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VULNERABILITY TESTS OF GERMAN TANKS

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**VULNERABILITY TESTS
OF
German Tanks**
pz kw III, pz kw IV, pz kw VI

19 JULY 1944

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INTRODUCTION

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19 July 1944

All models of German tanks which have been encountered on the battlefield by American troops are now at the Aberdeen Proving Ground. Firing tests with various calibers of American tank and antitank guns using APC ammunition have been conducted there.

As a result of these firings, it has been possible to compile data showing the ranges at which penetrations of the various plates found on German

tanks can be achieved. These data are given on the inclosed illustrations and tabulations.

While not reflected in the tables, it has been found that in many cases when German tanks are hit with APC shot, the plates are completely defeated and whole sections drop out of the tank, due to the failure of the welding or to the cracking and spalling of the plate. Thus, many plates fail under the impact shock of the hit, in addition to the actual penetration.

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GENERAL INTRODUCTION

The tabulated data herein pertain to the vulnerability of German tanks. They were computed from test firings conducted at the Aberdeen Ordnance Research Center against captured PzKw III, PzKw IV, and PzKw VI tanks. These tanks were made available through the Foreign Materiel Branch.

With the tanks set at ranges of 50 and 100 yards, ballistic limits based upon complete passage of projectiles through armor were obtained at as many angles of obliquity between 0° and 55° as were possible.

Since maximum penetration is achieved by a projectile when it strikes the target at 0° obliquity, gunners should attempt to open fire upon an enemy tank when it is in a position where they can obtain this impact. As the angle of

obliquity increases, the range at which penetration by any individual projectile can be obtained becomes less. For this reason, the tables show the corresponding ranges for each weapon and projectile at which the various component parts of the tanks PzKw III, PzKw IV, and PzKw VI, become vulnerable.

Only one angle of attack was used as the basis for the tabular computations. An angle of 25° was assumed as that which may be considered an average condition for attack. All values shown were based on penetrations at an angle of obliquity resulting from this 25° angle of attack and the angle of inclination of each separate armor plate as it is arranged on the tank.

It should be kept in mind that as the angle of attack in-

creases beyond 25° the range will become less than that shown in the table. Conversely, as the angle of attack decreases under 25° , the range will be larger than that given in the tabulation.

The tabulations cover only those areas which are more apt to be hit. Hits on other vulnerable sections of a tank by armor piercing projectiles and, in some cases, by high explosive shells, will reduce the effectiveness of enemy fire, retard the movement of the tank, or set it ablaze. The additional areas upon which fire may be brought to bear include the track, bogies, vision slits, air louvers, the junction of the turret and hull, guns, telescopes or periscopes, and sponson floor plates.

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PzKw III CHARACTERISTICS

Weight (approx.)..... 22 tons
 Length..... 18 ft.
 Width..... 9 ft., 6 ins.
 Height..... 8 ft., 1 in.
 Ground clearance..... 15 ins.
 Trench crossing ability..... 7 ft., 6 ins.
 Step..... 3 ft.
 Forging depth..... 3 ft.
 Maximum gradient..... 27°

Theoretical radius of action

Roads..... 102 miles
 Cross-country..... 59 miles

Armor:

Different thickness of armor as found on these models

Front	30mm Homo 50mm F.H.	30mm Homo plus 32mm F.H. 50mm plus 20mm F.H. spaced armor
Sides	30mm 30mm	30mm 30mm
Back	30mm 50mm	30mm 50mm
Top	25mm/16mm 16mm to 25mm	16mm to 25mm 16mm to 25mm

Armament

Tank Models, A-D—early models with 75mm KWK short barreled tank gun; later models with long barreled 75mm Gun Stu K.42 with muzzle brake. Latest modification equipped with 105mm Gun Stu. H.42 with muzzle brake.

Tank Models, J-K—50mm Gun KWK 39.

Tank Model, L-N—75mm Gun, KWK.

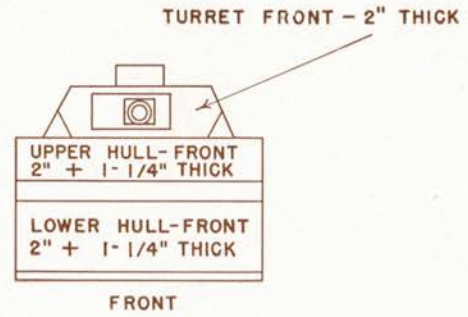
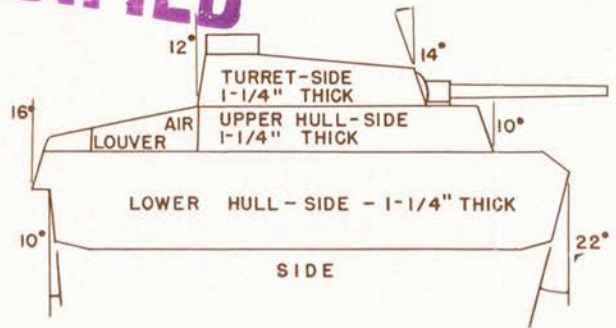
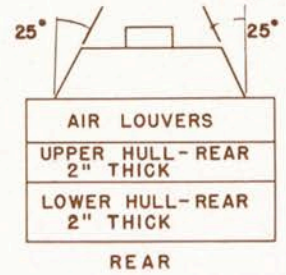
Two M.G. 34's, one mounted coaxially, one mounted in hull.

Engine..... Maybach V-12
 Suspension..... Six 20" diameter bogies
 Crew..... 5



R E S T R I C T E D

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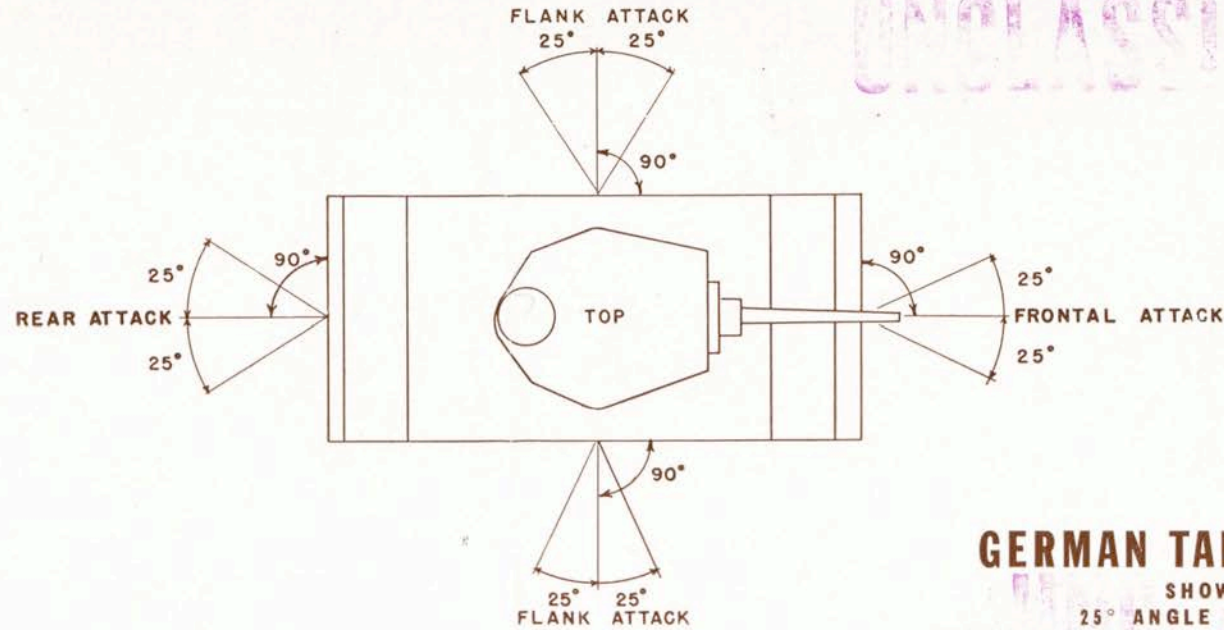


GERMAN TANK PzKw III

SHOWING
PLATE DESIGNATION, PLATE THICKNESS AND 25° ANGLE OF ATTACK

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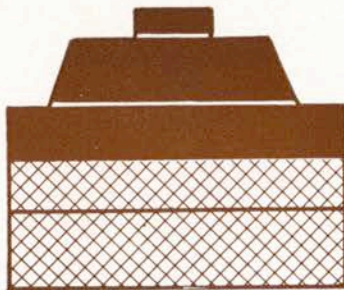


GERMAN TANK PzKw III

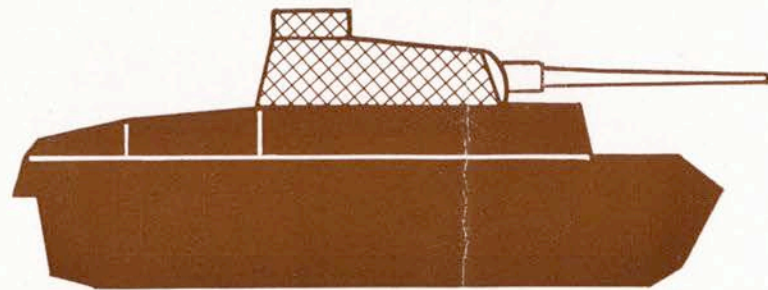
SHOWING
25° ANGLE OF ATTACK

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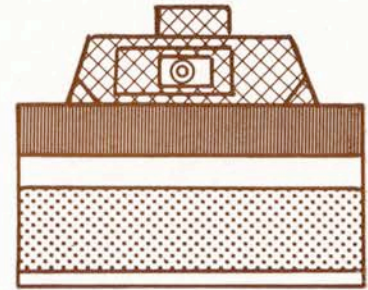
AREAS OF PzKw III VULNERABLE AT RANGE OF 1,000 YARDS TO DESIGNATED GUNS



REAR



SIDE



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AREAS OF PzKw III TANK VULNERABLE AT A RANGE OF 1,000 YARDS TO DESIGNATED GUNS

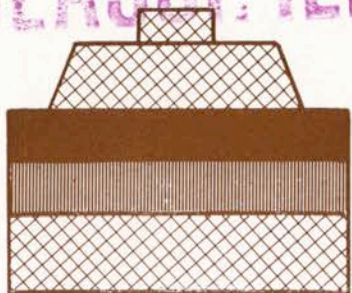
PROJECTILE	M.V. (f/s)	VULNERABLE AT 1,000 YARDS			
90MM A.P.C., M82, IN A.A. GUN, M1, TANK GUN, M3, ON MED. TANKS T25 AND T26, AND G.M.C. T71 AND T71E1.	2650	•••••		XXXXX	■■■■■
3 INCH AND 76MM A.P.C., M62. 3-INCH IN A.A. GUN, M3, GUN, M5 (FIELD); GUN, M7, ON HEAVY TANKS M6 AND M6A1. FOR 76MM SEE FOOTNOTE.	2600	•••••		XXXXX	■■■■■
75MM A.P.C., M61, IN GUN M4 (AIRCRAFT)	2030 +350 M.P.H.			XXXXX	■■■■■
75MM A.P.C., M61, IN GUN, M3, ON MED. TANK, M4, SERIES, GUN, M5, ON LT. TANKS T24 AND T24E1.	2030			XXXXX	■■■■■
75MM A.P.C., M61, IN GUN, M2*, ON MED. TANK, M4, SERIES.	1930			XXXXX	■■■■■
57MM A.P.C., M86, IN ANTI-TANK GUN, M1.	2700			XXXXX	■■■■■
37MM A.P.C., M51, IN GUN, M6, ON LT. TANKS M3A3, M5A1, T9E1 (AIRBORNE), LT. ARMORED CAR, M8, AND HEAVY TANKS, M6 AND M6A1, ANTI-TANK GUN, M3A1	2900				■■■■■
76MM A.P.C., M62, IN TANK GUN M1A2 ON MED. TANK M4, SERIES, G.M.C., M18, AND MED. TANKS T23 AND T23E3.	2600				■■■■■

*WILL NOT PENETRATE UPPER HULL REAR, LOWER HULL REAR, AND TURRET FRONT

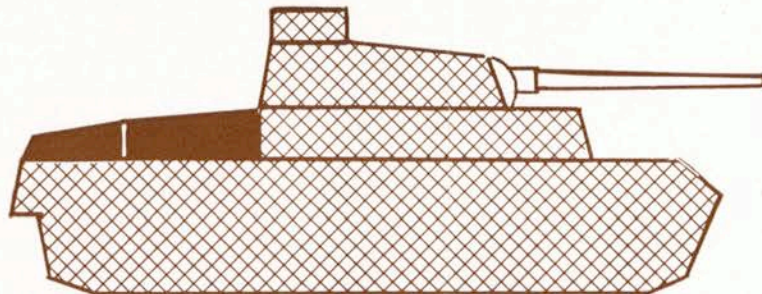
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AREAS OF PzKw III VULNERABLE AT A RANGE OF 2,000 YARDS TO DESIGNATED GUNS

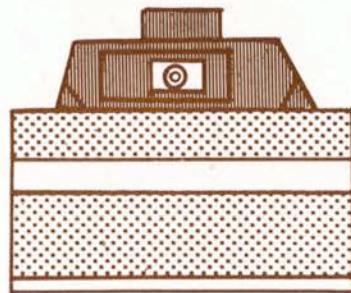
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REAR



SIDE



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AREAS OF PzKw III TANK VULNERABLE AT A RANGE OF 2,000 YARDS TO DESIGNATED GUNS



PROJECTILE	M.V. (f/s)	VULNERABLE AT 2,000 YARDS			
90MM A.P.C., M82, IN A.A. GUN, M1, TANK GUN, M3, ON MED. TANKS T25 AND T26, AND G.M.C. T71 AND T71E1.	2650				
3 INCH AND 76MM A.P.C., M62. 3-INCH IN A.A. GUN, M3; GUN, M5 (FIELD); GUN, M7, ON HEAVY TANKS M6 AND M6A1. FOR 76MM SEE FOOTNOTE.	2600				
75MM A.P.C., M61, IN GUN M4 (AIRCRAFT).	2030 +350 M.P.H.				
75MM A.P.C., M61, IN GUN, M3, ON MED. TANK, M4, SERIES, GUN, M3, ON LT. TANKS T24 AND T24E1.	2030				
75MM A.P.C., M61, IN TANK GUN, M2*, ON MED. TANK, M4.	1930				
57MM A.P.C., M86, IN ANTI-TANK GUN, M1.	2700				
37MM A.P.C., M51, IN GUN, M6, ON LT. TANKS M3A3, M5A1, T9E1 (AIRBORNE), LT. ARMORED CAR, M8, AND HEAVY TANKS, M6 AND M6A1, ANTI-TANK GUN, M3A1.	2900				
76MM A.P.C., M62, IN TANK GUN M1A2 ON MED. TANK M4, SERIES, G.M.C., M18, AND MED. TANKS T23 AND T23E3.	2600				



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*WILL NOT PENETRATE "LOWER HULL REAR."

VULNERABILITY OF GERMAN TANK PzKw III

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TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

GUN CALIBER	90MM	3"	76MM	75MM	57MM	37MM		
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC	M51-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1	M3A1
GUN MODEL	M1A1	M5	M1A2					
GUN MODEL	M2	M6						
GUN MODEL	M3	M7						
MUZZLE VELOCITY-F/S	2650	2600	2600	2030 + 350 MPH	2030	1930	2700	2900

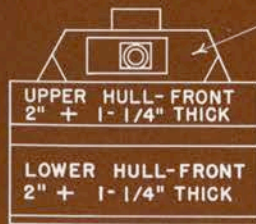
FRONTAL ATTACK

MAXIMUM VULNERABLE RANGE IN YARDS

TURRET SIDES	5000+	5000+	5000+	5000+	4700	3850	3820	950
TURRET FRONT	4660	2930	2930	2800	1120	680	1860	X
UPPER HULL FRONT	3250	1740	1740	1520	X	X	X	X
LOWER HULL FRONT	2600	1180	1180	920	X	X	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

TURRET FRONT - 2" THICK



FRONT

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VULNERABILITY OF GERMAN TANK PzKw III

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TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

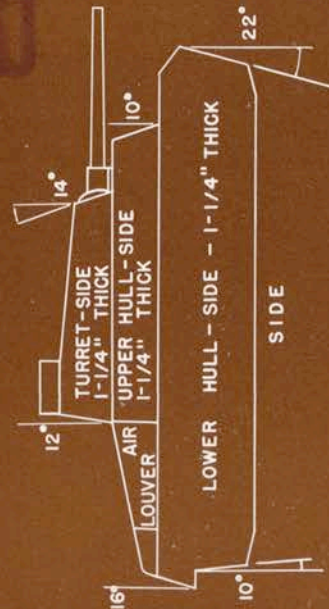
GUN CALIBER	90MM	3"	76MM		75MM		57MM	37MM
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC	M51-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1	M3A1
GUN MODEL	M1A1	M5	M1A2					
GUN MODEL	M2	M6						
GUN MODEL	M3	M7						
MUZZLE VELOCITY-F/S	2650	2600	2600	2030 + 350 MPH	2030	1930	2700	2900

FLANK ATTACK

MAXIMUM VULNERABLE RANGE IN YARDS

UPPER AND LOWER HULL SIDES	5000+	5000+	5000+	5000+	4960	4600	4500	1730
TURRET REAR	5000+	5000+	5000+	5000+	4500	4080	4340	1500
TURRET SIDES	5000+	5000+	5000+	5000+	4700	3850	3820	950
TURRET FRONT	4660	2930	2930	2800	1120	680	1860	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)



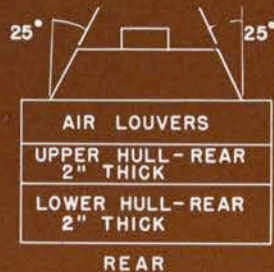
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VULNERABILITY OF GERMAN TANK PzKw III

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TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

GUN CALIBER	90MM	3"	76MM		75MM		57MM	37MM
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC	M51-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1	M3A1
GUN MODEL	M1A1	M5	M1A2					
GUN MODEL	M2	M6						
GUN MODEL	M3	M7						
MUZZLE VELOCITY-F/S	2650	2600	2600	2030+ 350 MPH	2030	1930	2700	2900



REAR ATTACK	MAXIMUM VULNERABLE RANGE IN YARDS							
TURRET REAR	5000+	5000+	5000+	5000+	4500	4080	4340	1500
TURRET SIDES	5000+	5000+	5000+	5000+	4700	3850	3820	950
LOWER HULL REAR	4840	3080	3080	2960	1280	840	2040	X
TURRET FRONT	4660	2930	2930	2800	1120	680	1860	X
UPPER HULL REAR	4580	2860	2860	2720	1040	600	1720	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

PzKw IV CHARACTERISTICS

Weight (approx.)..... 22 tons
Length..... 19 ft., 6 ins.
Width..... 9 ft., 4 ins.
Height..... 8 ft., 9 ins.
Ground clearance..... 15 ins.
Trench crossing ability..... 9 ft.
Step..... 3 ft.
Fording depth..... 3 ft.
Maximum gradient..... 27°

Theoretical radius of action
Roads..... 130 miles
Cross-country..... 81 miles

Armor:
Different thickness of armor as found on these models.

Front	30mm Homo 50mm F.H.	30 Homo plus 32mm F.H.
Sides	20mm 30mm	20mm plus 20mm
Back	20mm 50mm	20mm
Top	10mm to 20mm 10mm to 20mm	10mm to 20mm

Armament

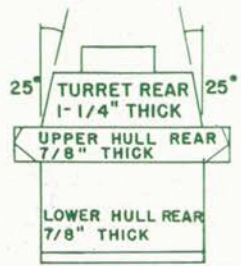
One 75mm KwK
One 75mm KwK 40 on later models
One M.G. 34 mounted coaxially
One M.G. 34 in front of hull

Engine..... Maybach V12—320 h.p.
Suspension..... Eight 18" twin bogie wheels

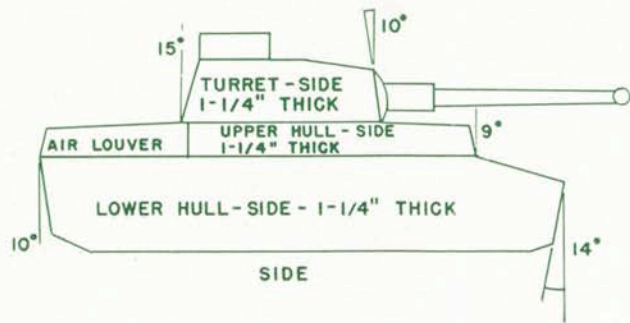


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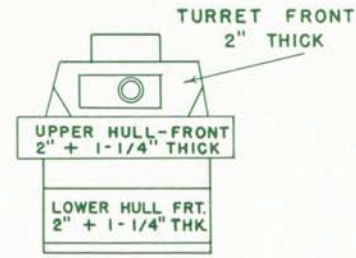
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REAR



SIDE



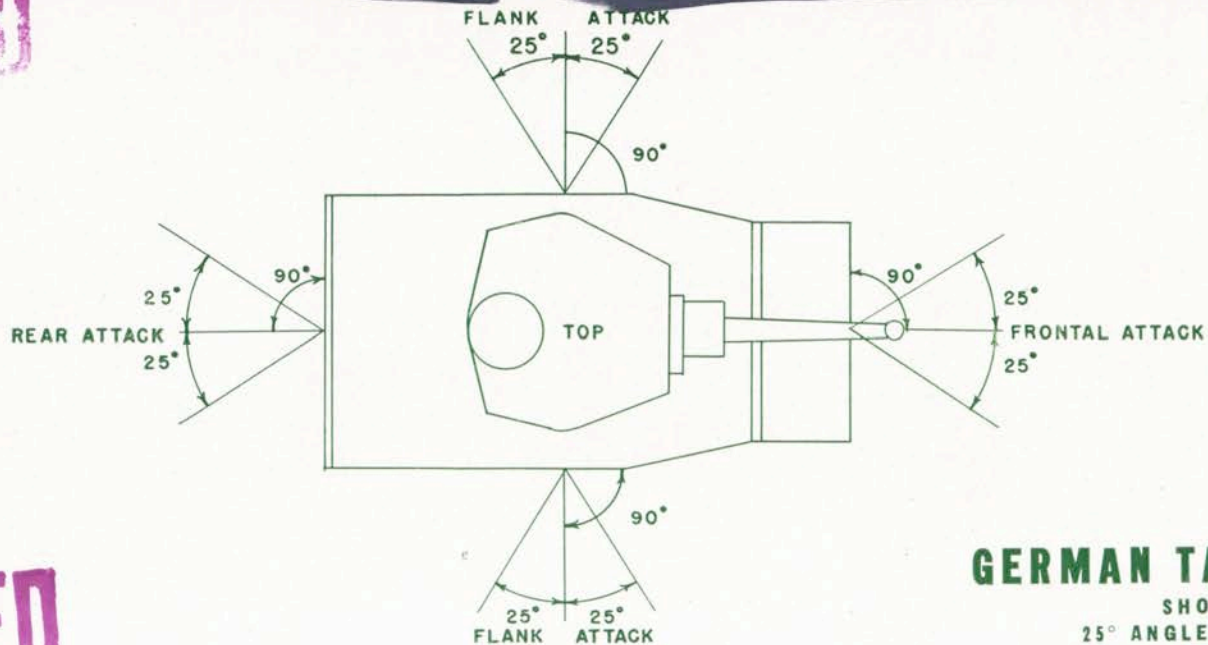
FRONT

GERMAN TANK PzKw IV

SHOWING
PLATE DESIGNATION, PLATE THICKNESS AND 25° ANGLE OF ATTACK

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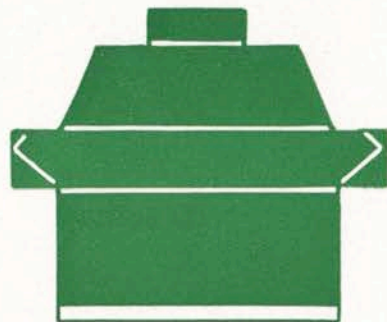
GERMAN TANK PzKw IV

SHOWING
25° ANGLE OF ATTACK

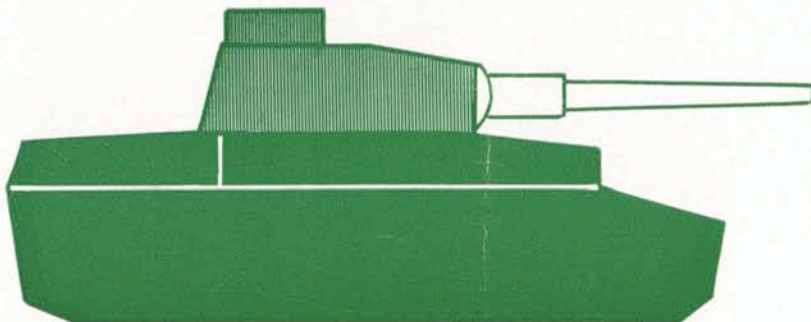
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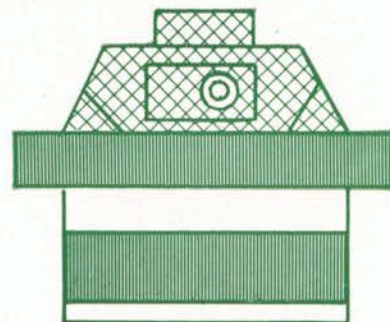
AREAS OF PzKw IV VULNERABLE AT A RANGE OF 1,000 YARDS TO DESIGNATED GUNS



REAR



SIDE



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AREAS OF PzKw IV TANK VULNERABLE AT A RANGE OF 1,000 YARDS TO DESIGNATED GUNS

PROJECTILE	M.V. (f/s)	VULNERABLE AT 1,000 YARDS
90MM A.P.C., M82, IN A.A. GUN, M1, TANK GUN, M3, ON MED. TANKS T25 AND T26, AND G.M.C. T71 AND T71E1.	2650	
3 INCH AND 76MM A.P.C., M62. 3 INCH IN A.A. GUN, M3, GUN, M5 (FIELD), GUN, M7, ON HEAVY TANKS M6 AND M6A1. FOR 76MM SEE FOOTNOTE.	2600	
75MM A.P.C., M61, IN GUN M4 (AIRCRAFT).	2030 +350 M.P.H.	
75MM A.P.C., M61, IN GUN, M3, ON MED. TANK, M4, SERIES, GUN, M5, ON LT. TANKS T24 AND T24E1.	2030	
75MM A.P.C., M61, IN GUN, M2, IN MED. TANK, M4, SERIES.	1930	
57MM A.P.C., M86 IN ANTI-TANK GUN, M1.	2700	
37MM A.P.C., M51, IN GUN, M6, ON LT. TANKS M3A3, M5A1, T9E1 (AIRBORNE), LT. ARMORED CAR, M8, AND HEAVY TANKS, M6 AND M6A1, ANTI-TANK GUN, M3A1.	2900	

76MM A.P.C., M62, IN TANK GUN M1A2 IN MED. TANK M4, SERIES, G.M.C., M18, AND MED. TANKS T23 AND T23E3.

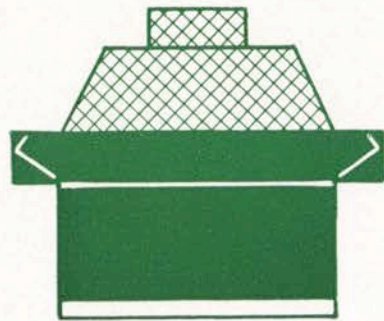
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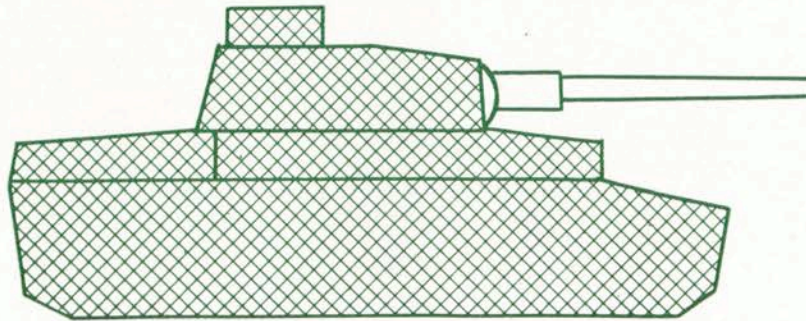
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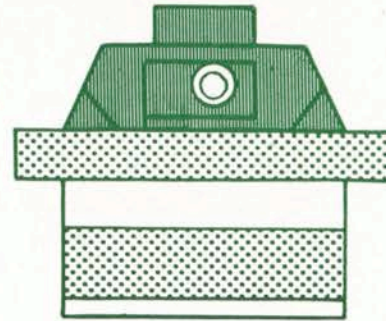
AREAS OF PzKw IV VULNERABLE AT A RANGE OF 2,000 YARDS TO DESIGNATED GUNS



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AREAS OF PzKw IV TANK VULNERABLE AT A RANGE OF 2,000 YARDS TO DESIGNATED GUNS

PROJECTILE	M.V. (f/s)	VULNERABLE AT 2,000 YARDS			
90MM A.P.C., M82, IN A.A. GUN, M1, TANK GUN, M3, ON MED. TANKS T25 AND T26, AND G.M.C. T71 AND T71E1.	2650	▨	▨	▨	▨
3 INCH AND 76MM A.P.C., M62. 3 INCH IN A.A. GUN, M3, GUN, M5 (FIELD), GUN, M7, ON HEAVY TANKS M6 AND M6A1. FOR 76MM SEE FOOTNOTE.	2600		▨	▨	▨
75MM A.P.C., M61, IN GUN M4 (AIRCRAFT).	2030 +350 M.P.H.		▨	▨	▨
75MM A.P.C., M61, IN GUN, M3, IN MED. TANK, M4, SERIES, GUN, M5, IN LT. TANKS T24 AND T24E1.	2030			▨	▨
75MM A.P.C., M61, IN GUN, M2, IN MED. TANK, M4, SERIES.	1930			▨	▨
57MM A.P.C., M86, IN ANTI-TANK GUN, M1.	2700				▨
37MM A.P.C., M31, IN GUN, M6, ON LT. TANKS M3A3, M5A1, T9E1 (AIRBORNE), LT. ARMORED CAR, M8, AND HEAVY TANKS, M6 AND M6A1, ANTI-TANK GUN, M3A1.	2900				▨
76MM A.P.C. M62, IN TANK GUN M1A2 IN MED. TANK M4, SERIES; G.M.C., M18; AND MED. TANKS T23 AND T23E3.	2600				▨



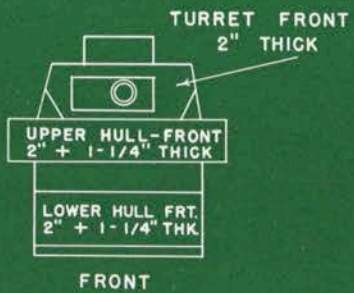
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VULNERABILITY OF GERMAN TANK PzKw IV

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TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

GUN CALIBER	90MM	3"	76MM		75MM	57MM	37MM	20MM	
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC	M51-APC	M75-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1	M3A1	M1
GUN MODEL	M1A1	M5	M1A2					M6	M2
GUN MODEL	M2	M6							
GUN MODEL	M3	M7							
MUZZLE VELOCITY-F/S	2650	2600	2600	2030+ 350 MPH	2030	1930	2700	2900	2615



FRONTAL ATTACK	MAXIMUM VULNERABLE RANGE IN YARDS								
TURRET SIDES	5000+	5000	5000	5000+	4700	3850	3820	950	X
TURRET FRONT	4840	3080	3080	2960	1280	840	2040	X	X
UPPER HULL FRONT	3250	1740	1740	1520	X	X	X	X	X
LOWER HULL FRONT	3100	1600	1600	1360	X	X	X	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

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VULNERABILITY OF GERMAN TANK PzKw IV

TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

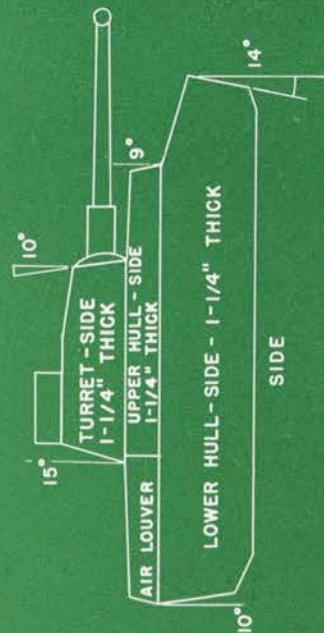
GUN CALIBER	90MM	3"	76MM		75MM		57MM	37MM	20MM
AMMUNITION	M82- APC	M62- APC	M62- APC	M61- APC	M61- APC	M61- APC	M86- APC	M51- APC	M75- APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1	M3A1	M1
GUN MODEL	M1A1	M5	M1A1					M6	M2
GUN MODEL	M2	M6							
GUN MODEL	M3	M7							
MUZZLE VELOC- ITY-F/S	2650	2600	2600	2030 + 350 MPH	2030	1930	2700	2900	2615

FLANK ATTACK

MAXIMUM VULNERABLE RANGE IN YARDS

UPPER AND LOWER HULL SIDES	5000+	5000+	5000+	5000+	4960	4600	4500	1730	X
TURRET REAR	5000+	5000+	5000+	5000+	3760	3360	4200	1340	X
TURRET SIDES	5000+	5000	5000	5000+	4700	3850	3820	950	X
TURRET FRONT	4840	3080	3080	2960	1280	840	2040	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)



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VULNERABILITY OF GERMAN TANK PzKw IV

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TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

GUN CALIBER	90MM	3"	76MM		75MM	57MM	37MM	20MM	
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC	M51-APC	M75-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1	M3A1	M1
GUN MODEL	M1A1	M5	M1A2					M6	M2
GUN MODEL	M2	M6							
GUN MODEL	M3	M7							
MUZZLE VELOCITY-F/S	2650	2600	2600	2030 + 350 MPH	2030	1930	2700	2900	2615



REAR ATTACK	MAXIMUM VULNERABLE RANGE IN YARDS								
UPPER AND LOWER HULL REAR	5000+	5000+	5000+	5000+	4960	4600	5000+	3940	220
TURRET REAR	5000+	5000+	5000+	5000+	3760	3360	4200	1340	X
TURRET SLIDES	5000+	5000	5000	5000+	4700	3850	3820	950	X
TURRET FRONT	4840	3080	3080	2960	1280	840	2040	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

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PzKw VI CHARACTERISTICS

Weight..... 56 tons (62 tons combat weight)
Overall length with gun..... 27 ft., 6³/₄ ins.
Length..... 20 ft., 6 ins.
Width with loading track..... 11 ft., 8 ins.
Width in action..... 12 ft., 3 ins.
Height..... 9 ft., 5¹/₂ ins.
Speed..... 12-18 m.p.h.

Armor

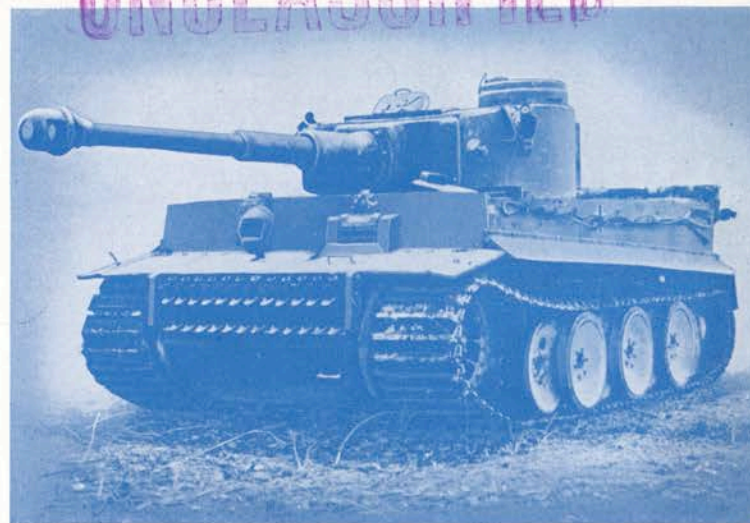
Front, hull, and superstructure..... 102mm
Turret and superstructure sides..... 82mm

Hull sides..... 62mm
Rear..... 82mm
Top..... 26mm
Floor..... 26mm

Armament

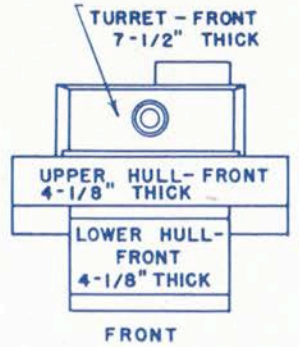
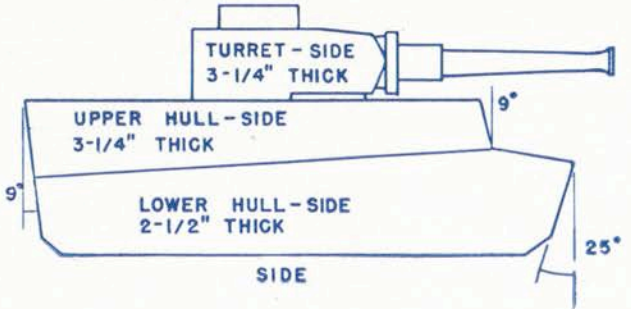
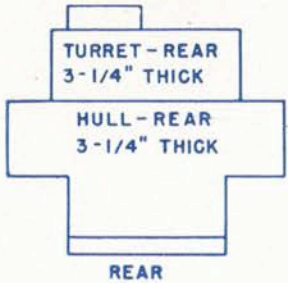
One 88mm KwK 36 gun
Two 7.92mm M.G. 34 (1 coaxially, 1 in hull)

Engine..... Maybach V12—642 h.p.
Suspension..... Eight bogies per side
Crew..... 5



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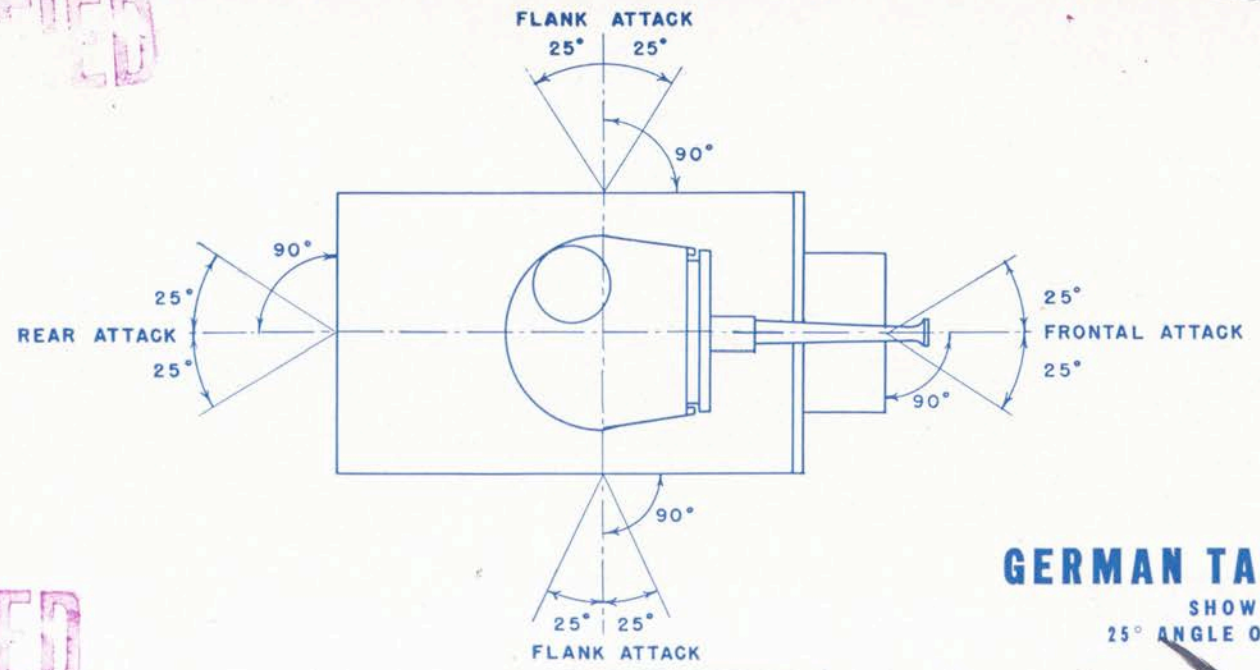


GERMAN TANK PzKw VI (TIGER)

SHOWING
PLATE DESIGNATION, PLATE THICKNESS AND 25° ANGLE OF ATTACK

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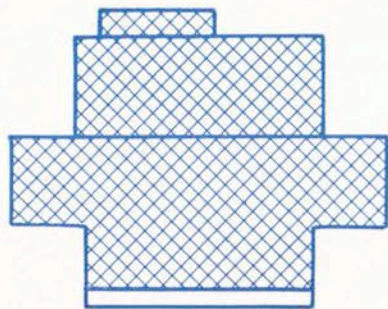
GERMAN TANK PzKw VI

SHOWING
25° ANGLE OF ATTACK

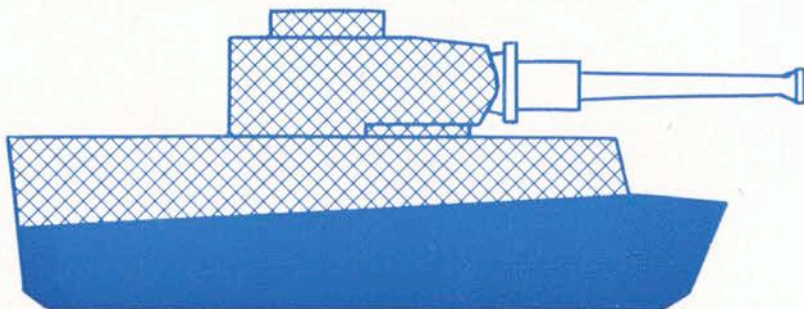
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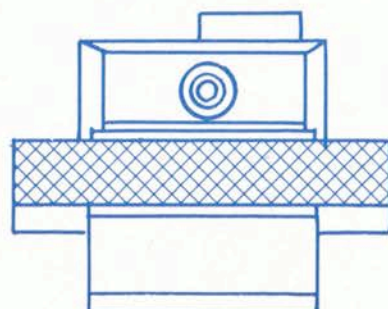
AREAS OF PzKw VI VULNERABLE AT A RANGE OF 1,000 YARDS TO DESIGNATED GUNS



REAR



SIDE




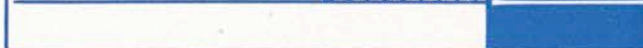






FRONT

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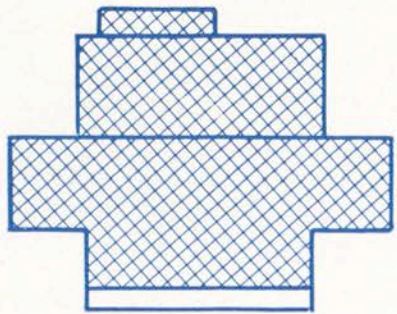
AREAS OF PzKw VI VULNERABLE AT A RANGE OF 1,000 YARDS TO DESIGNATED GUNS

PROJECTILE	M.V. (f/s)	VULNERABLE AT 1,000 YARDS
★ 90MM A.P.C., M82, IN A.A. GUN, M1, TANK GUN, M3, ON MED. TANKS T23 AND T26, AND G.M.C. T71 AND T71E1.	2650	
★ 3 INCH AND 76MM A.P.C., M62. 3 INCH IN A.A. GUN, M3; GUN, M5 (FIELD); GUN, M7, ON HEAVY TANKS M6 AND M6A1. FOR 76MM SEE FOOTNOTE.	2600	
75 MM A.P.C., M61, IN GUN M4 (AIRCRAFT).	2030 +350 M.P.H.	
75MM A.P.C., M61, IN GUN, M3, IN MED. TANK, M4, SERIES; GUN, M5, IN LT. TANKS T24 AND T24E1.	2030	
75MM A.P.C., M61, IN GUN, M2, IN MED. TANK, M4, SERIES.	1930	
57MM A.P.C., M86, IN ANTI-TANK GUN, M1.	2700	
★ 37MM A.P.C., M51, IN GUN, M6, ON LT. TANKS M3A3, M5A1, T9E1 (AIRBORNE), LT. ARMORED CAR, M8, AND HEAVY TANKS, M6 AND M6A1, ANTI-TANK GUN, M3A1.	2900	
★ 76MM A.P.C., M62, IN TANK GUN M1A2 IN MED. TANK M4, SERIES; G.M.C., M18, AND MED. TANKS T23 AND T23E3.	2600	

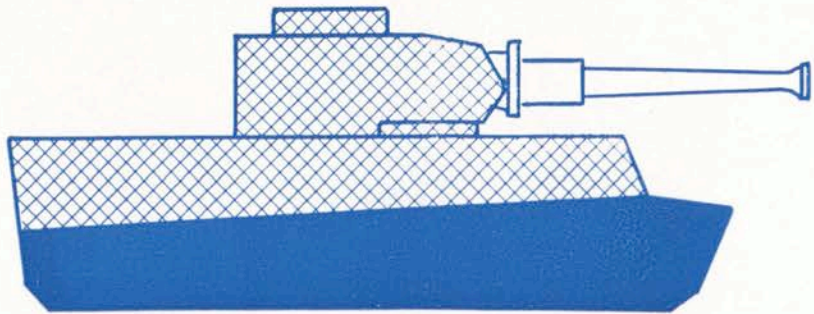
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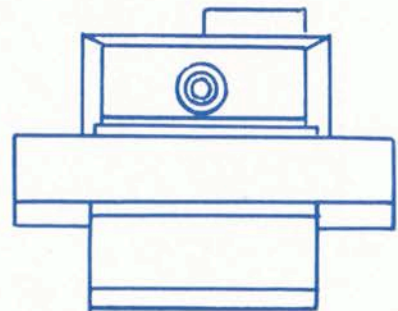
AREAS OF PzKw VI VULNERABLE AT A RANGE OF 2,000 YARDS TO DESIGNATED GUNS



REAR



SIDE











FRONT

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AREAS OF PzKw VI VULNERABLE AT A RANGE OF 2,000 YARDS TO DESIGNATED GUNS

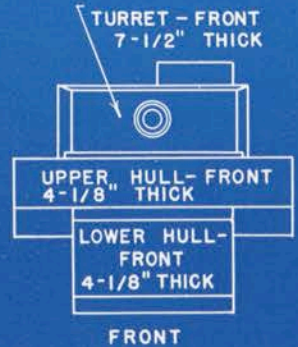
PROJECTILE	M.V (f/s)	VULNERABLE AT 2,000 YARDS
90MM A.P.C., M82, IN A.A. GUN, M1, TANK GUN, M3, ON MED. TANKS T25 AND T26, AND G.M.C. T71 AND T71E1.	2650	
★ 3 INCH AND 76MM A.P.C., M62. 3 INCH IN A.A. GUN, M3, GUN, M5 (FIELD), GUN, M7, ON HEAVY TANKS M6 AND M6A1. FOR 76MM SEE FOOTNOTE.	2600	
75MM A.P.C., M61, IN GUN M4 (AIRCRAFT).	2030 +350 M.P.H.	
75MM A.P.C., M61, IN GUN, M3, IN MED. TANK, M4, SERIES, GUN, M5, IN LT. TANKS T24 AND T24E1.	2030	
75MM A.P.C. M61, IN GUN, M2, IN MED. TANK, M4, SERIES.	1930	
57MM A.P.C., M86 IN ANTI-TANK GUN, M1.	2700	
37MM A.P.C., M51, IN GUN, M6, ON LT. TANKS M3A3, M5A1, T9E1 (AIRBORNE), LT. ARMORED CAR, M8, AND HEAVY TANKS, M6 AND M6A1, ANTI-TANK GUN, M3A1.	2900	
★ 75MM A.P.C., M62, IN TANK GUN M1A2 IN MED. TANK M4, SERIES, G.M.C., M18, AND MED. TANKS T23 AND T23E3.	2600	

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VULNERABILITY OF GERMAN TANK PzKw VI (TIGER)

TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK



GUN CALIBER	90MM	3"	76MM		75MM		57MM
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1
GUN MODEL	M1A1	M5	M1A2				
GUN MODEL	M2	M6					
GUN MODEL	M3	M7					
MUZZLE VELOCITY-F/S	2650	2600	2600	2030+ 350 MPH	2030	1930	2700

FRONTAL ATTACK	MAXIMUM VULNERABLE RANGE IN YARDS						
TURRET—SIDE AND REAR	2680	720	720	460	X	X	240
UPPER HULL—FRONT	1200	X	X	X	X	X	X
LOWER HULL—FRONT	X	X	X	X	X	X	X
TURRET—FRONT	X	X	X	X	X	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

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VULNERABILITY OF GERMAN TANK PzKw VI (TIGER)

TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

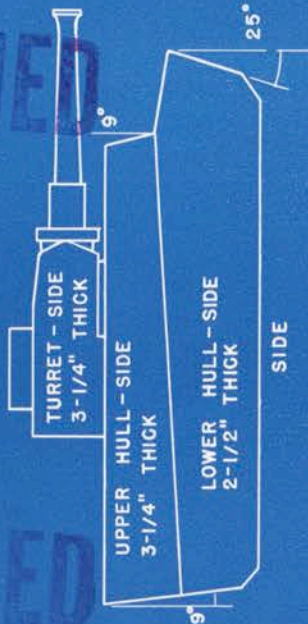
GUN CALIBER	90MM	3"	76MM		75MM		57MM
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1
GUN MODEL	M1A1	M5	M1A2				
GUN MODEL	M2	M6					
GUN MODEL	M3	M7					
MUZZLE VELOCITY-F/S	2650	2600	2600	2030+ 350 MPH	2030	1930	2700

FLANK ATTACK

MAXIMUM VULNERABLE RANGE IN YARDS

LOWER HULL—SIDE	4180	3000	3000	2880	1200	760	1910
UPPER HULL—SIDE	2680	720	720	460	X	X	240
TURRET—SIDE AND REAR	2680	720	720	460	X	X	240
TURRET—FRONT	X	X	X	X	X	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

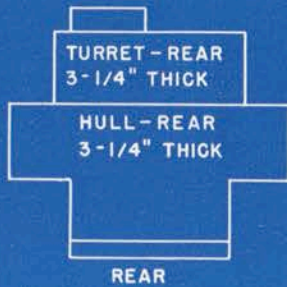


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VULNERABILITY OF GERMAN TANK PzKw VI (TIGER)

TO U. S. GUNS AND AMMUNITION FOR TWENTY-FIVE DEGREE ANGLE OF ATTACK

GUN CALIBER	90MM	3"	76MM		75MM		57MM
AMMUNITION	M82-APC	M62-APC	M62-APC	M61-APC	M61-APC	M61-APC	M86-APC
GUN MODEL	M1	M3	M1A1	M4 (AIR)	M3	M2	M1
GUN MODEL	M1A1	M5	M1A2				
GUN MODEL	M2	M6					
GUN MODEL	M3	M7					
MUZZLE VELOCITY-F/S	2650	2600	2600	2030 + 350 MPH	2030	1930	2700



REAR ATTACK

MAXIMUM VULNERABLE RANGE IN YARDS

TURRET—SIDE AND REAR	2680	720	720	460	X	X	240
HULL—REAR	2600	550	550	300	X	X	170
TURRET—FRONT	X	X	X	X	X	X	X

X—PROJECTILE WILL NOT PASS THROUGH (NOT VULNERABLE)

CLASSIFIED



EFFECT OF 57MM PROJECTILE M86, ON 3.22" TURRET ARMOR OF PzKw VI TANK. OBLIQUITY WAS 0°. THE RANGE WAS 1,200 YARDS.

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OPENING 62" x 27" CAUSED BY DISPLACEMENT OF SIDE ARMOR 3.22" THICK ON PzKw VI TANK CAUSED BY 3" PROJECTILE APC, M62. THE OBLIQUITY WAS 0°, AND THE RANGE WAS 2,530 YARDS.

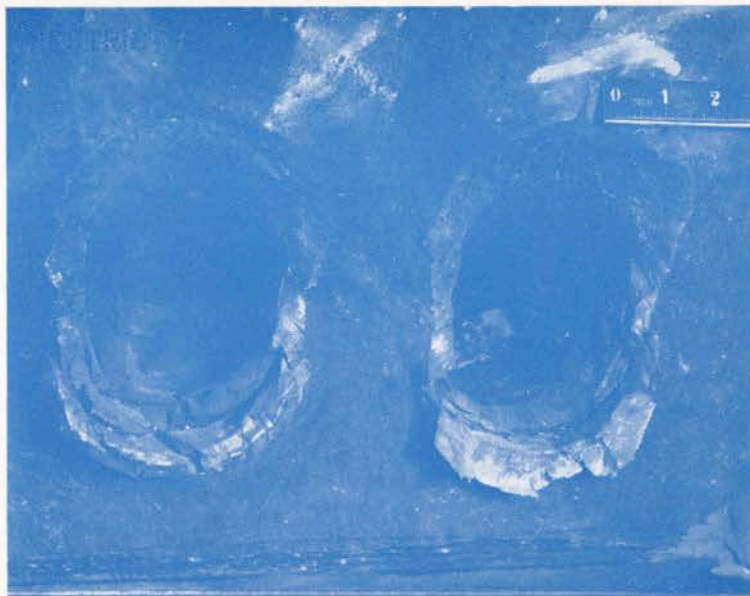
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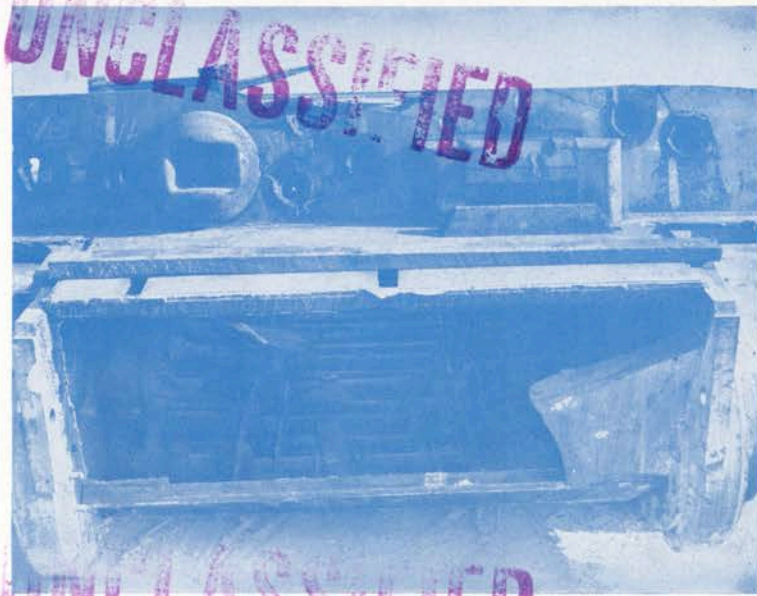
COMPLETE PENETRATION OF 3.92" HULL REAR PLATE OF PzKw VI TANK CAUSED BY 3" PROJECTILE, APC, M62 AT 0° OBLIQUITY. THE RANGE WAS 3,740 YARDS.



BACKSPALLS FROM 3" PROJECTILE, APC, M62, AT 0° OBLIQUITY, ON 4.05" UPPER HULL PLATE OF PzKw VI TANK. RANGES VARIED FROM 810 YARDS TO 1,640 YARDS.



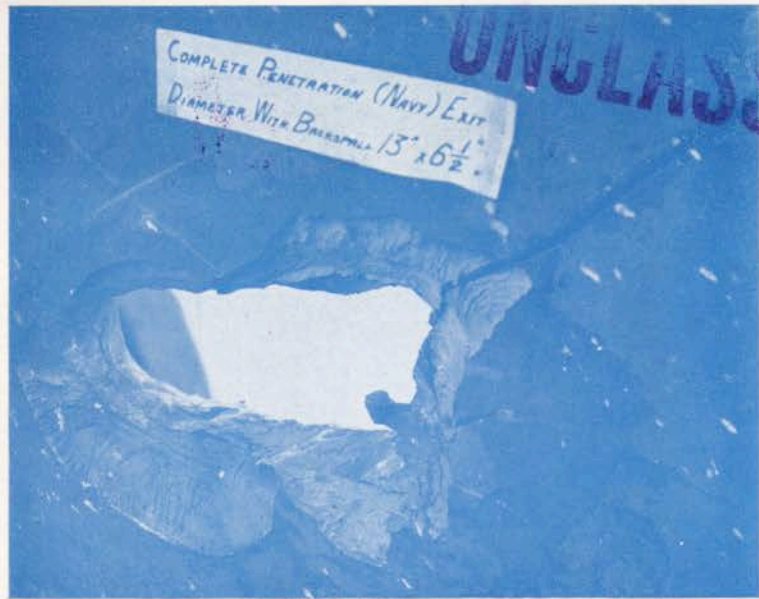
PENETRATIONS OF 90MM PROJECTILES, APC, M82, IN 4.21" FINAL DRIVE PLATE OF PzKw VI TANK. ROUNDS WERE FIRED AT RANGES OF 1,210 YARDS AND 1,740 YARDS. OBLIQUITY WAS 30° FOR BOTH ROUNDS.



4.05" FINAL DRIVE COVER PLATE DISPLACED FROM FRONT OF LOWER HULL OF PzKw VI AFTER IMPACT OF FOUR 90MM PROJECTILES, APC, M82. ROUNDS WERE FIRED AT 0° OBLIQUITY AND RANGES OF 2,820 YARDS TO 4,090 YARDS.

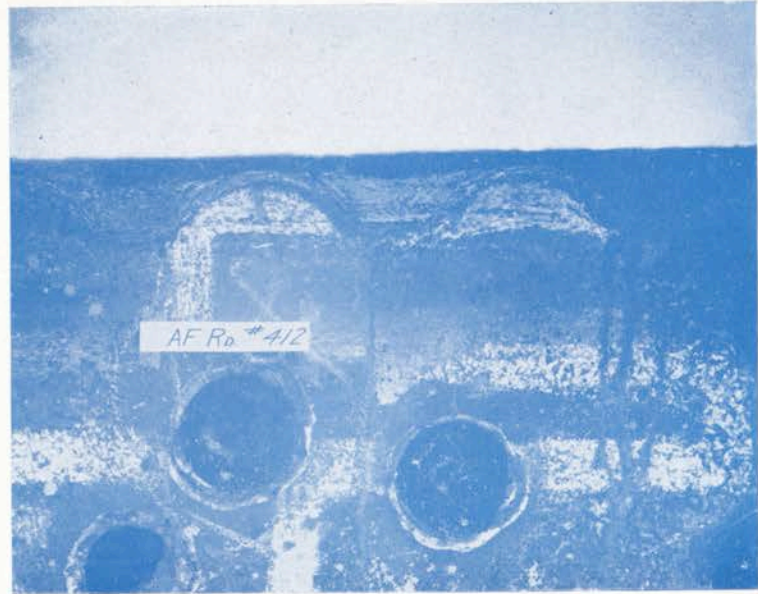
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COMPLETE PENETRATION OF 2.49" LOWER HULL LEFT SIDE PLATE OF PzKw VI BY ONE ROUND OF 90MM PROJECTILE, A.P.C. M82 AT 53° OBLIQUITY. THE RANGE WAS 400 YARDS.

UNCLASSIFIED



COMPLETE PENETRATION BY 75MM SHOT, A.P., M72, OF 2.39" LOWER HULL RIGHT SIDE PLATE, WITH CRATERING ON THE FACE OF THE PLATE. OBLIQUITY WAS 0°, AND THE RANGE WAS 2,060 YARDS

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