on the traverse control is awkward and must be improved.
- 3. Adjustment of the connecting drive for the T.W.Z.F.1 gun sight must be made easier and more accessible. The gun sight mounting must be independently adjustable in both traverse and elevation.
- 4. Stowage for the 12.8 and 7.5 cm ammunition couldn't be inspected because 12.8 cm ammunition would first be available in Boeblingen. The loaders have sufficient room now.
- 5. Operating handles for both turret hatches must be bent back so that recoil of the 12.8 cm gun won't be hindered.
- 6. A hand-operated, emergency, inductive firing device must be installed for both guns.
- 7. The hooks for the seat belts must be changed so that they can be more easily and quickly hung.
- 8. The installed air compressor for the **Rohrausblasevorrichtung** (device to blow expended propellent fumes out of the gun tube) couldn't be tested because their wasn't any source of forty-eight volt electricity available.
- 9. The switches for the gun circuits of the 7.5 cm and 12.8 cm Kw.K. are to be clearly identified
- 10. The decking on the turret platform must be easily and quickly removable in order to gain access to



The 2.Fahrzeug (Pz.Kpfw. komplett mit Turm) (second Maus as a Pz.Kpfw. complete with turret) out for tests at Boeblingen. (WJS)

the ammunition stored in the hull

- 11. The area behind the 12.8 cm ammunition racks in the turret is to remain free for stowage of the crews packs and other items.
- 12. MP-Kugelblende (machine pistol ball mounts) were still not installed because they are still being manufactured.
- 13. The ammunition hatch in the rear of the turret can't be tested until the turret is mounted on the chassis. The outer chain has to be strengthened.
- 14. Operation of the breeches of both guns is easily accessible.
- 15. The gun travel lock must be operated by both loaders at the same time. Nothing further can be changed on the design.
- 16. The cable for firing the M.G.34 is to be laid in the righthand groove so that it can't be pinched between the machine gun and the ammunition rack.
- 17. The ammunition feed for the machine gun can't be tested until ammunition is available.
- 18. Additional 7.5 cm ammunition stowage is to be installed in the free area above the turret platform.
- 19. The auxiliary traverse drive behind the gunner is easily accessible. An additional section of the turret ring is to still be cut out so that the hand of the operator is not damaged when turning the crank.
- 20. The gun cleaning brush, unloader, cover, and other tools for the gun must be stowed in suitable locations in the hull.
- 21. Krupp will improve the mounting for the **T.W.Z.F.1** by lifting the platform after loosening the holding bolts. Protection against bullet splash is to be made out of ten to twenty mm thick sheets instead of three mm thick.
- 22. The vertical **Entfernungsmesser** (range finder) from Zeiss, promised for mid-April, still hasn't arrived at Krupp.
- 23. The mount for the vertical **Entfernungsmesser** and the associated cover plate have already been installed in the turret.



The 2.Fahrzeug (Pz.Kpfw. komplett mit Turm) (second Maus as a Pz.Kpfw. complete with turret) out for tests at Boeblingen. (WJS)



The **2.Fahrzeug** (**Pz.Kpfw. komplett mit Turm**) after camouflage paint was applied. This was the only Maus that was outfitted with an operational turret. The **Fahrgestell** of the **2.Fahrzeug** differed from that of the **1.Fahrzeug** in numerous details, including two additional armor deflectors on the hull roof, headlights, the convoy tail light, and the auxiliary fuel tank. (WJS)



Rear view of **2.Fahrzeug** (**Pz.Kpfw. komplett mit Turm**) after camouflage paint was applied. Visible in this view are the convoy tail light and the auxiliary fuel tank. (WJS)

24. All openings in the turret and their closures have been outfitted for submersion.

25. If additional turrets are to be completed, the position of the Nahverteidigungswaffe, now located toward the turret rear, is to be exchanged with the ventilator directly in front of it.

The **Versuchs-Turm** was not accepted but it can be shipped because Porsche has again demanded shipment. Deficiencies are to be quickly corrected by Krupp in Essen or in Boeblingen.

On 17 May 1944, Krupp reported that the Versuchs-Turm Maus I had been unloaded at the airfield in Boeblingen on 4 May and since then has been lying there in the open covered by a tarpaulin. According to Porsche, it would be possible to mount the turret on the 2.Fahrgestell in about three weeks.

In preparation for a visit by Generaloberst Guderian, the turret was mounted on the chassis without the bearing ring in early June 1944. The space between the traversing ring and the hull was filled with **Terosankitt** (putty?). The viewing by Generaloberst Guderian scheduled for 11 June didn't take place.

In the report from Boeblingen for the period from 23 June to 2 July, it was reported that the **Maus** was undergoing repair so that it wasn't possible to test the traversing mechanism in the field. An additional twenty-six rounds of 7.5 cm ammunition were stowed bringing the total up to eighty-five rounds in the turret.

On 13 July 1944, **Wa Pruef 8** reported the delivery of a **T.Rbl.F.3** gun sight for the **Maus** to the Porsche-Werkstatt in the Hindenburg-Kaserne of **Panzer-Ersatz-Abteilung 7** in Boeblingen.

On 25 July 1944, Krupp reported the status of the available **Maus** hulls. The first and second hulls had been shipped to Alkett, four more were still in Essen. The third hull was up to 95% complete, the fourth was up to 70% complete, and the fifth and sixth were welded. On 27 July 1944, **Wa Pruef 6** informed Krupp that the four **Maus** hulls in Essen were to be scrapped.

On 19 August, Krupp informed Porsche that in accordance with orders from the Waffenamt further work on the

"205" was to cease. Krupp's technicians were called back for the weekend because of other work that was more urgent.

On 1 December 1944, Daimler-Benz reported that an MB 517 Motor from an OKH order still remained in the factory and would require at least two weeks to complete it. The MB 517 built into the Porsche-Panzer was still located in Boeblingen and was needed there for further trials. Reports have yet to be found from Daimler-Benz on how many and when MB 509 and MB 517 engines were delivered for installation in the Maus.

## **DEATH OF THE MAUS**

The Dr. Porsche interrogation report digresses from the original reports prepared as the project progressed in too many details to be trusted as a reliable source for filling in the information missing from other reports. Therefore, it is not known for certain when and in what condition the two vehicles were in when shipped to Kummersdorf.

Photographic evidence shows:

- •Both the 1.Fahrzeug (Fahrgestell mit Belastungsgewicht) and the 2.Fahrzeug (Pz.Kpfw. komplett mit Turm) together in a building, purportedly in Kummersdorf.
- •The 2.Fahrzeug with the side of the hull and the turret blown off from an internal explosion.
- •A perfect match between the hull of the 1.Fahrzeug and the turret from the 2.Fahrzeug when compared with the surviving Maus on display in Kubinka.
- •The remaining hulls and turrets (including the third hull (Wanne Nr. 351453) and the second turret (Turm Nr. 351452)) stored at Krupp, Essen at the end of the war.



The third hull (Wanne Nr.351453) photographed at Krupp, Essen after the war. This backs up Krupp's reports during the war that only the two hulls had been delivered for assembly. (TTM)



The second turret body (Turm Nr.351452) photographed at Krupp, Essen after the war again backing up Krupp's reports during the war that only one turret had been delivered for assembly. (TTM)



Documents on the activation of the unit at Kummersdorf for frontline service do not list a **Maus** among the operational Panzers. Therefore, it is not plausible to assume that the only **Maus** completed with a turret went into action against the Russians near Kummersdorf without a trained crew and a limited ammunition supply (if any).

All evidence, including the surviving **Maus** at Kubinka, points to a single conclusion: The Russians salvaged the turret from the blown up **2.Fahrzeug**, mounted it on the **1.Fahrzeug** in place of the **Belastungsgewicht**, and shipped this "amalgamated" **Maus** back to Russia where it is now on display at Kubinka.

## **OPERATIONAL CHARACTERISTICS**

Operational characteristics demonstrate the effectiveness of a main battle tank by relating its capabilities to effectively deliver firepower, maneuver, and survive on the battlefield. Basic knowledge of the ability of tank guns to penetrate and destroy their opponent's armor is an important factor for comparing capabilities of the opponent's tanks, the potential for losses in combat, and the fundamentals behind tactics. However, penetrating ability was not the overriding factor in determining how tanks were lost in combat. Mechanical breakdowns, combat damage, and tactics were all much more significant causes of tank losses than was a gun's ability to penetrate armor.

## **FIREPOWER**

The effectiveness of firepower that can be delivered by the main gun is dependent on the penetration ability of the armor-piercing projectiles, inherent accuracy of the gun, characteristics of the gun sights, and ability to get quickly and accurately on target.

The data in this chapter were selected to provide reliable statistics on the weapons capabilities. Sufficient details are included to obtain a basic understanding of the effects of the different types of armor-piercing projectiles.

Accuracy figures based on dispersion tests can be useful as a basis for comparing the ability of a gun to obtain a hit on a standard size target on the practice range. However, these figures do not reflect the ability to hit a tank in actual combat conditions. Round-to-round dispersion is only one of the many factors which affected accuracy in combat.

German penetration statistics for armor plate were expressed in terms of the thickness in mm that could be perforated when the plate was laid back at an angle of thirty degrees from the vertical. The penetrating ability of armor-piercing projectiles fired from the 12.8 cm Kw.K. L/55 and 7.5 cm Kw.K.44 L/36 were determined by tests conducted at firing ranges which proved that the results shown in Table 1 could be achieved.

As stated in the German manual on armor penetration curves: Basically all penetration data are valid for projectiles of good quality. The estimate of penetration for "worst" projectiles is possible only with great difficulty. The penetration can spread over a very large range below the given value. The regulations for acceptance of projectiles stipulate that a certain number of projectiles (1/2%) will be presented for inspection. Two-thirds of the projectiles which have been fired against armor plate, must satisfy the given conditions. Based on past experience, it can be stated that the largest part of the deliveries satisfy these conditions. A 100% assurance is not given; it may always be expected that a small percentage do not achieve the specified penetrating ability because of shattering prematurely. Also, the explosive charge in these shattered projectiles will not detonate.

The effect of the projectile inside the tank and the probability of hitting the target are not considered in these graphical charts; thus only the **complete penetration with the total effect inside the tank is considered**. As a rule, this effect is of annihilating power when using armor-piercing shells with a high-explosive charge. When using hard core projectiles, steel or soft iron core projectiles, or hollow-charge projectiles, a completely annihilating effect cannot always be expected with a single shot, because the crew, located in the dead space of the tank, cannot be hit under certain conditions.

A limited effect, without piercing the tank by the projectile (effect produced by back-spalling of armor plate

Table 1: ARMOR PENET	RATION		The target r	naterial used to	o test the German
Gun Caliber Projectile Type Shell Weight: Initial Velocity: Range 100 m 500 m 1000 m 1500 m 2000 m 3000 m	12.8 cm <b>Pzgr.43</b> 28.3 kg 920 m/s 223 mm 212 mm 200 mm 189 mm 178 mm 156 mm 140 mm	7.5 cm Gr.38 HL/C 4.8 kg 450 m/s 100 mm 100 mm 100 mm 100 mm	armor-pierci	ng projectiles o	Brinell Number 279 to 309 235 to 265 206 to 235

and punching out plugs (Stanzpfropfen), is frequently achieved with plates that are about 10% thicker than the thickness presented in the graphs.

The effect of penetration against cast armor parts is, under otherwise equal conditions, usually somewhat higher than against rolled plates. That is not the case if the quality of the cast armor is good. Plates hardened on the surface offer the projectile difficulties only if they cause the projectile to break. If that is not the case, the resistance might be equal to or even lower than homogeneous plates.

The **12.8 cm Kw.K. L/55** was capable of first round hits at ranges exceeding 1000 meters. The estimated accuracy is given as the probability (in percentage) of hitting a target 2 meters high and 2.5 meters wide, representing the target presented by the front of an opposing tank. These accuracy tables are based on the assumptions that the actual range to the target has been correctly determined and that the distribution of hits is centered on the aiming point. The first column shows the accuracy obtained during controlled test firing of the gun to determine the pattern of dispersion. The figures in the second column in parentheses includes the variation expected during practice firing due to differences between guns, ammunition, and gunners. Both columns were reported in the accuracy tables from original fire tables as shown in Table 2. These accuracy tables do not reflect the actual probability of hitting a target under battlefield conditions. Due to errors in estimating the range and many other factors, the probability of a first-round hit was much lower than shown in these tables. However, the average, calm gunner, after sensing the tracer from the first round, could achieve the accuracy shown in the second column.

The gun sight in the Maus was the periscopic T.W.Z.F.1 with 3x magnification and ten degree field of view. The reticle pattern consisted of seven triangles, separated by four mils. Placing the target on the point of a triangle

allowed the gunner to aim without obstructing the view of the target. The distances between triangles were used to lead moving targets. The triangle height and separation distances in mils were also used as an aid in estimating the range to the target. The range scale was graduated at 100-meter intervals out to a range of 4000 meters for the **Pzgr.43**.

To quickly traverse onto a target, the **Maus** was outfitted with an electric motor for the turret drive.

Table 2: ACCURACY		
Gun	12.8 cm Kw.K. L/55	7.5 cm Kw.K. L/36
Ammunition:	Pzgr.43	Gr.38 HL/C
Range		
500 m	100 (98)	100 (98)
1000 m	98 (68)	90 (50)
1500 m	85 (41)	53 (18)
2000 m	61 (22)	
2500 m	46 (15)	
3000 m	32 (9)	
3500 m	25 (7)	

The hydraulic drive traversed the turret at a maximum rate of 360 degrees in fifteen seconds. Fine adjustment (laying the target onto the peak of the proper triangle in the sight reticle) was accomplished using the gunner's hand traverse and hand elevation wheels. If the power traverse failed, the gunner could traverse the turret by hand. The gunner could be assisted by a loader using the auxiliary hand traverse.

## MOBILITY

The capability of the **Maus** to negotiate obstacles and cross terrain was as good as or better than most other Allied tanks used during the war as shown by the performance characteristics listed in Table 3.

Table 3: PERFORMANCE CHARACTERISTICS						
Maximum speed	20 km/hr	Fording without submersion kit	2 m			
Allowable sustained road speed	18 km/hr	Step climbing	0.75 m			
Radius of action, road	160 km	Gradient climbing	35 degrees			
Radius of action, cross country	62 km	Ground clearance	0.57 m			
Smallest turning radius	5 m	Ground pressure	1.45 kg/cm <sup>2</sup>			
Trench crossing	3.48 m	Power to weight ratio	8.2 HP/ton			

## SURVIVABILITY ON THE BATTLEFIELD

Along with the extremely effective main gun, a major asset of the **Maus** was their thick armor on the sides and rear as well as the front. The thickness and angles of the armor protection for the **Maus** are shown in Table 4. The **Maus**' armor was invulnerable to attack from most tank guns firing normal armor-piercing shells or shot. Tests conducted in June 1943, firing **8.8 cm Pzgr.39-1** projectiles from **8.8 cm Pak 43** against two **Maus** armor hulls and

a **Maus** turret at a range of 100 meters, proved that 200 mm thick armor at an angle of 32 degrees and 240 mm thick armor at an angle of zero degrees couldn't be defeated by this attack.

The data in the Penetration Range Tables 5 and 6 were extracted from a **Wa Pruef 1** report dated 5 October 1944 which relate the relative ability of the major opponents to penetrate the **Maus** and vice versa. The penetration ranges in the tables were determined for conditions in which the tanks stood at a side angle of thirty degrees to the incoming round. These tables should be used only for comparison of the relative vulnerability of the opponent's tanks. The data are not to be misconstrued as the absolute ranges at which the armor could be penetrated. There was a fairly large variance in both the protection offered by the same thickness of different armor plates and thickness penetrated by the same type of armor-piercing projectiles. However, it is patently obvious that the armor protection on the **Maus** was dominantly superior to all its potential opponents.

The ranges shown in Tables 5 and 6 are all approximations based on calculations using estimates of the capabilities of American and Russian guns and penetration numbers derived from German guns firing against German armor plate.

Table 4:ARMOR PROTECTION					
FRONT					
Turret Roof	60 mm @ 90°				
Gun Mantlet	250 mm rounded				
Turret	220-240 mm rounded				
Superstructure Roof	100-50 mm @ 9°				
Glacis Plate	200 mm @ 55°				
Hull Front	200 mm @ 35°				
Belly Plate Fore	100 mm @ 90°				
SIDE					
Turret	200 mm @ 30°				
Hull Side Upper	180 mm @ 0°				
Hull Side Lower	100 + 80 mm @ 0°				
REAR					
Turret	200 mm @ 15°				
Hull Rear Upper	150 mm @ 37°				
Hull Rear Lower	150 mm @ 30°				
Belly Plate Aft	50 mm @ 90°				

### Table 5:

Range in Meters at which the 12.8 cm Kw.K. L/55 Pzgr.43 Could Penetrate These Targets at a Side Angle of 30°

Target Tank	Sherman	Cromwell	<u>Churchill</u>	<u>T-34-85</u>	<u>IS-2</u>
FRONT					
Gun Mantlet	3500+	3500+	3500+	3500+	3500+
Turret	3500+	3500+	3500+	3500+	3500+
Superstructure	3500+	3500+	3500+	3500+	3500+
Hull	3500+	3500+	3500+	3500+	3500+
SIDES					
Turret	3500+	3500+	3500+	3500+	3500+
Superstructure	3500+	3500+	3500+	3500+	3500+
Hull	3500+	3500+	3500+	3500+	3500+
REAR					
Turret	3500+	3500+	3500+	3500+	3500+
Hull	3500+	3500+	3500+	3500+	3500+

#### TABLE 6:

Range in Meters at which the Maus could be Penetrated at a Side Angle of 30 Degrees by the Following Guns

Tank Gun Model Ammunition	75 mm M3 M61	76 mm M1A1 M62	57 mm 6-pdr APCBC	76 mm 17-pdr APCBC	85 mm S 53 APBC/HE	122 mm A 19 APBC/HE
FRONT						
Gun Mantlet	0	0	0	0	0	0
Turret	0	0	0	0	0	0
Superstructure	0	0	0	0	0	0
Hull	0	0	0	0	0	0
<u>SIDES</u> Turret	0	0	0	0	0	0
Superstructure	0	0	0	0	0	0
Hull	0	0	0	0	0	0
<u>REAR</u> Turret Hull	0 0	0 0	0 0	0 0	0 0	0 0

## **MAUS FAHRGESTELL**



This cutaway view shows the layout inside of the **Fahrgestell** packed completely full with the fuel tanks, motor, radiators and fans, electrical generators and motors, and ammunition stowage.



Drawing 205.00.47 depicts the running gear including the idler wheels and their adjustment, drive sprockets, double roadwheel assembly with vertical volute springs, and 1100 mm wide tracks. (K 3881)



This sideview, to be used as a lubrication chart, depicts the profile layout of the drivetrain.





Drawing 205.53.00 of the armor arrangement on the hull roof is fairly accurate in depicting what was actually fabricated for the **1.Fahrzeug** with two exceptions: the width of the panels for the rear louvers and the shape of the louvers behind the V-shaped deflector guard. It also does not show the two additional deflector guards welded to the roof of the **2.Fahrzeug**.



Drawing 205.25.30 depicts the details of the drive sprocket. (K3709)



A rear view drawing of the submersion kit installed on the Maus.



Drawing 205.57.00 depicts the submersion kit installed above the driver's hatch with ducts leading to the engine compartment cooling louvers. The cooling louvers at the rear were sealed with three panels. Power was to be provided to the electric motors in the submerged Maus by a cable connected to a second Maus. (NOTE: The original drawings used to reproduce these images suffered from misalignment caused by photographic reproduction of the originals.)



# MAUS I TURRET



These photos show the only Maus turret completed in operational condition by Krupp. These and the following photos and drawings of the turret were included in a manual written by Krupp entitled, **Panzerkampfwagen Maus**, Versuchsgeraet, Geraetbeschreibung und Bedienungsanweisung zum Turm dated 1 July 1944.







Spindle and Handle for

Plug for Range Finder Opening

Access Hatch Lid

Turret Light

Turret Ventilation Fan Plug for Gun Sight Reticle Light

-

Gun Sight

MP Ball Mount

Seat Strap

12.8 cm Kw.K. L/55

Elevating Gear

Left side of fighting compartment.

Azimuth Indicator

Gunner's Seat

Electric Traverse

Control for

Hand Wheel for

Turret Traverse

MG Mount

MP Ball Mount

Traversing Gear



Drive for turret traversing gear.

Elevating Gear



Turret traversing and gun elevating gears.

Gunner's Seat

Auxiliary Traverse Knob to Shift the Traverse Gear



Lower fighting compartment.







Lifting device, guide rollers, and turret traverse lock



12.8 cm ammunition rack.



Machine gun mount.

12.8 cm Kw.K. L/55

7.5 cm Kw.K.44 L/36.5





Right side of fighting compartment.

Deflector for

Spent Cartridge

7.5 cm

Safety Switch for 12.8 cm


Underside of turret roof at commander's position.



## **11. THE KUBINKA MAUS**





Right side fore







Right side of hull



Front/right side



Rear/right side



Only one Maus I turret was fabricated and assembled by Krupp before it was sent to Boeblingen and mounted on the 2.Fahrzeug.



ABOVE: Front

BELOW: Front/right side fore





ABOVE: Right side

BELOW: Rear



The gun mantlet, housing the twin mounted **12.8 cm Kw.K. L/55** and **7.5 cm Kw.K.44 L/36.5**, was rated at a nominal armor thickness of 250 mm. The machine gun aperture was cut into the 220-240 mm thick turret front.



Closeup of 7.5 cm gun



Right side



Front/right side



Closeup of 12.8 cm gun





Aperture for machine gun



The armored housing for the periscopic gun sight.

The open access hatches and forward ventilation port on the turret roof (view looking forward). The hole for the left-hand traversing periscope had been plugged and welded shut by Krupp and a hole cut to its front for the vertical range finder. When not in use this hole was sealed by an armor plug.





The open access hatches and forward ventilation port on the turret roof (view looking aft). The smaller diameter hole was for the right-hand traversing periscope which was originally covered by an armor housing. The rear ventilation port and Nahverteidigungswaffe (close defense weapon) on the turret roof (view looking aft). The original holes for lifting the turret had been plugged and welded shut. New holes were cut which were sealed originally with armor plugs.





Close-up view of the interlocked armor plates at the left/rear corner of the turret. Armor dowels were used to align and stiffen the joints. The grating on the left rear of the hull roof provided ventilation for the left-hand electrical motor.

> The spent cartridge ejection port with pistol port on the turret rear wall. The center grating beneath the turret overhang on the hull roof provided ventilation for the transfer gears.





The breech and breech block of the **12.8 cm Kw.K.** L/55. Remnants of the fasteners and tubes on the rear of the breech were for the Rohrausblasevorrichtung designed to blow propellent fumes out of the gun tube.



RIGHT and BELOW: The machine gun mounting, gun sight bracket, left trunnions and main gun mount, and the breech of the 12.8 cm Kw.K. L/55.





The breech of the 7.5 cm Kw.K.44 L/36.5 and right-hand gun mount.



The 7.5 cm ammunition rack in the right front corner of the turret. The hole cut in the right turret wall was for the **MP-Kugelblende** (machine pistol ball mount).



The top front corner of the turret with the recoil cylinder for the main gun, the recoil cylinder for the 7.5 cm gun, and the top of the 7.5 cm ammunition rack. The scalloped cut out of the right hand wall was to accommodate the traversing periscope mounted in the turret roof.



The right rear corner of the turret with the studs for fastening the 12.8 cm ammunition racks.



ABOVE and RIGHT: The inside of the spent cartridge ejection port with pistol port on the turret rear wall.





The **Tragrollen** (support rollers) designed to support the 51 metric ton turret while traversing.



The final gear for traversing the turret (the rest of the hand and electric drive are missing) and an interior mount for Leitrollen (guide rollers).



The photos on these two pages illustrate the gutted condition of the Kubinka MAUS. Not much is left to be seen except a few base supports, penetrations, and the cooling vents for the electrical generators.











The deck plate on the right side with the grating to the right rear missing. The hinged armor lid covered the filler neck for the right fuel tank.

ABOVE and BELOW: The hull deck with the driver's and radio operator's access hatch and driver's periscope mount.



BELOW and RIGHT: Details of the forward grating for engine compartment ventilation on the left side. This grating has been shoved to the right out of place. Originally there was a deck plate to its front and right side.







The deck plate on the right side with the deflector guard and the louvered decking with V-shaped deflector guard underneath the main gun.



The glacis plate and lower hull plate with two towing lugs installed. Notice the arrangement of interlocking the hull plates with the armor dowels, one up and one down. Numerous shaped charge rounds have been fired at the hull.

Details of interlocking the glacis plate with the right hull side. The edges are beveled and two different sized armor dowels were used.





Details of the towing lugs and the armor track guards.



Photos on this page show additional details of the track guards and towing lugs.







LEFT and BELOW: Details of the remote release for the auxiliary fuel tank that was mounted on the hull rear.



The guard for the convoy tail light which wasn't installed on **1.Fahrzeug (Fahrgestell mit Belastungsgewicht)** but was present on the **2.Fahrzeug**. The rectangular port cut into the hull rear (originally intended for electrical motor cooling ductwork) had been plugged and welded shut by Krupp.













Track and suspension on the right side forward.

One of the six double roadwheel mounts on the right side.





1100 mm-wide track on the left front idler wheel.



The forward lower curve of the drive sprocket with mud clearing chute.

Track on the right rear drive sprocket.





The axle cover for the drive sprocket hub, shape of the surrounding armor, and mud clearing chute on the rear.

## General Statistics from Wa Pruef 6 dated 1 May 1944

Туре	"Maus"
Combat Weight	188.0 metric tons
Turret Weight	51.5 metric tons
Length, overall	10.085 m
Length of chassis	9.020 m
Length with Gun at 6 o'clock	12.659 m
Width, overall	3.670 m
Height, overall	3.630 m
Ground Clearance	0.57 m
Crew	6
	(1 commander, 1 gunner, 2 loaders, 1 driver, 1 radio operator)
Ground Pressure	$1.45/1.27 \text{ kg/cm}^2$
Maximum Speed	20 km/hr
Maximum Range on Roads	160 km
Gradient Climbing Ability	35°
Step Climbing Ability	0.75 m
Trench Crossing Ability	3.48 m
Fording Ability	2.0 m
Fording Ability with Submersion Kit	6.0 m
Weapons	12.8 cm Kw.K. L/55
	7.5 cm Kw.K. L/36.5
	1 M.G.34
Ammunition Stowage <sup>-</sup>	55 rounds 12.8 cm
	200 rounds 7.5 cm
Optical Instruments	T.W.Z.F.1 (3x10) gun sight
	2 traversing periscopes
Radio Sets	Fu 5 or Fu 5 and Fu 8
Motor Type	Electrical
Engine Type	MB 509 Daimler-Benz
Power Rating	1540 HP @ 2500 rpm
Roadwheels on each side	24
Track Width	1100 mm
Width from track center to center	2330 mm
Track contact length	5880 mm
Steering Ratio	2.52:1
Fuel Capacity	1650 & 1000 Liters







