TRIPWIRE
INTERACTIVE

RED ORCHESTRA
OSTFRONT 41-45

History and Tactics Guide

CONTENTS

1 INTRODUCTION

1.1 Disclaimer

Red Orchestra: Ostfront 1941-45 is produced by Tripwire Interactive LLC to be a realistic representation of the infantry combat taking place on the Eastern Front during WWII. Therefore, period uniforms, equipment and insignia will be included in the game. Also, period terminology and slang is included both in the game and this manual, in order to produce a more immersive end result. This does not reflect any political views of the team in any shape or form, nor does it indicate any belief on our part in any of the causes they fought for, except for that of the freedom of the individual to live and die as they choose. The mod has nothing to do with the extremist politics of the followers of Hitler – nor those of Stalin.

1.2 Overview

This document is intended to provide the detail behind the game. The basic Game Manual will provide pretty much all you need to know to play the game. This manual aims to provide further detail on and behind the game for those who are interested. It also provides historical background and information for those considering building their own levels and maps for *Ostfront*.

This document is effectively divided into two main sections: the first is about game-play related items, while the second details the historical background on the battles and the weaponry.

One area that deserves detailed explanation is ballistics and armour penetration. *Ostfront* uses the most realistic and authentic representations of the period equipment that we can find. One of those areas is tank gunnery. A great deal of research has gone into hunting down what the relevant gun sights looked like, as well as how they operated in real life. In addition, we use realistic ballistics calculations based on the best estimates we can find for the "correct" performance of the given rounds used by the various tanks. As will be apparent to researchers on the subject, there are actually a wide variety of views on the exact performance that should be expected. This also makes range estimation important – and it was as difficult to do accurately in real life as it can be in the game.

Many factors influence ballistics and penetration and make it difficult to produce a definitive solution. For instance, the Germans and Soviets used very different criteria in tests for determining the simple fact of whether or not a round had "penetrated" armour. For the Germans, it was usually enough that "most" of the round fired could be found behind the armour test plate, whereas the Soviets required that "more than 75%" of each round actually penetrate. Add to this the fact that the quality of both rounds and armour varied considerably during the war, as well as the effect of wear on the gun barrel and you will understand why we can never do more than produce a "best estimate".

2 MODERN INFANTRY TACTICS

Red Orchestra: Ostfront 41-45 is described as a "combat simulation". This means that the "artificial" tactics developed by players in older games, which rely on the player's ability to run-and-gun, shooting accurately fromt the hip, are likely to be far less relevant here. It is easy enough to just play *Ostfront*, but it is much harder to become good at it, both as an individual and as a team. This section is intended to give players a bunch of ideas and pointers to real-world tactics that will help them to win more consistently at *Ostfront*.

This section is just a start: we fully expect to see far more tactical discussions taking place on our forums at www.redorchestragame.com.

60 years after the end of World War II, weaponry and tactics have moved on. The ways of operating for the infantryman are enshrined in doctrinal manuals across the world – but those manuals are only the derivation of all the learning done by the millions of soldiers of all nations during the war. This section provides a modern "take" on tactics – a synthesis of period squad organisations, combined with more modern squad-level procedures. While much of this section is taken from American Field Manuals, this is only because they are the most readily available. Most modern armies subscribe to very similar doctrines and training.

2.1 Infantry Mission

It is recognised around the world that, despite any and all technological advances, only close combat between ground forces will gain the decision in battle. Only the infantry can attack over terrain that armour-heavy forces cannot. They make the initial penetrations in difficult terrain and hold obstacles against attack. Only infantry can seize or control forested and built-up areas or control restrictive routes.

2.2 Combat Power

Modern US doctrine is based on four elements of combat power, as listed here:

2.2.1 Manoeuvre

This is the movement of forces, supported by fire, to achieve a position of advantage from which to destroy the enemy. Manoeuvre, properly supported by fires, allows the infantry to close with the enemy and defeat him.

2.2.2 Firepower

Firepower is the capacity of a unit to deliver effective fires on a target. It is used to destroy the enemy or to support manoeuvre. Without effective supporting fires, the infantry cannot manoeuvre in the face of the enemy.

2.2.3 Protection

Protection is the conservation of the fighting potential of a force so that it can be applied at the decisive time and place. Ultimately, an infantryman must remain undetected to survive.

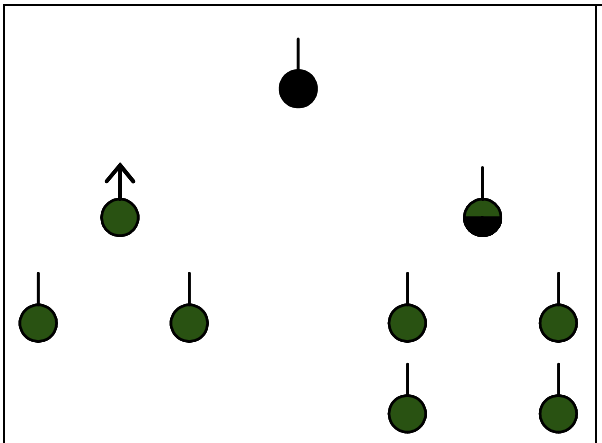
2.2.4 Leadership

Military leadership is a process by which a soldier influences others to accomplish the mission. The right leadership gives purpose, direction and motivation in combat.

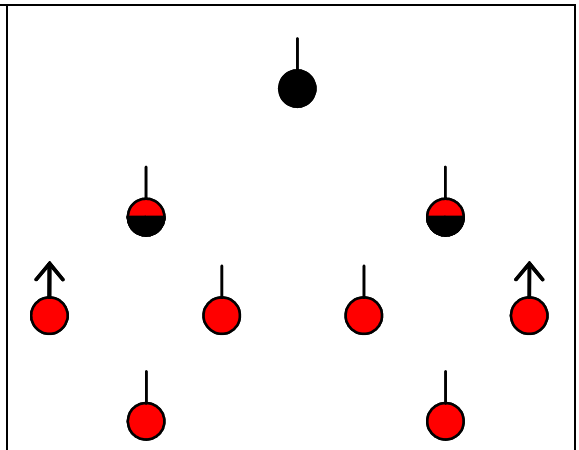
2.3 Organisation

In the 1940s, the squad was considered to be a coherent whole. The Germans worked on the principle that the light machine gun provided the base of fire, which supported the riflemen in the advance. If the squad was sub-divided at all, it was into the MG team and the rest. The Soviets started the war with a similar set-up, but added a second LMG to counter the Germans' superior firepower. The Soviets did not break the squad up until after the war. In the field most German and Soviet squads struggled to stay up to strength anyway, due to the intense nature of the fighting.

In the post-war years, through experience in the fighting in the 1950s and 60s, the squad was sub-divided into mutually supporting fire-teams in the US Army, each containing a machine-gun (the M249 today). This is an "expensive" proposition, as it relies on the abundant availability of suitable general-purpose machine guns and other heavier infantry weapons. For the purposes of the rest of this tactical discussion, we will consider "fire-teams" to be built around whatever German or Soviet LMGs are available, supported by rifles and SMGs. In reality, this means breaking the German squad into an LMG-team (gunner and a couple of riflemen), the remaining riflemen and the squad leader in charge; the Soviets have the opportunity, with two LMGs per squad to create two full LMG-based fire-teams.



Modern Fig 1 German Squad, 1943



Modern Fig 2 Soviet Squad, 1944

2.3.1 Symbols in use

The symbols picked for use in this modern section of the manual are actually based on period German and Soviet soldier "icons", rather than modern NATO ones. They are as follows (with Germans shown in dark green, Soviets in Red):

Squad Leader:
Gruppenführer
Komandir Otdeleniya

Machine-gunner:
MG-Schütze
Pulemetchik

"Team" Leader

"Other soldier":
Schütze/Stoßtruppe
Strelok/Avtomatchik

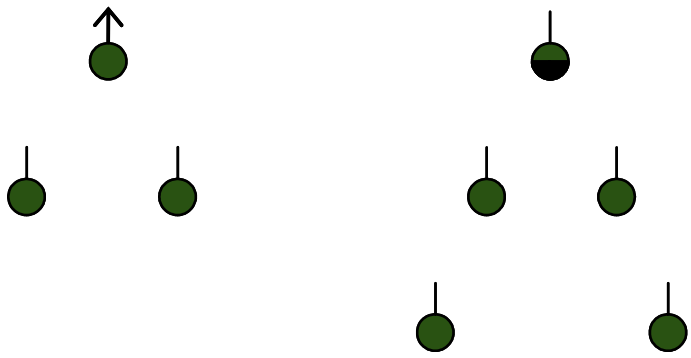
2.4 Movement

In general, the modes of movement depend very much on the terrain. There are a set of standard formations that are recognised, with different terrains and conditions in mind.

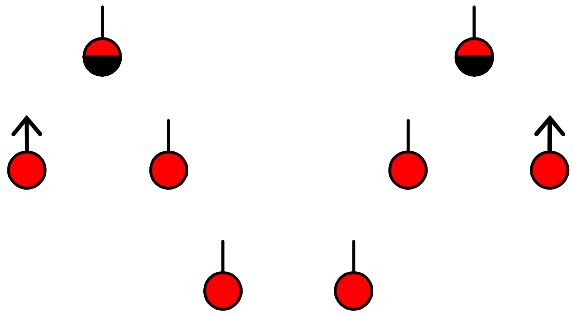
2.4.1 Fire-team formations

2.4.1.1 Wedge

The wedge is the basic formation for the fire-team. The team leader is on point, with the LMG to one side and behind him, the remainder of the team the other side. The intervals vary depending on the terrain. This is used in all conditions, except for very close terrain, as it allows for good control and provides the ability to rapidly engage targets in any direction. Note that the standard German squad makes it hard to create balanced fire teams.



German Fire Team "Wedges"



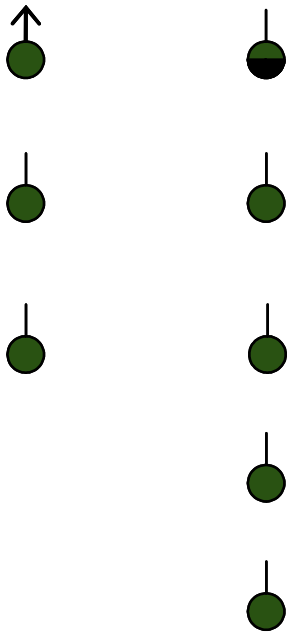
Soviet Fire Team "Wedges"

The standard wedge can be used in most forms of terrain. The more open the terrain, the wider the spacing between the soldiers, varying to as much as 20 metres between each. The closer the terrain, or the worse the visibility, the more the soldiers will close up. The natural progression of closing up a wedge is simply to produce a file – see below.

2.4.1.2 File

The file is used in close terrain as it is easier to control and for the fire-team to start working as described under Urban Operations below.

Soviet File



German Files

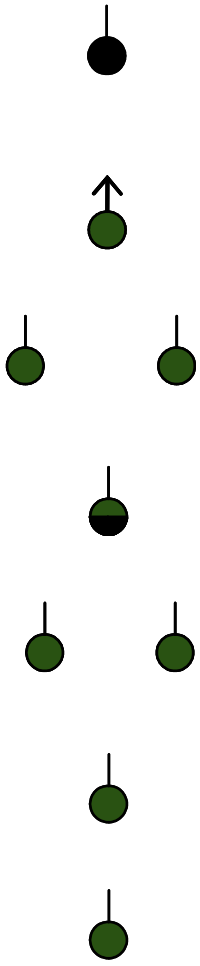
Again, note that the standard German squad arrangement does not lend itself to "balanced" fire teams – the LMG team is split from the rest of the squad but, in reality, the German squad operated as a complete unit – or with just the LMG team split off.

2.4.2 Squad formations

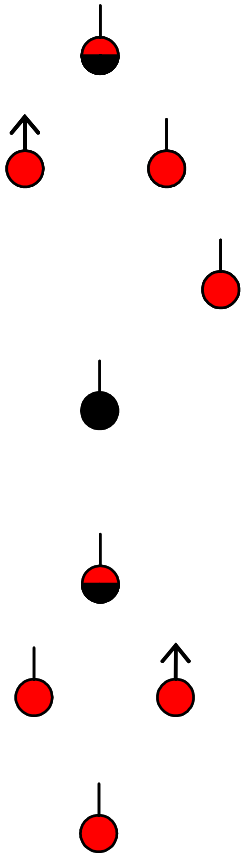
For the period, the squad formations are actually more natural than the fire team ones. At the time, the tendency, especially with less well-trained troops, was to try and ensure the coherency of the squad. However, in *Ostfront*, it is likely that players will gravitate towards the Fire Team set-ups, as it can be hard to get a full squad to co-operate with a random bunch of strangers!

2.4.2.1 Column

The squad column consists of the two fire-teams, each in wedge formation, following one after the other, with the squad leader in the centre. This provides good control, makes manoeuvre easy and allows for reasonable all-round security, although it restricts the volume of fire to the front. This is the basic squad formation. In German squads, the LMG should be in the lead fire-team, to ensure maximum suppressive fire on contact with the enemy.



German Squad Column

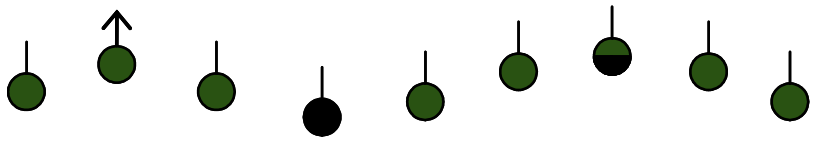


Soviet Squad Column

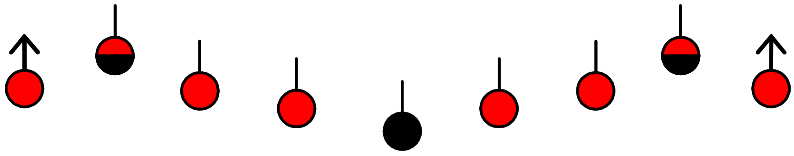
In order to maximise the fire at the expected point of contact, the squad LMG is placed close to the front of the column. Note that the column formation also provides flank and rear security.

2.4.2.2 On line

To provide maximum firepower to the front, the squad moves on line. However, this has the disadvantages of committing both fire-teams and leaving no manoeuvre element.



German Squad On line



Soviet Squad On line

2.4.2.3 File

As with the fire-team file, this is used in close terrain, providing maximum control, at the risk of masking fire to the front and rear.

2.4.3 Key technique: bounding overwatch

Many of the concepts used today were already being described in some form in the infantry manuals of WWII, especially the concept of "bounding". This is the key to movement when contact with the enemy is to be expected. A bound is simply a movement from one point of cover to another.

The "overwatch" part implies that the group that is performing the bound is being "overwatched" (or "covered") by another group. When a squad is moving in bounding overwatch, one fire-team covers the other as it moves. The squad leader will designate who bounds and who covers; he will designate the points to bound to and the sequence of events.

2.4.4 Individual movement

2.4.4.1 Basic Movement Techniques

In the manuals – and in common practice and experience – there is an accumulated body of wisdom on the basics of movement in the vicinity of the enemy. The key point is to limit the soldier's exposure to enemy detection and fire. The following are some key points:

- Stop, look, and listen before moving.
- Look for your next position before leaving a position.
- Look for covered and concealed routes on which to move.
- Change direction slightly from time to time when moving in tall grass.
- Use battlefield noises, such as weapons fire, to conceal movement noises.
- Cross roads and trails at places that have the most cover and concealment (large culverts, low spots, curves, or bridges).
- Avoid cleared, open areas and tops of hills and ridges.
- Do not move directly forward from covered positions.
- When moving, be careful not to mask supporting fires.
- Do not fire over the top of cover, as this provides a silhouette – fire round the side of the cover.
- Avoid silhouetting yourself in doors and windows when moving inside a building.
- Always move along the side of the street, not down the centre.
- Move in the shadows and out of lighted areas at night.

2.4.4.2 Movement around corners

The area around a corner must be observed before the soldier moves beyond it. The most common mistake a soldier makes is to expose his position. He should show his head below the height an enemy soldier would expect to see it, lying flat on the ground and leaning round the corner.

2.4.4.3 Movement past windows

Windows present another hazard to the soldier and small-unit leader. The most common mistake in passing a window is exposing the head. If the soldier shows his head, an enemy gunner inside the building could engage him through the window without exposing himself to covering fires.

2.4.4.4 Movement parallel to buildings

Soldiers and small units may not always be able to use the inside of buildings as a route of advance. Smoke and covering fires, and cover and concealment should be used to hide movement. In correctly moving on the outside of a building, the soldier "hugs" the side of the building, stays in the shadow, presents a low silhouette, and moves rapidly to his next position. If an enemy gunner inside the building fires on a soldier, he exposes himself to fire from other squad members. Furthermore, an enemy gunner farther down the street would have difficulty detecting and engaging the soldier.

2.4.4.5 Use of doorways

Doorways should not be used as entrances or exits since they are normally covered by enemy fire. If a soldier must use a doorway as an exit, he should move quickly through it to his next position, staying as low as possible to avoid silhouetting himself. Pre-selection of positions, speed, a low silhouette, and the use of covering fires must be emphasized in exiting doorways.

2.4.4.6 Crossing of open areas

Open areas, such as streets, alleys, and parks, should be avoided. They are natural kill zones for enemy crew-served weapons. They can be crossed safely if certain fundamentals are

applied. When using the correct procedure for crossing an open area, the soldier develops a plan for his own movement. Smoke from hand grenades or smoke pots should be used to conceal the movement of all soldiers. He runs the shortest distance between the buildings and moves along the far building to the next position. By doing so, he reduces the time he is exposed to enemy fire.

2.5 Offence

For now, we will consider the two main types of offence as "Movement to contact" or "Deliberate attack". There are other, very specific, types of offence to be dealt with later.

2.5.1 Movement to contact

The main form of movement to contact here is the approach march technique, as this is best suited to the situation where the enemy is expected to deploy to fight, rather than to avoid contact. The key aim is to make contact with the smallest possible element, leaving as much of the force as possible to manoeuvre into position to either bypass the enemy or to destroy him, as required.

In our case, the advance guard is likely to be a fire-team or even a single soldier. This may be the point man of a squad moving in column. Ideally, the fire-team that makes contact will take cover and provide the base of fire to fix the enemy in place, while the main body (one or more fire-teams) will move quickly into position to assault and destroy the enemy.

2.5.2 Deliberate attack

One element of the attacking unit will be detailed to provide the base of fire and will contain one or both LMGs. This group will move into position first, ideally undetected. Once they are in position, the remaining assault element can move past and onto the objective. The base of fire element will either have been ordered to hold fire to enhance the element of surprise, or will open fire early to keep the enemy's attention off the assault element as it moves.

The assault element will deploy into assault formations such that they can place the bulk of their firepower to the front as they assault the objective. As the assault element gets onto the objective, supporting fires are lifted and shift away from the objective – the assault element will be providing its own firepower at that point. The base of fire element will fire on areas adjacent to the objective to destroy enemy forces retreating or prevent reinforcement, or can move up in direct support of the assault element.

And once the objective is taken, the unit must all move up and consolidate on the objective, prepare all-round defence and ensure that the enemy cannot immediately counterattack.

2.5.3 Squad Attack

One of a number of specific battle drills that soldiers practise is the squad attack. In this case, the squad is moving as part of a force conducting a movement to contact or deliberate attack and encounters the enemy unexpectedly. They react in a series of pre-programmed steps to follow:

1. The soldiers under fire take cover and immediately return as heavy a volume of fire as possible. The fire team not in contact takes cover and observes (only) to the flanks and rear.
2. The fire-team in contact spots the enemy positions and places well-aimed fire on them.
3. The fire-team continue to suppress the enemy, destroying enemy heavy weapons first unless they do not have sufficient firepower. In this case, the rest of the squad deploy to suppress the enemy.
4. If the fire-team in contact can suppress the enemy, the remaining fire-team moves into position to assault the enemy.
5. With the enemy position taken, the squad regroups and consolidates on the objective, ready to repel any counter-attacks.

2.5.4 Knocking out bunkers

If the squad identifies enemy in bunkers (strongly fortified positions), the steps are:

1. The team in contact establishes a base of fire. Any additional LMGs advance to join with the base of fire unit, in order to suppress the enemy. If possible, the attackers will attempt to obscure the enemy position with smoke or grenades.
2. The squad leader identifies a covered/concealed route to flank the bunker.
3. If possible, some of the base of fire team are repositioned to isolate the bunker as well as to continue suppressive fires.
4. The assault team moves forward, without masking the fire of the base of fire team, to the last covered position. At this point the base of fire team shifts fire away from the assault team.
5. Two soldiers continue forward; one throws a grenade in an aperture, while the other covers the exit and then enters the bunker after the grenade detonates, firing short bursts to destroy the enemy.

2.5.5 Enter/clear building

When a squad identifies an enemy force in a building, the steps are:

1. The fire team initiating contact establishes a base of fire and suppresses the enemy in and around the building.
2. The squad leader identifies an entry point and a covered/concealed route to the entry point.
3. The fire team in contact continues suppressive fires and obscures the enemy position with smoke (grenades). If necessary, some of the supporting fire team are repositioned to isolate the building.
4. The squad leader and assault team approach the building and position themselves either side of the chosen entrance, while the supporting fire team shift fires.
5. The lead soldier of the assault team cooks off a grenade and throws it into the building. After the detonation, the next soldier enters the building, moves to one side of the door and engages all identified or likely enemy positions. If necessary, two soldiers enter at once. The one entering from the left fires from right to left, then moves to the left side, while the soldier entering from the right fires from left to right, across the line of fire of the first, and moves to the right side. This provides the maximum effective firepower into the room, but requires practice.
6. With the room cleared, the remainder of the team can enter, although one man may be left outside to provide security. The base of fire team continues to maintain suppressive fire as necessary.
7. The assault team positions to clear the next room and repeats the process.

2.5.6 Enter/clear a trench

The squad identifies enemy in a trench line – the steps are:

1. The squad leader assigns one fire team as the assault team and the other as the support team. The support team provides fire support initially and then follows the assault team.
2. The squad leader designates an entry point and the assault team move to the last covered/concealed position short of the entry point. The support team provides suppressive fire.
3. The first two soldiers of the assault team continue towards the entry point, while the others add to the suppressive fire.
4. The first two soldiers drop into the trench, back-to-back, and fire in opposite directions down the trench. They may precede their entry with grenades. They then move down the trench in opposite directions, firing short bursts and halt at the first corner or intersection. Here they take up positions to block any enemy movement toward the entry point.
5. The remainder of the assault team moves to the entry point and enters, moving to support the soldiers at the ends of the trench section. The support team continues to provide suppressing fire – or moves up, as necessary.
6. To clear the trench, two soldiers move to the next secured intersection. One cooks off a grenade and throws it around the corner. On detonation, the second soldier moves around the corner firing short bursts and advancing as he fires. The team follows him directly to the next intersection or corner, with the trailing soldier providing rear security.
7. At each intersection or corner the drill is repeated.

2.6 Defence

In some respects, defence is much simpler. It requires less movement and is more about establishing strong defensive positions, locating the enemy and fighting the defence.

The positioning of individual soldiers and weapons is of critical importance. They should be placed where they have protection, avoid detection and can surprise the enemy with accurate fire. This means knowing *where* you want to destroy the enemy. The machine guns, which provide the bulk of the firepower, should be positioned to cover the most likely avenue of approach first. The other weapons are positioned to support the LMGs, cover any dead space around the LMG crews and provide flank/rear security.

2.6.1 React to contact

Another battle drill frequently practised is to react to contact. In this case, a squad receives fire from enemy small arms or crew-served weapons. Again, they react in a series of pre-programmed steps:

1. Soldiers immediately take cover and return fire in the direction of the enemy.
2. The soldiers locate and engage enemy positions with well-aimed fire, maintaining contact with the soldiers on their left and right.
3. The squad leader determines whether he must withdraw or whether he can gain and maintain suppressive fire with his elements already in contact.
4. If he can suppress the enemy, he determines the next course of action – assault, knock out bunker, enter and clear building or trench.

2.6.2 React to ambush

A battle drill similar to react to contact is to react to ambush. In this case the squad has entered a kill zone where the enemy initiates an ambush with a high volume of fire. The steps are:

1. In a near ambush (grenade range), soldiers immediately return fire take cover and throw grenades. Immediately after the grenades detonate, the soldiers in the kill zone assault *through* the ambush zone. Those soldiers not caught in the kill zone identify enemy positions, initiate suppressive fires, take cover and then shift fire as the soldiers in the kill zone assault.
2. In a far ambush (beyond grenade range), soldiers immediately return fire, take cover and suppress the enemy. The soldiers outside the kill zone move under cover to flank the enemy and assault them. The soldiers in the kill zone continue suppressive fires and shift fire as the assaulting team fights through the enemy position.

2.7 Snipers in the urban environment

Snipers are encountered in many situations. However, they present their greatest danger in the urban environment. Techniques applied in this environment can be adapted to other areas.

2.7.1 Use of snipers

The value of the sniper to a unit operating in a built-up area depends on several factors. Sniper effectiveness depends in part on the terrain. In terrain where communication is difficult, cooperation between a squad and a sniper is a challenge. To provide timely and effective support, the sniper must have a clear picture of the commander's concept of operation and intent.

Snipers should be positioned in buildings of masonry construction. These buildings should also offer long-range fields of fire and all-round observation. The sniper has an advantage because he does not have to move with, or be positioned with, lead elements. He may occupy a higher position to the rear or flanks and some distance away from the element he is supporting. By operating far from the other elements, a sniper avoids decisive engagement but remains close enough to kill distant targets that threaten the unit. Snipers should not be placed in obvious positions, such as church steeples and roof tops, since the enemy often observes these and targets them for destruction.

Snipers may be assigned tasks such as the following:

- Killing enemy snipers (counter-sniper fire).
- Killing targets of opportunity. These targets may be prioritized by the commander. High priority targets might include enemy snipers, leaders, vehicle commanders, radio men, sappers, and machine gun crews.
- Denying enemy access to certain areas or avenues of approach (controlling key terrain).
- Providing fire support for barricades and other obstacles.
- Maintaining surveillance of flank and rear avenues of approach (screening).
- Supporting local counterattacks with precision fire.

2.7.2 Countering urban snipers

In general, there are two types of counter-actions against snipers – active and passive.

Active countermeasures either detect and destroy the sniper before he can fire, or engage and neutralise him after he fires. The first of these is to counter an enemy sniper with one of your own. They can normally engage enemy marksmen with precision fire, possibly even before they can cause any casualties.

If a unit under fire can determine the direction of the enemy, it should begin suppressive fire while manoeuvring a sub-unit to engage at close range. However, it is likely that a well-trained enemy sniper will be able to disengage and relocate before the assault element closes with him.

Passive counter-measures prevent the enemy sniper from getting a clear shot and causing casualties. This relies primarily on the soldier's basic training, rather than specific counter-sniper measures. All the basic rules of movement, to limit exposure to enemy fire, clearly apply. Additionally, it is important, where possible, to deny the enemy the use of overmatching terrain. It should be occupied by friendly troops or covered by their own snipers. Finally, the use of smoke (from smoke grenades or hand grenades) can significantly hinder the line of sight of enemy snipers.

2.8 References for infantry combat

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3 GAME-PLAY: VEHICLE GUNNERY

3.1 Basic Projectile Ballistics

The key point about all projectiles is that they are subject to the effects of gravity: they will start to drop towards the ground from the moment they leave the gun barrel. They do not travel in a straight line, but in an arc that gets steeper as the round slows.

There are a large number of factors that affect a round in flight. For gunnery purposes, the relatively minor ones include air temperature and pressure, as well as humidity. The most important ones for *Ostfront* are muzzle velocity and the ballistic coefficient of the round itself. There are plenty of other factors but, in order to keep this simple, we will only discuss the most obvious here!

3.1.1 Muzzle Velocity

The muzzle velocity (Mv) is simply the speed at which the round is travelling at the moment it leaves the gun barrel. Before this point, the round is being accelerated up the barrel by the actual firing charge; after this point it is in free flight and subject to all the mechanics of ballistics. This is also why the length of a gun barrel makes a difference: the round is accelerating all the way along the tube, so the longer the tube, the longer it spends accelerating and the higher the resulting Mv. Obviously, it is hard to measure the Mv exactly and you will often see varying figures for the same gun and round.

3.1.2 Ballistic Coefficient

Impolitely put, the Ballistic Coefficient (Bc) is a "fudge factor". It is usually derived by working backwards from the end result. Test firings were done at many ranges and the results plugged into standard ballistic equations. Working backwards from the answer allowed the Bc to be estimated. Theoretically, the Bc is directly related to the surface area of a cross-section of the round. However, in reality, it also depends on the exact shape of the round and even the round's own individual aerodynamics.

3.2 Gun Aiming

3.2.1 Modern gunnery elements NOT found in *Ostfront*

There are a number of items that people who have been trained on modern tanks, or who have played simulations of modern armoured combat, will have come to take for granted, that did not actually exist in the 1940s.

3.2.1.1 Range finders

Simply put, the tanks of the period weren't equipped with any. Modern tanks use lasers to estimate the distance to the target with very high accuracy. There was no equivalent in 1940. Some vehicles were equipped with artillery-style stereoscopic ("coincidence") telescopes or periscopes, but these were few and far between. All range estimation was done by eye and experience – see below.

3.2.1.2 Target identification

Some simulators offer target identification. Unfortunately it was all down to the experience of the crew – so mistakes happened!

3.2.1.3 Gun stabilisation

Aside from relatively experimental gyro-stabilisation on late model Shermans, there was no gun stabilisation at all. As you will see when looking through the gun sight of a moving tank, it is **very** hard to aim while on the move. German crews were trained to stop to fire; the Soviets liked to keep moving. In order to fire with any accuracy, the tank has to be stationary or moving very slowly. This takes co-ordination between gunner and driver.

3.2.1.4 Target tracking

Another modern convenience is the ability of modern gunnery systems to lock on to a target and then track it automatically. There was no such ability in 1940 – it is purely a manual task.

3.2.1.5 Loading

There were no auto-loaders and some of the interior designs of the tanks (such as the early T-34s) were awful. This means that reloading can take a significant time. Also, once a round was loaded in the gun, it was both difficult and dangerous to unload it again: this is why it takes time to change from AP to HE and back again.

3.2.1.6 Night vision

Apart from some mildly amusing German attempts at mounting UV lamps on a Panther, there were no night vision devices. Darkness and bad weather made 1940s tanks nearly blind.

3.2.2 Overview of WWII Gun sights

In the 1930s and 1940s, aiming and firing a tank's gun was an acquired skill – and it remains so in *Ostfront*. There are no convenient laser range finders, no computers in the tank to calculate and adjust for you and no nice electronic gun sights.

The range had to be estimated by eye, which was a skill in itself. The Germans did mount stereoscopic range finders on some vehicles, but these were actually hard to use under combat conditions, as they were designed to be used while standing still and taking your time. With the range estimated, the gunner could then adjust the gun sight and, if it was directly linked to the main gun, the gun itself, for the range.

The gunner might also allow for deflection – how much to allow for windage (the wind forcing the round off course) and how much to lead a moving target. He did have the option of adjusting this in the gun sight as well. However, this was more likely to be done by simply aiming off the target and adjusting in and is **not** reflected in the game.

Each tank gun sight had all sorts of "useful" numbers and guides photo-etched onto a plate, some elements of which moved as the sight was adjusted, so that the gunner could do everything while observing the target. Of course, being the 1940s, there were variations to complicate things: artillery gun sights did not (as a rule) include these guides, as artillery pieces were not designed to be used over open sights. The gunner had to look away, at the knob he was turning to adjust the range as this had the range settings on it, and then look back into the sight. This would not have been a problem, except for the fact that the German StuG III and the Soviet SU-76 assault guns were actually built with artillery pieces. In real life, the gunner on both had to glance away from the sight to set range, risking losing sight of the target.

NB: It is not necessary ever to set the range on a gun sight. You can simply keep it zeroed at 300 metres and aim up or down as needed. You are just more likely to get a first-shot hit with the range properly set!

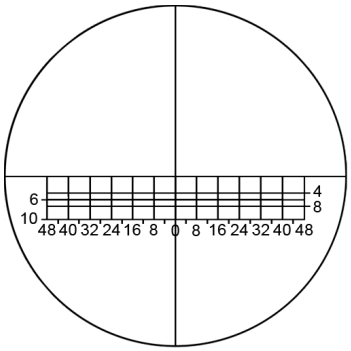
3.2.3 Unlinked Gun Sights

The older-style gun sights were placed alongside the main gun, but were not linked to it. Adjusting the range in the gun sight did not adjust the aim of the gun itself. All it does is to move the gun sight to compensate for the expected drop of the round. The gun sights are simpler to manufacture and maintain and are more obvious to use for the gunner. However, they making accurate aiming slower, as the process goes like this:

1. Gunner acquires the target in the gun sight
2. Commander/gunner estimate range
3. Gunner adjusts the range in the gun sight
4. Gunner now has to adjust his aim to bring the gun on target: his gun sight has been adjusted, but *not* the gun itself
5. Fire, observe the fall of the round, then adjust aim and fire again

Note that only the early-war Soviet tanks use these gun sights. As you will see from the examples, there is another disadvantage to these simpler gun sights: as the aim point adjusts, it is harder to see the target!

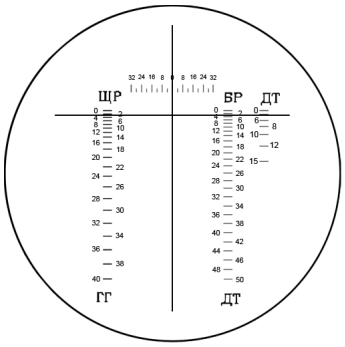
3.2.3.1 T-60



The gun sight (TMFP-1) for the TNSh 20mm cannon is the most simple. The aiming point is that point where the "cross-hairs" of horizontal and vertical lines cross.

The sight is adjusted when the horizontal line is lowered to the appropriate marking. The markings are in 100s of metres, showing ranges from 400-1,000 metres. The gun only fires one form of ammunition – the 20mm solid shot.

3.2.3.2 T-34 76

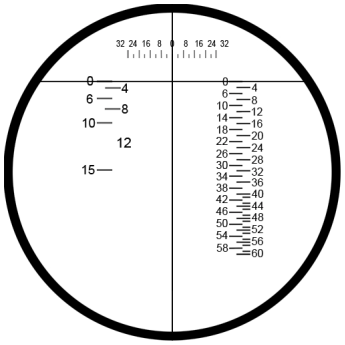


The early model T-34s had a more complex gun sight (TMFD-7) for their 76mm guns than the T-60 had. Once again, the aim point is the centre of the "cross-hairs". As the range is adjusted upwards, the horizontal line moves downwards and the gunner has to adjust his aim upwards to compensate.

On the T-34 there are 3 vertical range scales. These are (from left to right):

- High explosive (HE), marked in steps of 200 metres to 4,000
- Armour Piercing (AP), marked in steps of 200 metres to 5,000
- Co-axial MG, marked to 1,500 metres

3.2.3.3 KV-1s



The KV-1 series all used a similar 76mm gun to the T-34 76 and also used similar format sights, with the aim point still being the centre of the cross hair. However, the newer TSch-15 gun sight for the KV-1s had been simplified from the T-34. The vertical scales show only the co-axial MG on the left and the main gun's AP rounds on the right, marked in steps of 200 out to (a very hopeful) 6,000 metres. The performance of the HE rounds on the KV had been found similar enough to warrant using the same scale.

3.2.4 Linked Gun sights

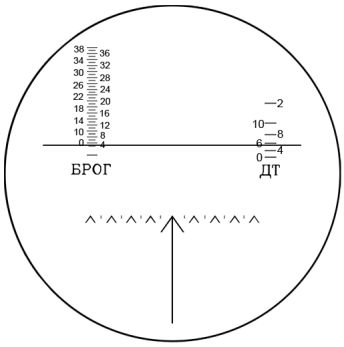
The more modern linked gun sights were placed alongside the main gun just as for the unlinked versions. In this case the adjustments for range directly affect the gun itself. When the range is adjusted in the gun sight, the gun itself is adjusted. This means that the gunner can aim at the target, then continuously adjust the range setting for the gun, without ever having to change the point of aim in the gun sight.

It is slightly less intuitive to use, as the range adjusts "upwards" in the gun sight. It is also more complex mechanically. However, it does make life simpler for he gunner, as the process goes like this:

1. Gunner acquires the target in the gun sight
2. Commander/gunner estimate range
3. Gunner adjusts the range in the gun sight, which also adjusts the gun
4. Fire, observe the fall of the round, then adjust aim and fire again

The later-model Soviet tanks use this system, as do all the German tanks.

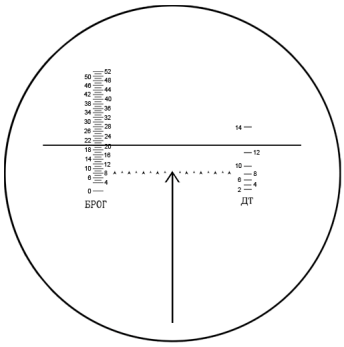
3.2.4.1 T-34 85



With the introduction of the newer 85mm gun, the Soviets also introduced the linked gun sight (TSch-15/16), as had been found in German tanks. This means that the scales on the TSch-16 are now reversed, working *up* the scope rather than down. The aim point is now the tip of the central "arrow" – and this no longer moves up or down.

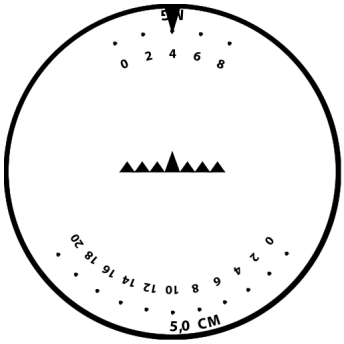
When the range is adjusted, the horizontal line moves up the scale, with the main gun automatically being adjusted with it. As for the KV-1s, the left-hand scale is for the AP rounds and the right for the co-axial MG.

3.2.4.2 IS-2



The IS-2 used the next gun sight on from the T-34 85 – the TSch-17. It operates in near-identical fashion to the TSch-16, with a horizontal line moving as the range is adjusted and the gun moving with it. The aim point is, once again, the tip of the vertical arrow.

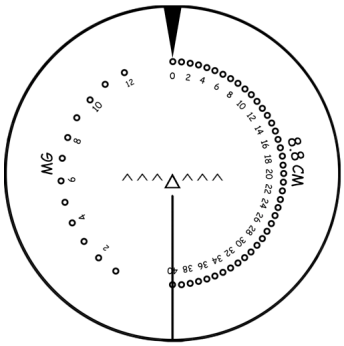
3.2.4.3 Panzer III and IV



The Germans used linked gun sights a few years earlier than the Soviets. The ones used in the earlier designs, such as the Panzer III and Panzer IV were all variants of the TZF-5 gun sight. The sight was both simpler and more complex at once than the Soviet linked sights. The solid black "triangle" at the top of the gun sight marks the range on the chosen scale. As the gunner changes the range, the "triangle" remains stationary and the numbers in the sight rotate until the desired mark (in 100s of metres) is under the "triangle".

The scale was chosen by the gunner flicking a switch, which flicked the sight round so that either the co-axial MG scale was in place (as shown) or the main gun scale moved into place at the top of the view. The actual aim point is the tip of the central (upward-pointing) solid black triangle. Note that there was only one scale for the main gun, for the AP rounds. This was to keep things "simple" for the gunner.

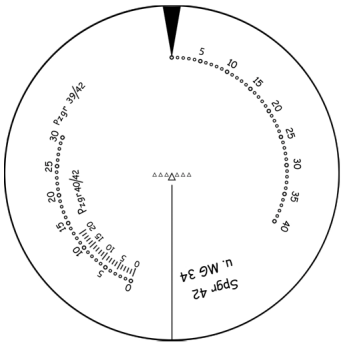
3.2.4.4 Panzer VI Tiger



The TZF-9 gun sight on the Tiger was very similar in operation to the earlier German gun sights. It had, once again, a scale for the co-axial MG and another for the 8.8cm main gun, showing the AP ranging.

The solid black triangle at the top marks the range setting, with the numerical scales rotating as before.

3.2.4.5 Panzer V Panther

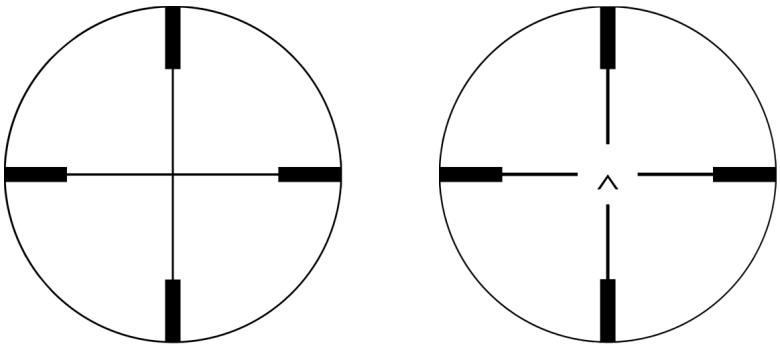


The TZF-12 gun sight introduced with the Panther was slightly more complex. It had the same basic format as all previous German gun sights, with a solid black triangle and rotating dials. However, it now had more range scales.

The single scale was used for both the co-axial MG and for firing the HE rounds, as they performed in similar fashion in ballistics terms. The other scale was used for the AP rounds. The larger (outer) scale was for the standard AP rounds (Panzergranate 39/42) graduated to 3,000 metres, while the smaller (inner) scale was for the Panzergranate 40/42 tungsten-cored rounds issued in small numbers in 1943-44. This was only graduated out to 2,000 metres.

3.2.5 Artillery Gun sights

3.2.5.1 StuG III and SU-76



The gun sights for the two assault guns are shown above. As they were both artillery pieces, *there were no range scales in the gun sights themselves*. The range was adjusted separately on a knob next to the gun sight.

3.3 Other Gunnery Tasks

3.3.1 Range Estimation

Range can be estimated using the standard tank commander's binoculars. They are marked with a central "^" and 4 more marks spaced equally each side. These are set a nominal 16 mils apart. Equally spaced between each 16-mil mark is a small "ı", showing an 8 mil gradation. These markers can be used to judge the distance to an enemy roughly – but quickly.

If you know the vehicle you are looking at – and its dimensions – you can work out the range from the following table:

At 1,000m, 1 mil = 1 metre
At 500m, 1 mil = 0.5 metre
At 400m, 1 mil = 0.4 metre
At 250m, 1 mil = 0.25 metre

Thus an IS-2 (6 metres long) will take up 12 mils in the binoculars at 500 metres. But this is complex to remember and to calculate when in a hurry, so here is a simplified set of "rules of thumb":

- If the enemy is closer than 250 metres, then range adjustment is hardly necessary
- At 200 metres, a large tank will fill a 16-mil mark when viewed from the front and 2 full marks when seen from the side. The Tiger below is a bit over the 2 full marks, so is under 200 metres:

- At 400 metres, a large tank will fill an 8-mil half-mark when viewed from the front and a full 16-mil mark from the side. The T-34 below is pretty much exactly a half-mark from the front – "range 400!":

- At 500 metres, it will be slightly less than a half-mark from the front and about three-fourths of a full mark from the side. The Tiger below is at around 500 metres:

- At 600 metres, it will be just over half an 8-mil half-mark from the front and just over half a full mark from the side.

3.4 Ammunition

The ammunition carried on most tanks was mixed, depending on the expected task and the availability of specific types.

3.4.1 Ammunition types

There are two main types of ammunition in the game. The first is Armour Piercing (AP). The actual round is normally the standard AP round for each vehicle. At the time, the German standard round was the Panzergranate 39. These were a solid steel shot, with a small high explosive charge. All guns of 5cm and up actually had a "piercing cap" of hard steel to assist penetration. At 7.5cm and up, they also added a ballistic cap to the rounds. Strictly speaking this makes the 5cm round APC and the larger rounds APCBC, but we will refer to them all as AP.

The Soviets had different designations for their rounds (see below under "Know your enemy"). They were basically all AP with a ballistic cap, but not piercing cap, making them APBC.

Both the Germans and the Soviets added a small bursting charge of high explosive to the rounds. Strictly speaking this makes the rounds APHE, rather than AP. However, the bursting charge is very small – under 150 grams/5 oz. This is rather less than the charge in a German hand-grenade. However, it is enough to cause additional damage if the round penetrates, although premature detonation of the bursting charge as the round impacted was common and gives rise to the view that the charge was actually intended to help the round penetrate.

Both sides also introduced tungsten-cored ammunition – known as Armour Piercing Composite Rigid. This was a sub-calibre round, with a lightweight casing that brought it back up to full calibre. The advantage was the that the extra density gave it good penetrating abilities, but the rounds did not carry well over distance. They are only included in *Ostfront* in the German Panzerkampfwagen III.

Apart from AP, most tanks would carry High Explosive (HE) rounds, for attacking infantry and bunkers. These would have some limited effect on other tanks, but were very much used for anti-personnel work. This is mainly because you need a direct hit with an AP round to hurt someone – and they make a very small target!

3.4.2 Ammunition loads

As stated before, each vehicle can carry a different load of ammunition. Some tanks have a high capacity, while others have a much smaller capacity. For example, the IS-2 may be large – but the ammunition is huge. The result is that each tank can only carry 28 rounds of ammunition for the main gun. As the IS-2 was actually designed to take on infantry/fortification targets, the usual load was for only about 10 rounds of AP.

Once loaded, a round can either be fired – or swapped out for the other type of ammunition the tank is carrying.

4 GAME-PLAY: VEHICLE COMBAT

In terms of basic vehicle combat there are some key points to keep in mind. This section will be a whistle-stop tour of some of them. These are derived both from playing the game itself and also from documents such as the semi-official "*Fibel*" documents produced for German tank crews during the war.

4.1 Know your enemy

It is imperative to be able to identify enemy tanks quickly, as well as identifying friendly vehicles. There are line drawings of the various vehicles in game later on in this document. It will pay to learn them in general. Another simple way to tell friend from foe is colour schemes. The Soviets used very simple schemes – dark ("olive") green most of the time, with occasional winter camouflage schemes. It is very rare to find Soviet tanks carrying any form of multi-coloured scheme.

The Germans started the war using the basic "*Panzer-grau*" – a familiar dark grey. This was over-painted in white for winter camouflage and began to be over-painted with greens for summer. From late 1942, the Germans had turned to the basic "sand" colour as the base for many of their tanks. This would quite often be over-painted with a bewildering variety of greens and browns during the summer, with all-over white schemes in the winter.

Another point that makes it important to know your enemy is simply to be able to correctly assess the threat: can you take him head-on, or should you back off and flank? The following table gives a simplistic assessment of the various vehicles in the game, with weapons and armour rated as "Light", "Medium" or "Heavy".

For example, the Pz IV F2 has fairly light armour, but packs a "medium" punch. In contrast, the Panther rates heavy armour and a heavy gun – probably the most dangerous opponent in the game.

Vehicle	Main weapons	AP Round	HE Round	Weapon	Armour
SdKfz 251	MG34 light MG	Machine-gun rounds with tracer		L	L
StuG III G	7,5cm StuK40 L/48	PzGr.39	SpGr.40	M	M
Pz III L	5cm KwK39 L/60	PzGr.39 [*AP*]	No HE in game	L	L
		PzGr.40 [*APCR*]	No HE in game	M	
Pz IV F1	7,5cm KwK37 L/24	K.Gr.rot.Pz	SpGr.40	L	L
Pz IV F2	7,5cm KwK40 L/43	PzGr.39	SpGr.40	M	L
Pz V A	7,5cm KwK42 L/70	PzGr.39/42	SpGr.40	H	H
Pz VI E	8,8cm KwK36 L/56	PzGr.39	SpGr.40	H	M-H
BA 64	DT28 light MG	Machine-gun rounds with tracer		L	L
T-60	20mm TNSh-20	Unknown APCR round: no HE		L	L
SU-76	76.2mm Zis-3Sh L/51.6	BR-350A	OF-350	M	L
T-34 M41	76.2mm F-34 L/41.6 [Zis-5]	BR-350A	OF-350	M	M
KV-1s	76.2mm F-34 L/41.6 [Zis-5]	BR-350A	OF-350	M	M
T-34 85	85mm ZiS-S-53, D-5 L/54.6	BR-365	O-365K	M	M
IS-2	122mm D25T, D25S L/43	BR-471	OF-471	H	M-H

4.2 Defeating an enemy tank

Having identified the enemy, it is key to assess the situation and consider if you have a good chance of destroying it from where you are currently sitting. If the enemy doesn't appear to have seen you, you have the time to line up the first shot carefully – but it is still never a good idea to try and take on an opponent heavier than you directly. If you haven't been seen, you have time to pull back and manoeuvre to get a better shot. If you don't feel you are close enough to penetrate the enemy's frontal armour then you will either need to move to where you can hit side or rear armour (or top armour) or take very careful aim for a weak spot.

Also remember communication: if the members of the crew are not communicating, it can be catastrophic. If the hull machine-gunner is blazing away, his tracers may alert an enemy you are sneaking up on. If the driver has halted in a good firing position, this is no help if the gunner hasn't spotted the target. And if the gunner has the perfect firing position but has forgotten to tell the driver to stop, everything is wasted.

The key is to assess carefully. If you feel you can penetrate the armour facing you, then aim carefully with the first shot. The ideal kill is tone in which the first shot penetrates, causes catastrophic damage and the enemy is dead before he even knows you are there. To do this, you need to understand the armour on the enemy tank – and also have a good idea of its weak points. The key "one-hit-one-kill" locations on any vehicle are the fuel and ammo supplies. Hitting the engine or drive train hard is likely to disable it. Trying to shoot off a track is an option, but it is a hard target.

In general, the engine is at the rear, usually easily reachable through the side armour at the back of the tank, or through the rear. Fuel stores are usually beside the engine, frequently on the right side. Ammo stores are more variable: on most Soviet tanks, the bulk of the ammunition is stored in canisters under the hull floor, making it quite hard to hit. On German tanks, the ammunition is split up, in a couple of locations in the hull. Both tend to carry some rounds in the turret itself, although these stores are often too small to blow the whole tank.

After firing, consider your options: you only want to stay stationary if you *know* that the enemy isn't going to kill you while you re-load. Straight slugging matches are really only a good idea against much lighter or inexperienced enemy. Again, communication between driver and gunner is key. You may want to take the risk of staying still, but move if you realise the enemy has found you and has time to aim and get a round off.

The classic sequence is to spot the enemy, move into position to get an accurate first shot off (and this requires good assessment of the range, too) then pull back to reload safely, before pulling forward (ideally not into *exactly* the same spot as you fired the first round from) for a second shot.

4.3 Keeping your tank intact

In general, surviving in armoured combat is simply a matter of reversing all the advice on how to defeat your enemy. There are a few key points to keep in mind.

The single most important point to remember is surprise. If you are ambushed, there is a high probability that the enemy will destroy you. Therefore, charging blindly into a combat situation is risky – it pays to assess the situation carefully. The commander needs to keep constant watch all around, just as the driver and hull gunner need to watch their specific areas carefully for signs of the enemy. The risk to the commander is that he is vulnerable when he has his head out of the hatch – so beware of enemy infantry!

Once in position to engage the enemy, it is important to keep your tank as safe as possible. There are a number of techniques for doing this:

- Try and find a "hull down" position. This is where the gunner can see the enemy, but the driver cannot – the hull is hidden from the enemy. Good spots for this are behind walls and small rises in the ground. Just remember that hedges do *not* stop AP rounds!
- When looking around, try and stay "turret down". In this case the only person who can see is the commander, when standing in the turret – the rest of the tank will be hidden from enemy fire.
- When engaging the enemy, it sometimes pays to angle your tank slightly, so that you not presenting your armour square on to them. This may well make you a more difficult kill by increasing the effective slope of your armour – just be careful not to expose your side armour too much!

5 COMBAT ON THE EASTERN FRONT, 1941-1945

This section quotes heavily (with permission from the authors) from a book that many see as being the classic military overview written in the modern era: *"When Titans Clashed"* by David M Glantz and Jonathan House, first published in 1995 by the University Press of Kansas.

5.1 Introduction

The combat of the war of annihilation between the Axis forces of Germany and her allies, and the Soviet Union (USSR) started in June 1941 with the Axis invasion of Soviet territory in Operation Barbarossa. It was a war of unprecedented ferocity, a monstrous clash of ideologies. It also led into another clash of ideologies between West and East, with the beginning of the Cold War. This means that the war the Soviets knew as the "Great Patriotic War" was largely presented to western audiences from the German point of view. Much of the Russian-language history written was filled with the "obligatory communist rhetoric that made their factual assertions appear to be so much propaganda".

However, consciously or otherwise, German accounts were just as biased as their Soviet counterparts, warping western understanding of this titanic struggle that we came to know by the German term – the "Eastern Front", or "*Ostfront*". Now, with the dismantling of the Stalinist system in the late 1950s under NS Khruschev and the gradual collapse of the Soviet system more recently, the Soviet archives have slowly opened and the subsequent disclosures have led to much more full and frank discussion of the war.

In creating Red Orchestra: Ostfront 41-45, we have made conscious and copious use of the newly opened Soviet archives, as well as the older records of the German armies held in the west. We hope it shows!

5.2 Prelude to War

The German forces came fresh from their conquests of the Rhineland, Czechoslovakia, Austria, Poland and Western Europe. They were confident of their ability to defeat any opponent they chose to take on. They prepared to launch their assault with over 3 million men and 3,500 tanks.

The Soviet forces, while appearing formidable on paper, were actually in a terrible state. The Red Army was the largest in the world, with a nominal tank force of over 22,000 vehicles. However, Stalin's purge of the Red Army that started in 1937 with the death of the brilliant Marshal MN Tukhachevsky, had led to the removal of over 30,000 men from an officer corps numbering some 75,000. Following this with a huge expansion of the army meant that the vast bulk of all officers preparing to face the Germans were completely unprepared for their role. The Red Army's tanks were in a sorry state of repair.

The final nail in the coffin for the Red Army in the summer of 1941 was supply and logistics. Stalin refused to mobilize the army in the face of the German threat for fear of provoking a war he knew the army was not ready for. Of the 300-plus divisions standing ready, the average division had less than 3 days ammunition and fuel to hand. They were below strength in men and estimated at having less than 30% of their motor transport. The mobilization plan called for the army to requisition transport from Soviet industry – but there was not to be time for this. The remainder of the Red Army's supplies were between 250-400 kilometers behind the lines, waiting for transport that would never arrive.

5.3 The First Period of War: June 1941 – Oct 1942

The Soviet Union and its armed forces suffered catastrophic defeats during the 18 months known as the First Period of War. Surprised when it should not have been, neither the state nor its military establishment was ready for war. Although numerically large on paper, the Red Army's training and maintenance were low; its leadership at mid and higher levels was weak, timid, or simply inept, and at the national level it was criminally deficient. As a result, during the first six months of the war, two thirds of the Red Army's initial mobilized strength (3,137,673 men) perished or fell into captivity, along with a sizable portion of its command cadre. Another 1,336,147 were wounded. By the end of 1942, the ghastly casualty total had risen to over 11 million.

The very scale of their success in June to July 1941 hindered the German advance. German panzer columns easily pierced the deepest Soviet defensive echelons, preempting initial Soviet attempts at counterattack based on their prewar plans. This preemption, especially along the Dnepr River in July 1941, encouraged an unbridled German optimism that propelled the invaders onward into positions that stretched their logistics to the breaking point and wore out the vaunted panzers. Yet on they went, reaching Leningrad, Rostov, and the outskirts of Moscow by late November and December. Hitler's strategic plan involved objectives that reached beyond European comprehension or practical achievement, but even the German Army's partial success surpassed exponentially the earlier advances in Poland and France.

The superb German fighting machine was defeated by more than distance. The German rapier, designed to end conflict cleanly and efficiently, was dulled by repeated and often clumsy blows from a simple, dull, but very large Soviet bludgeon. That bludgeon took the form of successive waves of newly mobilized armies, each taking its toll of the invaders before shattering and being replaced by the next wave. Its mobilization capability saved the Soviet Union from destruction in 1941 and again in 1942. While the German command worried about keeping a handful of panzer divisions operational, the Stavka raised and fielded tens of reserve armies. These armies were neither well equipped nor well trained. Often the most one could say of them was that they were there, they fought, they bled, and they inflicted damage on their foes. These armies, numbering as many as 96, ultimately proved that quantity possesses a virtue of its own. By necessity, those Soviet units that survived were well educated in the art of war.

The Soviet survival in the face of innumerable disasters was miraculous. First and foremost, this survival underscored the capacity of the Soviet population and armed forces for suffering. It was as if the old medical practice of bleeding the patient to restore health was the remedy accepted by the Soviet government. And bleed it did. Whether by design or by chance, the bleeding produced results. By late 1942, those who survived had learned to fight and often fought well. Their sacrifice bought Stalin the time necessary for industrial mobilization, which, with Allied support, provided the survivors with abundant implements to wage war.

On the German side, Operation Barbarossa, with its ill-defined, fantastic objectives, failed. Blame for that failure rested not only on Adolf Hitler but also those military commanders who enlisted in his new crusade, despite the obvious lessons of Charles XII and Napoleon. Barbarossa failed because German military planners applied the templates of military success in western Europe to the geography of eastern Europe, forgetting that Russia is anchored in Asia.

The Blitzkrieg, which had made a rapier of the German Army, was already failing at the gates of Moscow in 1941. It was further discredited at Stalingrad in 1942, and would be buried at Kursk in 1943. The surviving Soviet commanders at all levels often became as proficient at the art of killing as their German tutors. Henceforth, German forces would have to fight the Soviets on new terms, increasingly dictated by the Soviets themselves.

5.4 The Second Period of War: Nov 1942 – Dec 1943

The "Second Period of War" from November 1942 through December 1943 was pivotal in many ways. On a strategic level, the Germans began this period believing that they were within a few hundred yards of victory at Stalingrad and ended it with no illusions about the ultimate outcome of the struggle. After Kursk, Germany could not even pretend to hold the strategic initiative in the East. Moreover, a vast area of central Russia had returned to Soviet control, although this area was so devastated that it would require a decade to recover from the German occupation.

Organizationally, the Wehrmacht was clearly in decline by late 1943. In addition to the death of Sixth Army and several allied armies, the German panzer force and air transport force had been shattered repeatedly. Hundreds of ordinary infantry divisions were reduced to two thirds of their original strength, with declining mobility and inadequate antitank defenses. Even the belated industrial mobilization of Germany, fueled by slave labor and directed by the organizational genius of men like Speer and Guderian, could do little beyond patching together the existing units. Indeed, after Kursk a vicious cycle set in. Each new setback forced the Germans to commit their newly recruited replacement troops and their refurbished panzer units to battle more rapidly and with less training. Poorly trained troops suffered abnormally high casualties before they learned the harsh realities of combat. These casualties, in turn, meant that commanders had to call on the next wave of replacements at an even earlier stage in their training.

This grim German situation did not arise solely because of Hitler's errors nor even because of the often-exaggerated numerical superiority of the Soviet armed forces. Perhaps the principal cause of the reversal in the East was the revolution in Soviet command, staff, and operational and tactical techniques. By mid-1943, Stalin had come to trust his commanders and staff officers as professional leaders, and they had justified this trust by learning the painful lessons of mechanized warfare. Indeed, an entire section of the General Staff was devoted to the study and dissemination of "War Experience," based on exhaustive post-mortem analysis of each battle, operation, and campaign. These lessons were grafted onto the existing, prewar concepts of the Red Army, producing a new series of regulations and procedures.

During the summer and fall of 1943, the Soviet commanders experimented with a variety of strategic and operational concepts and techniques. In particular, they worked out most, but not all, of the difficulties of integrating the different arms and services into a true combined-arms operation. At Kursk, Soviet commanders and planners demonstrated their sophisticated understanding of intelligence, deception, and antitank defense. Similar improvements were evident in the careful orchestration of artillery, engineers, infantry and armor to penetrate German defenses by focusing overwhelming forces on extremely narrow fronts. In the counterstroke at Prokhorovka and in the Kutuzov, Rumiantsev, and Suvorov operations, the Red Army also tested the tank armies and separate tank and mechanized corps that were henceforth the hallmark of Soviet deep operations. With experienced commanders, competent staff officers, and improved logistics based on American trucks, these armored formations demonstrated their ability to match the best efforts of the German panzer force.

Many problems remained to be solved, particularly the correct timing and procedure for introducing these tank units into battle during or after the initial penetration attacks. In addition, ways had to be found to reduce the often catastrophic number of casualties suffered by the Red Army even in its successful offensive operations, lest victory be snatched from the Soviets' grasp by an army and nation bled white. Yet the future outline of Soviet offensive capability was clear, and realistic German commanders began to recognize that they faced an entirely new and far more competent Red Army.

5.5 The Third Period of War: Jan 1944 – May 1945

The 18 months of the Third Period of War accorded a gruesome symmetry to the horrors of war on the Eastern Front. The first 18 months of war witnessed the unprecedented catastrophes that beset the Red Army and the titanic defensive battles at Moscow and Stalingrad, punctuated by periodic Soviet counteroffensive impulses. The Germans had advanced to the gates of Moscow, the banks of the Volga, and the northern slopes of the Caucasus Mountains. At a cost of over 10 million military casualties and uncounted civilian fatalities, the Red Army had halted Blitzkrieg and turned the tide of almost unending German military victories.

During the 12 months of the Second Period of War, beginning with the catastrophic German defeat on the Volga and ending with the victorious Soviet drive to the Dnepr after the equally catastrophic German defeat at Kursk, the Red Army destroyed Blitzkrieg as a viable offensive military concept. At a cost of nearly 10 million additional military casualties, the Soviets began the liberation of their territories. Unlike the First Period of War, in this period the Germans and their allies themselves suffered losses numbering in the hundreds of thousands. More devastating for the German cause was the slow realization that this process of attrition would accelerate toward inevitable and total defeat.

This process reached fruition in the Third Period of War. A seemingly unending procession of Soviet strategic victories ensued, which tore the heart out of the Wehrmacht, inexorably propelled Soviet forces into central Europe, and climaxed in the total military and political defeat of Nazi Germany. The cost to the Red Army was a final nine million casualties.

The military consequences of operations in spring 1945 were clear. The remaining forces of the once-proud and seemingly indestructible armies of Germany were crushed by the combined efforts of Allied forces assaulting from East and West. Nazi Germany, which had based its power and built its empire on the foundations of warfare of unprecedented violence and destructiveness, was felled in equally violent and decisive fashion. The colossal scope and scale of the Berlin operation, resulting in appalling Soviet casualties and equally massive destruction of the German capital, was a fitting end to a war that was so unlike previous wars. As more than one German veteran observed, war in the West was proper sport, while war in the East was unmitigated horror. This final horror eliminated the remaining 2 million men of the Wehrmacht and reduced Germany to ashes.

The political consequences of these last operations reflected a process that had been going on for over a year, which the Soviet Union's Allies had largely overlooked in their search for victory. That process now became crystal clear during the peace that followed. In the baggage of the victorious Red Army came political power in the guise of newly formed national armies for Soviet liberated states and governments to go with those armies. Two Polish, three Rumanian, and two Bulgarian armies fought and bled alongside the Red Army, together with a Czech Corps and other smaller national formations. Once returned to their liberated lands, these units cooperated with local partisan formations, many of which had also been sponsored and equipped by the Soviet Union. Under the protection of the Red Army, these armed forces and the governments-in-exile that accompanied them quickly transformed military into political power.

Slowly, in mid-May 1945, the firing died out and the war in Europe gradually came to an end. Having, at great human cost, captured Bucharest, Belgrade, Warsaw, Budapest, Vienna, Berlin, and Prague from the shattered Wehrmacht, the Soviets, by rights, had undisputed claim to the lion's share of the spoils of this victory over Nazi Germany. In Western perceptions, however, the political consequences of that victory deprived the Soviet Union of that right. Within a few short years, the horrors of war were replaced by the menace of the Cold War, and suspicions soon obscured the unprecedented suffering and triumph of the Soviet peoples.

5.6 Aftermath: Counting the cost

The overall cost of the war on the Eastern Front in human terms is hard to grasp for those of us lucky enough not to have been involved. Until recent times, it has been very hard to assess the true cost to the Soviets. The key source for this is now a work commissioned by the Russian General Staff, completed in 1993, led by GF Krivosheev, which is available in English.

The following table gives some comparisons, with the USA included as a "benchmark". Detail figures for the US are from "Army Battle Casualties and Non-battle Deaths in World War II – Final Report", Statistical and Accounting Branch, Office of the Adjutant General, US Army, June 1953. Those for the Soviets, Germany and her allies are from "Soviet Casualties and Combat Losses in the 20th Century", Edited by Col-Gen GF Krivosheev of the Russian General Staff, Moscow.

Category	USA	Germany	USSR
a) Killed in Action	192,798	3,149,300	5,187,190
b) Died of Wounds	26,762	*Incl above*	1,100,327
c) Declared Dead	6,058		
d) Non-battle deaths	9,256	*Incl above*	541,920
e) Total Deaths (a+b+c+d)	**234,874**	**3,149,300**	**6,829,437**
f) Captured	124,079	2,571,600	3,305,600
g) Missing/Unrecorded		972,800	1,150,000
h) Total Lost during War (e+f+g)	**358,953**	**6,693,700**	**11,285,037**
i) Returned from Captivity	111,426	2,121,000	1,836,000
j) Died in captivity/MiA	*Incl above*	450,600	1,679,863
k) Actual total of war dead (e+j)	**234,874**	**3,599,900**	**8,509,300**
l) Other Casualties	701,385	6,035,000	18,344,148
m) Total Actual Casualties (k+l)	**936,259**	**9,634,900**	**26,853,448**

Note 1: the German figures are slightly misleading, in that they show the battle casualties for all fronts, but the captured/returned/died in captivity for the Eastern Front only. Also, some of the German figures are estimates, as much of the recording collapsed in the final months of the war. However, it is estimated that as many as 80% of the German casualties were taken in the East.

Note 2: the deaths in captivity and from those MiA for the Soviets have to be calculated from the overall total dead. The reason is that over a million men went missing in the first months of the war along with many of the Army and Front records in that period.

Germany's allies lost significant numbers themselves and this does need to be taken into account. In total, Hungary, Italy, Romania and Finland lost 1,053,700 total war dead, with a further 766,800 prisoners. This is a total loss during the war of another 1.82 million, taking the total for the Axis to 8.5 million, compared to the Soviets 11.3 million. The difference was nothing like as great as has always been suggested.

A quick comparison reminds us that the scale of losses on the Eastern Front were far greater than any other theatre. The American losses for the whole war pale into insignificance alongside those of the Germans or the Soviets. For every single day of the war on the *Ostfront* over 3,000 Germans and 7,000 Soviets would lose their lives. On average each month the Soviets would lose as many of their soldiers (over 200,000) as the Americans would lose in the whole war.

"Никто не забыт и ничто не забыто: No-one is forgotten and nothing is forgotten."

6 COUNTRIES, THE TERRAIN AND WEATHER

The war on the Eastern Front covered the single largest area of land conflict of the whole Second World War. From Berlin to Moscow is 4 full time-zones. In the far north, the Germans tried to break through to Murmansk, well north of the Arctic Circle, where the terrain is pure Tundra. And far to the south at one point, both sides left a massive gap in the front – the arid desert that is the Kalmuk Steppe, almost uncrossable without specialist desert gear. At its peak, the front line stretched over 3,000 km from end-to-end.

The effect of this is simple: the terrain is hugely variable, as is the weather. This section will give a very brief and simplified view of the types of conditions that the forces fought though during the almost 4 years of the conflict.

6.1 Terminology – Axis and Allies

A key, if pedantic, point is terminology: in *Ostfront* we refer to the two sides as "Axis" and "Allies" much of the time. In reality, the "Axis" consists of Germany as the major partner, with a number of other countries allied to the Germans, some under the terms of the "Tripartite Axis" agreement that gives us the name "Axis". The "Allies", on the other hand, are generally understood in the west to be Russia, Great Britain and the United States. In the context of the Eastern Front, it really means the Union of Soviet Socialist Republics (USSR, or "Soviet Union"), plus those nationalities not ruled from Moscow who joined forces with the Soviets. It is also worth noting that Russia is only one of a large number of republics (and ethnic groups) that made up the Soviet Union. Indeed, while Russian may have been the majority language of the Red Army, it is recorded that there were over 150 separate languages spoken in the army.

6.2 Central Europe

This generic term really covers a vast area, including regions of eastern Germany, the Baltic Republics of Latvia, Lithuania and Estonia, plus Austria, Poland, Czechoslovakia, Hungary, Romania and Bulgaria. These regions vary from typical "European" landscapes of rich agricultural land, deciduous and conifer woodland through to more Mediterranean areas in the south of scrub-pine, rocks and heathers. Many of these areas are crossed by rivers and streams, including such great rivers as the Oder, Danube and Bug.

At the start of the war in the east, Germany already "owned" the western areas of Poland. Czechoslovakia had been partitioned – the Czech areas simply becoming part of the Reich, while Slovakia had become a puppet state, effectively under German rule. Austria had become part of Germany under the "Anschluss" of 1938.

The Soviet Union had taken control of the eastern areas of Poland, as well as swallowing up the Baltic Republics. While Poland managed to regain its independence at the end of the war, a large number of her troops served alongside the Red Army, keen to get revenge on the Germans. The Bulgarians only had a small army and wisely capitulated to the Soviets when they reached Bulgaria, taking very little further part in the war. The Romanians also changed sides in 1944, partly to avoid having their country demolished by the Soviets, partly because they had never been that keen to be allied with the Germans – and partly as an excuse to take on the old enemy: Hungary. It is also worth noting that the Slovaks staged a small revolution as the Soviets approached, in a (failed) attempt to retain independence from the Czechs after the war.

6.3 Finland and the Far North

One other nation deserves a special mention: Finland. While they never formally joined the Axis, they fought alongside the Germans for many reasons. One of the key reasons was to regain territory lost to the Soviets in the Winter War of 1939-40. Officially, they refused to advance beyond what they saw as their own borders, regardless of pressure from the Germans to do so. In reality, many Finns were keen to pursue the war against the Soviets. Some volunteered to serve in the German forces, while others made the most of "patrolling" opportunities to get at the Soviets. They capitulated on remarkably favorable terms in late 1944 – a sign that they were one of the very few nations that Stalin respected enough not to simply swallow up. They very briefly came to blows with the German forces stationed in the far north when they chose to take longer than agreed to remove themselves from Finnish soil.

While the Finns are not (yet) included in *Ostfront*, the Germans did fight in the far north. The area is inhospitable in the summer, being tundra interspersed with conifer forests, lakes and marshes. In winter, the whole area becomes appallingly cold. Whole texts have been written on the combat in the far north, simply because of the hardship. Add to this the fact that a man needs nearly twice as many calories per day as normal just to stay alive and you have some idea of the effects.

6.4 Western Russia

Eastern Poland and the Baltic Republics fade gently through Belorussia into western Russia proper. In the north, there are large lakes, dense forests and swamps. Further south, as the weather becomes more livable, agriculture picks up. There are great cities, many of them ancient, and great rivers. This includes Moscow, on the northern end of the Volga River. Here the summers can reach 40 Celsius- and the winters, famously, can hit -40 Celsius.

Heading ever further south, the land becomes rolling Steppe terrain – vast grasslands of gently rolling hills, with deciduous woods, orchards and small rivers cutting the land, creating the "Balkas" or deep ravines of soft earth. There are great industrial cities, such as Voronezh and, particularly, Stalingrad. Stalingrad was both the collecting point for vast grain-producing areas to the west, as well as a huge industrial complex. The land heading west to the Ukraine is particularly fertile, crossed by rivers such as the Don.

Further south still is the city of Rostov-na-donu: Rostov on the Don. The area known as the "Don bend" is a vast reserve of minerals, including huge coal producing regions. South of there, as the land approaches the Caucasus Mountains, you reach the key oil-producing regions of the Soviet Union. By now the terrain is dry and Mediterranean and, further to the east, becomes the desert that is the Kalmuk Steppe.

6.5 The Ukraine

The Ukraine is an area that had been fiercely anti-Bolshevik during the Revolution and had come in for terrible handling by the Stalinist regime – particularly at the hands of one NS Kruschev, who willingly starved 2-3 million Ukrainians to provide grain for Moscow. The Ukrainians have their own distinct language and a deep hatred of the Soviet system. Of course, many served with the Red Army. It is also worth noting that the Red Army was still putting down armed insurrection by the Ukrainians in 1946.

The area itself also contains many ancient cities, such as Kharkov ("*Kharkiv*" to the Ukrainians) and Kiev ("*Ky'iv*"). The Ukraine was known as the "bread basket" of the Soviet Union, due to the richness of the soil and the vast grain-producing regions. The summers are hot and dry, but the winters can still be as cold and cruel as further north.

6.6 The Crimea

The Crimea ("*Krim*") is a large section of land, very Mediterranean in aspect, attached to the rest of the Soviet Union by the tiny Perekop Isthmus. It was an area of strategic importance, as it could not be left still occupied by the Soviet forces, as the Germans tried to plunge south into the Caucasus.

6.7 Mountains

Having seen so many pictures and news-reel of armored columns storming across open Steppe, it is easy to forget that the Eastern Front contains a number of very mountainous regions, that had to be crossed, defended and fought over. This includes the fighting in the Caucasus mountains in the far south of Russia, where the Germans tried (and failed) to force a way through to the oilfields at Baku. Later, the Germans and their allies would be forced to defend the Carpathians and the Transylvanian Alps against the Soviets. They held neither for long.

7 THE SOLDIERS

7.1 Introduction

The soldiers in *Ostfront* represent the basic troops of the infantry platoon on the Eastern Front of World War II. The infantry platoon usually consisted of about 30 soldiers, led by a junior officer or senior NCO. However, even in this small unit, we find the broad range of specializations represented. Those specializations would either be an organic part of the platoon, or would be attached for specific missions.

Those soldiers also represent the various branches of the ground forces on both sides. Strange though it may seem, given the perceived supremacy of the German Wehrmacht, the core infantry was all trained to perform similar roles, regardless of nationality, period of the war or branch of the armed forces. These are represented in *Ostfront* by the various roles in the game: the names may sound different in German and Russian, but they are the same behind those names. The training regimes were different. The Germans had a basic training period of 16 weeks at the start of the war, while the Soviet training was very variable. The Soviet basic training was meant to be 4 weeks long, but sometimes even that was skipped. But ultimately the soldiers of both sides learnt the way soldiers always have done: those that survived their first battle learnt their trade – and became expert at it.

7.2 German Forces

7.2.1 Heer

The vast bulk of the German armed forces were formed by the Heer – the Army. About 13 million men would serve during the course of World War II, in a total of some 500 Divisions. Of these, 28 were converted to Panzer Divisions, 13 to Panzergrenadier Divisions and 23 to Jäger or Mountain Divisions.

The Panzer and Panzergrenadier units made up the most famous elements, responsible for the "Blitzkriege" against Poland in 1939, France and the Low Countries in 1940 and the Soviet Union in 1941. They would form the main strike arm of the Army throughout the war – but only made up a relatively small percentage of the total forces available. Even so, they struck fear into the hearts of the enemy for most of the war.

However, the biggest part of the German Army was the infantry, in its various forms, making up 90% of the manpower throughout the war. Contrary to popular belief, the German infantry was not motorised – the 1941 Infantry Division had approaching 16,000 men, under 800 motor vehicles and over 3,000 horses. That makes up one vehicle per 20 men – compared to one for every 4 men in the armoured units. In reality, the vehicles towed guns, reconnaissance units and supplies – the infantry did what they have always done: they marched on foot.

The German infantryman was without a doubt the best-trained soldier in the world at the start of the war. Apart from the German doctrinal advances that helped create their astounding successes, it was also down to the fact that the German infantryman went through a basic training period twice that of the Western Allies – three times more than the Soviets were supposed to get. Even late in the war, this was only reduced to parity with the Allies.

For all the much-vaunted success of the armoured units, it was the infantry who actually held onto ground the Panzers had charged across. The Panzer Generals were always impatient for the infantry to catch up, to take over the job of reducing the enormous encirclements in 1941, so that the Panzers could charge off eastwards again. It was the infantry who also took the bulk of the casualties in all this fighting. By the September 1942, the Germans had lost nearly a million men killed, missing or disabled. This was a huge price to pay, for a force that had launched its attack on the Soviet Union with 3.5 million men.

The Infantry Divisions were variable in nature and quality. Most were basic "Infanterie Divisionen" – the core combat infantry, renamed to Grenadier and then Volksgrenadier during the war. However, the Germans also used specialist Light (Jäger) and Mountain Divisions in specific terrain such as forests, mountain and deep snow. In addition, there were a number of divisions making use of older, less fit, personnel in Security roles and for the static defence of "fortress" locations.

They fought in every battle, in every imaginable terrain and weather, throughout the course of the war in the East.

7.2.2 Waffen-SS

Possibly the most controversial military unit of the 20th Century, the original SS was founded as the "Stoßtrupp Adolf Hitler" in 1923, later becoming the "Schutzstaffel". They were originally simply a bunch of Nazi thugs, to rival the "SA" during the Nazis' rise to power.

Later, under Heinrich Himmler, the SS grew in power and stature. By the late 1920s, racial criteria were brought into the recruitment, in order to have a "pure Aryan" force. In their early days, the SS took over the guarding of the concentration camps, as the SS-Totenkopfverbände, while the Allgemeine-SS carried out basic semi-formalised policing duties. In 1933, as a reward for "services rendered", the SS were allowed to create the bodyguard unit "Leibstandarte SS Adolf Hitler". In late 1934, it became the first fully-motorized German military unit, at Regiment strength.

By the time of the invasion of Poland in 1939, the Waffen-SS (Armed SS) fielded 3 regiments. The next year, for the invasion of France, their strength had risen to nearly 3 full Divisions – and by the end of the war 38 Divisions had been raised, plus 2 Cossack Divisions taken over from the Army. However, many of the late-war Waffen-SS units were of highly dubious worth and probably never saw real combat.

For all the controversy surrounding them – and the atrocity stories that accompanied them – the mainstream Waffen-SS Divisions were without a doubt made up of some of the finest men that National Socialism had to offer. They were physically very well trained. However, their infantry and armoured training was sadly lacking, as they were never brought under Army training regimes and, as a result, they suffered very heavy casualties at times. Their dedication and loyalty could never be questioned, along with their fanaticism and willingness to die for their leader.

Their equipment was very variable. For much of the war, they only had access to weaponry rejected or declared obsolete by the Army – but they were also amongst the first to be issued new equipment once they had proved their worth in combat.

The mainstream Waffen-SS Divisions that fought in the East were 1 through 5 SS, which started out as various forms of motorized infantry units, becoming Panzergrenadier and later Panzer Divisions. These formed the backbone of the Waffen-SS forces in the East and would, between them, run a total of up to 100,000 men. A number of late-war units were formed, very low on strength, issued any old weapons that came to hand and were of very variable worth in combat. 36 SS-Grenadierdivision "Dirlewanger" was a prime example – formed from the Brigade Dirlewanger, named after its commander (who had previously been expelled from the SS on a morals offense…), which had fought brutally against the Polish uprising in the Warsaw Ghetto. In their first engagement, the whole Division quietly slipped away without telling anyone – or seeing signs of combat.

Many of the more successful later Waffen-SS Divisions were formed of volunteers from other European countries, including France, Belgium, Holland and the Scandinavian countries.

The better Waffen-SS units fought through many famous engagements, including Kharkov, Kursk, Budapest and Berlin. The best of them were frequently used as an emergency force by the Army – or as the spearhead of major assaults.

7.3 Soviet Forces

7.3.1 RKKA [PKKA] – the Red Army

The Worker's and Peasants' Red Army had a chequered history, leading into the fight with Germany. After its' formation by VI Lenin during the revolution, it had its initial successes, followed by defeat at the hands of the Poles in 1922 and a very costly victory against the Finns in the Winter War. However, it had also won a magnificent, if costly, victory against the Japanese at Khalkin-Gol in 1938. On top of that, its pre-war doctrines and equipment were some of the best in the world.

However, all these advances had been thrown away during the Stalinist purge of the officer corps in 1936-7, during which time most of the senior officers and fully half the junior officers were shot or sent to the Gulags of Siberia. This left the RKKA drastically short of trained officers – and this situation was made worse by the massive expansion of the Red Army leading in to the war. The result was that the Red Army was led by desperately inexperienced officers – and sometimes even without officers at all. The equipment had languished and the forces that met the initial German invasion were woefully unprepared.

With all that said, the Soviet soldier was a formidable opponent, as the Germans grudgingly admitted. He was tough, hardy and uncomplaining, with an ability to absorb immense casualties, when properly led. After the initial shock of the German invasion, the Red Army slowly recovered. It was to be a costly business, but by the start of 1944 the Soviets had learnt everything that there was to be learnt from the Germans.

Almost untold numbers served in the Red Army – with the armed forces taking some 18 million casualties during the course of the war. The Soviet equipment was simply designed and, usually, designed for ease of use and maintenance. Their sub-machine guns were excellent – particularly the much-loved "Pah-pah-shah". However, they (like most other nations) had nothing to rival the German light machine guns and had to bulk out their firepower by carrying extra DP1928s of their own.

The Soviet "Strelok" fought in every terrain, proving highly adaptable to both the extreme heat and the extreme cold. His bravery became legendary – over a million were named "Hero of the Soviet Union" during the course of the war.

In addition to the basic rifle units, the Soviets raised ever-growing numbers of mechanised troops, to rival the German armoured divisions. These were the "tank-desantniki" – those who rode into battle on the decks of the T-34s. They also raised specialist ski troops and mountain troops. These formed separate ski battalions for penetration behind the enemy lines in the depths of winter. The mountain troops were reserved for the toughest terrain – the mountains of the Caucasus, the Crimea and the Carpathians.

Finally, as the Soviets forced their way west, they were able to swell the ranks of the RKKA by sweeping up all those soldiers left behind during the retreats of 1941 and 42. Many of these had become partisans and now rejoined the ranks of the Red Army. Even more were rounded up from the PoW camps, handed a rifle and turned back on their German captors. Given the hardships and privations many of these men and women had endured, the ferocity of the final assaults on Germany becomes understandable.

7.3.2 RKKF [РККФ] – the Soviet Navy

While the Soviet Union was primarily a land power, they also had a large, if scattered, fleet - the RKKF (Workers' and Peasants' Red Navy). This was little used during the war at sea and became a useful source of manpower for the ground war.

When the Germans invaded, the RKKF quickly formed a bewildering array of ground forces. By the end of 1941, these were all sorted out to create 'Morskaya Pekhota' units (Naval Infantry, formed by the Navy, under Naval command) and 'Morskaya Strelkovy' units (Naval Rifle, formed by the Red Army, using Naval personnel). These are not 'Marines' in the same sense as the US Marine Corps - they were simply naval personnel, organised and used as infantry.

Many went into action with virtually no infantry training - but they all had the highest possible morale. Their willingness to accept horrendous casualties unnerved their German opponents who called them "the Black Death", due to the dark Naval uniforms they wore early in the war.

They were organised and equipped as standard Soviet infantry. After the initial surge they were also properly trained as infantry. Each major Naval unit contributed troops to the ground war, usually in their own local area. All of these troops were the best possible personnel. The RKKF may have been small, relative to the Red Army, but it was well trained, had good discipline and very high morale. The RKKF contributed approaching 500,000 men to the ground war - and fought in many of the most famous battles of the war:

The Red Banner Baltic Fleet sent 125,000 men to fight on the Leningrad Front, all through the long siege. The Black Sea Fleet provided nearly 60,000 men who helped Odessa and Sevastopol hold out for so long. They also led some of the largest Soviet amphibious operations, providing the spearhead both in the abortive attempt to retake the Crimea in the winter of 41-42, as well as the final invasion in 43-44.

The Northern Fleet sent nearly 40,000 men to fight in the far north, both to defend Murmansk and Archangel and in amphibious operations along the Arctic coast of Finland and Norway in late 44, as the Germans were driven out of Finland. The Pacific Fleet provided nearly 150,000 men as replacements for the German front and also in the many small amphibious operations against the Japanese in August 45.

Many of the smaller flotillas provided ground troops. One of the most famous groups was the 2,627 men the Volga Flotilla sent into the bitter fighting in Stalingrad. In such a battle, their lack of proper infantry training was not so much of a hindrance - their improbable bravery was by far the greatest asset. A small group of Naval Infantry held out in the Grain Elevator for days against wave after wave of German infantry, tanks, artillery and bombers. Another small group helped to hold Pavlov's House, further north in the city, for many weeks.

The Naval Infantry were some of the bravest troops the Soviet Union fielded during the war - not always the best-trained, but prepared to make up for that lack of training with their willingness to lay down their lives for their country and almost fanatical desire to get into close-quarter combat with the enemy. All the Axis forces who fought them rightly feared them.

7.3.3 NKVD [НКВД]

The People's Commissariat for Internal Affairs (Народный Комиссариат Внутренних Дел or Narodnyj Komissariat Vnutrennikh Del) was originally part of the Soviet security apparatus. It had absorbed the old OGPU in July 1934 and, by 1941, was led by the notorious Lavrentii Beria. It was responsible for State Security, as well as foreign and internal espionage and its members were known until recent times as "chekists" from the first Bolshevik counter-revolutionary teams.

The fighting forces that come under the heading of "NKVD" are actually fairly diverse and complicated. The first consists of the Border Guards, who were originally stationed on the State borders – but the State Borders were considered by the Soviets to represent the boundaries of the area under their control. This meant that the Border Guards were ever-present, providing rear-area security with the movement of the Red Army. These were also the troops that provided the notorious "Retreat Blocking" detachments. There remains great controversy about these units' roles even today, as well as disagreement about what they actually did. Apart from these units, the Border Guards provided well over 100,000 trained men to the Red Army. In addition, the NKVD formed a significant number of NKVD Rifle Divisions during the war – as many as 50 separate divisions.

Following Stalin's Order No.227 – "Not a step back!" – authorised the introduction of Punishment ("Straf") Battalions and Companies. These collected officers and men who were deemed to have retreated without authority and would now have the opportunity to redeem themselves with their own blood. Many of these were commanded by the NKVD. In addition, many of the Soviet Union's most famous divisions were NKVD-led. These were the so-called "Siberian Divisions". One of Stalin's very few trips to the front was to inspect "his Siberians" after the battles for Moscow, Rzhev and Vyazma during the winter of 1941-42.

The NKVD Rifle Divisions were of variable quality and in some respects had similarities (in origin at least) to the Waffen-SS Divisions. The best were formed from dedicated Soviets, with many years of military training. The worst were scraped together from rear-area security forces that had been happily lurking as far behind the front as possible.

The Siberians were mainly all-volunteer units. The volunteers came from the Gulags in Siberia, given the chance to have their sentence commuted and their families released, if they chose to serve in the armed forces. Many were actually officers from the pre-war Red Army who had been sent to the Gulags in the purges of 1936-37. These were experienced soldiers, properly trained before the war and hardened by 4-5 years in Siberia. They were initially led by guards from the camps – also volunteers. Their skill and dedication was noted by Stalin himself. It was also noted by the Germans, who believed they were being attacked by Asiatic "barbarians" with no respect for their own lives. The Germans were wrong. These NKVD-raised and led divisions were made up of tough and very skilled soldiers, mostly originally from European Russia, who were at least a match for the Wehrmacht forces who opposed them.

7.4 Infantry Roles

7.4.1 Core Infantry

7.4.1.1 Rifleman

The basic role for all armies of the period was the rifleman. It was so core to the infantry that the term (Schütze or Strelok) was also used simply to refer to a soldier. All soldiers in the infantry would start as a rifleman after completing basic training. The basic rifle platoon for each side consisted of 3 or 4 squads of 8-10 riflemen.

7.4.1.2 Assault troops

The Germans had realized the benefit of equipping some soldiers as assault troops (Stoßtruppen) before the end of World War One. This had given rise to the term "Stormtrooper". These troops were equipped early on with sub-machine guns, to give them as much firepower as possible when closing with the enemy. The Soviets had taken up this theme in the late 1930s, equipping their Avtomatchiki with their own sub-machine guns. Whereas the Germans initially tended to issue SMGs to small-unit leaders, the Soviets equipped whole platoons (and later battalions) with them. Their intention was to equip these troops for the final assault on the enemy.

7.4.1.3 Machine-gunner

The Germans had also realized the benefit of equipping every single squad with a light machine-gun in order to provide a solid base of fire at the same time as they had "invented" assault troops. By the start of World War Two, they had the single best LMG of any army in the MG34. The Soviets had followed a similar route with their DP28. However, the Soviets found that they needed to add extra LMGs to the infantry platoon in order to compete with the firepower of the German MG34 (and the later MG42).

7.4.2 Specialists

7.4.2.1 Sniper

Different armies took very different views on the use of snipers. The German view was that snipers were a very separate specialization from the core infantry. Snipers were not included in the organization of an infantry platoon until late in the war. The Soviets took a very different view: to them, snipers were an integral part of all infantry units. They were included in the platoon organization from early on. While they did also operate completely independently, this was usually when positions were static and the snipers could be detached from their units. The rest of the time, Soviet snipers were expected to provide very direct support to their platoon.

7.4.2.2 Engineer

Both armies had long recognized the need for including specialist combat engineers in their organizations. They were usually found attached at battalion level or higher in a division. After completing basic infantry training, they were sent on to specialist training in construction – and demolition. Some were also trained to support the infantry directly in the assault. In this role, they would carry demolition equipment to help them destroy objectives and clear routes through obstacles.

7.4.3 Leaders

7.4.3.1 Squad and Platoon Leaders

In both armies, the squad leader was an NCO. Platoon leaders were either senior NCOs or junior officers. They were obviously trained to lead and drive their men along. They were also trained to plan attack and defense strategies, in the placement of key weapons such as the squad LMGs and in directing snipers. They were also given at least some training in directing artillery fire, although this was usually kept fairly simple for such junior leaders. However, basic placement of artillery missions and the relevant communications procedures were well within their capabilities!

7.5 Tank Crew Roles

7.5.1 Core Crew

7.5.1.1 Tank Crew

Tank crew were specialists in their own right. They did not normally receive infantry training, but went straight through tank school. In the process, they would learn how to use the basic infantry weapons, but would spend most of their time on driving, radio and gunnery skills.

7.5.2 Leaders

7.5.2.1 Tank Commander

Tank commanders would be similar to squad leaders – junior NCOs. Some of them would have to double up as the commander of a tank platoon (4 or 5 tanks) and would be a junior officer. Contrary to popular belief, tank commanders very rarely had any form of direct access to artillery on call – they would have to work through their command net as the infantry did.

8 THE WEAPONS OF *OSTFRONT*

8.1 German Small Arms

8.1.1 Rifles

8.1.1.1 Mauser 98K [Karabiner 98kurz]

Country of Origin	**Germany**
Manufacturer	**Mauser**
Role	**Rifle**
In Service	**1935**
Number Built	**millions**
Round used	**7.92 mm**
Action	**Mauser turn-bolt**
Type of feed	**Five-round magazine**
Loaded Weight	**3.9 Kg**
Length	**111 cm**
Length of barrel	**600 mm**
Muzzle velocity	**720-755 m/sec**
Effective range	**800 m**
Ballistics (drop)	**4" at 100m, 18" at 200m, 90" at 400m**

The 98k went into production in 1935, and served throughout World War II as Germany's standard rifle. During the war, factories churned out huge quantities of the 98k, which proved to be reliable and accurate arms. Due to shortages of raw materials, time, and skills, the aesthetic appearance of the guns deteriorated as the war went on. The expensive wooden stock and other wooden parts were replaced with laminated wood, and the finish grew rougher.

The German soldier prized his 98k for its accuracy. The 98 family of guns featured a light action that promoted sure shooting, although at the expense of speed - a Lee-Enfield could get off more shots per minute. The 98k's V-shaped rear sight marked off ranges from 100 m (109 yd) to 2,000 m (2,187 yd).

The Germans introduced various types of extras, including periscopic and telescopic sights, and folding butts for airborne troops. The 98k acquired the ability to launch rifle grenades in 1941. The weapon is still being made today as a sporting rifle.

Despite the plethora of semi and fully automatic rifles the Germans experimented with and actually deployed, the Kar 98 still provided the bulk of the rifle strength of the Army. It served as a sniper rifle with a variety of telescopic sights, and proved highly destructive in the role.

The rifleman was issued sixty rounds, two five round clips carried in each of the six pouches on his belt.

8.1.1.2 Gewehr 43 Rifle

Country of Origin	**Germany**
Manufacturer	**Erfurt Maschinenwerk**
Role	**Automatic Rifle**
In Service	**1943**
Number Built	**~200,000**
Round used	**7.92 mm**
Action	**Semi-Automatic**
Type of feed	**10-round box magazine**
Loaded Weight	**4.4 Kg**
Length	**112 cm**
Length of barrel	**56 cm**
Muzzle velocity	**745-775 m/sec**
Rate of fire	**Semi-automatic**
Effective range	**800m**
Ballistics (drop)	**4" at 100m, 17" at 200m, 85" at 400m**

The German Army was desperate to get a reliable semi automatic weapon into the hands of their troops on the Eastern Front. Their first attempt, the Gewehr 41, was less than successful, and was issued only in limited numbers. It proved difficult to maintain and produce, and at 5 kg was quite heavy.

When the Germans captured numbers of the Russian SVT 40, they found the mechanism it employed far simpler than the version used in the Gewehr 41, and copied it for their own use. It was an irony that the Red Army gave the German Army some of their best weapons of the war.

The Gewehr 43 proved a far superior design to the Tokarev. It was built with standard fittings for the sniper's telescopic sights. It could never come close to replacing the bolt action Mauser, but it provided a lethal companion.

8.1.1.3 Sturmgewehr 44 [MP43]

Country of Origin	**Germany**
Manufacturer	**Various**
Role	**Assault Rifle**
In Service	**Late 1943**
Number Built	**~120,000**
Round used	**7.92 mm**
Action	**Semi-Automatic**
Type of feed	**30-round box magazine**
Loaded Weight	**5.2 Kg**
Length	**94 cm**
Length of barrel	**42 cm**
Muzzle velocity	**650-685 m/sec**
Rate of fire	**500 rpm**
Effective range	**500 m**
Ballistics (drop)	**5" at 100m, 20" at 200m, 100" at 400m**

The MP43 was an attempt to break the mould of previous designs by using an entirely different cartridge. The same 7.92 mm calibre common to other German weapons was retained; but the round itself was shorter than its predecessor with a much reduced propellant charge. This in turn meant a reduced lethal range of around 500 m. It also generated a lighter recoil effect, which allowed the inclusion of fully automatic fire as well as single shots. This gave the user an advantage over every other rifleman he may encounter in a typical gun battle.

Because of its automatic capability, and the kind of political insanity endemic to Nazi Germany, the weapon was described as a sub machine gun initially. No one wanted to have to retool the war machine to produce the new ammunition. By 1944 it had been accepted as an 'assault rifle' - a term which persists to this day. Grand plans were laid to rearm the Wehrmacht with the new design, but as mentioned numbers were never equal to the task. Following the war, the weapon was heavily studied to provide the basis of the Soviet AK47 and its derivatives.

Ammunition was carried in the same manner as for the MP40. Two pouches, each containing three magazines, with perhaps a further one loaded in the rifle for a total of 210 rounds.

8.1.2 Submachine Guns

8.1.2.1 MP 40/41

Country of Origin	**Germany**
Manufacturer	**Erfurt Maschinenwerk**
Role	**Submachine Gun**
In Service	**1935**
Number Built	**millions**
Round used	**9 mm**
Action	**Automatic**
Type of feed	**32-round box magazine**
Loaded Weight	**4.7 Kg**
Length	**83 cm (62cm stock folded)**
Length of barrel	**240 mm**
Muzzle velocity	**365-390 m/sec**
Rate of fire	**500 rpm (cyclic)**
Effective range	**200 m**
Ballistics (drop)	**4" at 50m, 16" at 100m, 72" at 200m**

Germany had begun to develop tactics that called for mobile infantry with plenty of automatic firepower - and the submachine gun was easy for untrained men to learn to use. In 1938, the Oberkommando der Wehrmacht (Wehrmacht High Command, OKW) issued a specification for a submachine gun suited to mobile warfare. The Germans chose Erma's automatic-fire-only design which, upon entering service August 1938 as the MP38, became the first submachine gun to play a major role in a first-grade army.

In a nod to the future, the MP 38 eschewed wood in favor of plastic and employed a folding metal butt. It retained the blow-back mechanism and telescopic bolt assembly. Below the barrel, a lug prevented the weapon from inadvertently moving inboard while firing from the gun port of an armored vehicle. A 32-round box magazine inserted below the receiver fed the ammunition.

MP 38 production used traditional gunsmithing methods and took an unacceptable length of time to make. The MP 40 was essentially the same gun as the MP 38, although stamped rather than tooled and with design changes that rendered the gun less likely to fire when jolted. Visually, the only difference was that the MP 40 had four horizontal ridges on the magazine receptacle, and the lightening cuts milled into the receiver body were eliminated. Distribution of the MP 40 began in mid 1940. All MP 38s were eventually converted to the MP 40 standard in time.

The MP 38/40s offered the operator accurate and stable fire, even when loosing prolonged bursts. The weapons' biggest weakness was the magazine/receiver interface, which would occasionally jam on dirt or the cylindrical Parabellum cartridges.

The 'Schmeisser' remains one of the best-known German weapons of the war, despite the fact it was not connected with that designer in any way. Germany was the only nation to enter the war already producing a simple machine pistol for its troops. The original weapon, the MP38, suffered from a touchy safety system, which was anything but safe. This was rectified and production simplified with the MP40.

The MP41 was produced in very small numbers. It was basically the body and barrel of the MP40 fitted to the wooden butt and firing mechanism of the MP28; it is difficult to understand why it was made in the first place!

8.1.3 Pistols

8.1.3.1 Parabellum 1908 "Luger"

Country of Origin	**Germany**
Manufacturer	**Various**
Role	**Pistol**
In Service	**1908**
Number Built	**4,000,000+**
Round	**9-mm**
Type of feed	**Eight-round box magazine in grip**
Loaded Weight	**0.94 kg**
Length	**222 mm**
Length of barrel	**103 mm**
Muzzle velocity	**320-381 m/sec**
Effective range	**50 m**
Ballistics (drop)	**1" at 25m, 18" at 100m**

The Treaty of Versailles forced Germany to stop producing P08s, although production restarted in 1923. The P08 remained the principal sidearm of the German military throughout the inter-war period. It was issued to all German armed forces and in the infantry found use as an officer's sidearm, as well as with weapon crews, dispatch riders, signallers, and NCOs.

For all its popularity, the P08 was far from an ideal service pistol, having both poor sights and a complex trigger mechanism. The toggle breech mechanism required precision machining (unsuitable for mass production), was open to the elements and the entry of dirt and grit, and demanded virtually perfect ammunition to function. These drawbacks were somewhat compensated by the weapon's superb potential accuracy and, considering its precision tolerances and open toggle breech, remarkable reliability in the field.

The Luger was carried by an enormous variety of personnel. Two eight round magazines were issued, one loaded and the other held in a pouch on the holster.

8.1.3.2 Walther P38

Country of Origin	**Germany**
Manufacturer	**Various**
Role	**Pistol**
In Service	**1938**
Number Built	
Round used	**9-mm Parabellum**
Type of feed	**Eight-round box magazine in grip**
Loaded Weight	**1 Kg**
Length	
Length of barrel	
Muzzle velocity	**350 m/sec**
Effective range	
Ballistics (drop)	**1" at 25m, 18" at 100m**

The P38 was the successor to the Luger, but never managed to replace it. The P38 offered several improvements, notably the introduction of a double action trigger similar to that used in the revolver.

Issue was as great as the Luger. Each Panzer crewman was armed with a pistol, supplemented by one MP40 per tank. Ammunition was carried in the same manner as the Luger.

8.1.4 Machine Guns

8.1.4.1 Maschinengewehr 34 (MG34)

Country of Origin	**Germany**
Manufacturer	**Mauserwerke, SDP, Waffenwerk Brno**
Role	**General Purpose Machine Gun**
In Service	**1934**
Number Built	**~250,000**
Round used	**7.92 mm**
Action	**Automatic**
Type of feed	**50-round drum or belt**
Loaded Weight	**12.1 Kg empty, 14.6 Kg loaded**
Length	**122 cm**
Length of barrel	**62.9 cm**
Muzzle velocity	**755 m/sec**
Rate of fire	**800-900 rpm (cyclic)**
Effective range	**750 m**
Ballistics (drop)	**3.5" at 100m, 16" at 200m, 80" at 400m**

The German Army finished World War One with the firm conviction that the machine gun was the major arbiter of infantry battle. During the peace that followed, they developed the idea that, rather than using two different weapons in the light and heavy roles, a single 'general purpose' design could be found. This concept was given form in first the MG34 and later the mid war MG42.

It used a combination of recoil and gas in its operation and maintained the bolt group to the rear during firing. They had the facility to change barrels and could be mounted on a tripod for use as Heavy Machine Guns or on a bipod in the light role. German theory ran that a gunner would only have a few seconds to fire at the enemy before they took cover. It was thought that the more rounds he could fire in this time, the more casualties he could cause. It proved to be a dreadfully effective tactic.

The original MG34 proved the soundness of the design, but it was susceptible to stoppages caused by sand and dust and was generally demanding to maintain. Moreover, as a pre-war design it was complicated to produce. The MG42 was commissioned to eliminate these faults, in which it succeeded. There was no question of it replacing its predecessor though and the two types both remained in service side by side.

In the light role, the gunner carried one 50 round belt, loaded into its side mounted drum. His assistant carried four more, plus 300 boxed rounds, while the ammunition bearer carried two further boxes for a total of 1150 rounds per gun. When the ammunition bearer was later deleted from the Rifle Squad, his load was divided among the riflemen.

8.1.4.2 Maschinengewehr 42 (MG42)

Country of Origin	**Germany**
Manufacturer	**Mauserwerke AG**
Role	**General Purpose Machine Gun**
In Service	**1942**
Number Built	**~750,000**
Round used	**7.92 mm**
Action	**Automatic**
Type of feed	**50-round drum or belt**
Loaded Weight	**11.7 Kg empty**
Length	**122 cm**
Length of barrel	**53.3 cm**
Muzzle velocity	**825 m/sec**
Rate of fire	**1,200 rpm (cyclic)**
Effective range	**750 m**
Ballistics (drop)	**3.5” at 100m, 16” at 200m, 80” at 400m**

As the MG34 was complex and time-consuming to manufacture, the design of a new version was commissioned, that would be easier and cheaper to make. Manufacturing expertise was called in to ensure ease of production and the end result was the MG42. This relied on modern stamping and pressing processes, rather than the older hand-machining required on the MG34.

At the same time, the action was simplified and improved on. This was so effective that the rate of fire was raised to a terrifying 1,200 rounds per minute. This led to the requirement for a very quick and simple barrel change mechanism, as sustained fire could ruin a barrel very quickly. To put it in perspective, barrel change was recommended every 250 rounds – about 12 seconds of firing!

It was used in just the same fashion as the MG34, but with the drums being far less popular, simply because they only gave 2.5 seconds of firing. The norm was to use the 250-round belt.

8.1.5 Anti-Tank Weapons

8.1.5.1 Panzerfaust

Country of Origin	**Germany**
Manufacturer	**Various**
Role	**Handheld AT Weapon**
In Service	**Oct 43 [PF30], Jun 44 [PF60], Nov 44 [PF100]**
Number Built	**~1,000,000+**
Round used	**AT warhead**
Action	**Fired by gunpowder charge**
Type of feed	**Single shot**
Loaded Weight	**11.7 Kg empty**
Length – tube	**80cm**
Length – bomb	**49.5cm**
Muzzle velocity	**30-60 m/sec**
Rate of fire	**Single shot**
Effective range	**30-100m**

From very early in the war in the East, the German soldiers were crying out for a better way to engage the mass of Soviet armour, other than attacking with hand-held mines. After some initial tests, the Panzerfaust was put into mass production in October 1943. The initial version only had a range of 30 metres – but even this was better than coming to grips with tanks by hand.

It was launched by firing the small gunpowder charge at the base of the bomb, rather like a large firework. The range was steadily increased during the course of the war to give the infantry more chance. Aiming was a simple process, but requiring experience to get it right, as the bomb was more lobbed than shot and followed a very curved trajectory. However, the shaped-charge warhead was extremely efficient and capable of penetrating 200mm of armour when it impacted correctly.

8.1.6 Grenades

8.1.6.1 Stielhandgranate 39

Country of Origin	**Germany**
Variants	**StiGr 24; StiGr 39; StiGr 43**
Role	**Grenade**
In Service	**1935**
Diameter	**60 mm**
Loaded Weight	**480 g**
Length	**356 mm**
Filling	**200 g TNT; relied on blast – no frag**
Delay	**4 – 5 seconds**

The German grenades in service during World War II relied on blast rather than fragmentation for their effect. The two basic types were the Stielhandgranate (handle hand grenade) stick grenade - often called a potato masher and practically unchanged since World War I - and the smaller, round Eihandgranate (egg hand grenade).

The Stielhandgranate 24 (StiGr 24) consisted of a hollow wooden handle attached to a thin sheet-metal head that contained the high-explosive bursting charge. These grenades used friction ignition, a mechanism widely used in German grenades but rarely by other nations. A cord ran from the head through the hollow handle and out the bottom, where a porcelain bead kept it in place behind a metal cap. To use the grenade, a soldier had to unscrew the metal cap, pull on the bead, and throw. When pulled, the cord would draw a roughened steel pin through a sensitive chemical in the head that would then ignite and set off the detonator.

Because blast, or concussive, effect isn't as lethal over as big a range as shrapnel is, Germany kept moving to larger grenades. The StiGr 39 was essentially a heavier StiGr 24 with more explosive. After 1942, the StiGr 24 could have its anti-personnel effect enhanced by the manual addition of Splitterringe (shrapnel rings), a grooved fragmentation sleeve clipped over the head of the grenade, but these never saw much use.

While Allied fragmentation grenades were more deadly over a wider area, the German Stielhandgranate could be thrown farther, thanks to the leverage the handle provided.

8.1.7 Engineer Weapons

8.1.7.1 Satchel

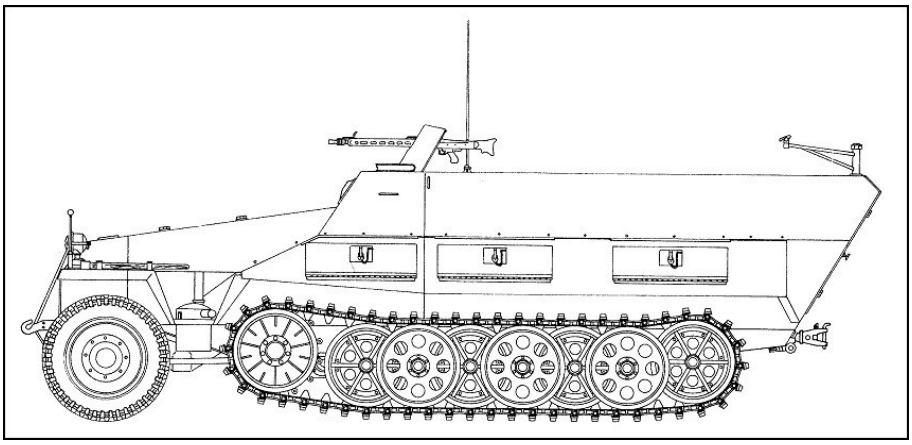
Country of Origin	**Germany**
Manufacturer	**Various**
Role	**Demolition charge**
Round used	**3Kg explosive charge**
Action	**10 second chemical fuse**
Loaded Weight	**3.25Kg**
Height	**20cm**
Width	**17cm**
Thickness	**8cm**
Rate of fire	**Single shot**

The satchel charge is a simple 3 Kg charge, carried in an engineer's pack – hence the name "satchel" charge. It is effective against hard obstacles and was usually used for breeching. However, the blast effect also made it extremely useful against enemy armour, so long as someone was brave enough to run up behind an enemy tank and toss it onto the rear deck or the tracks.

8.2 German AFV's

8.2.1 Armored Transports

8.2.1.1 Sd Kfz 251 Half-track

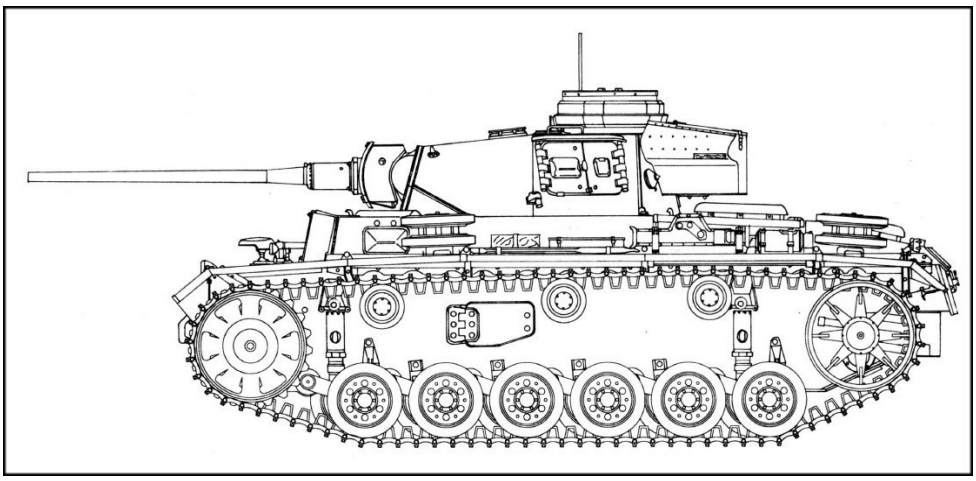


Early on in the creation of their armoured forces before the war, the Germans recognised the need for some form of infantry transport that could both keep pace with the tanks across country and provide a certain amount of protection for the passengers. The SPW 251 came in many variants, the most common of which was the 251/1 – the basic carrier for the armoured infantry squad. It had a good turn of speed both on and off road and could carry a squad in relative safety. While it carries marginally more armour than the Soviet BA-64, it is still very vulnerable to anything but small arms fire. However, it still makes the perfect battlefield-taxi!

Weight (Tonnes)	8
Length-Width-Height (metres)	5.98 – 2.1 – 1.75
Crew	2: Driver – Gunner
Road Speed (Kph)	53
Off-Road (Kph)	30
Max gradient (Deg)	30
Side gradient	20
Gap crossing (m)	1.2
Max range (Km)	300
Engine	Maybach HL42TUKRM (petrol)
Power (hp)	
Gearbox (forward/reverse)	4 / 1 [High + Low Ratios]
Main Gun	1 or 2 MG 34/42
Rate of fire (rpm)	900-1,200
Average reload time (sec)	MG reload
Rounds in storage	
Full 360 traverse (sec)	*Manual - 30 degrees each way only*
Traverse mechanism	*Manual*
Armour (Hull/Upper) (mm-Deg)	
Front	15-22/10-33
Side	8-35/8-35
Rear	8-33/8-33
Top/Bottom	6-90/Open
Version modelled	*SPW 251/1 Ausf D; there were differences in design details all through the production runs, but this version can be used throughout the war.*

8.2.2 Tanks

8.2.2.1 Panzerkampfwagen III

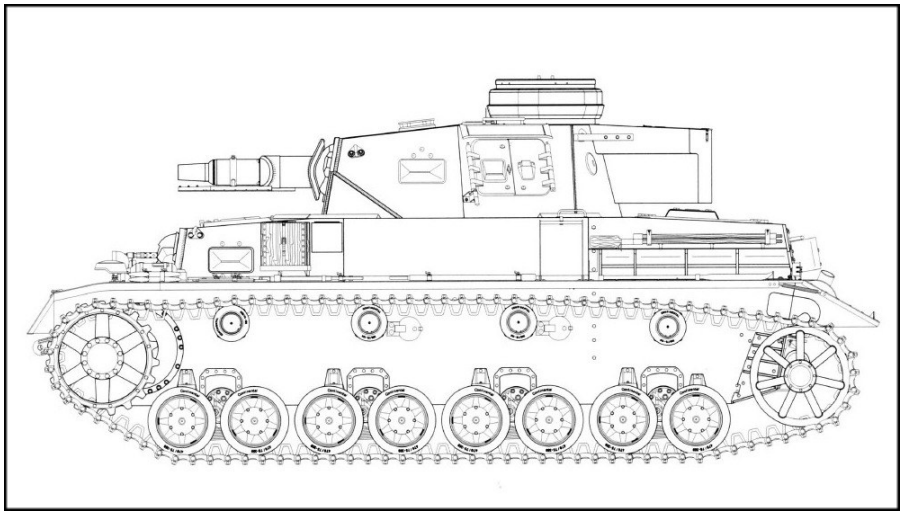


The Panzerkampfwagen III had been designed as the Wehrmacht's main weapon for tank vs. tank combat. While this was fine in 1939 and 1940, by the time the Germans invaded the Soviet Union in 1941, the Pz III was seriously outclassed by the Soviet medium tanks. It was complex to drive and relatively lightly armoured. Even once it had been upgunned with the longer 50mm gun, it could still barely penetrate the frontal armour of the Soviet tanks.

However, the tank was quick enough, the training good and the layout well thought out, which gave the crews the chance to get to the sides and rear of the enemy and destroy them.

Weight (Tonnes)	20.3
Length-Width-Height (metres)	6.41 – 2.95 – 2.51
Crew	5: Commander, Gunner, Loader, Radio/Hull Gunner, Driver
Road Speed (Kph)	40
Off-Road (Kph)	24
Max gradient (Deg)	
Side gradient	
Gap crossing (m)	
Max range (Km)	165
Engine	Maybach HL120TRM (petrol)
Power (hp)	300
Gearbox (forward/reverse)	10 / 4
Main Gun	5cm KwK L/42
Elevation (Deg)	-10 to +20
Rate of fire (rpm)	4
Average reload time (sec)	10
Rounds in storage	99
Full 360 traverse (sec)	*~30*
Traverse mechanism	Hand-wheel only
Secondary armament(s)	Co-axial MG, Hull MG
Armour (Hull/Turret) (mm-Deg)	
Front	30-9/30-15
Side	30-0/30-0
Rear	30-30/30-0
Top/Bottom	17-90/12-90
Version modeled	*Ausf L*

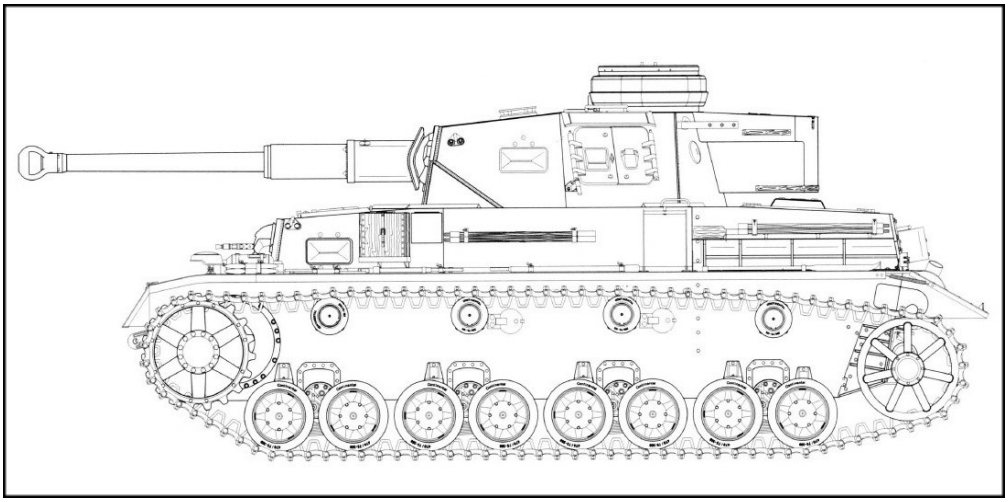
8.2.2.2 Panzerkampfwagen IV F1



The Panzerkampfwagen IV was designed as the German Army's infantry support tank. It was relatively heavily armoured and equipped with a short 75mm gun, much like the early StuG. While it was a good design that would serve right through the war, the short 75mm was no real match for the heavier Soviet armour. Once again, the Germans were forced to use their tactical expertise to overcome the enemy.

Weight (Tonnes)	22.3
Length-Width-Height (metres)	5.92 – 2.84 – 2.68
Crew	5: Commander, Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	42
Off-Road (Kph)	25
Max gradient (Deg)	
Side gradient	
Gap crossing (m)	
Max range (Km)	200
Engine	Maybach HL120TRM (petrol)
Power (hp)	300
Gearbox (forward/reverse)	6 / 1
Main Gun	7.5cm KwK37 L/24
Elevation (Deg)	-8 to +20
Rate of fire (rpm)	5-8
Average reload time (sec)	12
Rounds in storage	80
Full 360 traverse (sec)	*~25*
Traverse mechanism	Electric + hand-wheel
Secondary armament(s)	*Co-axial MG34,* Hull MG34
Armour (Hull/Turret) (mm-Deg)	
Front	50-12/50-11
Side	30-0/30-26
Rear	20-9/30-16
Top/Bottom	10-90/10-90
Version modeled	*Pz IV Ausf F1; this can be used to represent all the earlier-war models. While effectively obsolete by the end of 1942, it was still in service at the end of 1943.*

8.2.2.3 Panzerkampfwagen IV F2

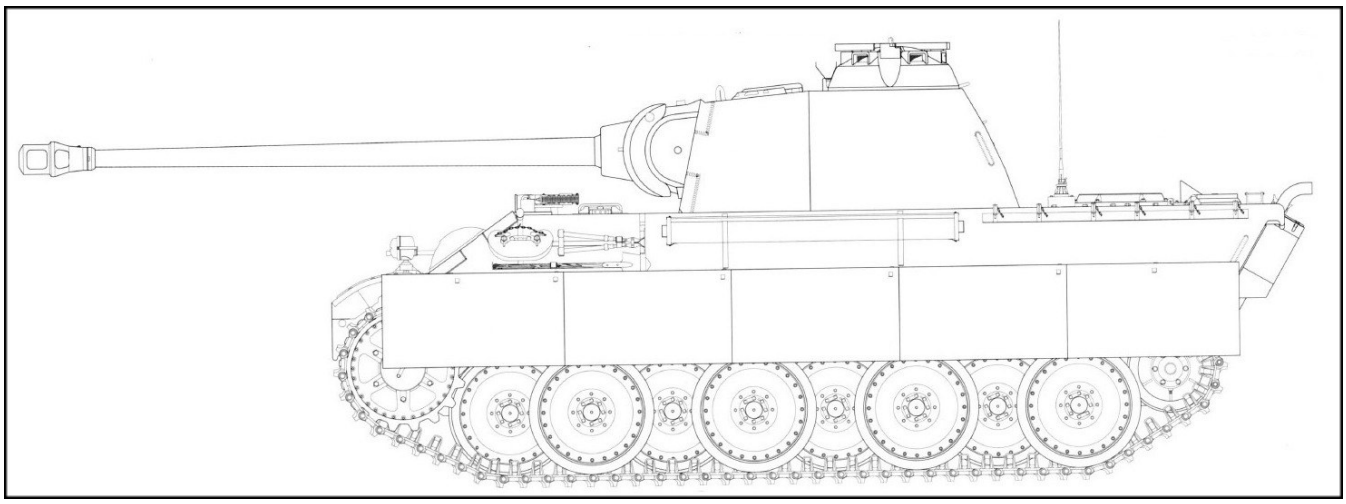


Unlike the Pz III, the Pz IV had a turret large enough to be upgunned to a longer-barrelled 75mm gun. The Ausfuhrung F2 was the first of these Pz IVs and, with the new gun, it suddenly became a match for the Soviet armour once more. However, it was still relatively lightly armoured.

Any Soviet players need to be sure they spot the longer gun barrel!

Weight (Tonnes)	23
Length-Width-Height (metres)	6.62 – 2.84 – 2.68
Crew	5: Commander, Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	40
Off-Road (Kph)	25
Max gradient (Deg)	
Side gradient	
Gap crossing (m)	
Max range (Km)	200
Engine	Maybach HL120TRM (petrol)
Power (hp)	300
Gearbox (forward/reverse)	6 / 1
Main Gun	7.5cm KwK40 L/43
Elevation (Deg)	-8 to +20
Rate of fire (rpm)	4-6
Average reload time (sec)	~15
Rounds in storage	87
Full 360 traverse (sec)	*~25*
Traverse mechanism	Electric + hand-wheel
Secondary armament(s)	*Co-axial MG34,* Hull MG34
Armour (Hull/Turret) (mm-Deg)	
Front	50-12/50-11
Side	30-0/30-26
Rear	20-9/30-16
Top/Bottom	10-90/10-90
Version modelled	*Ausf F2; this represents all the later models in-game. While there were changes beyond this point, they do not make significant difference to the tank's performance.*

8.2.2.4 Panzerkampfwagen V G

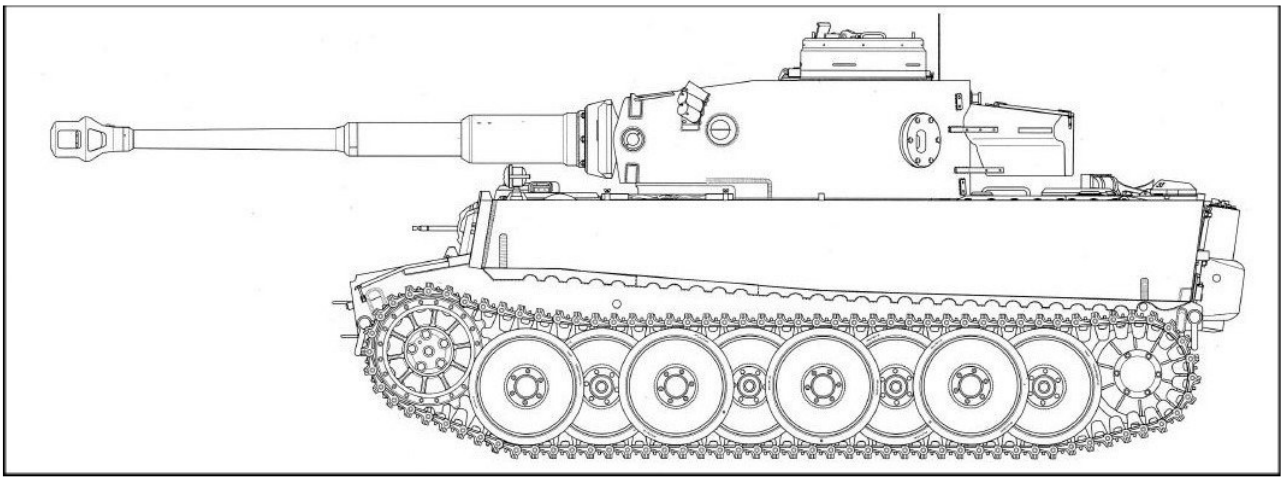


The Panzerkampfwagen V "Panther" was one of the most famous tanks of the war. It started into the design cycle almost as soon as the Germans first encountered the T-34 in 1941 and incorporated many design innovations from the Soviets – especially the well-sloped armour. It is often rated as the best tank of the war, quite justifiably.

It was relatively fast and carried a very long 75mm gun, which turned out to be about the most effective tank gun of the war. It had few deficiencies, apart from being overly complicated to manufacture and maintain, but was vulnerable from the sides and rear.

Weight (Tonnes)	44.8
Length-Width-Height (metres)	8.86 – 3.4 – 2.98
Crew	5: Commander, Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	46
Off-Road (Kph)	20
Max gradient (Deg)	35
Side gradient	25
Gap crossing (m)	2.45
Max range (Km)	200
Engine	Maybach HL230P30 (petrol)
Power (hp)	
Gearbox (forward/reverse)	7 / 1
Main Gun	7.5cm KwK42 L/70
Elevation (Deg)	-8 to +18
Rate of fire (rpm)	5-8
Average reload time (sec)	~15
Rounds in storage	79
Full 360 traverse (sec)	*15*
Traverse mechanism	Hydraulic + hand-wheel
Secondary armament(s)	*Co-axial MG34,* Hull MG34
Armour (Hull/Turret) (mm-Deg)	
Front	80-55/110-11
Side	40-40/45-25
Rear	40-30/45-25
Top/Bottom	16-90/16-90
Version modelled	*Ausf G; while many detail modifications were made to the Panther during the course of the war, this version will actually pass muster for the whole period.*

8.2.2.5 Panzerkampfwagen VI E



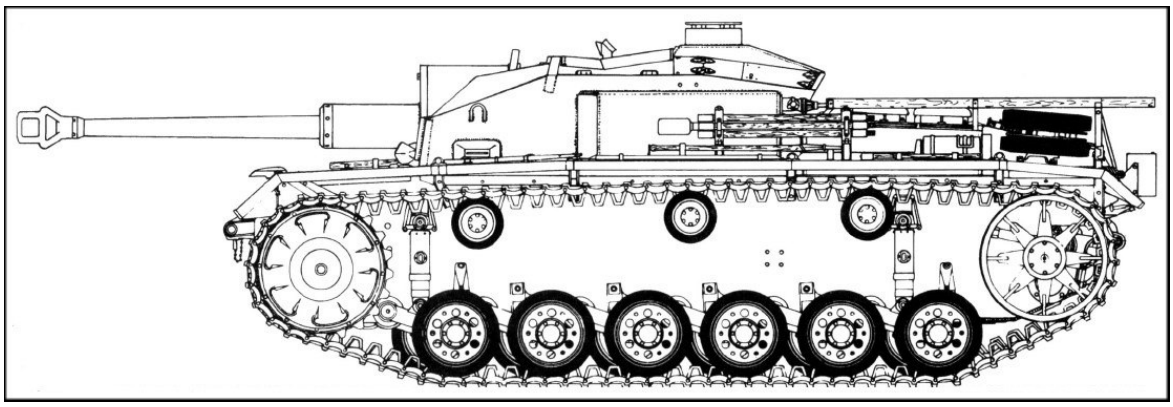
The Wehrmacht had initiated the design of a heavy tank at the outset of the war, resulting in the Panzerkampfwagen VI "Tiger". This was designed along the pre-war German lines, with very squared off armour, rather than sloped. However, the armour was very thick (a full 100mm at the front) and it packed a conversion of the classic 88mm anti-aircraft gun. This high-velocity piece, combined with the excellent German optics, gave the Tiger outstanding range, especially when it was introduced in 1942 – leading to the Tiger's fearsome reputation.

However it was very heavy, underpowered and slow, complex and cumbersome. The turret rotation was desperately slow and the heavy shells for the main gun made loading difficult. The 88mm gun was actually less powerful than the 75mm gun mounted in the Panther.

Weight (Tonnes)	57
Length-Width-Height (metres)	8.45 – 3.7 – 2.93
Crew	5: Commander, Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	38
Off-Road (Kph)	
Max gradient (Deg)	35
Side gradient	
Gap crossing (m)	2.5
Max range (Km)	140
Engine	Maybach HL210P45 (petrol)
Power (hp)	700
Gearbox (forward/reverse)	8 / 4
Main Gun	8.8cm KwK36 L/56
Elevation (Deg)	-9 to +10
Rate of fire (rpm)	3
Average reload time (sec)	20
Rounds in storage	92
Full 360 traverse (sec)	*60*
Traverse mechanism	Hydraulic + hand-wheel
Secondary armament(s)	Co-axial MG, Hull MG, (Cupola MG)
Armour (Hull/Turret) (mm-Deg)	
Front	100-10/100-8
Side	80-0/80-0
Rear	80-8/80-0
Top/Bottom	25-90/25-90
Version modelled	*Ausf H1/E, 1942*

8.2.3 Assault Guns

8.2.3.1 Sturmgeschütz III



Before the war, while the various factions in the German Wehrmacht were arguing over modernisation, the artillery branch had a support vehicle designed – the Sturmgeschütz or "Assault Gun". The original StuG was built on the chassis of the Panzer III, carrying a short-barrelled 75mm gun, so that it could follow the infantry on the attack and destroy enemy strong points. Early in the war, however, it was upgunned to carry the longer 75mm.

In game, the StuG has a reasonably powerful gun, but on a limited traverse, making co-operation between the driver and the gunner imperative. It is fully armored and has a low profile, making it harder to hit – and the reload time is quite short without a turret.

Weight (Tonnes)	23.9
Length-Width-Height (metres)	6.77 – 2.95 – 2.16
Crew	4: Commander, Gun-layer, Loader, Driver
Road Speed (Kph)	40
Off-Road (Kph)	15
Max gradient (Deg)	30
Side gradient	~18
Gap crossing (m)	2.3
Max range (Km)	155
Engine	Maybach HL120TRM (petrol)
Power (hp)	
Gearbox (forward/reverse)	6 / 1
Main Gun	7.5cm StuK40 L/48
Elevation (Deg)	-6 to +20
Rate of fire (rpm)	4-8
Average reload time (sec)	12
Rounds in storage	54
Full 360 traverse (sec)	*10 deg each way only*
Traverse mechanism	Artillery hand-wheel
Secondary armament(s)	*None*
Armour (Hull/Upper) (mm-Deg)	
Front	80-10/80-0
Side	30-0/30-11
Rear	50-0/30-0
Top/Bottom	16-90/15-90
Version modelled	*Ausf F L/48 1942; while this version was strictly speaking only in production briefly, it can be used as the later StuG IIIG as they perform in very similar fashion*

8.3 German Artillery

Artillery is modelled in game as being "off-board" – it is not visible, but is heard firing in the distance when called. There are a number of different types available to the mapper and they were historically available as follows:

- 80mm mortars – platoon or company level weapons
- 105mm guns – division level weapons
- 150mm guns/howitzers – division or corps level weapons

8.4 Soviet Small Arms

8.4.1 Rifles

8.4.1.1 Mosin-Nagant 1930G

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals**
Role	**Rifle**
In Service	**1931**
Number Built	**millions**
Round used	**7.62 mm**
Action	**Bolt**
Type of feed	**5-round magazine**
Loaded Weight	**4 Kg**
Length	**123 cm**
Length of barrel	**73 cm**
Muzzle velocity	**810 m/sec**
Effective range	**800m**
Ballistics (drop)	**3" at 100m, 14" at 200m, 70" at 400m**

The Mosin-Nagant was another example of a World War One weapon slightly modified to equip the army of World War Two. The Red Army had intended to rearm itself with the SVT series of semi automatic rifles, but the program was never seriously undertaken. Instead, the M1891/30 was the weapon that carried the Soviets to Berlin. Its accuracy was best demonstrated in the sniper role, whose numbers took a heavy toll on the Wehrmacht.

8.4.1.2 Mosin-Nagant 1938G

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals**
Role	**Rifle**
In Service	**1931**
Number Built	**millions**
Round used	**7.62 mm**
Action	**Bolt**
Type of feed	**5-round magazine**
Loaded Weight	**3.5 Kg**
Length	**101 cm**
Length of barrel	**58 cm**
Muzzle velocity	**770 m/sec**
Effective range	**800m**
Ballistics (drop)	**3" at 100m, 14" at 200m, 70" at 400m**

The Soviets had also produced a shortened carbine version of the standard Mosin-Nagant rifle in 1938, intended for use by mounted troops – the 1938G. It reduced length to 101 cm, weight to 3.5 kg and muzzle velocity to 770 mps. One other result of this was the removal of the bayonet fittings.

8.4.1.3 Tokarev SVT-40

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals**
Role	**Automatic Rifle**
In Service	**1940**
Number Built	**Unknown**
Round used	**7.62 mm**
Action	**Semi-automatic rifle**
Type of feed	**10-round box magazine**
Loaded Weight	**3.9 Kg**
Length	**122 cm**
Length of barrel	**62 cm**
Muzzle velocity	**770-830 metres per second**
Rate of fire	**Semi-automatic**
Effective range	**800m**
Ballistics (drop)	**3.5" at 100m, 15" at 200m, 77" at 400m**

The Red Army introduced several types of semi automatic rifle in the years prior to the Nazi invasion. Both the AVS and the SVT 38 served in small numbers before their mechanical failings consigned them to the scrap pile. The basic design of the SVT 38 was improved upon though, and emerged as the SVT 40 detailed above.

Like so many other such weapons, the SVT 40 suffered from the use of the high power rifle round used in its companion bolt-action rifles and machine guns. In the Red Army, there was also the added problem that men were often thrust into combat with little training, especially in the niceties of weapon maintenance. The SVT was a complicated machine, ill suited for conscript recruits. Ambitious plans for the weapon to replace the old Mosin-Nagant came to nought. Instead, it became a support item, used to bolster the fire of a rifle squad in the hands of an experienced soldier or NCO.

Several variants appeared, most notably a sniper version, whose users would lavish more care and attention on the tricky mechanism. A few fully automatic weapons were produced, but proved too troublesome for further development. The weapon was simply too complicated for the needs of the Red Army which was paring itself to the bone to survive.

8.4.2 Submachine Guns

8.4.2.1 PPD 1940

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals**
Role	**Sub machine gun**
In Service	**1940**
Number Built	**"small number"**
Round used	**7.62 mm**
Action	**Blowback, selective fire**
Type of feed	**71-round drum**
Loaded Weight	**5.4 Kg**
Magazine Weight	**1.8 Kg**
Length	**79 cm**
Length of barrel	**26.7 cm**
Muzzle velocity	**490 m/s**
Rate of fire	**800 rpm**
Effective range	**200m Semi, 100m Auto**

8.4.2.2 PPSh-1941G

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals**
Role	**Submachine Gun**
In Service	**1942**
Number Built	**~5,000,000**
Round used	**7.62 mm**
Action	**Selective fire automatic**
Type of feed	**71-round drum magazine**
Loaded Weight	**5.4 Kg**
Magazine Weight	**1.8 Kg**
Length	**83 cm**
Length of barrel	**27 cm**
Muzzle velocity	**490 m/sec**
Rate of fire	**900 rpm**
Effective range	**200 m Semi-auto, 100m Auto**
Ballistics (drop)	**2" at 50m, 11" at 100m, 54" at 200m**

The "Pah-Pah-Shah" was issued on a scale unsurpassed by any other such weapon, becoming the very emblem of the Soviet infantryman. It was derived from the earlier PPD 1940G, in order to simplify production. Other than that simplification, not much had to be changed, as the PPD was a highly effective weapon in its own right. The barrel jacket extended beyond the muzzle to act as a muzzle brake and compensator, diverting some of the gases upwards and counter-acting the tendency to creep upwards during automatic firing. This meant that the PPSh could be fired on full automatic, without so much of the tendency to leap off the target that other sub-machine guns had. All in all, it was a truly great weapon.

The weapon did not arrive in the hands of the troops in great numbers until 1942, by which time the Red Army was fighting for its life. The lethal effect of the PPSh was much appreciated by the soldiers in the field. Unlike the Sten or M3, the weapon was finished to a high standard and more importantly proved utterly reliable even in the depths of a Russian winter. In fact, it proved so popular that the German Army seized any captured examples for their own use, even modifying some to fire their own 9 mm round.

8.4.2.3 PPS-43

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals, Leningrad**
Role	**Sub machine gun**
In Service	**1942**
Number Built	**"small number"**
Round used	**7.62 mm**
Action	**Blowback, full auto only**
Type of feed	**35-round box**
Loaded Weight	**3.9 Kg**
Magazine Weight	**0.6 Kg**
Length	**82 cm**
Length of barrel	**25.4 cm**
Muzzle velocity	**490 m/s**
Rate of fire	**650 rpm**
Effective range	**100m**
Ballistics (drop)	**2" at 50m, 11" at 100m, 54" at 200m**

The PPS-42 and its follow-on, the PPS-43, had been designed and issued during the siege of Leningrad in 1942. It was more akin to the Sten and M3 in appearance, weighed 3.4 kg empty and 3.9 kg loaded and was 82 cm long. It fitted the same 35 round magazine as the PPSh, but not the drum. Rate of fire was reduced to under 700 rpm, muzzle velocity remaining the same. It could never hope to supplant the PPSh in use, but served alongside from 1943 onwards.

It was designed for simplicity of production and use, being designed and built in the factories in Leningrad during the siege. It was entirely stamped from steel, except for the barrel and bolt and spot-welded together. The only non-metal components are the wooden grip and a small piece of leather acting as a buffer for the bolt. Finish is non-existent and it was produced as cheaply as possible. For all that, it was a reliable weapon. Production history beyond the siege of Leningrad is unknown.

8.4.3 Pistols

8.4.3.1 Tokarev M TT33

Country of Origin	**Soviet Union**
Manufacturer	**Tula**
Role	**Pistol**
In Service	**1933**
Number Built	**Unknown**
Round used	**7.62 mm**
Action	**Automatic pistol**
Type of feed	**8-round box magazine**
Loaded Weight	**0.83 Kg**
Length	**20 cm**
Length of barrel	**11.6 cm**
Muzzle velocity	**420 m/sec**
Effective range	**50m**
Ballistics (drop)	**1" at 30m, 14" at 100m**

The TT33 was designed by Tokarev and manufactured in the Tula State Arsenal, adopted in 1933 – hence the nomenclature. It is apparently based on the standard Browning design, as in the Colt M1911. A number of design improvements to the feed mechanism and magazine made it extraordinarily reliable in action. However, this also included removal of the safety catch. In 1934 the design was simplified slightly, to improve production times of the weapon.

It seems to have been on general issue to infantry officers, although there is some doubt as to how widespread its use really was. In general, the Soviets stopped issuing pistols to other ranks once they had sufficient numbers of sub-machine guns in production.

8.4.4 Machine Guns

8.4.4.1 Degtyarev DP/DT

Country of Origin	**Soviet Union**
Manufacturer	**Tula Arsenal**
Role	**Light Machine Gun**
In Service	**1928**
Number Built	**Unknown – probably millions**
Round used	**7.62 mm**
Action	**Automatic**
Type of feed	**47-round flat drum [DT – 60-round]**
Loaded Weight	**9.3 Kg**
Length	**128 cm**
Length of barrel	**60 cm**
Muzzle velocity	**850 m/sec**
Rate of fire	**500 rpm (cyclic)**
Effective range	**750 m**
Ballistics (drop)	**3" at 100m, 13" at 200m, 62" at 400m**

The standard infantry model DP, with its visually distinctive flat drum magazine, was designed by Vasily A Degtyarev. Models adapted for use in tanks were sometimes issued to Rifle formations to make up for a shortfall in numbers.

The DP was the standard Red Army light machine gun throughout the Great Patriotic War. It saw its first major use with the Communist forces in the Spanish Civil War and was modified accordingly from the experience learned.

The DT was the tank version, with a reinforced barrel and a 60 round magazine.

It was a gas operated weapon and proved remarkably reliable in the harsh conditions it was subjected to. It fitted a visually striking drum magazine, which actually held 49 rounds, but was deliberately restricted to 47 to prevent stoppages. It did have a facility to change the barrel, but in typical Red Army style a spare was not carried. Given that it only had 6 moving parts, it was a remarkably robust weapon.

The nomenclature for the DP is actually somewhat confusing, as the design was accepted by the Red Army in 1927, while the weapon came into service in 1928. To the Soviets during the war, it was simply a "DP". They produced an updated version in 1944 – the "DPM" for "modified", but it was not fully updated until 1946. In the west (and in many Russian publications) the weapon is known as either the DP27 or DP28. In *Ostfront* we refer to it by the year it entered service – as the DP28.

8.4.5 Anti-Tank Weapons

8.4.5.1 PTRD Anti-tank rifle

Country of Origin	**Soviet Union**
Manufacturer	**State Arsenals**
Role	**Anti-tank rifle**
In Service	**1941**
Number Built	**220,000+**
Round used	**14.5mm tungsten cored**
Action	**Bolt action**
Type of feed	**Single shot**
Loaded Weight	**17.2 Kg**
Length	**201cm**
Length of barrel	**122 cm**
Muzzle velocity	**1,005 m/s**
Rate of fire	**Single shot**
Effective range	**750 m**
Ballistics (drop)	**2" at 100m, 8" at 200m, 35" at 400m**

The *ProtevoTankovskoe Rushy' Degtyarev [PTRD]* was designed starting in 1932, to provide the Red Army with a simple and effective infantry anti-tank weapon. The 14.5mm cartridge was one of the heaviest ever developed. It was originally a streamlined steel-cored projectile, replaced in 1941 with a simpler tungsten-cored round more effective at short range.
While it looks very simple, this conceals some clever refinements based on the principle of "long recoil", which has the barrel recoil used to unlock the breech and eject the spent cartridge. A new cartridge is inserted by hand and the bolt closed to make it ready for the next shot.
While the penetration was never great, it was capable of penetrating the thinner side and rear armour of many tanks, as well as being accurate enough to find specific weak spots, if used by a brave infantryman!

8.4.6 Grenades

8.4.6.1 Fragmentation grenade F-1

Country of Origin	**Soviet Union**
Role	**Grenade**
In Service	**Late 1930s**
Number Built	**Replaced during 42/43 by RTD 1942**
Diameter	**40mm**
Loaded Weight	**570 g**
Length	**10 cm**
Filling	**45 g TNT; fragmentation case**
Delay	**4 – 5 seconds**

This was a conventional "defensive" grenade, with the typical serrated body of its type. It looked very similar to the British Mills pattern, with the main difference that the handle is thrown off axially – in other words, straight up from the body, not outwards. This did make it potentially dangerous in wet conditions, as the handle could slip through the fingers, igniting the fuse.

Like all of its type, it was very simple in design, consisting of an igniter, the delay fuse, a small amount of TNT, all wrapped up in the metal casing, that was designed to shatter on detonation, throwing pieces of shrapnel as far as 30 metres.

8.4.7 Engineer Weapons

8.4.7.1 Satchel

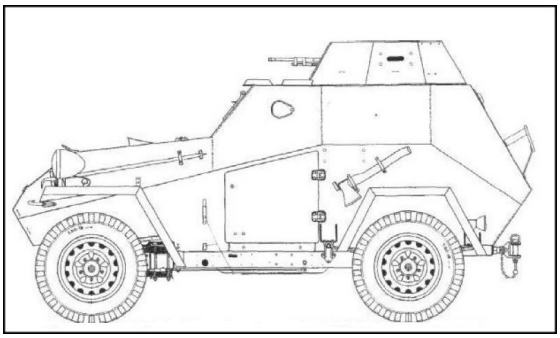
Country of Origin	**Soviet Union**
Manufacturer	**Various**
Role	**Demolition charge**
Round used	**3Kg explosive charge**
Action	**10 second chemical fuse**
Loaded Weight	**3.25Kg**
Height	**20cm**
Width	**17cm**
Thickness	**8cm**
Rate of fire	**Single shot**

The satchel charge is a simple 3 Kg charge, carried in an engineer's pack – hence the name "satchel" charge. It is effective against hard obstacles and was usually used for breeching. However, the blast effect also made it extremely useful against enemy armour, so long as someone was brave enough to run up behind an enemy tank and toss it onto the rear deck or the tracks.

8.5 Soviet AFV's

8.5.1 Light Vehicles

8.5.1.1 BA-64



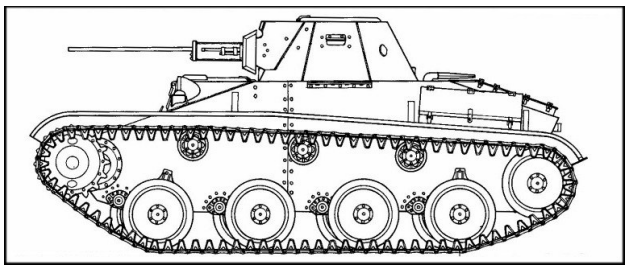
The BA-64 was simply an armored body placed on the GAZ-64 light car to create the "Broneavtomobil" – "Armored Car". It was a typically Soviet design – simple to build and use and brutally functional. Also typically, there were no attempts at creating comfort for the 2-man crew. For the time it was light and quick so was used very much as a scout vehicle and sometimes for artillery observers.

In game, keep in mind that it is very lightly armoured – but it is very quick and can be used as a fast transport for the Soviets.

Weight (Tonnes)	2.4
Length-Width-Height (metres)	3.66 – 1.69 – 1.875
Crew	2: Commander/Gunner, Driver
Road Speed (Kph)	80
Off-Road (Kph)	30
Max gradient (Deg)	30
Side gradient	18
Gap crossing (m)	0.45
Max range (Km)	560
Engine	GAZ-MM (petrol)
Power (hp)	50
Gearbox (forward/reverse)	4 / 1
Main Gun	DT with large ammo mags
Rate of fire (rpm)	500
Average reload time (sec)	MG reload
Rounds in storage	1,260
Full 360 traverse (sec)	Manual
Traverse mechanism	Manual
Armour (Hull/Turret) (mm-Deg)	
Front	15-40/10-30
Side	9-30/10-30
Rear	9-30/10-30
Top/Bottom	4-90/Open
Version modelled	BA-64B 1943; the BA-64 was actually introduced in 1942 and saw service throughout the war, with minor modifications

8.5.2 Tanks

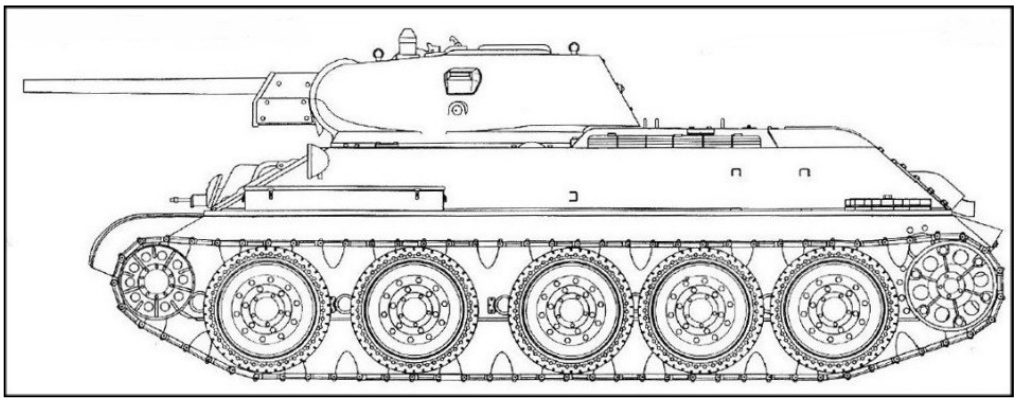
8.5.2.1 T-60



The Soviets had a long history of creating small, fast light tanks. In 1942 they continued this by introducing the T-60. For such a small vehicle, it was well armoured, with the armour sloped to help it. While the 20mm cannon seems puny, it has to be remembered that this is a 20mm automatic cannon, pumping out 200 rounds per minute. While there is no danger of it penetrating any of the German tanks frontally, it can actually damage them from behind – and is a serious danger to infantry and half-tracks.

Weight (Tonnes)	6.4
Length-Width-Height (metres)	4.1 – 2.3 – 1.74
Crew	2: Commander/gunner, Driver
Road Speed (Kph)	44
Off-Road (Kph)	20
Max gradient (Deg)	26
Side gradient	35
Gap crossing (m)	1.7
Max range (Km)	350
Engine	GAZ-202 (petrol)
Power (hp)	76
Gearbox (forward/reverse)	4 / 1
Main Gun	20mm TNSh-20
Elevation (Deg)	-5 to +27
Rate of fire (rpm)	~200
Average reload time (sec)	15 seconds
Rounds in storage	754, in 13 belts
Full 360 traverse (sec)	15
Traverse mechanism	Hand-wheel
Secondary armament(s)	Co-axial DT
Armour (Hull/Turret) (mm-Deg)	
Front	15-70/25-25
Side	15-0/25-25
Rear	25-14/25-25
Top/Bottom	10-90/10-90
Version modelled	T-60 M42

8.5.2.2 T-34 76

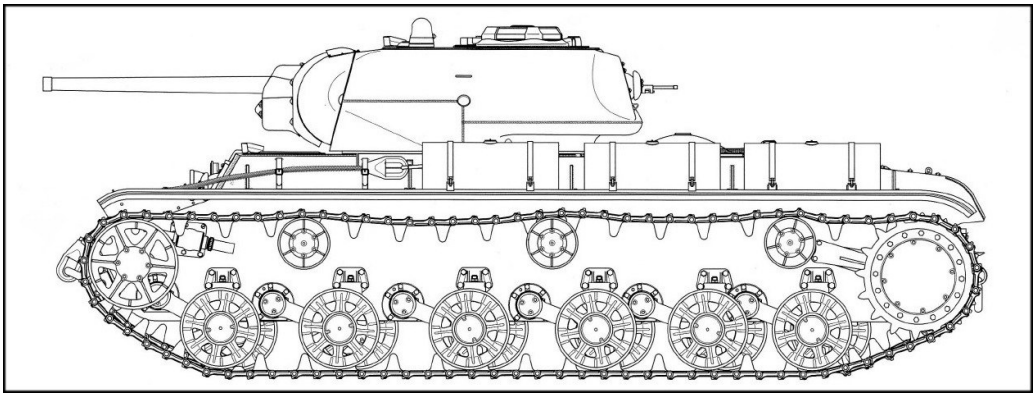


The T-34 had begun its design history before the war, with its suspension actually "borrowed" from the American designer, Christie and its Soviet-designed armour layout. It was also equipped with the 76.2mm gun that was quite capable of destroying any German tank on the battlefield in 1941. The T-34 came as a nasty surprise to the Germans in 1941, as it was almost invulnerable to their tank guns from the front.

Luckily for the Germans in 1941, the layout was flawed, with the 2-man turret and most of the ammunition stored on the hull floor, making the loader's job a nightmare. It still requires some thought for the early German armor to take it out!

Weight (Tonnes)	26.5
Length-Width-Height (metres)	6.68 – 3.0 – 2.45
Crew	4: Commander/Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	53
Off-Road (Kph)	25
Max gradient (Deg)	35
Side gradient	25
Gap crossing (m)	2.5
Max range (Km)	250
Engine	V-2-34 (diesel)
Power (hp)	500
Gearbox (forward/reverse)	4 / 1
Main Gun	76.2mm F34
Elevation (Deg)	-5 to +28
Rate of fire (rpm)	2-4
Average reload time (sec)	15
Rounds in storage	68
Full 360 traverse (sec)	14
Traverse mechanism	Hydraulic + hand-wheel
Secondary armament(s)	Co-axial DT, Hull DT
Armour (Hull/Turret) (mm-Deg)	
Front	45-60/52-0
Side	45-40/52-30
Rear	47-42/52-30
Top/Bottom	20-90/20-90
Version modelled	T-34 M42, Zavod #183; there were considerable minor variations on the base model T34 M40 and M41. This depended both on when the tank was made and at which factory. The various models from 1941-1943 perform in very similar fashion.

8.5.2.3 KV-1s

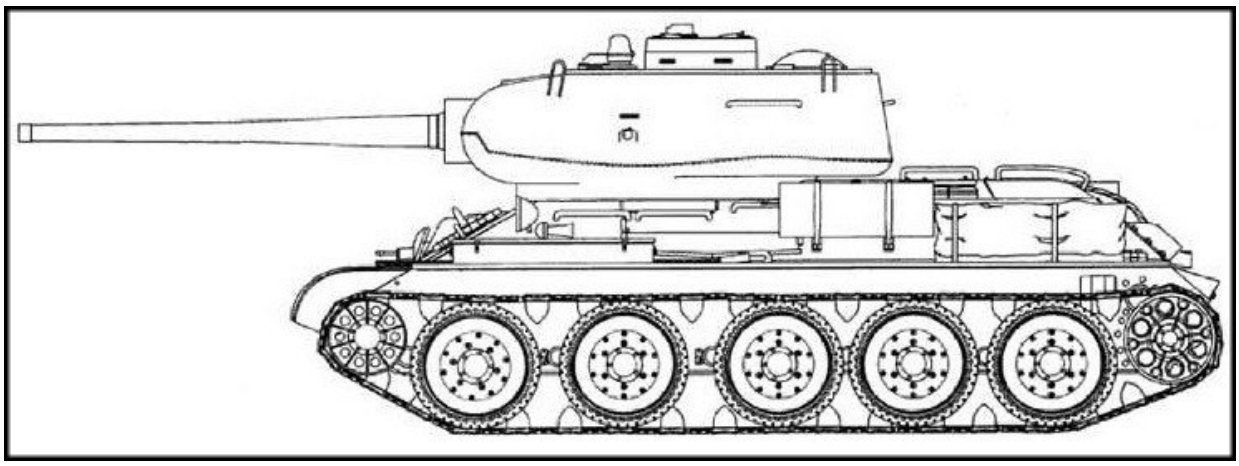


The Soviets had introduced the heavy "Klimenti Voroshilov" tanks in 1940, with the early KV-1. For the time, it was a very heavily armoured tank, mounting a good gun. However, deficiencies in the design soon came to light and, by 1942, the Soviets had improved the turret design, issuing the KV-1S.

The KV-1 had reasonable cross-country capability, but a relatively slow turret due to the weight. It is a formidable opponent for any early-war German armour but by the end of 1943 was really obsolete – although the Soviets kept it in service until the end of the war.

Weight (Tonnes)	42.5
Length-Width-Height (metres)	6.8 – 3.25 – 2.64
Crew	5: Commander, Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	43
Off-Road (Kph)	18
Max gradient (Deg)	36
Side gradient	30
Gap crossing (m)	2.7
Max range (Km)	250
Engine	V-2-34 (diesel)
Power (hp)	600
Gearbox (forward/reverse)	4 / 1
Main Gun	76.2mm ZiS-5
Elevation (Deg)	-5 to +28
Rate of fire (rpm)	4-8
Average reload time (sec)	~15
Rounds in storage	114
Full 360 traverse (sec)	~30
Traverse mechanism	Hydraulic + hand-wheel
Secondary armament(s)	Co-axial DT, Hull DT, (Rear turret DT)
Armour (Hull/Turret) (mm-Deg)	
Front	75-30/82-15
Side	60-0/75-15
Rear	60-10/82-15
Top/Bottom	40-90/30-90
Version modelled	KV-1S Model 1942

8.5.2.4 T-34 85

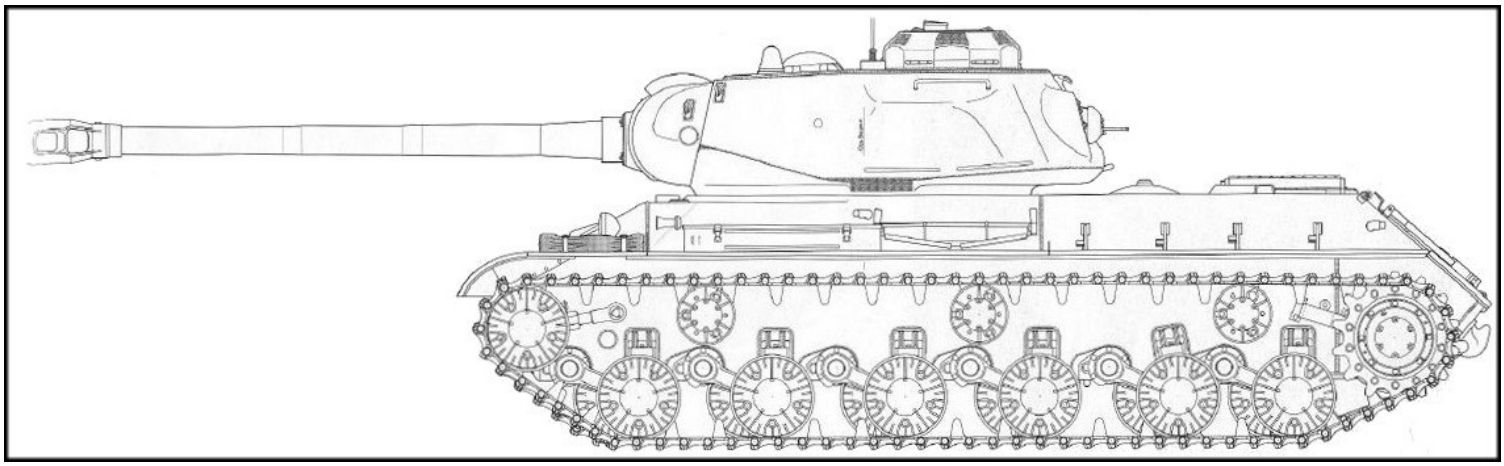


The base T-34 went through a number of design modifications, especially to the turret layout, in its massive production run. By 1943, the Soviets were looking to provide the T-34 with more strike power and upgunned it to carry the very successful 85mm Zis-S-53 main gun. The armour was also improved in some areas, although the extra weight slowed the tank down marginally.

The T-34 85 saw out the war and then went on to equip a large number of Soviet "client" states after the war finished. Some are, miraculously, still operational to this day.

Weight (Tonnes)	32
Length-Width-Height (metres)	8.15 – 3.0 – 2.6
Crew	5: Commander, Gunner, Loader, Driver, Radio/Hull Gunner
Road Speed (Kph)	55
Off-Road (Kph)	25
Max gradient (Deg)	35
Side gradient	25
Gap crossing (m)	2.5
Max range (Km)	250
Engine	V-2-34 (diesel)
Power (hp)	500
Gearbox (forward/reverse)	4 / 1
Main Gun	85mm ZiS-S-53
Elevation (Deg)	
Rate of fire (rpm)	4-8
Average reload time (sec)	~15
Rounds in storage	55
Full 360 traverse (sec)	~15
Traverse mechanism	Hydraulic + hand-wheel
Secondary armament(s)	Co-axial DTM, Hull DTM
Armour (Hull/Turret) (mm-Deg)	
Front	47-60/90-0
Side	45-40/75-20
Rear	45-48/52-10
Top/Bottom	20-90/20-90
Version modelled	T-34 85 M44

8.5.2.5 IS-2



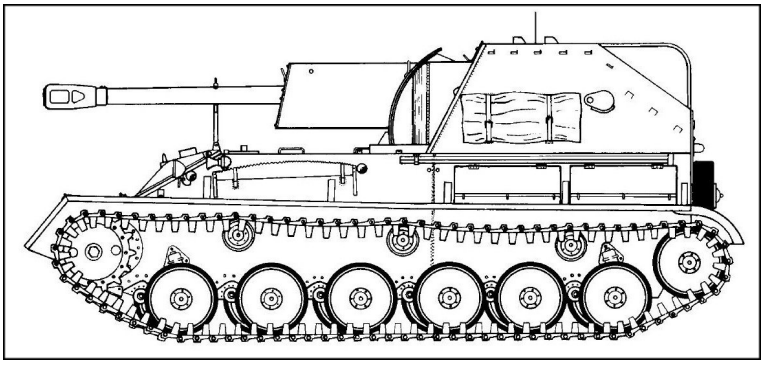
As the Red Army went more and more onto the offensive, they required a new heavy tank to support the infantry assaults. The Iosef Stalin series was born, with an early conversion of the KV, before the IS-2 was introduced in late 1943.

This was a very modern design, with sloped armour and modern turret layout and carried a massive 122mm main gun. However, this was a converted howitzer and was primarily designed for action against enemy fortifications. The ammunition was very heavy – and had to be loaded in two parts (projectile and then the charge). This made for very slow reloading, even if it did pack a massive punch.

Weight (Tonnes)	46
Length-Width-Height (metres)	9.9 – 3.09 – 2.73
Crew	4: Commander, Gunner, Loader, Driver/Mechanic
Road Speed (Kph)	37
Off-Road (Kph)	17
Max gradient (Deg)	36
Side gradient	27
Gap crossing (m)	2.3
Max range (Km)	240
Engine	V-2-IS (diesel)
Power (hp)	600
Gearbox (forward/reverse)	
Main Gun	122mm D-25T *[2-part ammo]*
Elevation (Deg)	
Rate of fire (rpm)	2
Average reload time (sec)	30 *[2-part]*
Rounds in storage	28
Full 360 traverse (sec)	~30
Traverse mechanism	Hydraulic + hand-wheel
Secondary armament(s)	Co-ax DT, Rear turret DT, (Cupola DShK)
Armour (Hull/Turret) (mm-Deg)	
Front	120-60/100-0
Side	90-15/90-18
Rear	60-49/90-30
Top/Bottom	30-90/20-90
Version modelled	IS-2 M1943; while there were various additions to the IS-2 during the war, including a cupola-mounted 12.7mm MG, the base tank remained largely unchanged.

8.5.3 Assault Guns

8.5.3.1 SU-76



While the Germans introduced the assault gun, the Soviets also created their own versions. The SU-76 was created in the desperate days of 1941, simply by remodeling a tractor chassis and putting an open-topped, armoured superstructure on it, with the standard 76.2mm Zis-3 cannon. As this vehicle proved so successful, the Soviets rapidly improved it into the SU-76M.

The layout for the gun crew was good, although the driver sat beside the paired engines. This layout (and the space afforded by the open top) gave the gun a very high rate of fire. It was also very mobile, if not well armoured.

Weight (Tonnes)	10.6
Length-Width-Height (metres)	5.0 – 2.7 – 2.1
Crew	4: Commander, Gun-layer, Loader, Driver
Road Speed (Kph)	45
Off-Road (Kph)	19
Max gradient (Deg)	28
Side gradient	30
Gap crossing (m)	1.6
Max range (Km)	190
Engine	Twin GAZ-203 (petrol)
Power (hp)	2x 70
Gearbox (forward/reverse)	4 / 1
Main Gun	76.2mm Zis-3Sh
Elevation (Deg)	-5 to +28
Rate of fire (rpm)	4-8
Average reload time (sec)	6
Rounds in storage	60
Full 360 traverse (sec)	~15 deg each way only
Traverse mechanism	Artillery hand-wheel
Secondary armament(s)	None
Armour (Hull/Upper) (mm-Deg)	
Front	25-60/25-20
Side	15-0/10-20
Rear	15-0/Open
Top/Bottom	7-90/Open
Version modelled	SU-76M 1943; as with many of the vehicles, this version will cover from 1942 to the end of the war.

8.6 Soviet Artillery

Artillery is modelled in game as being "off-board" – it is not visible, but is heard firing in the distance when called. There are a number of different types available to the mapper and they were historically available as follows:

- 82mm mortars – platoon or company level weapons
- 76.2mm guns – regiment or division level weapons
- 122mm guns/howitzers – division or corps level weapons
- Rocket artillery – corps or army level; remember that this will fire in one single salvo of 16 or 32 rounds

9 THE BATTLES OF *OSTFRONT*

9.1 Arad

Arad: Romanian-Hungarian border, 19th September 1944

Historical background: With the Romanians having staged a coup and then declared war on Germany on 25th August 1944, the Soviet forces had surged across Romania against limited resistance until they closed up on the Hungarian border. By the 29th August, the German Army Group Ukraine had collapsed as effectively as Army Group Centre, with the loss of the 6th Army (for the second time in the war). Having out-run their logistics, the Soviets paused in early September, collecting themselves forward on the Hungarian borders. The Soviet high command (Stavka) immediately laid plans to charge into Hungary and knock them, too, from the war. The first phase of this was to be the Debrecen operation, to clear the way into Hungary proper and the offensive was due to start in early October 1944.

Preparation for the battle: Prior to starting the Debrecen operation, the Soviets attempted to seize better start positions on the Hungarian border, north of the town of Arad. At the same time, some of the remaining German armoured forces tried to launch a spoiling attack towards Arad itself. While both moves were doomed to failure, in one of those peculiarities of war, both armoured forces found themselves with the enemy behind them and were forced to turn and fight back the way they had come.

The battle itself: During the 19th September, the German and Soviet forces have both turned back and are actually trying to secure the area so that they can then get back to advancing in the right direction, with their lines of communication intact. As they do so, they discover the enemy in their rear and both groups are forced to attack back towards their own main lines, around a small village in northwestern Romania.

German Forces: 201.Panzer Regiment of 23.Panzer Division. Transferred hastily to the area after the collapse of Romania, this is a very tough and experienced German unit.

Soviet Forces: Task group of 18th Separate Tank Corps, formed from 110th Tank Brigade with some IS2s of 36th Guards Heavy Tank Regiment attached. This is one of the famous Soviet units that had halted the SS Panzer Corps at Kursk in July 1943 – at great cost.

German briefing: A Soviet armoured force, including IS-2 heavy tanks, is behind us. Secure the area by moving to the north and taking control of the northern village and the surrounding fields. We also have Tigers in support, plus artillery.

Soviet briefing: German armour is operating behind us. Secure the area as quickly as possible. They appear to have heavy tanks attached, as do we. We also have artillery on call.

9.2 Baksan Valley

Baksan: Caucasus Mountains, 10th November 1942

Historical background: In the summer of 1942, the Germans had surged across the Ukraine and southern Russia, in a fashion reminiscent of the early drive of Operation Barbarossa in 1941. At one famous point, this had brought them to the banks of the Volga. After the drive across the Southern Steppes to the Volga, Hitler had turned 1st Panzer Army south from Stalingrad, with 17th Army on its right flank – and thin air on its left. The target was the Caucasian oil fields at Maikop and Grozny. Maikop was taken in a typical charge across the open Steppes. However, to get to Grozny the Germans had to penetrate deep into the Kaukasus Mountains, along the Terek River that becomes the Baksan in its upper reaches.

Preparation for the battle: In another drive towards Grozny, the Germans try to penetrate further into the mountains, aiming for the town of Ordzhonikidze. The operation started in early October from the banks of the Baksan River, east of Nalchik and penetrated deep along the main road into the mountains. On the German right flank, west of Nalchik, the Soviets keep up intense pressure along the Baksan River, where it turns south, behind the mighty Mt Elbrus.

The battle itself: As the winter snows start, the Soviets are applying even more pressure along the river line. Here, German troops from 4.Gebirgsjaeger (Mountain) Division, supporting 1. Gebirgsjäger, move forward to hold a small valley along the river banks, amongst old buildings and ruins.

German Forces: 13. Gebirgsjäger Regiment of 4. Gebirgsjäger Division. This is another experienced unit that has fought through the war, but is now badly under-strength.

Soviet Forces: 392 Rifle Division of 37th Army. This is a division raised in the Caucasus itself, in Georgia – Stalin's home country.

German briefing: The Soviets are attempting to seize control of this valley and prevent us moving forward. Take the area and eliminate the threat.

Soviet briefing: We are attempting to move forward across the river at this point. There are German mountain troops defending – destroy them and clear the area.

9.3 Barashka

Barashka: Hungary, 25th January 1945

Historical background: During the winter of 1944-45, the Soviets once again refused to allow the terrible eastern winters to slow them up. They attacked at various points along the front and, by Christmas 1944, had punched through to the Hungarian capital of Budapest. Hitler was determined to keep the Hungarians in the war following the separate peace made by the Romanians in 1944. To this end, he had ordered that Budapest be held at all costs. With a number of German units surrounded in Budapest – and Hitler refusing, once again, to allow a breakout, the scene was set for another catastrophe. However, the Germans decided to try and break in to free the defenders and re-take the city. They assembled a powerful strike-force, including 4 Wehrmacht and 3 SS Panzer Divisions, lunging forwards in a surprise attack on 26th December 1944. Failing to break through that way, IV SS Panzer Corps was disengaged, quickly shifted south and attacked from the southwest a few days later. They punched through the initial Soviet defences but were brought up short by defences along the Buda River.

Preparation for the battle: The initial German attack had been partially successful. With the SS divisions switched to the southern flank of the offensive, they tried again late in January. By this time the Soviets had moved fresh forces into the area between Lake Balaton and the city of Budapest. The SS Panzer Divisions were searching for ways across the main rivers. One such key crossing was the twin railway and road bridges at the small village of Barashka. 5th SS Panzer Division "Wiking" was ordered to charge for the village, seize the area and hold it, so that the whole Panzer Corps could continue the drive forward. However, the Soviets had now brought up fresh armoured units from their reserves. Soviet 23rd Tank Corps had been given orders to secure the same river crossings in order to facilitate a planned counter-attack.

The battle itself: On 25th January, 5th SS Panzer Division "Wiking", on the right flank of the German drive, attempted to punch across the river at a rail and road crossing north of the small village of Barashka. They ran straight into the Soviet 23rd Tank Corps, brought up as fresh reinforcements and a sharp meeting engagement ensued as both sides fought for a bridgehead across the river. The forces were both well equipped, including a number of heavy tanks, plus some supporting infantry.

German Forces: 5th SS Panzer Division "Wiking", with 5th SS Panzer Regiment leading. A battle-hardened unit, made up of a mixed bag of volunteers including Dutch, Flemish, Volks-Deutsche from the Balkans and some Germans.

Soviet Forces: 23rd Tank Corps, with 135th Tank Brigade leading. This was also a veteran unit, being ultimately derived from one of the pre-war Soviet tank divisions. However, it had taken heavy casualties over the years fighting the Germans and had recently been rebuilt and re-equipped.

German briefing: Move forward rapidly, securing the south bank of the river, then the bridges over the peninsula and the railway bridge. With these objectives taken, push across and take the north bank. We have support from some Tigers from the heavy tank company, plus artillery on call.

Soviet briefing: In order to clear the way for a counter-attack, take the north bank and the two river crossings, preventing the Germans from capturing them. With those objectives secure, advance to the south bank of the river, take and hold it. We have direct support from the IS-2s of a separate heavy tank battalion, as well as artillery on call.

9.4 Basovka

Basovka: L'vov, 2nd July 1941

Historical background: The initial onslaught of Operation Barbarossa in June 1941 had caught the Soviet Red Army woefully unprepared. Within days the German armoured forces had driven straight through the Soviet defences and were already as much as 250 kilometres behind the lines within a week. In some places, the troops continued to fight while, in others, the defences simply collapsed. Often this was simply due to the dismal supply situation for the Soviets, who only had supplies of food, fuel and ammunition in the front lines for 2-3 days combat. Where they could, they fought hard, even suicidally, but the Germans still rounded up hundreds of thousands of prisoners and started to march them west into captivity.

Preparation for the battle: In the Ukraine, the Germans had paused momentarily before resuming the drive towards Kiev. The German forces (17th Army) were predominantly infantry, so had not kept up the same pace as 1st Panzergruppe, on their left flank. Contrary to popular belief, the vast bulk of the Wehrmacht was not motorised, so these troops had spent the first weeks of the war on forced marches, with all their kit following on as best as possible. The infantry columns had become badly strung out. By 2nd July, the Germans had re-grouped and resumed the attack eastwards. However, the Soviets have had a few days to prepare the defences.

The battle itself: On the morning of 2nd July, the German 17th Army attacked again, after softening the Soviet defences with artillery. One objective is to break the Soviet line at Basovka, a small Ukrainian town and railway halt. This was held by the 97th Rifle Division that had fallen back from the initial German attacks. It has only survived because the German armour has already bypassed it to the north. By now, the Soviets had time to construct better defences, digging in quickly and preparing themselves for the next German attack. With time to prepare themselves, the Soviets could give a good account of themselves in a square fight.

German Forces: 68.Infanterie Division of 17th Army. This is a division raised in 1939 from reservists that took part in the fighting in Poland and France, making them an experienced infantry unit.

Soviet Forces: 97th Rifle Division of 6 Rifle Corps, Kiev Special Military District. The division is near full strength, although badly lacking in transport, making it well equipped by Red Army standards at the time. The division was first raised before 1929 and had a high proportion of professional soldiers. Although inexperienced, the unit has good training and morale.

German briefing: Take the key points in the Soviet defence system here, break through and open the way for the full advance to continue. Break into the trenches, clear them and then advance to take the Station beyond.

Soviet briefing: Hold the line here. There will be no retreat.

9.5 Bondarevo

Bondarevo: Western Russia, 8th July 1942

Historical background: In the second summer of the war, the Germans once again have planned massive offensives. This time, after the failure of Operation Barbarossa the previous winter, they have limited their attacks to key areas. In the north, the German forces have been ordered to take Leningrad – a battle the Germans will never win. The central areas remain relatively quiet, while the Germans move to finally clear the Crimea. And in western Russia, the main offensive for the summer kicked off. Once again the Germans plunge forward, with the panzers leading and the infantry following up on foot. At first the aim is to cut Russia in two by breaking through to the Volga at Stalingrad. This is to be followed by a swing to the south, deep into the Caucasus, to take the southern oilfields.

Preparation for the battle: The German summer offensive is in full swing and, because of the successes gained over the last few weeks, XXX Panzer Corps is detached from the German 6th Army and ordered to drive south, ahead of the infantry, to link up with 1st Panzer Army and head for the Caucasian oilfields. They have been told to expect light resistance, as the Soviets in this area seem to be in full retreat. At the same time, the Soviet 22nd Tank Corps, which had not yet been engaged, having been in reserve behind 28th and 56th Armies, has been ordered to make a fighting withdrawal, clearing the path for the retreating Soviet armies. The two clash unexpectedly in the grain fields outside the village of Bondarevo.

The battle itself: Early on the 8th July 1942, lead elements of the German 3rd Panzer Division and the Soviet 22nd Tank Corps run headlong into each other outside the village of Bondarevo. The Germans have mostly old equipment at this point and suddenly find themselves facing a mix of Soviet armour, including light, medium and heavy tanks. A brisk meeting engagement ensues.

German Forces: The lead elements of 6.Panzer Regiment of 3.Panzer Division, reinforced with some StuG IIIs from the anti-tank battalion. At near-full strength and a veteran unit, having fought in all the major campaigns to date.

Soviet Forces: Lead elements of 13th Tank Brigade (Recon, armour and motorised infantry) of 22nd Tank Corps. The unit was only formed in April 1942, but has already seen hard fighting near Kharkov, so is somewhat below strength but ready for a fight.

German briefing: Retreating Soviet armoured elements have been spotted ahead. Engage and destroy the enemy armour and secure the small farm and village ahead to ensure the enemy cannot interfere with the division's movement.

Soviet briefing: Our movement east is being threatened by German armour moving south. Engage the enemy armour, destroying as much as possible, while creating time for the rest of the Corps to move clear.

9.6 HedgeHog

"Hedgehog": Ukraine, 28th June 1944

Historical background: During June 1944, Stalin quietly sat back and waited, his vast armies conveniently paused, while the Western Allies finally launched the second front over the beaches of Normandy. To the Soviets, this was long overdue. They felt their partners in the west were waiting for them to weaken the Germans. It is also alleged that Stalin allowed overtures of peace from the Germans, momentarily enjoying the thought that the Germans would turn and maul the American and Commonwealth troops – or be mauled. In either case, this would allow the Soviets to rest before tearing into the Germans once more. However, in late June 1994, the Soviets launched Operation Bagration to destroy the German Army Group Centre in Belorussia, north of the Pripyat Marshes, around Mogilev, Minsk and Vitebsk. The operation was well planned and well executed, with the Germans being heavily over-matched. Within a few weeks, Army Group Centre had disintegrated and the Germans had lost 450,000 men – far more than they lost at Stalingrad. It was also far more than the Germans lost in the entire Normandy campaign.

Preparation for the battle: As the German front fell apart, many units stood, others retreated in good order and still others collapsed and fled. Many of them were already well too late to retreat, as the Soviets were behind them.

The battle itself: In this instance, a retreating German unit has to fight for its survival around some small Belorussian farms. The Germans have paused briefly, possibly considering a rear-guard action, but have rapidly been caught by the fast-charging Soviet advance guard. The Germans are trapped in one of their "Hedgehog" positions, with Soviet troops all around. They need to try and hold on as long as possible, before breaking out.

German Forces: Another German Kampfgruppe formed from retreating remnants of 18th Panzergrenadier Division. Having paused, they have both armour and artillery support.

Soviet Forces: 3rd Guards Mechanised Corps, a rifle battalion of 8th Guards Mechanised Brigade leading.

German briefing: There are Soviet forces all around; we need to hold this area long enough to regroup our forces and fight through to the West. Hold on to as many of the Objectives as possible. You have artillery on call to assist.

Soviet briefing: We have caught up with another fleeing fasheestkoye unit; surround it, take the area and annihilate the enemy. Take all three Objectives.

9.7 Kaukasus

Kaukasus: Caucasus Mountains, 14th October 1942

Historical background: In the summer of 1942, the Germans had surged across the Ukraine and southern Russia, in a fashion reminiscent of the early drive of Operation Barbarossa in 1941. At one famous point, this had brought them to the banks of the Volga. After the drive across the Southern Steppes to the Volga, Hitler had turned 1st Panzer Army south from Stalingrad, with 17th Army on its right flank – and thin air on its left. The target was the Caucasian oil fields at Maikop and Grozny. Maikop was taken in a typical charge across the open Steppes. However, to get to Grozny the Germans had to penetrate deep into the Kaukasus Mountains, along the Terek River.

Preparation for the battle: In another drive towards Grozny, the Germans try to penetrate further into the mountains, aiming for the town of Ordzhonikidze. This involved the Germans fighting their way up through the passes and, in the classic words "taking the high ground". They wanted to break through the mountains before the winter set in. Fortunately, this far south, winter set in late. The Caucasus Mountains are very high, but in a relatively warm climate. It was still only Fall when the Germans pushed forward again. Here, however, the Wehrmacht could not bring its supremacy in armoured tactics to bear: it would be forced to fight on the Soviet's terms, on ground that the Soviet forces knew well.

The battle itself: On this occasion, the German mountain troops pushing along one of the rough roads leading into the mountains have found the road overlooked by a strong Soviet position, based around an old monastery. This was set high up above the road, away from the distractions of the world. Here, of course, this provided a perfect base for a small contingent of Soviet troops to watch the road and ensure that nothing passed. The Germans had no choice but to fight their way upwards and clear the monastery and surrounding area.

German Forces: Troops of 54. Aufklärungsabteilung of 1 Gebirgs (Mountain) Division. The unit had actually been formed of Austrian mountain specialists in the summer of 1939. The attacking unit is the divisional recon battalion.

Soviet Forces: Elements of 9th Mountain Rifle Division, of 3rd Mountain Rifle Corps. This was actually one of the senior units of the Red Army, having been formed originally as the "Kursk" Infantry Division on 11th October 1918. It was a long-standing and solid unit, some elements having taken part in the Kerch landings the previous winter.

German briefing: There are Soviet forces on the heights above, based in an old monastery. There are two routes to it, so both must be taken and the heights cleared of Soviet troops, so that we can keep the road along the valley clear from interference.

Soviet briefing: The position here must be held against all German attacks. We have a very strong defensive position, although we do have two separate routes to defend. If any positions are taken, they should be counter-attacked and retaken immediately.

9.8 Königsplatz

Königsplatz: Berlin, 30th April 1945

Historical background: By the last day of April 1945, Berlin was in ruins and the Red Army had taken possession of all but the last few pockets of resistance. After 5 years of steady bombing by the British and Americans, the city had to suffer a final battering from an incredible 20,000 Soviet artillery pieces. Many of these were dragged forward and used to demolish any building where even the slightest signs of resistance were shown. The Soviets were close to the finish now and were in no mood to be delicate. Any semblance of military order in the Wehrmacht had disintegrated in these last days and small, ad-hoc, units were all that remained to defend the last few landmarks. For the Soviets, the ultimate symbol of Fascist aggression had always been the Reichstag: Zhukov's intention was to take it in time for May Day – 1st May 1945.

Preparation for the battle: At dawn on 30th April, elements of the Soviet 756th Rifle Regiment started out to clear a path through the final few hundred metres across the Königsplatz to the Reichstag, in preparation for the final assault. The assault battalions were commanded by Captain SA Neustroyev; as soon as they launched into the attack, they met ferocious fire from ahead and each flank as the remaining German units attempted to hold them off. The Soviets had to waste further time clearing the heavily damaged Kroll Opera House to the west and the Interior Ministry to the north. With those taken, they were finally in position to launch into the Königsplatz.

The battle itself: As the Soviet assault forces gathered by the Kroll Opera, they could see the Reichstag through the smoke on the far side of the Königsplatz, off to the east. They had intermittent tank support as some of their armour made it across the Moltke Bridge and joined them by the Interior Ministry to the north. The Königsplatz, once beautiful parkland with rows of triumphal statues, was a ruin – hell on earth. The parkland had been bombed and shelled to oblivion, with the statues and columns destroyed. A tunnel dug as part of Hitler's grand plan for the "new Berlin" had collapsed, partially filling with water and creating an impromptu anti-tank ditch. The Reichstag was already ruined and bricked up from the fire in 1938 and the construction offices and buildings in front of it were partially demolished and now fortified. As the Soviets advanced into the Königsplatz, they found German defenders in every hole and corner. These were the last, desperate defenders of Germany and they knew they had no choice but to hold off the Soviets – or die trying. There was nowhere else left to retreat to. As they advanced, the Soviets found that the Germans also had the last few Tiger tanks left in Berlin to support them. The Soviets responded by calling in every artillery tube they could muster, supporting every surge forward with another artillery barrage. It took the Soviets a full 6 hours to finish clearing the Königsplatz so that they could finally break into the Reichstag itself.

German Forces: The last Axis troops, part of "Kampfgruppe Babick", under SS-Obersturmführer Babick. The backbone of this little force was made up of Waffen-SS volunteers from 2 of the SS armoured divisions. They were supported by a mix of Naval Infantry and clerks, holed up inside the Reichstag itself. The final few Tiger tanks from these SS divisions did what they could to stem the Soviet tide.

Soviet Forces: Neustroyev's battalion of Komsomol members from the 756th Rifle Regiment of 150th Rifle Division. These men were all volunteers – Communist party stalwarts – all vying for the opportunity to be in at the finish as the "Hitlerite invaders" were finally crushed.

German briefing: Prevent the Soviets from reaching the Reichstag at all costs. Beat them back to buy time for us to bring up reinforcements! We have support from a few Tigers and plenty of Panzerfausts to destroy the enemy armour with. The Soviets are attacking from the far side of the square and will try to clear a series of objectives straight through to the Reichstag. These must be held.

Soviet briefing: Clear the approaches to the Reichstag in preparation for the final assault to be made on the building itself. This must be completed as quickly as possible, as Comrade Stalin has been promised that we will raise the Red Banner on top of the Reichstag in time for the May Day celebrations tomorrow. We start our assault from the Kroll Opera, with tank support coming in from our left. Protect these tanks from German infantry, as their guns will help us take the objectives. We also have plenty of artillery available, so use it to force the enemy back. We must clear a path through the middle of the square, so the objectives are simply a sequence of locations along that path. Take each one in turn, ensuring that the Germans do not infiltrate and take any back, until you have cleared the steps to the Reichstag itself.

9.9 Krasnyi Oktyabr'

Krasnyi Oktyabr': Stalingrad, 29th September 1942

Historical background: The German drive to the Volga brought 6th Army to Stalingrad – mostly on foot – by August 1942. During August and into September, they drove steadily through the city, assisted by constant pounding from the Luftwaffe, pushing the Soviet 62nd Army ever backwards. To the north of the city stood the huge factory district, consisting of (from North to South) the Dzerzhinsky Tractor Factory (manufacturing T-34s), the Barrikady Gun Factory, the Krasnyi Oktyabr' Steelworks and the Lazur Chemical works. While units to the south fought their way metre-by-metre through the city itself, the Soviets hung on grimly to the factories.

Preparation for the battle: In the last week of September 1942, the Germans launched yet another attempt to dislodge the Soviets from the factory district. On the 29th September, the Germans launch a full-scale assault on the Krasnyi Oktyabr' plant, aiming for nothing less than clearing it completely. The Soviet positions in the factory, initially held by militia raised from the factory workers, had been reinforced by the 308th Rifle Division, brought across the Volga river in ferries a couple of nights earlier. These troops were now well dug in, but had been greeted by continual bombing from the Luftwaffe in an effort to soften up the Soviet defences. Instead of taking the 3 days planned, the Germans wound up embroiled in a desperate fight for the factory, room by room, for months to come.

The battle itself: The Soviet militia had managed to hang on to most of their steelworks against the German assaults. However, both sides had taken a heavy beating and now both had brought up relatively fresh units. The German troops were expecting nothing more than well-beaten militia forces and launching an attack into the teeth of well-armed and well-motivated troops from Siberia came as a nasty shock.

German Forces: 54th Infantry Regiment of 100th Jäger Division. This was actually a division that had only been raised in July 1942 as a "light" division. Bizarrely, they were supported by 3 supply columns of Turkish troops.

Soviet Forces: 308 Rifle Division of 62nd Army. This was a unit that had been raised in Omsk, Siberia, in the spring of 1942. The troops were mostly volunteers from the NKVD camps in Siberia. As such, many of them had previous military experience. They were keen to show their mettle, so that they and their families would be allowed to return from Siberia – if they lived!

German briefing: work your way into the Red October plant and clear the remaining Soviet defenders from it.

Soviet briefing: The Germans are attempting to break through to the banks of the Volga and prevent any further reinforcements getting through. The factory must be held at all costs. Follow Comrade Stalin's order – "not one step back"!

9.10 Odessa

Odessa: Black Sea Coast, 10th April 1944

Historical background: In the spring of 1944, the Soviet offensives in the Ukraine continued unabated, without the traditional pause for the early "*rasputsitsa*" or "muddy period. While the offensives further north slowed, in the south they continued with only brief pauses to allow the ever-lengthening logistics tails to catch up with the armoured spearheads. The Soviet aim now was to finish clearing Soviet territory in the Ukraine, remove the last Germans from the Crimea and close up to the Romanian border on the Dniester River. At the beginning of March 1st Ukrainian Front attacked again and, by the 24th, had cut off the battered German 1st Panzer Army. 2nd and 3rd Ukrainian Fronts followed suit, just as successfully. After a pause, 3rd Ukrainian Front charged past Odessa, leaving the defenders cut off and desperately hoping for rescue from the sea.

Preparation for the battle: As the German 6th Army tried to halt and form a defensive line around Odessa, the Soviets once more brushed them aside and 6th Army retreated clear to the Dniester River, leaving the garrison of Odessa to its own devices. The forces in the city itself were effectively abandoned and had to hope they could hold off the Soviets long enough. In the event, the Soviets left the city alone for a few days and finally sent a Rifle Division in to clear the rest of the city.

The battle itself: On 9th April, in sudden clear weather, the Soviets push into the city, unsure whether they will meet any resistance. The last remaining German troops are a small security detachment, left behind in the retreat, that now has to face the Red Army in force. Their only hope is to hold onto the area around their headquarters, a mere 250 metres from the sea front.

German Forces: 550.Sicherungsabteilung. This is a small security detachment, used to policing the rear areas for 6th Army and handling encounters with partisans, rather than the full weight of the Red Army.

Soviet Forces: 61 Rifle Division of 28th Army. This unit was originally raised in Armenia and fought hard through the Caucasus and across southern Ukraine. In April 1944, it was in reserve when it was diverted to clear the city.

German briefing: The main Soviet forces are attempting to clear the city. We must hold the area until we can be evacuated by sea!

Soviet briefing: Clear the city centre, through to the sea front.

9.11 Ogledow

Ogledow: Poland, 12th August 1944

Historical background: Following on from the destruction of the German Army Group Centre during June 1944, the Soviets kept the Offensives rolling all up and down the front. In a drive out of the Ukraine and across southern Poland, the Soviets launched the L'vov-Sandomierz Operation. This was an armour-heavy assault, intended to move the Soviets out of the Ukraine and all the way to the pre-war orders of Czechoslovakia and Germany itself. 1st Ukrainian Front threw 1st and 3rd Guards Tank Armies and 4th Tank Army into the line and broke the Germans once more.

Preparation for the battle: The German 1st and 4th Panzer Armies tried to halt the blow, but ended up repeatedly cut off and surrounded by the advancing Soviets. Each time they managed to break free, but at great loss to themselves in men and materiel. By the second week of August the Germans were nearing exhaustion and in dire need of help.

The battle itself: On 12th August, 16.Panzer Division, having been pulled out of a refit, is thrust into the line, ordered to counter-attack the Soviet spearheads and slow their advance. They ran into the advancing Soviets near the small Polish village of Ogledow.

German Forces: 16.Panzer Division. This was not a lucky unit: it was first destroyed at Stalingrad, then rebuilt and sent to Italy, where it was almost destroyed again. It suffered heavy losses at Kiev in 1943 and then at Cherkassy. By now, the division has been re-equipped yet again and has been pushed forward to try and stem the onrushing Soviet armour.

Soviet Forces: 53 Guards Tank Brigade of 6 Guards Tank Corps. The tank brigade had fought a long war and was an experienced unit. On this occasion they are supported by 71 Guards Heavy Tank Regiment. This is a newer unit, operating in direct support of 6 Guards Tank Corps.

German briefing: The Soviets are advancing past Ogledow – intercept and stop them.

Soviet briefing: A small German armoured unit has been detected in our path. Destroy it and continue the advance.

9.12 Rakowice

Rakowice Airfield: Krakow, 25th January 1945

Historical background: At the start of the year, the Soviets kicked off the Visla operation with 4th Ukrainian Front leading in the south, As the offensive rapidly gathered momentum 1st Ukrainian and then the 1st and 2nd Byelorussian Fronts joined in. While the offensive drove most of the way to Berlin in the north, it pulled up shorter in the south, after storming through Poland and Slovakia. The winter of 1944-45 was one of the hardest in Europe that century, as famously noted by the Allies in the west, too. The Soviets only allowed the offensive to stall briefly in Poland, before bringing up yet more reinforcements to continue the onslaught.

Preparation for the battle: As the Soviet offensive started off in earnest again in the third week of January, one of the many subsidiary objectives was Rakowice airfield, which had been the first purpose-built fighter base in the world, when created in 1910 in Poland. Taken over by the Germans in 1939, the airfield became a major transport base for the Luftwaffe covering the Ukraine. But now it was no longer a rear-area base: it was the front line. The German defenders already had defences prepared, ironically enough built by the Poles before the war. The Germans made use of them in an attempt to stop the Soviet steamroller once more.

The battle itself: The Soviet 38th Army drove the right flank of 4th Ukrainian Front forward, liaising with the left flank of 1st Ukrainian Front. With Krakow bypassed and surrounded, the Soviets pulled up between the city and Rakowice airfield to the southwest on the evening of 24th January 1945. The next morning, they resumed the drive west – but met armoured resistance briefly at Rakowice. With supporting armour of their own, a brief and violent combined arms clash took place over the field.

German Forces: Kampfgruppe 78 Sturm. This is a battle group formed from the remains of the 78th Sturm Division (a heavily reinforced infantry division), under command of the fast-retreating 17th Army.

Soviet Forces: 241 Rifle Division, of 67 Rifle Corps, 38th Army, with armoured support.

German briefing: Our job is to use the open ground of the airfield to hold the Soviet armour back as long as possible, from the prepared defensive positions. Ideally inflict major casualties and force them to retreat.

Soviet briefing: Move forward as rapidly as possible – German armour has been reported at the airfield ahead. Move up, engage the enemy and destroy them. Take the airfield and clear the way for the advance to continue!

9.13 Stalingrad Kessel

Stalingrad Kessel: Stalingrad, 26th December 1942

Historical background: During the summer of 1942, the Germans had stormed to the banks of the Volga at Stalingrad. 6th Army had then had to fight its way into the city. In some areas, the Germans broke through to the river. The Soviets were divided into 2 or 3 pockets of resistance. One of these had been the factory district to the north of the city. But in each of these pockets, the Soviets hung on with grim determination, only retreating when the building was burning down around them. And then they would attack and take the ruins back again. With the Germans stalled in the city of Stalingrad, the Soviets had attacked to the north and south of the city and surrounded the whole of 6th Army in mid-November. A relief attempt was made by 4th Panzer Army, under Erich von Manstein, but this could not break in – and Hitler had forbidden 6th Army to breakout. The relief attempt stalled on 18th December, leaving the Soviets free to attack the Germans now forced to defend the ruins of Stalingrad.

Preparation for the battle: By late December, the German defenders of Stalingrad were heavily dug in, embattled, hungry and running short of everything. The weather had turned into another terrible Russian winter and the Germans were freezing to death. Now the Volga too was freezing over and the Russians would soon be able to bring reinforcements across the frozen river. In the factory district, the front lines ran through individual buildings and even across a workshop. The one-time defenders of the Red October ("Krasnyi Oktyabr") factory made a last push to try and dislodge the Germans now holding it.

The battle itself: The Germans held a portion of the Red October factory, some of which had been mostly demolished and was in ruins, while other areas, that the Germans had taken early in the fighting, were less damaged. Now, however, the Soviets attacked back, keen to regain the areas lost and to repay their German tormentors in blood. The fighting was particularly brutal as the Germans had nowhere to retreat to. They also knew that the Soviets attacking them were in no mood to take prisoners.

German Forces: The remnants of 79.Infanterie Division. This was a pre-war reserve division that had fought through the French campaign and through Russia since 1941. Now reduced to the strength of a single regiment.

Soviet Forces: 62nd Army Battle-group "Krasnyi Oktyabr'" – a battle-group made up of survivors of 308 and 264 Rifle Divisions, from the earlier battles. These were the toughest men, those able to survive the appalling fighting that had taken place in the previous few weeks, as well as the vicious Russian winter.

German briefing: the Soviets have 6th Army surrounded. It is the task of each unit to hold its area of the line, so that we may all hold on and be rescued. Hold the factory against all assaults!

Soviet briefing: Now we have a last chance to take revenge on the Hitlerites – grind those holed up in the factory to dust! One last battle before we are relieved!

10 APPENDIX: WEAPON AVAILABILITY

This section gives a guide as to when the various different types of weapons *should* be available in-game. There are always plenty of debates about just exactly when each weapon should be available, but the following provides a good "rule of thumb".

10.1 Small Arms Availability Charts

Side	Weapon	In service	Notes
Axis	Mauser 98K	1935	Available in large numbers all war
Axis	Gewehr 43	mid-1943	Issued in small numbers only
Axis	Sturmgewehr 44	Jan 1944	Used from ~ Sep 1943 as the MP43
Axis	MP40	1939	Available in large numbers all war
Axis	MP41	1941	Small numbers only
Axis	P1908 Luger	1908	Available all war
Axis	Walther P38	1938	Available all war
Axis	MG34	1934	Available all war
Axis	MG42	Early 1942	Available rest of war
Axis	Panzerfaust	Oct 1943	PF30 introduced late1943
Axis	Stielhandgranate 39	1939	Available all war; upgraded versions produced during the war
Both	Satchel	1916	Available all war
Soviet	Mosin 1930G	1931	Available in large numbers all war
Soviet	Mosin 1938G	1938	Available in large numbers all war
Soviet	SVT-40	1940	Relatively small numbers
Soviet	PPD 1940	1940	Small number, replaced by PPSh
Soviet	PPSh-1941G	Jan 1942	Available rest of war
Soviet	PPS-43	Jan 1942	Small numbers only, dropped 1944
Soviet	TT33	1933	Available all war
Soviet	DP 1928	1928	Available all war
Soviet	PTRD	Jan 1941	Available all war
Soviet	F-1	~1935	Available all war

10.2 Vehicle Availability Charts

Vehicle	In service	Notes
BA-64	Jan 1942	Version in-game is actually 1943
SPW-251/1	June 1939	Version in-game is Ausf D of Sept 1943
T-60	June 1941	Version in-game is actually 1942
StuG III F/G	Mar 1942	In-game is Ausf F, use as Ausf G too
SU-76M	Jan 1943	Base version Jan 1943, in-game is later type
Pz III L	Dec 1941	Obsolete by mid-1943
T-34 M41	Early 1941	Use through about early 1944
Pz IV F1	Apr 1941	Obsolete by late 1942
KV-1s	Early 1942	Use as base KV-1 from 1940; obsolete 1944
Pz IV F2	Mar 1942	Use as later models to end war
T-34 85	Mar 1944	
Pz V G	Mar 1944	Use as earlier Ausf D from Jul 1943
IS-2	Dec 1943	
Pz IV E	Jul 1942	

11 AND FINALLY…

This is an extract from what is known in the English-speaking world as "Murphy's Laws of Combat", many of which are as applicable here as they are anywhere else in combat:

- Friendly fire - isn't.
- Suppressive fires - won't.
- You are not Superman; *Waffen-SS* and the *NKVD* take note.
- A sucking chest wound is Nature's way of telling you to slow down.
- If it's stupid but it works, it isn't stupid.
- Try to look unimportant: the enemy may be low on ammo and not want to waste a bullet on you.
- Never share a position with anyone braver than yourself.
- If your attack is going really well, you're in an ambush.
- The enemy diversion you're ignoring is their main attack.
- The enemy invariably attacks on two occasions: when they're ready and when you're not.
- Teamwork is essential: it gives the enemy other people to shoot at.
- Don't look conspicuous: it draws fire.
- Never draw fire: it irritates everyone around you.
- Incoming fire has the right of way.
- If the enemy is within range, so are you.
- The only thing more accurate than incoming enemy fire is incoming friendly fire.
- Anything you do can get you killed, including doing nothing.
- Experienced soldiers are predictable; the world is full of dangerous amateurs.
- Mines are equal opportunity weapons.
- Sniper's motto: reach out and touch someone.
- When in doubt, empty your magazine.
- The side with the simplest uniforms wins.
- Whenever you have plenty of ammo, you never miss. Whenever you are low on ammo, you can't hit a barn door.
- The bursting radius of a hand grenade is always one foot greater than your jumping range.
- Every command which can be misunderstood will be.
- There is no such place as a convenient foxhole.
- If your ambush is properly set, the enemy will go the other way.
- If your flank march is going well, the enemy expects you to outflank him.
- Odd objects attract fire - never lurk behind one.
- The seriousness of a wound is inversely proportional to the distance to any form of cover.