

The German Army, Waffen SS, Luftwaffe Ground Forces and Naval Coastal Artillery Deployed (D) in Support of Operation Barbarossa from 22nd June to 4th July 1941

From table [Ger Total Deployed \(D\) 1](#) and the German Deployment Matrix, we can summarise the German ground forces which supported Operation Barbarossa from 22nd June to 4th July 1941 as follows.

i. Army Group North

- 18th Army, 4th Panzer Group and 16th Army (deployed from north to south), with 29 divisions and approximately 712 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 562 000 personnel were allocated to Deployed (D) combat units (i.e. those units displayed in the German Deployment Matrix for Army Group North).
- 7 infantry corps HQs, 2 panzer (motorised) corps HQs, 1 army group rear area HQ, 20 infantry divisions, 3 panzer divisions, 2 motorised divisions, 1 Waffen SS motorised division and 3 (small) security divisions.
- 770 fully tracked AFVs (Armoured Fighting Vehicles) of all types. This included 619 tanks, command tanks and flame tanks. However only 214 tanks and assault guns had 50-75mm calibre guns, and only 274 AFVs had guns with a calibre greater than 45mm.
- 213 armoured cars of all types (including armoured radio cars), and 344 semi-tracked AFVs (including APCs and armoured observation vehicles).¹
- 3 980 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 735 (20-105mm) AA guns (including all SP AA guns), and 3 409 (50-81mm) mortars.
- Approximately 122 900 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 2 259 halftrack prime movers (excluding halftracks used as self-propelled guns).²
- Commander: *Generalfeldmarschall* Ritter von Leeb.

ii. Army Group Centre

- 3rd Panzer Group, 9th Army, 4th Army and 2nd Panzer Group (deployed from north to south), with 52 divisions and approximately 1 308 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 1 022 000 personnel were allocated to Deployed (D) combat units.
- 11 infantry corps HQs, 5 panzer (motorised) corps HQs, 1 army group rear area HQ, 33 infantry divisions, 9 panzer divisions, 5 motorised divisions, 1 Waffen SS motorised division, 1 cavalry division and 3 (small) security divisions.
- 2 599 fully tracked AFVs of all types. This included 2 241 tanks, command tanks and flame tanks. However only 797 tanks and assault guns had 50-75mm calibre guns, and only 973 AFVs had guns with a calibre greater than 45mm.
- 829 armoured cars of all types (including armoured radio cars), and 541 semi-tracked AFVs (including APCs and armoured observation vehicles).
- 7 764 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 1 564 (20-105mm) AA guns (including all SP AA guns), and 6 468 (50-81mm) mortars.
- Approximately 240 800 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 4 900 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander: *Generalfeldmarschall* Fedor von Bock.

¹ Includes the Sd Kfz 254 wheel-cum-track medium armoured observation vehicle. This relatively rare vehicle had four wheels and a track system which was lowered below the wheels for cross-country use.

² The total number of motor vehicles used was slightly higher than this because a small proportion of 'rear-area' vehicles in non-Deployed (D) units are not shown in the tables. Refer Volume IIB 3. 1) d. - 'The Rear Area Transport Available for Supply Distribution from 22nd June to 4th July 1941'. Also, refer Volume IIB 6. 5) b. - 'Parameters Relating Specifically to The Calculation of the Wehrmacht SDE in 1941'. The Proportion of Available Rear Area Trucks, Tractors and Light Transport Allocated to Rear Area SDE Functions'.

iii. Army Group South

- 6th Army, 1st Panzer Group and 17th Army (deployed from north to south in southern Poland), and 11th Army in Rumania, with 41 divisions and approximately 1 013 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 804 000 personnel were allocated to Deployed (D) combat units.
- 10 infantry corps HQs, 3 panzer (motorised) corps HQs, 1 army group rear area HQ, 25 infantry divisions, 5 panzer divisions, 2 motorised divisions, 1 Waffen SS motorised division, 1 mountain division, 4 light infantry divisions and 3 (small) security divisions.
- 962 fully tracked AFVs of all types. This included 821 tanks, command tanks and flame tanks. However only 446 tanks and assault guns had 50-75mm calibre guns, and only 491 AFVs had guns with a calibre greater than 45mm.
- 319 armoured cars of all types (including armoured radio cars), and 170 semi-tracked AFVs (including APCs and armoured observation vehicles).
- 5 658 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 1 277 (20-105mm) AA guns (including all SP AA guns), and 4 965 (50-81mm) mortars.
- Approximately 171 800 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 3 145 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander: *Generalfeldmarschall* Gerd von Rundstedt.

iv. Norway Army, *Befehlsstelle Finnland* (East Front Only)

- Part of the Norway Mountain Corps, and 36th Corps (a Reduced Strength Special Corps Command - HoH. Kdo.), (deployed from north to south), with 4 divisions and approximately 88 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 78 000 personnel were allocated to Deployed (D) combat units.
- 2 infantry corps HQs, 2 infantry divisions, 2 mountain divisions and 1 Waffen SS motorised brigade.
- 114 fully tracked AFVs of all types. This included 114 tanks, command tanks and flame tanks. However none of the tanks had 50-75mm calibre guns, and only 10 tanks had guns with a calibre greater than 45mm.
- 578 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 115 (20-105mm) AA guns (including all SP AA guns), and 646 (50-81mm) mortars.
- Approximately 11 500 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 173 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander Norway Army: *Generaloberst* von Falkenhorst.

v. OKH Reserves

- 2nd Army (deployed behind Army Group Centre), 12 divisions and 239 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 200 000 personnel were allocated to Deployed (D) combat units.
- 4 infantry corps HQs, 11 infantry divisions (including the SS Police Division) and 1 mountain division.
- 6 armoured cars of all types (including armoured radio cars).
- 1 686 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 78 (20-105mm) AA guns (including all SP AA guns), and 1 593 (50-81mm) mortars.
- Approximately 30 300 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 271 halftrack prime movers (excluding halftracks used as self-propelled guns).

vi. Total, East Front

- 3 Army Group HQs, 4 Panzer Group HQs, 8 army HQs, 34 infantry and mountain corps HQs, and 10 motorised (panzer) corps HQs, with 3 359 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 2 665 000 personnel were allocated to Deployed (D) combat units.
- 138 divisions made up of 91 infantry divisions (including the SS Police Division), 17 panzer divisions, 9 motorised divisions, 3 Waffen SS motorised divisions, 1 cavalry division, 4 mountain divisions, 4 light infantry divisions and 9 (small) security divisions.

- 4 445 fully tracked AFVs of all types. These comprised 3 795 tanks, command tanks and flame tanks, 301 assault guns, 257 light tank destroyers and SP guns, and 92 pionier (combat engineer) and ammunition transport vehicles. However, it should be noted that only 1 457 fully tracked AFVs (33%) were tanks or assault guns with 50-75mm calibre guns (i.e. were Pz IIIs (50mm), Pz IVs or StuG IIIs), and only 1 748 AFVs (39%) had guns with a calibre greater than 45mm. In addition, 642 fully tracked AFV (14%) had only MG armament or no mounted armament at all, while another 817 AFVs (18%) were light Pz IIs with only 20mm cannon armament.
- 1 367 armoured cars of all types (including armoured radio cars), and 1 055 semi-tracked AFVs (including APCs and armoured observation vehicles).
- 19 666 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 3 769 (20-105mm) AA guns (including all SP AA guns and 622 8.8cm Flak guns), and 17 081 (50-81mm) mortars.
- At least 577 200 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 10 748 halftrack prime movers (excluding halftracks used as self-propelled guns).

At this point it is worth examining the distribution of personnel within the Wehrmacht forces that invaded the USSR on 22nd June 1941. As already noted, there were approximately 3 359 000 personnel in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces (in coastal artillery) and railroad troops, supporting Operation Barbarossa from 22nd June to 4th July 1941. This force comprised approximately 3 138 600 German Army, Waffen SS, naval coastal artillery and railroad personnel, and 220 700 Luftwaffe ground forces personnel. The Luftwaffe ground forces personnel was made up of 54 800 in Luftwaffe flak units, 20 500 in Luftwaffe-Army liaison units (these units were embedded in the field army), and 145 400 in Luftwaffe supply units.

Excluded from table Ger Total Deployed (D) 1 is approximately 146 300 Luftwaffe flight and flight support personnel, and all personnel from the Todt Organisation (*Organisation Todt* – OT) and the Reich Labour Service (*Reichsarbeitsdienst* – RAD)). The OT and RAD did not maintain ground combat units and were not part of the Wehrmacht. The total Luftwaffe personnel on the East Front from 22nd June to 4th July 1941 was therefore approximately 367 000. The 146 300 Luftwaffe flight (air crews) and flight support personnel were supporting 3 914 aircraft (of all types), which equates to around 37 personnel per aircraft.³

³ Refer Volume IIB 5. - 'The Luftwaffe in 1941'. This was typical of a WWII era Western air force (the Soviet VVS in 1941 had considerably fewer support personnel per aircraft). Obviously bomber units and larger aircraft tended to have more supporting personnel. The flight support personnel includes those in aircraft ground crews, aircraft maintenance and repair units, aircraft refuelling and rearming units, air intelligence and weather units, and air-traffic control: generally all the personnel needed to support an operational airfield. The flight support personnel did not include those in 'Luftwaffe supply units'. The latter mostly operated 'off-airfield', and were responsible for moving the fuel, ordnance and aircraft spare parts from supply depots to the operational airfields.

The German Army, Waffen SS, Luftwaffe Ground Forces and Naval Coastal Artillery, Deployed (D) in the Western Fronts and the Replacement Army from 22nd June to 4th July 1941

i. Norway Army (Norway Occupation Duties)

- Norway Army with 7 divisions and 124 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 103 000 personnel were allocated to Deployed (D) combat units.
- 2 infantry corps HQs, part of the Norway Mountain Corps, and 7 infantry divisions.
- 564 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), approximately 780 (100-280mm) coastal guns, and 693 (50-81mm) mortars.⁴
- Approximately 13 800 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 51 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander: *Generaloberst* von Falkenhorst.

ii. Army Group D (France-Low Countries)

- 7th Army, 1st Army and 15th Army, with 43 divisions and 509 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 436 000 personnel were allocated to Deployed (D) combat units.
- 8 infantry corps HQs, 43 infantry divisions and 2 panzer brigades.
- 357 fully tracked AFVs of all types. This included 330 tanks, command tanks and flame tanks. However only 6 tanks and assault guns had 50-75mm calibre guns, and only 131 AFVs had guns with a calibre greater than 45mm.
- 2 (army) armoured cars and 7 semi-tracked AFVs (including APCs and armoured observation vehicles).⁵
- 3 076 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 82 (20-105mm) Army AA guns (including all SP AA guns), and 2 871 (50-81mm) mortars.⁶
- Approximately 49 500 motor vehicles (excluding halftracks, armoured cars and motorcycles), 130 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander: *Generalfeldmarschall* von Witzleben, who also acted as the *Oberbefehlshaber West* (OB West - Commander in Chief, West).⁷

iii. 12th Army (Yugoslavia-Serbia-Greece-Crete)

- 12th Army with 12 divisions and 169 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces including airborne forces, naval ground forces in coastal artillery, and railroad troops). Approximately 139 000 personnel were allocated to Deployed (D) combat units.⁸
- 2 infantry corps HQs, 9 infantry divisions, 2 mountain divisions, 1 Air Corps HQ (*Luftwaffe* organisation) and 1 Parachute Division (with an additional glider borne infantry regiment).
- 22 fully tracked AFVs of all types. This included 22 tanks, command tanks and flame tanks. However none of the AFVs had guns with a calibre greater than 45mm.
- 2 (army) armoured cars of all types (including armoured radio cars).⁹

⁴ Excludes Luftwaffe flak guns (included in 'Germany and the Remainder of Occupied Europe, and the Replacement Army' below).

⁵ These were in the 271st Infantry Division, which had the 227th Schnelle Battalion and an assault gun battery. Excludes a handful of obsolete armoured cars, such as the Kfz 13, issued to order-police units, and some captured French vehicles issued to security/occupation units. The precise number is unknown.

⁶ Excludes Luftwaffe flak guns, Ibid note 26.

⁷ *Oberbefehlshaber West* (OB West) was the German Army Command in the West, and had overall command of the German Army on the Western Front during most of World War II (the *Westheer*). It was directly subordinate to the German Armed Forces High Command (OKW). The area under the command of the OB West varied as the war progressed, and in 1941 it extended as far west as the French Atlantic coast. Note, at this time *Luftflotte 3* (in France) reported directly to the *Oberkommando der Luftwaffe* (OKL), which in turn reported to OKW.

⁸ Includes *Militarbefehlshaber* (MB) *Serbien* (Military Governor in Serbia).

⁹ These were in the 46th Infantry Division, which had transferred to the East Front by 5th July 1941. Excludes a handful of obsolete armoured cars issued to security/occupation units. The precise number is unknown.

- 1 084 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 52 (20-105mm) Army AA guns (including all SP AA guns), and 1 002 (50-81mm) mortars.¹⁰
- Approximately 21 300 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 182 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander: *Generalfeldmarschall* List.

iv. Deutsches Afrikakorps (D.A.K) (North Africa)

- *Deutsches Afrikakorps* (D.A.K) with 2 divisions and 83 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, and railroad troops). Approximately 45 000 personnel were allocated to Deployed (D) combat units.
- 1 panzer (motorised) corps HQ, 1 panzer division and 1 motorised division (with a full panzer regiment attached).¹¹
- 357 fully tracked AFVs of all types. This included 320 tanks, command tanks and flame tanks. However, only 182 tanks and assault guns had 50-75mm calibre guns, and only 209 AFVs had guns with a calibre greater than 45mm.
- 70 armoured cars of all types (including armoured radio cars), and 83 semi-tracked AFVs (including APCs and armoured observation vehicles).
- 255 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 172 (20-88mm) AA guns (including all SP AA guns), and 216 (50-81mm) mortars.
- Approximately 21 100 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 329 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander: *Generalleutnant* Rommel.

v. Germany and the Remainder of Occupied Europe, and the Replacement Army

Includes the following military and military-government administrative 'commands':

- *Militarbefehlshaber* (MB) *Belgien und Nordfrankreich*: Military Commander (also sometimes called Military Governor) in Belgium and Northern France.¹²
- *Militarbefehlshaber* (MB) *Frankreich*: Military Commander in France.
- *Wehrmachtbefehlshaber* (WB) *Niederlande*: Armed Forces Commander Netherlands.
- *Militarbefehlshaber* (MB) *im General-Gouvernement* (Military Commander in Occupied Poland - also abbreviated MiG).¹³
- Luftwaffe ground forces in the West.
- *Ersatzarmee* (Replacement/Training Army); with 6 army divisions and 31 replacement divisions and 4 (*Ersatz*) security brigades. Includes the *Befehlshaber Deutsch Truppen Danemark* (Commander of German Troops in Denmark) and the Commander of the Replacement Army in Bohemia and Moravia.¹⁴

Note, most *Ersatzarmee* units, including the 31 replacement divisions, were not 'combat units', and the personnel and equipment in these divisions are therefore not considered to be Deployed (D) in the German FILARM model. Consequently, they are also not included in the German Deployment Matrix. However the *Ersatzarmee* also often had temporary control of various regular Wehrmacht combat units (e.g. the refitting army divisions in June 1941), which were combat units and are considered to be Deployed (D) in the German FILARM model. Consequently these units are included in the German Deployment Matrix.

¹⁰ Excludes Luftwaffe flak guns, Ibid note 26.

¹¹ Note, the 5th Light Division's organisation was closer to a panzer division than a light motorised division. It was redesignated the 21st Panzer Division on 1st August 1941.

¹² Strictly translated, *Militarbefehlshaber* is military commander; but this position was also called 'Military Governor', which was more in line with the military government's administrative and security role.

¹³ *Generalgouvernement* was a military government which refers to *Generalgouvernement für die besetzten polnischen Gebiete* (General Governorate for the Occupied Polish Territories). In October 1939 Hans Frank was appointed the 'Governor General', and in August 1941 Eastern Galicia (previously occupied by the Soviets) was included in this territory.

¹⁴ The Bohemia and Moravia protectorate (*Protektorat*): the German occupied part of Czechoslovakia.

- Total personnel amounted to approximately 1 076 000 in the German Army, Waffen SS, Luftwaffe ground forces, naval ground forces in coastal artillery, railroad troops, *Landeschutzen* (army-militia) units, *Wach* (Guard) units, and a few *Ersatz* (replacement) units deployed as combat capable. Approximately 852 000 of these personnel were allocated to Deployed (D) combat units (shown in the German Deployment Matrix).

Excluded (in Total Manpower in the Replacement Army in table Ger Total Deployed (D) 2) are approximately 915 000 personnel in Replacement Army units, which are **not** considered Deployed (D) combat units. These forces included 31 replacement divisions and a great many smaller units involved in tasks such as rear-area administration, training, instruction, medical, POW infrastructure, transport and rear-area support. If these units were included, the total personnel would be 1 991 000. The total number of personnel reporting to the Commander Replacement Army (i.e. the *Chef Heeresrüstung und Befehlshaber der Ersatzarmee*) was approximately 1 240 000.¹⁵

Included (in Total Manpower in the Replacement Army plus other forces) are: approximately 210 000 in *Landeschutzen* (army-militia) and *Wach* (Guard) battalions, 115 000 Field Army troops temporarily under the Commander Replacement Army, 143 000 army and SS personnel in security, administration, occupation and support functions (i.e. SDE functions), and 608 000 Luftwaffe ground force personnel. The large majority of the Luftwaffe personnel were in flak units and supporting infrastructure, deployed for the strategic air-defence of 'Greater Germany' (see below). Note, these Luftwaffe units did not report to the commander of the Replacement Army, and were under OKL and OKW control.

- 1 panzer (motorised) corps HQ, 3 infantry divisions, 2 panzer divisions, 1 motorised division, 31 replacement divisions (not Deployed (D)), and 18 Replacement Army command area HQs (*Wehrkreis*) including the 'protectorate' Bohemia and Moravia.¹⁶

Excluding the non-Deployed (D) Replacement Army elements, the equipment comprised:

- 251 fully tracked AFVs of all types, of which 170 were tanks, command tanks and flame tanks. However only 103 tanks and assault guns had 50-75mm calibre guns, and only 115 AFVs had guns with a calibre greater than 45mm.
- 63 armoured cars of all types (including armoured radio cars), and 138 semi-tracked AFVs (including APCs and armoured observation vehicles).
- 531 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 12 247 (20-105mm) AA guns (including all SP AA guns), and 564 (50-81mm) mortars.
- Approximately 145 500 motor vehicles (excluding halftracks, armoured cars and motorcycles), 1 945 halftrack prime movers (excluding halftracks used as self-propelled guns).
- Commander Replacement Army (*Chef Heeresrüstung und Befehlshaber der Ersatzarmee*): *Generaloberst* Fromm.

¹⁵ Refer Volume IIB 4. 7) a. - 'The German Replacement Army *Wehrkreise* System' and for more detail on the units in the Replacement Army in June 1941. Also, table 'Distribution of Personnel Strength within the Replacement Army, June 1941' shows more detail of the personnel functions within the Replacement Army. In addition, the next section shows a breakdown of personnel included in the German FILARM model, which includes some elements of the Replacement Army.

¹⁶ Refer Volume IIB 4. 7) a. - 'The German Replacement Army *Wehrkreise* System'.

The Total German Army, Waffen SS, Luftwaffe Ground Forces and Naval Coastal Artillery Deployed (D) in the Reich from 22nd June to 4th July 1941

Excluding:

- **non-Deployed (D)** elements of the Replacement/Training Army (*Ersatzarmee*) (see above),
- non-coastal artillery elements of the German Navy (*Kriegsmarine*),
- Luftwaffe aircrew,
- Luftwaffe flight operations support and airfield support troops,
- Luftwaffe air-signals troops involved in radar, communication HQs and other strategic air-defence ground forces,
- Luftwaffe construction units, home defence units and other auxiliary organisations,

the Wehrmacht had the following personnel and equipment Deployed (D) during the early stages of Operation Barbarossa.¹⁷

- 4 Army Group HQs, 4 Panzer Group HQs, 13 army HQs, 34 Infantry and Mountain Corps HQs, 12 Reduced Strength Corps Command HQs and 12 motorised (panzer) corps HQs.
- Approximately 5 320 000 personnel (total in the German Army, Waffen SS, Luftwaffe ground forces, security/militia forces, naval ground forces in coastal artillery, and railroad troops).¹⁸ Approximately 4 240 000 personnel were allocated to Deployed (D) combat units (i.e. those units displayed in the German Deployment Matrix).
- 208 divisions made up of 153 infantry divisions (including the SS Police Infantry Division), 20 panzer divisions, 11 motorised divisions (including the 5th Light Mechanised Division in Africa), 3 Waffen SS motorised divisions, 1 cavalry division, 6 mountain divisions, 4 light infantry divisions, 1 parachute division and 9 (small) security divisions.
- 5 432 fully tracked AFVs of all types. These comprised 4 637 tanks, command tanks and flame tanks, 356 assault guns, 317 light tank destroyers and SP guns, and 122 pionier (combat engineer) and ammunition transport vehicles. However it should be noted that only 1 748 fully tracked AFVs (32%) were tanks or assault guns with 50-75mm calibre guns (i.e. were Pz IIIs (50mm), Pz IVs or StuG IIIs), and only 2 203 AFVs (41%) had guns with a calibre greater than 45mm. In addition, 744 fully tracked AFVs (14%) had only MG armament or no mounted armament at all, while another 977 AFVs (18%) were light Pz IIs with only 20mm cannon armament.
- 1 504 armoured cars of all types (including armoured radio cars), and 1 283 semi-tracked AFVs (including APCs and armoured observation vehicles).
- 25 176 (28-600mm) artillery pieces (including anti-tank guns, and excluding coastal and rail guns, and rocket systems), 16 322 (20-105mm) AA guns (including all SP AA guns), and 22 427 (50-81mm) mortars.
- Approximately 828 300 motor vehicles (excluding halftracks, armoured cars and motorcycles), and 13 385 halftrack prime movers (excluding halftracks used as self-propelled guns).

At this point it is necessary to review the overall distribution of personnel within the Wehrmacht from 22nd June to 4th July 1941. As noted above, there were approximately 5 320 000 personnel in the German Army, Waffen SS, Luftwaffe ground forces, security/militia forces, naval ground forces in coastal artillery, and railroad troops from 22nd June to 4th July 1941. This force comprised approximately 4 521 000 personnel in the German Army, Waffen SS, Luftwaffe airborne forces, security/militia forces, naval ground forces in coastal artillery, and railroad troops; and around 799 000 Luftwaffe ground forces personnel (excluding airborne forces). The Luftwaffe ground forces personnel were made up of 502 000 in Luftwaffe flak units, 30 000 in Luftwaffe-Army liaison units (these units were mostly embedded in the Field Army), and 267 000 in Luftwaffe supply and support units.¹⁹

¹⁷ See table - 'Wehrmacht & Waffen SS personnel distribution on 15th June 1941, and personnel included in the German FILARM model' below.

¹⁸ Ibid.

¹⁹ This correlates closely with E.B. Westermann, *Flak-German Anti-Aircraft Defences 1941-1945*, University Press of Kansas, Lawrence, Kansas, 2001, p. 272.

The following personnel are **excluded** from the 5 320 000 personnel figure (above), and in tables Ger Total Deployed (D) 2 and Ger Total Deployed (D) 1.

- Approximately 915 000 personnel in the Replacement Army, which were not Deployed (D) and are not shown in the German Deployment Matrix.
- Approximately 353 000 personnel in the *Kriegsmarine* (the German Navy) which were not part of the coastal artillery forces.
- Approximately 721 000 Luftwaffe personnel in: aircrew, flight operations support and airfield support, air-signals (except those Deployed (D) in the army liaison role with the Army and Waffen SS), construction units, home defence units and other auxiliary organisations. Note, the 262 000 personnel in aircrew, flight operations support and airfield support were supporting approximately 8 880 aircraft (including around 3 000 training aircraft), which equates to around 29 personnel per aircraft. This figure is comparable to most of the Western Allied air-forces at this time. All these Luftwaffe forces are not considered Luftwaffe ground forces capable of any significant ground combat. Thus the total Luftwaffe personnel fielded from 22nd June to 4th July 1941 amounted to around 1 520 000 (excluding around 25 000 in the airborne forces).²⁰
- All personnel from the Todt Organisation (*Organisation Todt* – OT) and the Reich Labour Service (*Reichsarbeitsdienst* – RAD)). The OT and RAD did not maintain ground combat units and were not part of the German Army.

The following personnel are **included** in the 5 320 000 personnel figure (above), and in tables Ger Total Deployed (D) 2 and Ger Total Deployed (D) 1.

- 3 896 000 personnel in the Field Army (including military police and Deployed (D) order-police units).
- 160 000 personnel in the Waffen SS.
- 115 000 personnel in the Field Army and Waffen SS, which were Deployed (D) and temporarily under the Commander of the Replacement Army. These personnel were mainly from the 6 army divisions (including 2 panzer divisions) which were refitting in the Replacement Army on 22nd June 1941.
- 210 000 personnel in *Landeschutzen* and *Wach* battalions, which are considered Deployed (D) units and which were under the control of the Commander of the Replacement Army. These units were mostly fulfilling rear-area security, POW guard and line-of-communication functions.
- 64 000 Army Railroad troops (including personnel seconded from the *Deutsche Reichsbahn*). Note, these individual units are in the German Deployment Matrix, and are considered Deployed (D) units.
- 25 000 Luftwaffe airborne forces in Deployed (D) combat units.
- 502 000 Flak troops which are considered Deployed (D). Note, the associated Flak units, and their Flak guns and other equipment, are considered Deployed (D) and are in the FILARM model. The large majority of these Flak troops were employed in the strategic air-defence of Germany.
- 30 000 Air Signals Troops used in the army liaison role. These small units were usually embedded in Field Army units, and included local liaison HQs.
- 267 000 Luftwaffe personnel in Luftwaffe supply units. The latter were motorised units responsible for the maintenance of fuel, ammunition and spare-parts to forward airfields (i.e. SDE functions).
- 51 000 Kriegsmarine personnel in coastal artillery units which are considered Deployed (D).

²⁰ This correlates with: Germany and the Second World War; Volume I, Organisation and Mobilisation of the German Sphere of Power, Part 1, Wartime Administration, Economy and Manpower Resources 1939-1941, Kroener, B. R., et al, (German Research Institute for Military History, at Potsdam), Clarendon Press (Oxford University Press Inc), New York, 2000, Diagram III.V.13, p. 751.