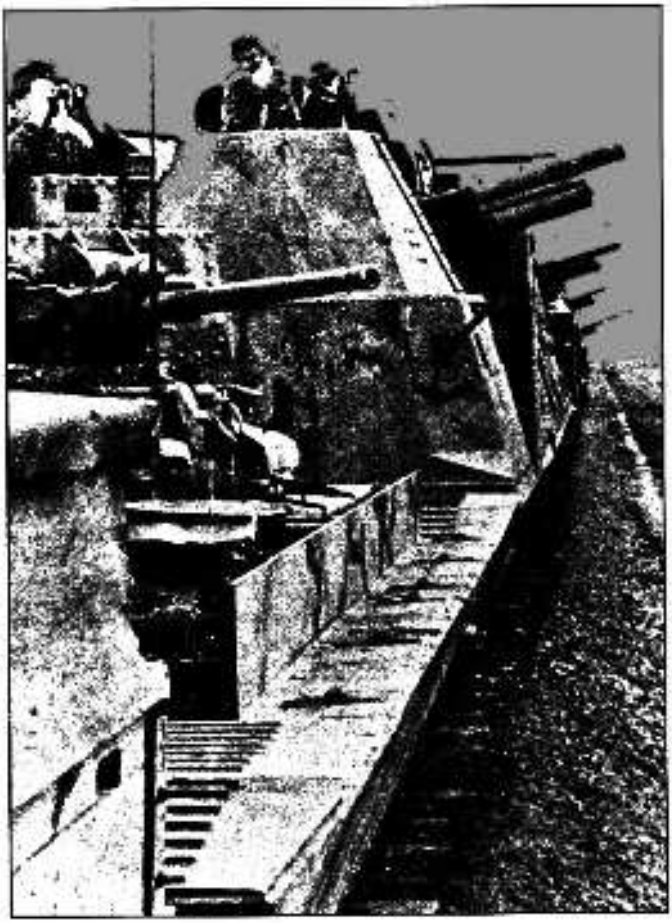
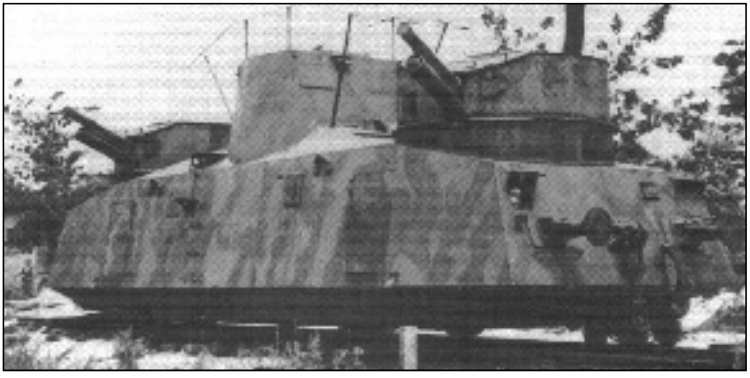


PanzerZug!

Armoured trains in PanzerBlitz

Glen Coomber 2009



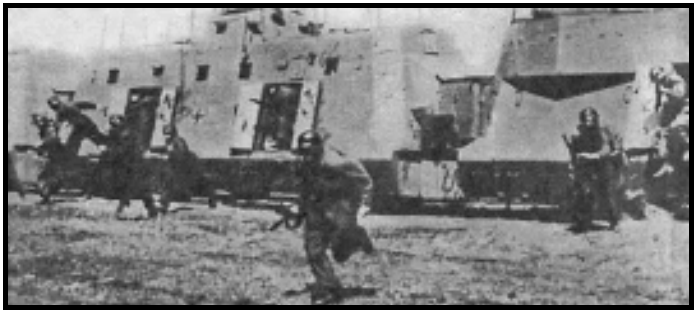
PanzerGeschutztriebwagen 17-23 (captured MBV-D2)

PanzerZug!

Armoured Trains in PanzerBlitz

Contents

PanzerZug! is offered as a resource to the PanzerBlitz community. If you find it useful or enjoyable, please consider making a donation to an organisation in your country that assists war veterans and their dependants, or the victims of conflict.



Eisenbahnpanzertruppen demonstrating an infantry assault from an armoured train

Panzer Zug!

Armoured Trains in Panzer Blitz

Using this material

PanzerBlitz is a board wargame produced during the 1970s by The Avalon Hill Gaming Company. Designed to simulate battles on the Eastern Front during mid-WW2 between Germany and the Soviet Union, it is regarded as a watershed in the development of board wargaming, introducing the concepts of geomorphic maps, DIY scenario design and the ability to create new units, counters, rules and maps. Two companion board wargames, *Panzer Leader* and *Arab-Israeli Wars*, provided expansions and development of the game system.

The material presented in *PanzerZug!* is designed to be used in conjunction with *PanzerBlitz* rules, maps and counters, and also draws on some features of the *Panzer Leader* and *Arab-Israeli Wars* games. In recent years, a number of enthusiasts have created many DIY resources, including maps with railway terrain. A listing of where to locate these resources is found in Appendix 1.

The past four years have seen the development of freely available, high quality, counters, maps and situations produced in accordance with the original design parameters of *PanzerBlitz*. The passion and enthusiasm of folk such as Ward McBurney, Byron Henderson, Alan Arvold, Carl Schwarmburger, Greg Moore, Garry Garrett and the many contributors to ConSimWorld rubbed off, prompting me to give shape to something that might otherwise have stayed in an archive box gathering dust.

Introduction

A bewildering variety of "things on rails" saw service during WW2. In the situations covered by Panzer Blitz, the railways were the predominant form of transport for both Germany and the Soviet Union. Armoured trains were a feature of war on the Eastern Front, and were used offensively and defensively, as well as for internal security purposes. Germany alone operated up to 80 such trains at any given time, and the Soviet Union 100-200. Armoured trains in this period included purpose built trains, improvised trains, and captured trains turned against their former owners.

This article will seek to provide a history of the armoured train; explore its use on the Eastern Front and other fronts in WW2; present rules for using armoured trains in Panzer Blitz and provide a counter set for players wanting to use armoured trains.

History of the Armoured Train

The development of the railroad preceded that of the internal combustion engine. During the first half of the 20th century many nations had far more developed rail networks than roads. Railways and ships were the major means of transporting goods and people, and were used for military purposes from the American Civil War onwards. The armoured train was a logical development: a machine that could control a length of railway and preserve it for its nation's own purposes; a machine that could strike rapidly, and with limited warning in an era before aerial reconnaissance; a machine that could control communications and dominate local civic areas. Telegraph networks frequently ran parallel to railway lines; just as development of rail networks served to unify nations through a need to develop consistency in timekeeping, the parallel development of the telegraph served to link communities together.

Armoured trains were a feature of the Civil War in Russia, and the subsequent Russo-Polish War, and in the many civil disturbances and wars of independence that followed WW1. Due to poor road networks, fighting in these conflicts tended to follow the railway lines. A lack of enemy aircraft and AFV's meant that the armoured train's role was critical. During this period tactics were developed for the aggressive use of armoured trains. Their roles included:

- Scouting and assessing the forward situation
- Engaging the enemy
- Covering the deployment of infantry and cavalry into battle order
- Supporting attacks or retreats with their fire[1]

Armoured trains offered combatants a ready solution to issues of mobility, using existing infrastructure and technology that was readily available. Improvised armoured trains were common, using existing rolling stock with wooden planks or concrete slabs for protection, and mounting field guns (with carriage) on a flat car.

During the 1920s and 1930s many armoured trains were purpose built, incorporating armour plating, guns in rotating turrets, radio, and provision for carrying troops, although improvised trains continued to be built. Armoured trains were used extensively in China, by both regular forces and by the warlords, and by the Japanese during their conflicts in

[1] *Armored trains of the Soviet Union, 1917-45,* Kopenhagen, W., p.9

Manchuria and China. Between the wars, Poland in particular developed a strong armoured train force, well armed with support trains, scout cars and assault troops.

In Germany the Versailles Treaty had forbade armoured trains; those trains in service belonged to the State Railways and were used to ensure the safety of the railways, stations and passengers. Typically they consisted of standard freight cars, with internal armour lining and MG mounts. They were designed to carry troops to trouble spots, and took part in suppressing a number of armed uprisings that threatened railway infrastructure.

Many nations used armoured trains during WW2, including Poland, Germany, USSR, Slovakia, Japan, China, Great Britain, Finland, Hungary and Italy. Armoured trains were built in a bewildering complexity of designs for a wide range of purposes. Armoured trains also changed hands many times: one train passed from Austro-Hungarian to Polish to German to Soviet use over its lifetime.

The railway gun was a parallel development, providing an easy way of moving heavy artillery quickly. During WWI heavy guns placed well behind the frontline could be moved rapidly to meet the need of either supporting an assault or assisting in the defence of a sector. Some countries, notably France, kept a reasonable number of such guns on their active list; other countries dispensed with them altogether. When Germany rearmed during the 1930's, railway artillery was produced to provide support at a Corp level. The placement of heavy FlaK (anti-aircraft) guns on rolling stock was a particular feature of the German military.

To meet the needs for scouting along railway lines or for operating on railways that were of small gauge or low weight-bearing capacity, a wide range of rail trolleys and modified armoured cars were developed. Poland developed a unique system that allowed light tanks and tankettes to be used as scout troops to the armoured train units. The Soviet Union, Italy and Germany all developed self-propelled rail trolleys mounting tank turrets. Germany also developed the concept of light and heavy armoured trolleys for use in the Balkans, which could operate independently or be joined to form longer and better armed trains. The German Army also developed armoured trains based on obsolete tanks providing the fighting force of the train, and which were able to move off their rolling stock and pursue the enemy. These trains were mainly used for anti-partisan work.

Armoured trains on the Eastern Front

The German invasion of the Soviet Union was reliant upon the railways for transporting supplies, fuel, equipment, troops and food. At its height, over 200 trains per day left Germany for the Soviet Union.[2] As Germany and Russia had different width rail-gauges, there was no role for German armoured trains initially. Soviet trains were active in the defence, fighting delaying actions to allow other units to retreat, and then moving backwards themselves. As the fighting moved eastward, and partisan activity began, there was a need for Germany to consider track protection. There were several responses to a complicated logistical situation. Initially supplies had to be transferred from German gauge rolling stock to Soviet gauge rolling stock; a laborious procedure. Captured Soviet rolling stock was used for this transfer; with captured armoured trains being put into German service to provide protection. Secondly, a system of using rail-wagon mounted tanks as an

[2] *Deutsche Reichsbahn – the German State Railway in WWII*, Arvo L. Vecamer

armoured train was also developed; these were much easier to build than fully armoured trains. Thirdly, the Soviet broad gauge lines were progressively changed to European standard gauge, simplifying transportation issues and leading to the development of new classes of German armoured trains. Throughout the war German forces continued to use a mix of purpose built, improvised and captured armoured trains.

Troop trains and supply trains were a constant feature of military life, and armies relied on them in order to keep on fighting. The German Army in Russia discovered that there was a "tripwire" beyond which it was not possible to supply frontline units using motorised transport. Five hundred kilometres was the extreme limit – after this the transport system broke down completely; even at shorter distances it was found difficult to transport all the materiel required, and many frontline units never received adequate supplies. Railways were found to be the most cost-effective method of transporting materiel, weapons and troops, and consequently the imperative to protect this vital supply system resulted in production priority of armoured trains being equal to that of the Panther and Tiger tanks.

From the Soviet perspective, armoured trains were an important part of their armoury before the outbreak of war. In a situation characterised by poor roads and vast distances, armoured trains were an effective means of moving forces rapidly and gathering information. After the defeats of 1941 the Soviet war industry went into survival mode. Anything that could mount a gun was pressed into service, including agricultural tractors, obsolete tanks, and trains. The Soviet Union possessed many rail centres capable of building or repairing trains, and these began crash programs of armouring and arming existing rolling stock. Some of their creations were simple, such as the Improvised Train formed from armour plated coal trucks with MG embrasures cut in the sides; and the OB-3 series mounting four captured or obsolete 75mm guns, each of a different type, with different ammunition requirements and no gun sights. Other centres developed heavily armed and standardised trains, or simple rail trolleys, which were often driven straight from the factory to the front-line.

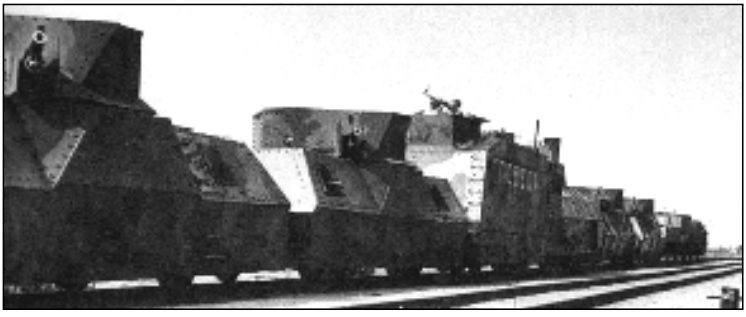
A number of important incidents involving armoured trains occurred, including the delaying of overwhelming German forces by the Soviet train *Za Rodinu*, and the breakout through a Soviet encirclement by a German armoured train battalion.

The heyday of the armoured train was perhaps the Russian Civil War, where they were used extensively by all combatants. Some of the artillery cars, having passed through several captors' hands, were still in combat twenty years later. The development of effective cross-country transport, the relative fragility of the train compared to later war anti-tank guns, and the increasing effectiveness of airpower saw the tactical demise of the armoured train.

Other nations and theatres

Italian forces in Russia used a number of captured or improvised armoured trains. In the Balkans, AB40 and AB41 armoured cars were fitted with rail wheels and used for internal security duties. Finland used several armoured trains during the Winter War, including some captured Soviet rolling stock. During the invasion of Poland in 1939, Polish armoured trains saw combat. Reasonably well armoured and armed, and aggressively handled, they achieved some local successes. Perhaps the most famous incident was during the Battle of Mokra on September 1st, when the timely arrival of Armoured Train No. 53 ("Smialy") allowed the 'Wolynska' Cavalry Brigade to hold off the 4th Panzer Division, and to cause a loss of over 100 tanks and other vehicles. One account describe the train arriving as the mechanised column was crossing the railway lines. The train stopped in the middle of the column and opened fire from all guns. Other Polish armoured trains played significant roles in supporting the attack of infantry divisions. Only one Polish armoured train was lost to air attack; another became a casualty when it was hit on the engine by anti-tank guns or artillery. The majority of the trains were destroyed by their crews, with some of the cars later seeing service under Soviet or German ownership.

Great Britain improvised a number of armoured trains before settling on a standardised design. Armed with 6-lber cannon from WWI tanks, and in some cases crewed by Polish soldiers, the armoured trains were an important part of Britain's defence against German invasion. Japanese forces in China and Manchuria used a range of armoured trains. Trucks and armoured cars were fitted with rail wheels and used on a large scale for transport and security duties. One armoured car was fitted with a device to enable it to move between rails and cross country use. An experimental tank was developed with retractable rail wheels under the hull; a similar machine was developed in Germany on a Pz III chassis. Canada built an armoured train to patrol coastal rail lines on the Pacific coast, following the scare of a Japanese invasion or raid. Throughout the 1920s and 1930s, armoured trains were built by all the major combatants in China, from Government forces to warlords. The Soviet Union provided both armoured trains and advisors who had gained their experience in the Russian Civil War. During the Second Russo-Japanese War (1938-39), a Japanese armoured train was used to escort troops moving to the front.



Soviet OB-3 armoured train

Why use armoured trains?

The armoured train flourished in the right environment. When that environment changed, the armoured train ceased to be a viable weapon. In many parts of the world throughout the 20th century, cross-country transport was restricted to horse-drawn vehicles and railways. Railways connected isolated communities and linked large cities. To control the railway lines meant controlling access to the cities. Armies could still move on foot, but the quickest and easiest way was to use rail transport. Although they moved in predictable lines, so did everyone else. There was a well-established infrastructure for the construction and repair of trains. An improvised armoured train was relatively easy to build compared to tanks or armoured cars. One advantage of an armoured train compared to an armoured vehicle is the ability of the train to take the weight of the armour and still move, as compared to a truck or tank that could be easily overloaded. An armoured train could carry a strike force, which could disembark and assault a target under the cover of the train's artillery fire.

During the 1920s and 1930s, arguably the greatest development in military terms was the introduction of the 6-wheel cross-country truck. This relatively cheap vehicle, capable of moving guns, men and materiel rapidly cross-country freed armies from reliance on horses and railways as the primary means of transport. It also began to mark the end of the dominance of the armoured train, which could now be outmanoeuvred.

The advantages of the armoured train included:

- the ability to move rapidly
- it could mount a wide range of guns
- its weapons could be brought into action quickly
- the turreted weapons could be quickly manoeuvred onto new targets
- its gunners and spotters sit high off the ground compared to regular artillery, giving good visibility
- it could carry a large amount of equipment and troops if required

Armoured trains were at their best in wide open spaces where rail is the major form of transport. An armoured train could act as a combined arms unit, providing its infantry assault unit with covering artillery and MG fire. The infrastructure to build, maintain, fuel and water the trains was readily available.

The disadvantages of the armoured train included:

- trains restricted by rails; their movements can be predictable
- the tracks are vulnerable to demolition & sabotage
- the train can only be armoured so far: too much resistance and kinetic energy from the shell will knock the train off the tracks
- train and tracks are vulnerable to air attack
- a typical armoured train had only one engine – if it is destroyed or damaged the train is incapable of movement
- increasingly effective anti-tank weapons could significantly damage the train

Despite some incongruity between the strategic tasks of armoured trains and the tactical approach of *PanzerBlitz*, there is a role for these units in the game.

Armoured train tactics

Armoured trains served a variety of tactical purposes. For all sides, their primary purpose was protection of the railway lines that served their armies. The railways were vital for the movement of troops, vehicles, fuel, food, ammunition, guns and supplies, and were the most cost-efficient way of transporting goods and people. Railways also moved raw materials, evacuated the wounded, and carried mail and spare parts. Post-1941 German armoured trains were designed with this protection function in mind, carrying a mix of weapons to give flexibility in combating partisans. As the war continued, the trains were given anti-tank weapons to combat the Soviet tank breakthroughs. Some the trains found themselves fighting to breakout of encirclements. Other trains formed mobile batteries on the edge of the retreating army, destroying the railway line behind them as they covered the retreat.

Prior to 1941, German armoured train use found its origins in the interwar railway security system. Interwar German armoured trains consisted of boxcars with internal armouring, mounting machine guns and carrying infantry. They were designed to resemble standard trains. They saw action during several uprisings, where their approach was to steam openly into a station pretending to be a scheduled goods train. The infantry unit then conducted a close assault covered by the train's machine guns. Light mortars might be carried by the assault platoon. Their purpose was to both protect the rail network from the uprising, and to stabilise the situation until other troops could arrive. Early German use of armoured trains in WWII followed this pattern, with attempts being made in Poland and Holland to capture key stations and bridges using a stealth approach. In each case the attempt failed, resulting in the trains receiving significant damage. In France a similar approach was tried using two improvised armoured trains consisting of flatcars carrying infantry. The flatcars were armoured with sandbags and timber. These attempts were successful, with a number of important stations captured ahead of the main invasion force. Other attempts to use armoured rail trolleys were unsuccessful, with the units being identified and turned back as they attempted to cross the borders. These "stealth" attacks were part of a range of similar techniques, including the use of paratroops at Eban Emal, and the use of Storch aircraft to transport infantry into the Ardennes Forest in 1940.

Soviet tactics stressed the offensive aspect of the armoured train. In 1941 and 1942, instead of covering the retreating Soviet armies, the trains were thrown into the frontline in an effort to slow down the German advance. Some trains, such as the OB-3 series, were cobbled together from any available weapons to a basic plan, and driven straight to the frontline. Crewed by soldiers and workers who often had experience using armoured trains from the Russian Civil War, the armoured trains would fight on until destroyed. Some trains that became disabled resisted repeated counterattacks from tanks, aircraft, artillery and infantry, fighting on until the last gun was destroyed or the ammunition ran out. The advantage of these trains is that they could be made relatively quickly from existing rolling stock. As the war progressed the trains continued to be used offensively, with their role changing to that of protecting key areas, with a focus on artillery support and anti-aircraft work. At least one train was present at the Battle of Kursk, acting as a mobile artillery battery. The trains were also used as mobile command centres and headquarters.

As anti-tank weapons developed the armoured train became increasingly vulnerable, and ceased being a front-line weapon.

Types of armoured trains and other rail units

The following outlines some of the broad classes of railway units.

Armoured cars: Several nations used armoured cars fitted with flanged rail wheels for scouting along railway lines. These units could often move at rapid speed along the line. The Japanese Sumida 2593 was equipped with gear to enable it to move on and off the rails, and with rim attachments to turn the rail wheels into road wheels.

Armoured trains– improvised: Improvised armoured trains varied widely. Common features include: field artillery mounted on flatcars; improvised attempts to armour at least part of the train, including the use of armour plate, boiler plate, sandbags, planks, logs, cement slabs, or layers of timber and sand. They were often used to support accompanying infantry in close assaults, or to provide a protected means of transport for infantry units.

Armoured trains– purpose built: Purpose built armoured trains have similar features, including the use of armour to protect all parts of the train, including the engine. Typically they include two artillery carriages, a command car, and an engine. Some will also have an infantry car, containing an integrated assault platoon. Artillery mounted can vary, but typically 2-4 guns are mounted, ranging from 75mm-105mm calibre. A co-ordinated fire-control system is fitted, as are radio communication facilities.

Draisenes/rail trolleys: Draisene is the term used for independently powered armoured units that move along railway lines. They range from the tiny Polish Tatra, mounting one machine gun; to the large Soviet MBV unit, mounting three T-28 tank turrets. These units are used to patrol rail lines. The Polish army also used a unique system where TK and FT-17 tanks powered themselves on rail-riding carriages. These small, three tank units, were attached to armoured trains for scouting purposes, as they could both patrol along the railway lines, and leave the railway to scout across country. During the later part of WW2, Germany produced a series of standardised draisene-type units for use in the Balkans, where the heavier armoured trains were unable to use the light railway network. These units each had their own motor, but were designed to be able to link together to form an armoured train of appropriate composition. Unit types included: AA car, artillery car, command car, assault car, anti-tank car, etc. These units were made in both light and heavy forms.

Flak trains: Standard engines hauling flatcars or armoured/semi-armoured carriages mounting anti-aircraft guns. Used extensively by the German army in WW2 to protect cities and railway marshalling yards, and often armed with 88mm or 128mm AA guns. Flak trains can also include carriages purpose built for protection of an individual train, mounting 20mm, quad 20mm or 37mm AA guns.

Rail-riding tanks: Several nations experimented with devices that allowed tanks to use railway lines and deploy from them. Both Germany and Japan developed devices involving retractable railway wheels incorporated into a tank hull. None were used operationally. Poland developed rail-riding devices for FT17 and TKS light tanks; these were powered off the tank engine or enabled the tankette to use its tracks along the railway line. A similar device was used for the Polish C4P and the externally similar 7TP.

Railway guns: Heavy artillery mounted on purpose built or improvised carriages; ranged in calibre from 75mm (6″) to 400mm. Also includes improvised artillery; for example, field guns (and wheels) lashed to flatcars and surrounded by sandbags.

Tanks as armoured trains: Tanks have been used to form armoured trains in several ways. Firstly, they have been used as artillery, being placed on flatcars and provided with additional protection, including armoured plate panels, and sandbags. Secondly, German armoured trains in later WW2 often used tank turrets on artillery cars. Thirdly, some German armoured trains consisted

of purpose built flatcars carrying tanks. The tank was able to dismount and remount the flatcar without assistance. This system was designed for anti-partisan use in Russia, and utilised tanks that were no longer suitable for regular combat. Tanks used include Pz 38(t), and captured French S-35 tanks. Fourthly, some regular armoured trains were provided with one or two of the flatcars described above to assist in anti-partisan work, essential to keep the train moving in the event of ambush or line blockages. Trains mounting tanks on flatcars with surrounding armour plating were used in the 1990s in the former Yugoslavia. Fourthly, the German panzerjaegerwagen used the turret and upper body of a tank as the basis of a artillery cars designed to provide anti-tank protection to a train.

Supply trains: Standard engines hauling boxcars or flatcars. Used for carrying supplies or vehicles.

Troop trains: Standard engines hauling boxcars or carriages, with attached cooking facilities

Air troop transport: Not a PanzerBlitz unit, but worthy of note! Four unique trains, carrying No. 47 Squadron of the RAF, operated in Russia during the Russian Civil War. DH9 reconnaissance planes and Sopwith Camel fighters were flown. Three trains each carried a flight, whilst the fourth was used as a mobile Headquarters. Taking off from flat land beside the trains, the squadron (later known as A Flight and then Z Flight), achieved notable successes, including attacks on cavalry and gunboats. Also during the Russian Civil War a number of armoured trains carried observation balloons. These had their own armoured coach, and when in use provided a view of up to 20 km from the train.

Other vehicles: Numerous trucks were adapted to ride along railway lines. These were used for transporting equipment, troops and material to the front, and to evacuate casualties to the rear. Polish forces developed a device to enable engineer half-tracks attached to armoured train units to travel along railway lines. Motorised rail inspection trolleys were sometimes armed and used for patrolling. Allied troops in Europe and Asia modified Jeeps so they could be used on railway lines.

Crew of a Soviet BA-20ZhD inspecting railway tracks

Armoured trains within Panzer Blitz

In Panzer Blitz terms, an armoured train has three unique features.

- Firstly, it is restricted to movement along one type of terrain feature (hexes containing railway lines). It may not leave the railway hexes under any circumstances – the only other units subject to a similar restriction would be boats or other watercraft.
- Secondly, an armoured train moves as one unit, due to the way its components rely on each other and interact together. Although long (some armoured trains reached 100m in length), the components of the train stay in strict relationship with each other, never varying in distance. The fate of an individual component (eg artillery car) rests on the situation of the whole.
- Thirdly, an armoured train can be composed of a large number of weapon types, mixing cannon, rockets, machine guns, anti-tank guns, anti-aircraft guns, tanks, field guns, mortars and infantry weapons. This makes an armoured train different to units of a homogenous weapon type, and makes deciding on a Z-score more difficult. Additionally, the components of an armoured train changed over time – the 80+ German armoured trains had an estimated 200+ versions.

The following is designed to be a basic set of rules for incorporating armoured trains into Panzer Blitz.

These rules are based on the concept of an armoured train being represented by one counter.

German BP-42 armoured train

Basic Rules for using armoured trains in *PanzerBlitz*

Movement

- Trains move only along railway lines (ie from one rail hex to the next rail hex)
- Trains pay one MP per hex.
- The effect of other terrain in the hex is ignored for movement purposes by armoured trains.
- Armoured trains cross green hex sides without penalty.
- Rail hexes can be blocked or mined. Standard rules for the effects of blocks or mines apply against armoured trains.

Combat

- An armoured train unit attacks once per turn.
- Unless specified, an Armoured Train is considered an Armoured Target. See the Unit Function Table or situation Special Rules for details on individual trains.
- When defending, an Armoured Train is subject to all Terrain Effects modifiers.
- An armoured train is represented by one counter, regardless of the number of cars or wagons that make it up. The armoured train is considered one unit for defense purposes.
- Armoured trains may conduct Overrun Attacks in line with the PB rules.

Transporting other units

- Unless otherwise specified, an armoured train may transport one Assault Platoon.
- Unless specified, the standard rules for transporting units apply.
- The Assault Platoon is transported within the armoured train. Whilst doing so it shares the DF and the fate of the train.
- The Assault Platoon may not fire (use its AF) whilst loading, being transported or unloading,
- Unless specified, an armoured train may carry up to two platoons of infantry (Russian trains may carry either two platoons or one company sized units).
- Transported infantry units may not fire (use their AF) whilst loading, being transported or unloading.
- Units being transported in this manner have a DF of 1.
- Cavalry, motorcycle, vehicular or artillery units may not be transported. Infantry, scout, recon or engineer units may be transported.
- Specially designated armoured trains may transport vehicular units, and load and unload them during play. These trains are specified on the Unit Function Table. These trains may only transport their associated vehicles.

Note: Optional Rules are provided for many of the rules above. Players may agree to use as many of the Optional Rules as they wish.

Expanded rules for using Armoured Trains in Panzer Blitz

Category	Background to rules	Rule	Optional rule
Movement	A train cannot leave the railway line.	Trains move only along railway lines (ie from one rail hex to the next)	
	Railway lines are laid out for efficient haulage, avoiding slopes and other obstacles.	Trains pay one MP per hex.	In some situations a maximum speed can be imposed for trains. This represents a speed limit dictated by the condition of the track, its load bearing capacity or its construction.
		The effect of other terrain in the hex is ignored for movement purposes by armoured trains.	
		Armoured trains cross green hex sides without penalty.	
		Rail hexes can be blocked or mined. Standard rules for the effects of blocks or mines apply against armoured trains.	

Category	Background to rules	Rule	Optional rule
Combat	Armoured trains were typically armed with a variety of weapons, including artillery, MGs, rockets, AA guns, AT guns, tank turrets,	An armoured train unit attacks once per turn.	An armoured train may attack more than once per turn, when it has been allocated more than one Attack Factor. Such attacks may be delivered against separate targets or combined against the one target. Such units may be represented by dual-value counters or other format agreed to by the players involved
	The term "armoured train" typically refers to trains that were covered in armour. However, some trains that were armed and used offensively were not armoured or only partially armoured.	Unless specified, an Armoured Train is considered an Armoured Target. See the Unit Function Table or situation Special Rules for details on individual trains.	
		When defending, an Armoured Train is subject to all Terrain Effects modifiers.	

	For simplicity of play, one counter is used to represent an armoured train. Players may like to experiment with counters and rules that simulate the use of armoured trains in greater detail.	An armoured train is represented by one counter, regardless of the number of cars or wagons that make it up. The armoured train is considered one unit for defence purposes.	If desired, players can create counters that represent either each car/wagon individually or counters that represent each weapon type collectively. These counters could include a mix of armoured and unarmoured units.
Close Assault	An armoured train's defence factor is low compared to many other units, due to the relationship between stability and the impact energy of a striking shell. However, its defence against an assault by infantry is higher than indicated by the DF displayed on the counter.		When an armoured train is close-assaulted by an infantry unit, double its Defence Factor for the purpose of the close assault only.
Overrun attack		Armoured trains may conduct Overrun Attacks in line with the PB rules.	An armoured train using the optional Split move and fire rules may not conduct an Overrun Attack during the movement phase of SMF
Panzerblitz Assault			Transported infantry units may engage in Panzerblitz Assaults. See Transport section.
Split Move and Fire	An armoured train moves as one unit, without the need to load/unload its weapons. The nature of a train means that it can quickly reach its maximum speed. Within the six-minute span of a PB turn, it is possible for a train unit to fire its weapons and to move to another position. As this means that it will not be able to engage the target for as long as normal, it will attack with a reduced AF.		Armoured trains have the capability to split fire and move (SMF). The player must declare his intention to use SMF (Step 2 of Player Turn). The armoured train unit resolves its attack during Step 3. When using SMF the AF is halved. Fractions are rounded down, and halving occurs before any modifications are made for target type. After firing, the armoured train may move up to one-half of its printed movement allowance; the counter is then placed face down. Note that in scenarios where a movement limit exists due to the state of the track, the armoured train may move up to one-half of the permitted movement rate.

Category	Background to rules	Rule	Optional rule
Transporting other units	Some armoured trains included an assault platoon as part of its regular establishment. This unit typically travelled within an armoured assault wagon, and was trained to support the armoured train by securing critical points such as stations and junctions, and clearing obstructions (physical or armed!) impeding the progress of the train.	Unless otherwise specified, an armoured train may transport one Assault Platoon.	

		Unless specified, the standard rules for transporting units apply.	
		The Assault Platoon is transported within the armoured train. Whilst doing so it shares the DF and the fate of the train.	The Assault Platoon may conduct a Panzerblitz Assault in line with the PB Optional Rules.
		The Assault Platoon may not fire (use its AF) whilst loading, being transported or unloading,	The Assault Platoon may fire its (use its AF) whilst being transported. It does not need to attack the same targets as the armoured train.
	Armoured trains sometimes carried other infantry units. Typically these units were carried in unarmoured boxcars or on flatcars. Points H-K from the Transporting Units rules apply, except as modified here.	Unless specified, an armoured train may carry up to two platoons of infantry (Russian trains may carry either two platoons or one company sized units).	Rail-transported infantry units may conduct a Panzerblitz Assault in line with the PB Optional Rules.
		Units being transported in this manner have a DF of 1.	
		Transported infantry units may not fire (use their AF) whilst loading, being transported or unloading.	
	Within the time limitations imposed by the game, units that require platforms, ramps, cranes etc to load/unload cannot be transported.	Cavalry, motorcycle, vehicular or artillery units may not be transported. Infantry, scout, recon or engineer units may be transported.	See exceptions below.
	Some armoured trains carried vehicular units on special transporter flat cars. These were designed to allow the unit to deploy within minutes. Typically these units were designed for anti-partisan duty. Vehicles transported included S-35 and 38t tanks, and self-propelled artillery based on captured French tank chassis.	Specially designated armoured trains may transport vehicular units, and load and unload them during play. These trains are specified on the Unit Function Table. These trains may only transport their associated vehicles.	

The following Optional Rules are designed to allow players to simulate action directed against railway lines. Although action against terrain is not included in Panzer Blitz, the relationship between the railway line and the train is of critical importance. In historical terms, action was often taken to damage railway lines, as it was the easiest way to limit the effectiveness of an armoured train. Armoured train crews were skilled in repairing damage to the tracks. The simplest way to simulate damage to railway lines during the course of a game is to use Block counters. These Optional Rules therefore detail ways that Block counters can be placed or removed during play. Players should decide jointly which rules they would permit to be used. Note that most of these Optional Rules are based on rules from Panzer Leader.

Category	Background to rules	Optional Rule	Expanded Optional Rule
Railway lines	Armoured trains are unique in Panzer Blitz in that they are restricted to one type of terrain, and that this terrain is linear in nature. Destruction of railway lines by infantry units or aerial bombing was a regular feature of WW2. These rules attempt to reflect this situation. Panzer Blitz does not permit the creation or removal of Blocks during the game; therefore these are all Optional Rules. Note that many of these rules are taken from Panzer Leader.		
Block counters (removal based on Panzer Blitz rules)	In Panzer Blitz, Block counters are placed at the beginning of the game and may not be removed. This Optional Rule is a modified version of the Mine Removal rules from Panzer Blitz.	Engineer units or Assault Platoons may remove Block counters on railway lines as though they were Mines (unit moves adjacent, each turn thereafter must roll "1" to remove Mine)	
Creating Block counters	Players may choose to create Block counters in railway hexes according to the rules outlined in Panzer Leader	Engineer units, partisans or Assault Platoons may create Block counters.	Rules for creating Block counters are outlined in Panzer Leader.
Railway Block counters (based on Panzer Leader rules)	In Panzer Blitz a Block counter affects all movement across a hex. A Railway Block counter is more limited in that it only affects movement by trains along the railway line.	Players may create Railway Block counters, or use the "Damaged Track" counters provided. These represent damage to the railway track. A Railway Block counter has no effect on the movement of other units across the hex.	
	These rules are based on Section X of the Panzer Leader Rulebook (Engineers)	Engineer units, partisans or Assault Platoons may create Railway Block counters.	To create a Railway Block: A unit capable of creating a Railway Block may create one per railway hex in any given situation. The unit must be accompanied by a designated transport counter, which must remain in the same or an adjacent hex during the creation of a Railway Block. For an Assault Platoon, its armoured train constitutes its transport unit. For partisans, a wagon counter may be used. The unit must remain on the railway hex for two turns in a woods-railway hex or for four turns for any other type of railway hex. When the required number of turns is completed the unit moves to an adjacent hex. A die is rolled to determine construction of a Railway Block – a roll of 1-5

			means that the railway is damaged, and a Railway Block counter is placed on that hex. A die roll of 6 means that the attempt failed. The unit must move back to the railway hex if another attempt to block the railway line is desired. Only one turn is required to try again if the first attempt fails. A die roll of 1-65 on the second or subsequent attempt successfully creates the Railway Block.
Creating Railway Blocks by aerial attack (based on Panzer Leader rules)	Dive-bomb attacks on railway lines, marshalling yards, junctions and stations were a common feature of WW2. Aircraft do not feature in Panzer Blitz, so players will need to incorporate an Air Phase into their Turn Sequence. These rules are based on the Turn Sequence and rules from Panzer Leader. For more information about the capabilities of aircraft in Panzer Blitz/Panzer Leader, the article "Panzer Hunters" by Mr Carl Schwamberger is recommended.	Railway Blocks may be created by aerial attack	Aircraft units capable of conducting dive-bombing attacks may attempt to create a Railway Block. These attacks are resolved during the Air Phase. Only bombs or rockets may be used to attack railway lines. Each aircraft taking part in the attack must roll 1 on a d6 to create a Railway Block. Aircraft may combine their attacks to a maximum of 1-5 on a d6. If more than 5 aircraft take part in the attack, the extra aircraft make a separate attempt.
Removing Railway Blocks (based on Panzer Leader rules)	The damage caused to a railway line represented by a Railway Block counter can be repaired. The damage could take several forms, some of which could be repaired by replacing rail-lines, strengthening or checking rail-ties etc; in other situations new track would be laid to go around the damaged area. Armoured train units were skilled in this form or repair; some units were able to lay temporary track to go around a section of damaged line as fast as they could walk.	Railway Block counters may be removed by Engineer or Assault Platoon units	Railway Block counters are removed in a four-part process, as follows: Turn 1: Engineer or Assault Platoon unit moves adjacent to the Railway Block counter. Turn 2: Railway Block counter is inverted at the beginning of the movement phase. Turn 3: Engineer or Assault Platoon unit moves onto the Railway Block counter Turn 4: Railway block counter is removed at the beginning of the movement phase. An Engineer unit must be stacked with or adjacent to its designated transport unit during the removal of Railway Blocks; an Assault Platoon must be stacked with or adjacent to its armoured train unit. If the Engineer or Assault Platoon unit is dispersed at any time during this sequence, the removal process is temporarily halted. When that unit is undispersed, the sequence is restarted at the step in which the dispersal took place. When inverted, the Railway Block counter continues

			to affect movement as per normal. If the engineer or Assault Platoon unit is eliminated during this sequence, any new units must begin all over again. An engineer or Assault Platoon unit may only clear one Railway Block counter at a time. Whilst doing so, the units may not attack in any manner or load onto a carrier vehicle.

Notes:

Background to rules is designed to give players an understanding of what the rules try to reflect.

Rule gives rules for using armoured trains in Panzer Blitz that are based on the standard PB Rules as closely as possible. Some of these rules are simply clarifications or affirmations of existing PB rules.

Optional Rules give rules that players can choose to use. Some of these Optional Rules are based on existing PB Optional Rules, Panzer Leader rules or are taken from Arab-Israeli Wars. Several of these rules reflect the complex nature of some armoured trains, with their often-curious mix of armament.

Suggested rules for specific situations

1. In some settings, the speed of an armoured train is dictated by the nature and condition of the track. To reflect this, it is possible to restrict any unit using railway lines to a maximum speed, expressed in a maximum number of hexes that can be travelled in one turn (eg *Due to poor condition of the track in the XYZ region, rail movement is restricted to 6 hexes per turn maximum movement*)

2. Armoured trolleys, scout vehicles and attached infantry units are treated as normal units. When travelling with the train, they use the train MP and defence factor. Trolleys are restricted to movement along railway hexes. Other specified scout vehicles may be able to leave the rails and move normally. Attached infantry units may launch an assault on an adjacent enemy unit, regardless of the number of hexes the train has moved (note: if the train has moved 50% or less of its MP's, this assault may be preceded by the train's artillery!). Attached units may be stacked on top of the train counter to indicate that they are unloaded from the train. In this instance, they utilise their own DF, counting as additional units for all purposes.

3. Unless the Situation provides specific guidance, players must determine whether the railway track represented on the board is one-way or two-way. If it is agreed to be one-way, then the location of sidings or lay-bys must be determined. This has significant implications if more than one rail unit is in operation, as they may be unable to pass each other. (Example: players may agree that railways are single track, with sidings in each village or town hex).

Notes on the counters

Each counter represents a complete unit, although the size of the unit may vary considerably. The image depicted on the armoured train counters is normally one of the artillery cars.

The complete TO&E for an armoured train unit might include:

- An armoured locomotive, attached to several armoured artillery cars and an armoured infantry wagon carrying an infantry platoon
- Several self-propelled draisines, or armoured cars fitted with railway wheels, for scouting and security purposes
- An unarmoured locomotive with wagons containing sleeping quarters, kitchen, stores, workshop, fuel and supplies

Armoured trains were often organised into battalions of two or three armoured train units.

Notes for Soviet Armoured Train Units

BP-35 Light No. produced: 47 (?) Theatre: Eastern Front
Max armour: 15mm Max. speed: 25 mph/40 kph
Armament: 4 x 76.2mm 1902; 12 x MG; 1 x quad-Maxim AA MG
Notes: initially produced in 1935 during a modernisation of the Soviet armoured train force. Saw extensive use during WW2; captured examples were used by Germany and Finland.

BP-35 Heavy No. produced: 13 Theatre: Eastern Front
Max armour: 15mm Max. speed: 25 mph/40 kph
Armament: 2 x 107mm 1910 guns; 10 x MG; 1 x quad-Maxim AA MG
Notes: initially produced in 1935 during a modernisation of the Soviet armoured train force. An armoured train battalion consisted of two BP-35 light and one BP-35 heavy train, armoured cars, and infantry company and support trains.

NKVD-1 No. produced: unknown Theatre: Eastern Front
Max armour: various Max. speed: 25 mph/40 kph
Armament: various, including 76mm guns and MGs
Notes: the NKVD was responsible for security of the railways, using a number of armoured trains for this purpose. This train is representative of an older type of armoured train, passed from the army to the security forces.

BA-6ZhD No. produced: unknown Theatre: Eastern Front
Max armour: 8mm Max. speed: 33 mph/55 kph (rails) / 27 mph (road)
Armament: 2-4 x 45mm guns, 4-8 x MGs
Notes: this 6-wheeled armoured car was modified for use on railway lines by changing the front and rear wheels for special flanged wheels. This could be done in the field, allowing the unit to scout cross-country. An armoured train battalion might have 2-4 of these heavy armoured cars. The counter represents 2-4 vehicles.

BA-20ZhD No. produced: unknown Theatre: Eastern Front
Max armour: 6mm Max. speed: 48 mph/80 kph (rails) / 34 mph (road)
Armament: 2-4 x MGs
Notes: this four–axle armoured car was modified for use on railway lines by replacing the wheels with special flanged wheels. This could be done in the field. An armoured train battalion might have 2-4 of these units. The counter represents 2-4 vehicles.

Rail trolley No. produced: unknown Theatre: Eastern Front
Max armour: 20mm Max. speed: 46 mph / 75 kph
Armament: 76mm gun; 7 MGs
Notes: a wide range of self-propelled rail trolleys were produced during the war. This model mounts a turret and gun from the KV-1 tank; the engine came from the same tank. The trolley was used as part of armoured train battalions, as well as for security and patrol duties. The counter represents one vehicle.

MBV rail trolley No. produced: 40+ Theatre: Eastern Front
Max armour: 20mm Max. speed: 75 mph / 120 kph
Armament: 3 x 76mm guns; 12 MGs; 1 x quad-Maxim AA MG
Notes: produced before the war, the MBV was designed as a rapid response vehicle. Armed with 3 turrets from the T-28 tank, and with a diesel engine, the MBV was intended to move into areas of unrest or capture key targets, allowing heavier forces to move in behind it. The counter represents one vehicle.

MBV-D1 No. produced: unknown Theatre: Eastern Front
Max armour: 16mm Max. speed: 46 mph / 75 kph
Armament: 2-6 x 45mm guns; 12-24 MGs
Notes: the MBV-D1 was a self-propelled rail trolley, designed for rapid response. The vehicle was armed with two turrets from the T-26 or BT-7 tank, and machine guns. The counter represents 2-4 vehicles linked together.

MBV-D2 No. produced: 30 Theatre: Eastern Front
Max armour: 16mm Max. speed: 46 mph / 75 kph
Armament: 2-6 x 76mm guns; 12-24 MGs
Notes: the MBV-D2 was the artillery version of the D1. Larger, and with two 76mm guns and radio equipment, it was used in groups of 2-4 vehicles. It was also attached to armoured trains as an artillery car. Captured units were used by the German army. The counter represents 1-3 vehicles linked together.

Improvised 1941 No. produced: unknown Theatre: Eastern Front
Max armour: varied Max. speed: 25 mph/40 kph
Armament: 2-4 x 76mm guns; 24-42 MGs
Notes: a number of improvised armoured trains were produced following the German invasion of the Soviet Union in 1941. The train represented consisted of open coal cars with amour plating or boiler plate attached to the sides, with loopholes cut for MGs. Some of these trains mounted jury-rigged infantry guns, possibly without sights. It is unlikely that anyone thought these trains could do more than buy time.

OB-3 No. produced: 65+ Theatre: Eastern Front
Max armour: 30-80mm Max. speed: 25 mph/40 kph
Armament: 4 x 76mm guns; 20 x MGs; 2 x 20mm AA
Notes: the OB-3 series was produced in response to the invasion of the Soviet Union. Rather than build the multi-turreted artillery cars of the BP series, the train consisted of individual guns each on their own car. There was no fixed pattern, although the units fell into the same standard. Armour was sometimes improvised using spaced steel plates filled with concrete. All available artillery pieces were used, including ones obtained from museums or that had been war trophies. This lead to some trains having four different types of gun. In many cases no guns sights were available. Initially a stop-gap weapon, the OB series was later standardised and served throughout the war. It was important in introducing the system of individual artillery cars, a feature that improved the survivability of the train. Each counter represents one train.

NKPS-42 No. produced: 20+ Theatre: Eastern Front
Max armour: 30-50mm Max. speed: 25 mph/40 kph
Armament: 4 x 76mm guns; 2 x 107mm guns; 16 x MGs; 6 x 37mm AA;
Notes: built in response to the war in a number of crash-programs, the NKPS-42 achieved some successes in combat due to its heavy armament and the determination of its crews to fight to the finish. However its large artillery wagons proved vulnerable, and the type was phased out.

Kozma Minin No. produced: unknown Theatre: Eastern Front
Max armour: 45mm Max. speed: 25 mph/40 kph
Armament: 4 x 76mm guns; 16 x MGs; 4 x 37mm AA; 2 x M-13 rocket launchers
Notes: the Kozma Minin class trains used turrets from T-34 tanks on its artillery cars. It is notable in mounting two M-13 rocket launcher racks.

BP-43 No. produced: 21+ Theatre: Eastern Front
Max armour: 45mm Max. speed: 45kph
Armament: 4 x 76.2mm F-34; 12 x MG; 4 x 37mm AA;
Notes: the final Soviet armoured train design of WW2, the BP-43 combined the single turret artillery cars of the OB-3 with AA wagons. Mounting T-34 turrets, the artillery cars were well designed, with heating and good communications. The use of smaller artillery cars gave the train a higher degree of survivability.

AA train No. produced: 200 Theatre: Eastern Front
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 6-10 x 37mm or 76mm AA; 2-11 x MGs
Notes: the AA trains consisted of artillery cars mounting either 37mm or 76mm AA guns, or a mixture of each. The guns could be dismounted if required. These trains were used to protect bridges, rail depots and other vital structures. Two counters are depicted, to allow for the varying weapon mixes.

Engine

This is a generic counter that can be used to represent any unarmed train. The "T" class should be considered a sub-class of the "C" class for transporting units, with modifications appropriate to the situation.

Dual value counters

Three dual value counters are included for players interested in distinguishing between the anti-aircraft armament and the other weapons carried by the train.

Armed tram No. produced: unknown Theatre: Odessa
Max armour: see text Max. speed: 30 mph / 48 kph
Armament: various, including MGs and light guns (45mm?)
Notes: during the siege of Odessa, trams were pressed into service conveying ammunition and supplies to the front line, which stood at the last stop on the tram-line. Some of these trams were provided with a flatcar mounting an MG or light artillery piece, and were expected to engage the enemy wherever possible. Some trams were fitted with sandbags or boiler plate over vital areas. The "tram tachanki" operated particularly on Route 21. In PB terms, the armoured train is restricted to movement within city hexes, where it may move to any hex (assume that tram lines run throughout the city). It may not move along railway lines.

Notes for German Armoured Train Units

Eis.PzZug I No. produced: 4 Theatre: Poland, Holland
Max armour: varied Max. speed: 25 mph/40 kph
Armament: MGs, rifles
Notes: the Eisenbahn Panzerzug I counter represents the seven early German armoured trains. Belonging to the State Railways, they had been used primarily for railway security tasks. They consisted of boxcars with internal armour plating and loopholes, and were designed to look like a normal train. Some were withheld from service in Poland in 1939 due to their lack of heavy weapons, but several saw service in Holland in 1940, where their attempts to capture critical bridges by stealth met with an active by the defending Dutch troops, who put two trains out of action.

PzZug II No. produced: 2-3(?) Theatre: Poland, Holland
Max armour: varied Max. speed: 25 mph/40 kph
Armament: 2 x 75mm guns; MGs; some with 37mm AT and 75mm IG
Notes: some of the seven original German armoured trains were equipped with captured Czech artillery cars following the takeover in March 1939. This counter represents a train armed with two artillery cars with forward firing guns, typically 75mm. A range of other weapons could be mounted, including 37mm AT guns and 75mm infantry guns. The mounts for these additional guns may have been crude, including the use of armoured boxes mounted on flatcars. Trains of this type saw action in Poland and Holland; in some cases they were repeatedly upgraded over the course of the war and saw action across Europe.

PzZug III No. produced: 2(?) Theatre: Poland, Holland
Max armour: varied Max. speed: 25 mph/40 kph
Armament: 3-4 75mm guns; MGs
Notes: Notes: some of the seven original German armoured trains were equipped with captured Czech artillery cars following the takeover in March 1939. This counter represents a train armed with two artillery cars with turreted guns. The artillery cars continued to serve throughout the war, with one turret later replaced with an AA gun. These trains were upgraded during the war and served in many theatres.

PzZug 10a & 10b No. produced: 2 Theatre: Eastern Front
Max armour: 20mm(?) Max. speed: 25 mph/40 kph
Armament: (1941) 4 x 75mm guns; MGs, 2 x 20mm AA
Notes: Polish armoured trains PP 53 ("Smialy") and PP 51 ("I Marszalek") were converted to wide-gauge in 1939-40 by their Soviet captors, and assigned to NKVD units. In 1941 they were captured by German forces and grouped together as PzZug 10, with PP 53 being known as PzZug 10a and PP 51 becoming PzZug 10b. In early 1942 PzZug 10b took part in anti-partisan operations; at the end of 1942 both trains were moved to the Stalingrad area, providing fire support. 1n 1943 the trains helped cover the retreat from Stalingrad. The unit was then split, with PzZug 10b becoming PzZug 11. In 1944 it was upgraded with panzerjaegerwagen, 38(t) tanks and quad-20mm AA guns. PzTrWgn 16 was assigned to it, and the two units broke through several Soviet encirclements.

PzZug 1941 No. produced: 6 Theatre: Eastern Front
Max armour: 47mm Max. speed: 30 mph/48 kph
Armament: 2-4 x 47mm AT; MGs; 20mm AA
Notes: immediately following the invasion of the Soviet Union came the need to secure the railway network, which was vital in moving supplies and troops to the front. Several alternatives were used, such as the use of captured Soviet armoured trains, and mounting on flatcars of disabled Soviet tanks. The 1941 program developed light armoured trains composed of captured French tan, with at least six trains being produced. The tanks were mounted on special cars that enabled them to mount and dismount without a platform, and under fire if necessary. From 2-4 tanks were carried; other armament might include AA guns and an infantry unit. Various locomotives were used, including large steam engines, and smaller diesel engines. The trains were developed in both standard and wide gauge versions. Several counters are used to depict these trains – this counter shows the train with its tanks mounted on cars. The number to the right of the image indicates the number of S-35 tanks carried.

PzZug 1941 No. produced: unknown Theatre: Eastern Front
Max armour: varied Max. speed: 30 mph/48 kph
Armament: none
Notes: this counter depicts one of the engines used for this train, and is used to represent the train when the tanks have moved off their cars. A variety of steam and diesel engines were used, with some armoured and some remaining unarmoured. Later in the war these units received artillery cars and were progressively upgraded.

PzKpfw 35C 739 (f) No. produced: 90-100 Theatre: Eastern Front
Max armour: 47mm Max. speed: 18 mph / 30 kph
Armament: 2-4 x 47mm SA35 gun; MGs
Notes: these counters represent the tank component of the PzZug 1941 trains. The French S-35 tank was used extensively for anti-partisan work, as were other French tanks. Although considered outdated by the end of the war, these smaller tanks were liked for their ability to manoeuvre along smaller tracks and paths. Modifications made by the German army include changes to the turret to install hatches, and installing radios. The number to the right of the image indicates the number of tanks in the unit. These trains were used for railway security and anti-partisan work, with the tanks dismounting to pursue the partisans. In the absence of any anti-tank weapons they were reasonably effective; however without supporting infantry they were unlikely to achieve any real success. They may conduct Overrun attacks.

Lokomotiv No. produced: 1000s Theatre: Eastern Front
Max armour: none Max. speed: 25 mph/40 kph
Armament: none
Notes: this unit represents the various engines used by the German forces, including the BR-57, BR-39 and BR-42. The unit may transport other units as designated by the Situation or by agreement between the players. In some circumstances the rules regarding the number of units that may be stacked in one hex may be extended, as a train might reasonably transport an infantry battalion or more at one time. Note that although infantry might be able to detrain in a short period in an emergency, it takes substantially longer to re-embark. Other units such as mortars might not be able to detrain in the time allocated for a Situation. No hard and fast rule is given, as there are a large number of variables such as: what type of

railcar the troops are in; the types of troops being transported and their relationship to each other. Players should determine these issues and determine how to resolve them if required.

PzKpfw III N Schienenfahzug No. produced: 3 Theatre: experimental
Max armour: 70mm Max. speed: rail 63mph/100kph; road 40kph
Armament: 7.5 cm KwK 37 L/24 & 2 x MG per tank
Notes: this vehicle was an experiment in providing tanks with the capability of moving along rails. Railway wheels were fitted to the hull, and could be raised or lowered. The vehicle had potential for anti-partisan work, however only a few were made and it is unlikely they saw combat – this is a "what if" counter. For ease of play, treat it as MF 9 when off-rails. No road movement bonuses apply to this vehicle.

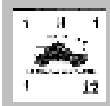
BP-42 Light No. produced: 11+ Theatre: Eastern Front
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: 2 x 10cm-le.F.H. 14/19(p); 2 x 7.62cm F.K. 295(r); 2 x 20mm AA; MGs; 2 x 38(t) tank
Notes: the BP-42 was designed as a "proper" armoured train. It was based on standarised wagons, and included an armoured locomotive and tenders, artillery wagons, infantry wagon and command wagon, flak wagon and two tank wagons each carrying a 38(t) tank. A flat car carrying ballast or equipment was placed at either end of the train. Artillery carried included 75mm or 105mm guns; AA weapons were the 2 cm Flakvierling. A feature of the train was the use articulating armoured plates connecting the wagons, allowing the crew to move freely about the train. The train was symmetrically arranged.

BP-42 Heavy No. produced: 11+ Theatre: Eastern Front
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: various upgrades to BP-42 armament, including all guns being 100mm; AA changing to quad-20mm AA
Notes: wherever possible armoured trains were up-gunned throughout the war. This counter represents a BP-42 Light that has replaced its AA weapons with quad-20mm AA, as well as increased the calibre of its artillery. In practical terms, this train increasingly resembles the BP-44. Some of the streckenschutzzug *trains were upgraded to approximate the BP-42.*

BP-44 No. produced: 8 Theatre: Eastern Front
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: 4 x 10.5cm 18M howitzer; 2 x 7.5cm KwK L/48; 2 x quad 20mm AA; MGs
Notes: The BP-44 was based on the same standardised wagons as the BP-42. However, the guns were upgraded where possible to 105mm or 150mm, and the AA weapons to the quad-2cm Flakvierling. Panzerjaeger wagons mounting the Pz IV turret armed with the long 7.5cm KwK L/48 were added to each end of the train. Variations existed due to modifications during manufacture, field modifications, or replacement of wagons with those from other trains. Special wagons carrying tanks were part of the train, and could be dismounted for reconnaissance or combat purposes. Typically the tank carried was the 38(t), but also included 35(t), S-35 and Lorraine SP gun (SdKfz 135/1)

BP-44 (Pzug 32) No. produced: 1 Theatre: France
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: 4 x 105mm guns; 3 x 37mm AA; 1 x quad-20mm AA; 2 x 20mm; MGs
Notes: PzZug 32 was a modified BP-44, upgraded to mount 37mm AA guns. Built in 1944 in France, it became operational in July of that year. It was used to escort freight trains. In September 1944 at Saint-sur-Berain Dheune it encountered an Allied group including M10 tank destroyers. The engine was repeatedly damaged and repaired throughout a 12-hour battle; although the train responded with its guns it was eventually abandoned by its crew who panicked after receiving artillery fire. The train was captured, and later became famous as the train used in the film "La Bataille du Rail". Images and plans of the train show a range of armaments carried, including either two SdKfz 135/1, or one and an R-35. The number of artillery cars may have varied across its life. The story of this train highlights one of the serious issues of an armoured train – without its engine it becomes a sitting target.

SdKfz 135/1 No. produced: unknown Theatre: Eastern Front
Max armour: 12mm Max. speed: 18 mph / 30 kph
Armament: 1 x 150 mm sFH13/1
Notes: 94 of the 15cm sFH 13/1(Sf) auf Gw Lorraine Schlepper(f) Sd.Kfz.135/1 were produced, as part of the Marder series of self-propelled artillery. A number were assigned to armoured trains, where they were carried on flatcars enabling them to quickly dismount from the train. 1-2 of these vehicles was carried on PzZug 32. The counter represents two SdKfz 135/1 vehicles.



Pz. Spahwagen P.204(f) No. produced: unknown Theatre: Eastern Front
Max armour: 20mm Max. speed: 48 mph / 78 kph
Armament: 25mm AT; MG
Notes: the French Panhard 178 armoured car was admired by the German Army, who made extensive use of them. A number were converted for rail patrol purposes by replacing the road wheels with flanged steel wheels, and installing radios and other fittings. A number of armoured trains had 1-2 vehicles assigned to them. In PB terms, these units are unable to leave the rails and go cross-country, as the wheel change-over was not practicable in the time-frames of the game.

Streckenschutzzug I No. produced: unknown Theatre: Eastern Front
Max armour: 10-20mm Max. speed: 25 mph/40 kph
Armament: included 37mm SA18 Puteaux L/21 guns; 81mm mortars; MGs
Notes: nearly 60 trains were designated as Streckenschutzzug – "track protection trains". Distinctions between Streckenschutzzug and panzerzug (armoured trains) included lighter armour; extensive use of captured equipment, including tanks, as the main armament, and limited use of artillery. As the war progressed the distinction between the two types of train blurred, with many Streckenschutzzug receiving artillery cars and being reclassified as panzerzug. This counter represents a lightly armed train mounting several FT-17s and an infantry assault wagon. Captured French FT-17 tanks were used extensively for a range of purposes including training, airfield security and similar second line activities. One use was to place an FT-17 on a railway flatcar, and use it as an artillery piece. Additional armour plating might be mounted on the side of the flatcar. The FT-17 was unable to disembark in the field. Photos show trains carrying two or more of these tanks; sometimes other French tanks were carried including S-35s. Typically at least one assault platoon would be carried.

Streckenschutzzug II No. produced: unknown Theatre: Eastern Front
Max armour: 10-20mm Max. speed: 25 mph/40 kph
Armament: 4-6 x 45mm AT; MGs; possibly other light artillery pieces
Notes: captured Russian tanks were used to form improvised armoured trains. Some trains consisted of tanks placed directly onto flatcars. Photos show that in many cases the running gear was damaged, and the tank was unable to disembark. Although lightly armoured, these units were adequately protected against the limited firepower available to partisan forces in the early stages of the war. From 2-6 tanks might be carried, as well as an infantry platoon. Tanks used included T-26 and BT-5. This counter depicts a T-26 tank mounted on a flatcar.

Streckenschutzzug III No. produced: unknown Theatre: Eastern Front
Max armour: 10-20mm Max. speed: 25 mph/40 kph
Armament: 4-6 x 45mm AT; MGs; possibly other light artillery pieces
Notes: as the war progressed, more sophisticated designs emerged using captured equipment. Turrets were used from T-26, BT-5, T-70 and a variety of French tanks. The wagons may have been captured Soviet rolling stock, or improvised in the field. Fitting the turrets to the wagons allowed for greater protection and better conditions for the crew. This counter depicts a T-26 turret fitted to an armoured boxcar.

PzZug 3 (1942) No. produced: unknown Theatre: Eastern Front
Max armour: 25mm Max. speed: 25 mph/40 kph
Armament: varied; included 2 x 75mm AT; 1 x 105mm gun; 1 x quad-20mm AA

Notes: these 75mm AT gun-armed wagons were used on PzZug 3 during 1942 and 1943. A 20mm AA gun was also mounted on the roof of the artillery car cabin during this period. Other equipment during this period included armoured boxcars, which were later replaced by standard artillery cars. In one configuration this train could be considered as a light version of the BP-42. The counter represents a "snapshot" of the train during 1942-43. It served in Operation Barbarossa, and later in the Balkans. Other trains may have also used this style of wagon.

PzB 16 No. produced: 1 Theatre: Eastern Front
Max armour: 100mm Max. speed: 45 mph / 72 kph
Armament: 2 x 76.2mm Mod. 02/30 field gun; 2 x 76mm AT
Notes: Panzertriebwagen Nr.16 was a unique and unusual design. It consisted of a diesel locomotive, which was encased in heavy armour, with a turreted gondola at either end, each mounting a captured Soviet Putilov 76.2mm Mod. 02/30 field gun. In 1944 two panzerjägerwagen were added. Each mounted a T-34 turret on an armoured flatcar. The result was a relatively small and quiet unit, heavily armed and armoured for its size. It was subordinated to PzZug 10b (later 11). After performing patrol duties in Poland, in was eventually captured in 1945 by the Soviet Sixty-First Army. It remained in service with the Polish People's Army in anti partisan operations in southeastern Poland and was finally withdrawn from service in the late 1960s. It remains on display today as one of the few surviving German armoured train units.

Panzerdraisine I No. produced: unknown Theatre: Balkans
Max armour: 13.5mm Max. speed: 45 mph / 73 kph
Armament: 4-6 MGs per wagen (24-36 MGs per train)
Notes: Developed in 1943, the schweren Schienenpanzerspahzug (sSp.) was a new approach in the development of armoured trains. It was designed to fit three main requirements: flexibility during a mission; ability to travel along light rail lines, and survivability. Each wagen was self-propelled, enabling the train to be split into smaller units, or to patrol as individual cars; this feature, plus the lighter weight of the wagens compared to a standard armoured train, allowed it to use rail lines that were not able to bear the weight of larger trains. Many rail lines across the Soviet Union and eastern Europe used fewer ties and poorer quality beds that lines in western Europe, and were often less well maintained. The ability of each wagen to move under its own power meant that the train no longer relied on a single, vulnerable engine. Six such trains were formed from May 1944, and were deployed to the Balkans. This counter depicts a train composed of the Kammandawagen, armed with MGs.

Panzerdraisine II No. produced: unknown Theatre: Balkans
Max armour: 13.5mm Max. speed: 45 mph / 73 kph
Armament: 4-6 x 7.5 cm KwK 37 L/24; MGs
Notes: Three versions of the sSp were envisaged: a command version armed with MGs and carrying infantry, an artillery version mounting the turret of a Pz IVd with the short 75mm gun, and a flak version mounting the 20mm cannon. The flak version did not enter production. The original concept called for each train to include two flak, four artillery and six command wagens. This counter depicts a train composed of artilleriewagens.

38(t) tank unit No. produced: unknown Theatre: All
Max armour: 50mm Max. speed: 27 mph / 42 kph
Armament: 2 x 37 mm KwK 38(t) L/47.8; 4 x 7.92 mm MG37(t)
Notes: this unit represents the two 38(t) tanks carried on special flatcars by many of the later German armoured trains. The tanks were able to dismount and remount from the flatcars in a simple operation. Although outclassed in comparism with other tanks by the end of the war, the 38(t) remained a useful anti-partisan vehicle, as it was light, handy and reliable, and suited to infantry cooperation. This was vital with the increasingly strong armament carried by partisan groups.

BP-35 Light (beute) No. produced: unknown Theatre: Eastern Front
Max armour: 15mm Max. speed: 25 mph/40 kph Armament: : 4 x 76.2mm 1902; 12 x MG
Notes: numerous Soviet armoured trains were captured by the German army. Some were used "as is", others were broken up to extend the capabilities of existing trains. This counter represents a captured train that has been upgraded to Wehrmarcht standards in the areas of gun sights, intra-train communications and crew training. The train may include a number of German-style wagons or engine.

BP-35 Light (captured) No. produced: unknown Theatre: Eastern Front
Max armour: 15mm Max. speed: 25 mph/40 kph
Armament: : 4 x 76.2mm 1902 or 75mm; 12 x MG; 20mmAA
Notes: this counter represents a captured Soviet train in use by the German Army, but which has not been upgraded. A wide range of different captured or reconstructed trains were used, and players might choose to use a different counter to this – simply select the appropriate Soviet counter and print it in a different colour!

Rail trolley (beute) No. produced: unknown Theatre: Eastern Front
Max armour: 12mm Max. speed: 36 mph / 60 kph
Armament: various, including 37mm guns and MGs
Notes: a range of self-propelled rail trolleys were produced within the Soviet Union both before and during the war at a range of factories. They carried a range of armaments, including some mounting early-style turrets from the T-26 tank, as depicted on this counter. All the units were similar in having two-axles, light armour and light armament. Some were fitted with radios. All had the same mission – to scout ahead of the train they were assigned to. Numerous examples of these vehicles were captured by the German army, who assigned many of them to their own armoured trains where they were used for the same purpose.

PzTrWg 15 No. produced: 1 Theatre: Eastern Front
Max armour: 12mm Max. speed: 36 mph /60 kph
Armament: 6 x MG-34
Notes: this lightly armed and armoured draisene was based on the 1930s VT811 diesel engine. It was lightly armoured, and its purpose was railway line security. Panzertriebwagen 15 was subordinated to a number of armoured trains across its life, and also operated on its own. Armed with six machine guns, it was attached to PzZug 7 in the ill-fated attempt to capture the Westervoort bridges over the Issel River in Holland in 1940. It also saw service in France, Russia, the Balkans and Greece before surrendering in Austria in May 1945.

Schienenwolf No. produced: unknown Theatre: Eastern Front
Max armour: nil Max. speed: n/a
Armament: n/a
Notes: the Schienenwolf was part of a "scorched earth" policy. It consisted of a large metal hook mounted on a flatcar. Designed to be pulled behind a train, the hook could be lowered and would wreak the rails by breaking the ties. Quicker and cheaper than laying explosives over long distances, it had the effect of denying the enemy the use of the railway in the pursuit.

PzZug "Berlin" No. produced: 1 Theatre: Defence of Berlin
Max armour: 80mm Max. speed: 25 mph/40 kph
Armament: 75 mm KwK 40 L/48; quad-20mm AA; MGs
Notes: the "Berlin" was an improvised armoured train based on Rail Protection Train 350. It consisted of five flatcars mounting disabled Pz IV-H tanks. At least one quad-20mm AA gun was also carried. The train saw action in April 1945 in the Seelow Heights and Werbig areas. It is reported to have destroyed 56 Soviet tanks before being outmanoeuvred and abandoned by its crew.

Rail truck No. produced: 100s Theatre: all
Max armour: none Max. speed: 35 mph / 60 kph
Armament: none
Notes: the movement of supplies and troops by rail offered the quickest and most cost-effective of doing so. Numerous trucks were fitted with flanged wheels to enable them to operate on railway lines as light cargo carriers. They were used in all theatres.

Notes for Polish Armoured Train Units

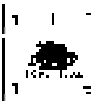
Pociag Pancerny I No. produced: 2 Theatre: Poland
Max armour: 15 mm Max. speed: 28 mph/43 kph
Armament: 2 x 75mm 02/26; 8 x MG (PP 15) / 12 x MG (PP 55)
Notes: this unit represents PP 15 "Smierc" and PP 55 "Bartosz Glowarki" pre-September 1939. The artillery cars were developed by Austria during WW1, and through capture and war restitution came to be used in Poland, Hungary and Czechoslovakia, and later in Germany. Trains of this type saw action throughout the 1920s and 1930s across central Europe.

Pociag Pancerny II No. produced: 2 Theatre: Poland
Max armour: 15mm Max. speed: 25 mph/40 kph
Armament: 2 x 75mm 02/26; 1 x 100mm 14/19 howitzer; 8 x MG (PP 15) / 12 x MG (PP 55)
Notes: during the 1939 mobilisation, PP 15 "Smierc" and PP 55 "Bartosz Glowarki"were given an artillery car from reserves, mounting a single 100mm 14/19 howitzer.

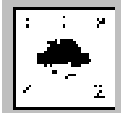
Pociag Pancerny III No. produced: 3 Theatre: Poland
Max armour: 12mm Max. speed: 25 mph/40 kph
Armament: 4 x 75mm 02/26; 12 x MG (PP 13 & 53) / 16 x MG (PP 51)
Notes: three of Poland's armoured trains (PP 13 "General Sosnkowski"; PP 51 "Pierwszy Marszalek"; PP 53 "Smialy") each had two artillery cars mounting two turreted 75mm 02/26 guns. The designs varied, with some of the artillery cars having been captured during the Russo-Polish War.

Pociag Pancerny IV No. produced: 5 Theatre: Poland
Max armour: 12 mm Max. speed: 25 mph/40 kph
Armament: 2 x 75mm 02/26; 2 x 100mm 14/19 howitzer
Notes: five of Poland's armoured trains (PP 11 "Danuta"; PP 12 "Poznanczyk"; PP 14 "Paderewski"; PP 52 "Piłsudczyk" and PP 54 "Grozny") each had two artillery cars, each mounting a turreted 75mm 02/26 gun and a 100mm 14/19 howitzer. These designs were more standardised, with modern, purpose-build equipment. As with all Polish armoured trains, anti-aircraft defense was limited. Some of this equipment was later used by Germany.

TK-R-TK draisine No. produced: 16 Theatre: Poland
Max armour: 16mm Max. speed: 35 mph / 55 kph
Armament: 2 x MG; 1 x 37mm SA18 Puteaux L/21 gun
Notes: Polish armoured trains were equipped with four TK/TKS tankettes and two Renault FT-17 tanks. Each had devices that allowed them to move along railway lines. This enabled them to scout ahead of the train, as well as leave the tracks and proceed cross-country if required. Mounting or dismounting from the devices only took a few minutes and could be done without exposing the crews. Typically, the tanks were grouped into threes in the combination TK-R-TK, with one group at either end of the train. On occasion during September 1939, these groups conducted attacks, spotted for the train's artillery for indirect fire, and performed useful reconnaissance work. However, their casualty rate was high. Each counter represents a TK-R-TK combination.



TK rail scout No. produced: 56 Theatre: Poland
Max armour: 8 mm Max. speed: 18 mph / 30 kph
Armament: 1-2 MGs
Notes: Polish armoured trains carried five TK or TKS tankettes for scouting purposes. Four tankettes were grouped into pairs with Renault FT-17; the fifth tankette was carried as a spare on the supply train accompanying the armoured train. This counter represents the tankettes operating away from their rail-riding device. To mount or dismount, the unit (or the TK-R-TK as appropriate) is turned over during the movement phase; it cannot fire, move or spot during that turn. On the next turn the unit is turned over. If dismounting, leave the TK-R-TK unit inverted on that hex; the TK rail scout must return to that hex to mount its rail riding device.



Tatra draisine No. produced: 15 Theatre: Poland
Max armour: 8 mm Max. speed: 28 mph /45 kph
Armament: 1-2 MGs
Notes: this small, self-propelled draisene was designed to scout along the railway lines ahead of the armoured train. It was armed with one or two machine guns, and had a crew of two. Purchased from Tatra in Czechoslovakia 1926, it proved to be underpowered. The flexibility of the TK-R-TK combination in being able to leave the railway lines meant that the Tatra had been replaced by 1939 in all trains except PP 13 and 15. Each Tatra carried equipment enabling the crew to shift it to a parallel rail line.

C4P rail rider No. produced: 20 Theatre: Poland
Max armour: none Max. speed: 25 mph/40 kph
Armament: none
Notes: each armoured train was accompanied by a support train carrying accommodation, a kitchen, and engineering supplies and personnel. Two C4P half-tracks fitted with rail riding devices were attached to the engineering personnel on each train.

Assault Platoon No. produced: Theatre: Poland
Max armour: n/a Max. speed: n/a
Armament: 30 infantry with rifles and light machine guns
Notes: each armoured train had a dedicated assault platoon. The unit travelled in the assault car, and was able to fire its weapons from within the train. The platoon was trained to rapidly dismount from the train and assault an objective under the covering fire of the train's artillery. The platoon could also clear railway blockages (treat as an engineer unit for this purpose – the assault platoon does not gain any of the CAT bonuses of a regular Engineer unit).

Other nations

Finland

Panssarijuna I "Hyöky" No. produced: 1
Max armour: varied Max. speed: 25 mph/40 kph
Armament: 2 x 76mm VK/04 guns; 14 x MG (1939)
Notes: a number of armoured trains were used during the conflict within Finland in 1918-19. The victorious White Finns formed two armoured trains out of the best components of the surviving or captured rolling stock. Neglected until the mid-1930s, the trains were progressively upgraded following the winter War in 1939/40, when the guns were replaced by Bofors 40mm AA guns and the number of MGs increased to 22. The Finns were happy to use the AA guns in an anti-tank role; when using this piece in scenarios after 1941 the unit can attack both ground and aerial targets as desired. The codename "Hyöky" was used during 1939.

Finland

Panssarijuna II "Armas" No. produced: 1
Max armour: varied Max. speed: 25 mph/40 kph
Armament: 2 x 76mm VK/04 guns; 22 x MG (1939)
Notes: this train was also progressively upgraded after 1940. In 1941 it the guns were removed and replaced with 40mm Bofors AA guns. For one operation a flatcar mounting a 75mm K/15 field gun on a flatcar was added. In 1942 one Bofors gun was replaced with a 76mm AA gun. These two trains shot down a number of aircraft, and were increasingly used as mobile AA batteries.

Finland

BP-35 light (captured) No. produced: 1
Max armour: 20mm Max. speed: 25 mph/40 kph
Armament: 2 x 76.2mm 1902; MGs
Notes: During 1940 a Soviet armoured train with one artillery car was captured by Finnish forces. After some modifications, the train was returned to fight its former owners.

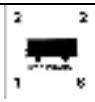
Hungary

No. 1 1940 No. produced: 3
Max armour: 15 mm Max. speed: 25 mph/40 kph
Armament: 1 x 80mm cannon; 1 x 36M 37mm AT gun; 2 x 20mm guns; 6-8 x MG
Notes: after WW1, the excellent light armoured trains produced by Austria were widely used throughout Eastern Europe (see Polish train "75mm I" as example). Hungary operated a number of these trains throughout the 1920s and 1930s; however by 1939 the artillery cars had been replaced or modified. Although there were several variants, the armament carried was the same. The 80mm cannon was fixed to fire forward, the 37mm AT gun to the rear, with the 20mm "heavy rifles" in turrets. There was no separate infantry wagon. These three trains took part in the Hungarian actions in Slovakia and Ruthenia in 1939, Transylvania in 1940, and Yugoslavia and the Soviet Union in 1941. During 1944 the trains were active in actions within Hungary.

Hungary

No. 4 1940 No. produced: 1
Max armour: 15mm Max. speed: 30 mph / 48 kph
Armament: 1 x 80mm cannon; 1 x 36M 37mm AT gun; MGs
Notes: similarly armed to the other Hungarian armoured trains, this self-propelled draisene was modified extensively. This unit operated on its own or with a flatcar before and after as some protection from mines. It is unclear if it was combat during WW2, and was likely used for internal security purposes.

Tren blinda I & II No. produced: unknown
Max armour: 8-15mm(?) Max. speed: 25 mph/40 kph
Armament: various
Notes: Italian forces performing anti-partisan duties in Yugoslavia developed a number of improvised armoured trains for escort and security work. One type consisted of armoured, open topped wagons, with the train mounting two MGs and a 47mm gun. A second type consisted of 5-6 2-axle trucks, with loopholes for infantry weapons and open sections at either end mounting an MG or light mortar. The Italian forces in Russia may have operated an older style, captured armoured train, armed with a forward firing cannon and MGs.



Italy

These counters can be used to represent the variety of improvised armoured trains.

Italy

AB41 Ferroviaria No. produced: 20+ User: Italy
Max armour: 15 mm Max. speed: 49 mph / 78 kph
Armament: 20mm Breda 35 autocannon; 2-3 MGs
Notes: the AB41 was a well-designed and effective armoured car that was used extensively by the Italian army. For rail patrol use in the Balkans, it was fitted with a kit that included railway wheels, a sand container, a spotlight and extra lighting and signalling devices. The counter represents 1-2 vehicles. A number of earlier model AB40s may have also been equipped with the railway kit.

Italy

Littorina Blinda I & II No. produced: 16
Max armour: 6mm/11.5mm Max. speed: 73 mph / 118 kph
Armament: 2 x 20mm Breda m38; 2 x flamethrowers; 6 x MG; 1-2 mortars (second series)
Notes: the self-propelled Libli units were built for Italian army service in the Balkans. The first series had armour only 6mm thick, which was increased to 11.5mm in the second series. Their range of armament was unique, and included flamethrowers. They patrolled in pairs, and the counter represents two such units.

Croatia

Oklopni vlak No. produced: 10(?)
Max armour: 10mm (?) Max. speed: 25 mph/40 kph
Armament: 2 x 37mm SA18 Puteaux L/21 guns; 81mm mortar; 6 x MG
Notes: operated by Croatian forces in the anti-partisan / internal security role, these trains were typically composed of two FT-17 tanks mounted on flatcars, with for to seven armoured railway cars carrying up to a half-company of infantry. The tanks were unable to leave the flatcars. Variations were possible, and other tanks such as the S-35 may have been carried at times. The pro-Axis State of Croatia was formed in April 1941 following the German invasion of Yugoslavia. Croatian forces were engaged in action on both the Eastern Front under German direction, or in anti-partisan work across the former Yugoslav territories.

Slovakia

Stefanik No. produced: 1
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: 2 x 37mm KPÚV vz.37; 1 x 75mm Model 15 gun; 10 x MG
Notes: the "Stefanik", "Masaryk" and "Hurban" armoured trains were built in 1944 during the Slovakian National Uprising. Each train was built in less than two weeks. The trains achieved some tactical success due to a number of factors, including the extensive rail network available to them, the presence of numerous tunnels to hide within, mountainous terrain, and a second-line opposition. The trains used non-running LT-35 and LT-38 tanks as their basis; some of the tanks may have been placed on the flatcars and an armoured box exposing only the turret built around them. The Stefanik was armoured with boiler plate. After several weeks of fighting, the train was abandoned by its crew who continued fighting as guerrillas.

Slovakia

Hurban No. produced: 1
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: 3 x 37mm KPÚV vz.37; 1 x 100mm Skoda vz14/19; 10 x MG
Notes: better armoured than "Stefanik", the "Hurban" carried three tank turrets as well as a forward-firing 100mm cannon. It saw action over six weeks during September-October 1944. After sustaining damage, it was abandoned in a tunnel with the crew escaping to continue fighting.

Slovakia

Masaryk No. produced: 1
Max armour: 30mm Max. speed: 25 mph/40 kph
Armament: 4 x 37mm KPÚV vz.37; 1 x forward firing 80mm light canon Škoda vz.17; 11 x MG
Notes: "Masaryk" was the third train built during the National Uprising, and was the best armed and armoured. It was built in 10 days. It participated in a number of defensive battles before sustaining damage leading to it being abandoned in a tunnel. The crew escaped to fight on. The three trains suffered regular attack by aircraft, which were unsuccessful due to the inexperience of the pilots and the presence of numerous tunnels for the trains to shelter in.

Japan

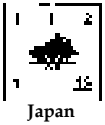
Sumida Type 91 (So-Mo) No. produced: 1000
Max armour: 16mm Max. speed: rail 37mph/60kph; road 25mph/40 kph
Armament: 4-6 x MGs
Notes: although resembling the six-wheeled armoured cars used by the Imperial Japanese Army, this vehicle was defined as a "broad gauge tractor". Its purpose was to ensure the security of the railway network. Typically operating in pairs, these vehicles patrolled along railway lines. The flanged railway wheels could be fitted with special rims to enable them to leave the tracks, however they were considered cumbersome cross-country. Each vehicle was armed with 4-6 MGs and crew weapons, and carried a crew of six. In PB terms, this vehicle can change from rail to road movement in one full turn, during which it is considered dispersed. The So-Mo can be used to transport infantry units on flatcars that it tows; this should be specified in a given situation. If using road movement, it has a MF of 8, and moves as a truck.

Japan

Rinji Soko Ressha No. produced: 1
Max armour: 11mm Max. speed: 45 kph
Armament: 2 x 100mm cannon; 2 x 75mm AA; 33 x HMG; 6 x LMG; 54 x rifles
Notes: this "experimental" armoured train carried a large complement of men and nearly 40 machine guns, suggestive of its internal security role throughout Manchuria.

Japan

Type 94 No. produced: 1
Max armour: 11mm Max. speed: 25 mph/40 kph
Armament: 2 x 100mm cannon; 2 x 77mm AA; 12 x HMG
Notes: transport in Manchuria relied heavily on railways. The lack of roads, and the problems faced by cross-country transport in Manchuria (tanks in Manchuria required an additional road wheel to counter the problems involved in crossing the ridged kaolin fields) meant that control of the rail network was critical. This armoured train was used extensively throughout Manchuria for patrol, escort and internal security duties. Earlier Japanese trains in Manchuria had faced other armoured trains operated by various war lords; as Japanese control tightened this train's role shifted from offensive to defensive.



Japan

So-Ki No. produced: 121
Max armour: 8mm Max. speed: rail 45mph/72 kph; road 12-18mph
Armament: none (sometimes armed with MG and crew weapons)
Notes: this vehicle was designed to fulfil a number of tasks – patrolling railways, cross-country movement in areas with no roads, and the ability to move between the two. The So-Ki had retractable rail wheels in the hull bottom, which could also be adjusted to suit varying track widths. The tank tracks allowed for effective cross-country movement. Changing between the two was quick, taking about one minute to dismount the rails, and about three minutes to return to the rails. In PB terms, it costs the So-Ki three MF to leave the rails, and 8 MF to return to the rails. The So-Ki can transport infantry on flatcars as per the So-Mo; however when doing so its MF is reduced to 8. The counter represents two So-Ki units.

Japan

Shi-Ki 98 or 100 No. produced: 1000+
Max armour: none Max. speed: 30 mph / 48 kph
Armament: none
Notes: based on a standard truck model, these rail trucks were used extensively by Japanese forces throughout China and Manchuria. The Shi-Ki was able to move between road and rails by changing the wheels. They were often used in pairs, transporting supplies and troops. Like most rail units based on trucks, the pairs were often linked back-to-back. This allowed the unit to proceed in either direction at maximum speed, rather than be limited to the speed of the reverse gear. These units were often used as engines, hauling a number of flatcars or boxcars.

U.K.

1940 A-M No. produced: 12
Max armour: 15mm (?) Max. speed: 25 mph/40 kph
Armament: 2 x 57mm cannon; 8 x MG; some fitted with Boyes AT rifles
Notes: devised in 1940 to patrol coastal railway lines and to provide a mobile defence against German landings, the trains consisted of a 2-4-2 engine, two cargo wagons and two fighting wagons. The fighting wagon was armed with a 57mm (6pdr) cannon taken from stores, and which had previously been used to arm the WWI Mk IV & V tanks. A mix of Bren, Lewis and Vickers MGs were mounted. Boyes AT rifles could also be carried, with some trains later mounting a 40mm Bofors gun. Crew complement was around 35.

U.K.

Rail Jeep No. produced: unknown
Max armour: none Max. speed: variable, depending upon load
Armament: none
Notes: the Jeep was readily adapted to use on railway lines by replacing the wheels with flanged rail wheels. Jeeps were used to pull heavy cargos, including trains up to 250 tons. Photos exist of rail Jeeps pulling steam cranes, boxcars and flatcars loaded with supplies. They provided a quick and cost-effective of replacing locomotives on light gauge lines, and were also used on standard gauge lines in Europe and SE Asia. One problem encountered was the Jeep was very light, meaning that it had trouble with shifting a heavy load, and with braking. This was countered by weighing the Jeep down with various items, including steel, sandbags and people! In PB terms, the Jeep can be used to transport infantry units, mortars and artillery up to 45mm. Each unit carried reduces the Jeep's MF by 2 (cumulative). Normal stacking rules apply.

U.K.

FMSR/Krohcol No. produced: 1
Max armour: unknown Max. speed: 25 mph/40 kph
Armament: none (rifle platoon personal weapons)
Notes: Operation Krohcol was a plan intended to stop a Japanese invasion of Malaya through Siam. The plan called for an armed intervention by British and Commonwealth forces into Siam to stop them before they reached Malaya. In December 1941 the Siamese Government gave in to Japanese pressure, and forces of the Imperial Japanese Army began moving through Siam south into Malaya. As part of Operation Krohcol, a locomotive and two flatcars of the Federated Malaya States Railway was armoured with boiler plate and sandbags. On board were a rifle platoon from the 2nd Battalion, 16th Punjab Regiment and a platoon of Royal Engineers. Their task was to advance into Siam and destroy the railway bridge at Khlong Ngae. Parts of the rails were destroyed, but overall the task failed as the bridge standings were built of a reinforced concrete that resisted the explosives used. In a further attempt to damage the bridge, the empty train was run over the damaged bridge – it reached safety on the other side, later moving back to Malaya. No photo of this train could be located – the counter depicts a FMSR 125 Class I 40 0-6-4 locomotive, which was in service in Malaya at the time of the incident.

Notes for generic Armoured Train units

(use for China, Russian Civil War and NKVD)

Train 1 No. produced:
Max armour: n/a Max. speed: 25 mph/40 kph
Armament: 3-4 x 75mm field guns; MGs
Notes: this counter represents a train mounting field artillery pieces placed directly onto flatcars. The gun may be fully or partially surrounded by sandbags. Sometimes spaced wooden armour filled with sand was used. Although cheap and easy to make, the sand would leak out as the train moved. This type of train was common in the initial stages of the Russian Civil War and other post-WW1 conflicts in Europe, and also in China. 3"/75mm guns were common, but other calibres were use.

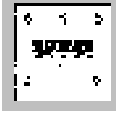
Train 2 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 2-4 x 75mm field guns: MGs
Notes: this counter represents a train mounting light artillery o in partially armoured wagons. The effectiveness of the weapons was often reduced by their limited field of fire. A variety of light guns on field carriages were used, including mountain guns.

Train 3 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 2-4 x 75mm guns: MGs
Notes: this counter represents a train where the guns are placed on fixed mounts in partially armoured wagons. Fields of fire were better than on the type 2 trains.

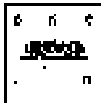
Train 4 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 2-4 x 75mm guns; MGs
Notes: this counter represents a train where the guns are mounted in turrets, but the wagon may be partially armoured.

Train 5 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 2-4 x 75mm; MGs
Notes: this counter represents a train where the guns are mounted in turrets, and the wagons are fully armoured.

Train 6 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 2-4 x 75mm guns; MGs
Notes: some trains mounted long barrelled guns, sometimes taken from naval ships. The wagons are partially armoured.



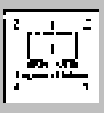
Train 7 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 2-4 x 75mm guns; MGs
Notes: this counter represents a train mounting long-calibre naval guns in fully armoured wagons.



Train 8 No. produced:
Max armour: 10-15mm Max. speed: 25 mph/40 kph
Armament: 4 x 75mm guns; MGs
Notes: this counter represents a train with turreted guns in partially armoured wagons.

Train 9 No. produced:
Max armour: Max. speed: 25 mph/40 kph
Armament:
Notes: this counter is a generic locomotive counter. It can be used to transport troops or other counters as agreed between the players. This unit may be considered as armoured or unarmoured, as determined by the players. The armouring or partial armouring of the locomotive was a common occurrence, and could involve using placing sandbags on the boiler, bolting steel plate to the cabin, or encasing the entire locomotive within armour.

Assault Platoon (generic)
Armament: rifles, LMGs
Notes: many armoured trains carried infantry units. The infantry were able to fire their weapons from the train, and could dismount to close assault a target while the train supported them with artillery and MG fire. Some assault platoons were trained in track repair and the skills needed to operate signals and change tracks. These three counters (plus one in the Polish section) can be used to represent a variety of troops from different theatres of operation, taking into account their training, weapons and experience.



Engineer Platoon (generic)
Armament: rifles, LMGs, explosives
Notes: engineer units attached to armoured trains were equipped to deal with line repairs and blockages, as well as bridge and tunnel demolition.

Notes for other counters

Damaged track
Notes: use this counter to denote a section of damaged track. Trains are unable to enter a hex containing this counter. The counter can be removed; see Rules section for details.

Unit Function Tables - Soviet Units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	BP-35 Light	H	•	•	•1			A		•		1				•	13-H-6-5-8
	BP-35 Heavy	H	•	•	•1			A		•		1				•	14-H-8-5-8
	NKVD-1	H	•		•1			A		•		1					4-H-3-3-8
	BA-6ZhD	H	•		•1			A			&	1					2-H-2-2-11
	BA-20ZhD	I	•		•1			A			&	1					1-I-2-2-16
	Rail trolley	A	•		•1			A				1					1-A-2-2-12
	MBV-rail trolley	H	•		•1			A				1					2-H-4-3-20
	MBV-D1	A	•		•1			A				1					3-A-3-1-12
	MBV-D2	H	•		•1			A				1					6-H-4-2-12
	OB-3	H	•		•1			A				1					8-H-3-5-8
	OB-3	H	•		•1			A				1					6-H-3-5-8
	Improvised 1941	I	•		N/A 1			A		•		1					8-I-6-3-8
	NKPS-42	A	•	•	•1		•2	A		•		1				•	16-A-6-5-8
	Kozma Minim	A	•	•	•1		•2	A		•		1				•	10-A-5-5-8
	BP-43	A	•	•	•1		•2	A		•		1				•	8-A-5-6-8
	AA train	AA	•				•	A				1					9-AA-12-3-8
	AA train	AA	•				•	A				1					12-H-12-3-8
	Engine	T						NA		•		1					0-C-0-1-8
	Armed tram	H	•					NA		•		1					1-H-2-1-10

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

2 Unit may conduct an AA attack using one-half of its AF

& Unit has rail riding device or adaptation to enable it to travel along railways. This unit may be able to leave the railway hex; check individual unit information for details.

German Units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Eis. PzZug 1	I	•		•1			A		•		1					6-I-6-2-8
	PzZug II	H	•		•1			A		•		1					4-H-6-3-8
	PzZug III	H	•		•1			A		•		1					6-H-8-4-8
	PzZug 10a & 10b	H	•		•1			A				1					12-H-20-5-8
	PzZug 1941 (2)	I	•		•1			A	&			1					2-H-2-2-10
	PzZug 1941 (3)	H	•		•1			A	&			1					3-H-2-2-10
	PzZug 1941 (4)	H	•		•1			A	&			1					4-H-2-3-10
	(PzZug 1941 engine)	T						A		•3		1					0-C-0-1-10
	Lokomotiv	T	•					NA		•7		1					0-C-0-1-8
	PzKpfw III N Schienenfahzug	H	•		•1			A			&	1					5-H-8-7-9
	PzKpfw 35C 739 (f) - 2	H	•		•			A			&	1					2-H-2-2-6
	PzKpfw 35C 739 (f) - 3	I	•		•			A			&	1					3-H-2-2-6
	PzKpfw 35C 739 (f) - 4	A	•		•			A			&	1					4-H-2-3-6
	BP-42 light	H	•	•	•1		•4	A		•		1					18-H-20-6-8
	BP-42 heavy	H	•	•	•1		•4	A		•		1					38-H-20-6-8
	BP-42 (PzZug 32)	H	•	•	•1		•5	A		•		1					33-H-20-6-8
	BP44	H	•	•	•1		•6	A		•		1					45-H-20-8-8
	SdKfz 135/1	H	•	•				A			&	1					20-H-12-2-6
	Pz. Spähwagen P.204(f)	H	•		•1			A				1					1-H-1-1-15
	Streckenschutzug I	H	•		•1			A		•		1					2-H-2-3-8

	Streckenschutzug II	A	●		●1			A		●		1					5-A-3-3-8
	Streckenschutzug III	A						A									6-A-3-3-8
	PzZug 3 (1942)	A	●		●1			A		●		1					6-A-5-3-8
	PzB 16	H	●		●1			A				1					10-H-10-5-12
	Panzerdraisine I	I	●		●1			A				1					6-I-6-5-15
	Panzerdraisine II	H	●		●1			A				1					6-H-8-6-15
	38(t) tank unit	H	●		●			A			&	1					2-H-2-2-9
	BP-35 Light (beute)	H	●	●	●1			A		●		1					18-H-12-5-8
	BP-35 Light (captured)	H	●	●	●1			A		●		1					13-H-6-5-8
	BP-43 (beute)	A	●	●	●1			A		●		1					12-A-10-6-8
	Rail Trolley (beute)	A	●		●1			A		●		1					1-H-2-1-12
	Panzertriebwagen 15	I	●		●1			A				1					1-I-2-1-12
	Schienenwolf	E	●2					-				0					0-E-0-0-0
	PzZug “Berlin”	A	●		●1			A				1					14-A-8-3-8

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked “N/A” may only overrun non-armoured units.

2 The Schienenwolf is a device designed to destroy rail lines and be towed behind a train. It does not count for stacking purposes. Stack underneath a train unit until deployed, when it must be stacked on top of the train. Trains so equipped move at no more than two hexes per turn; place a “Damaged Track” marker on the hex as the train moves. The railway track is considered destroyed, however the marker only affects movement along the railway by trains, and has no affect on other units moving through the hex or on combat results.

3 The PzZug 1941 locomotive may only transport the PzKpfw 35C 739 (f) tanks; when loaded, replace with the appropriate counter

4 May conduct an AA attack using one-half of its AF

5 May conduct an AA attack using one-third of its AF

6 May conduct an AA attack using one-quarter of its AF

7 The exact units that can be carried by a locomotive must be determined by the players

& Unit has rail riding device or adaptation to enable it to travel along railways. This unit may be able to leave the railway hex; check individual unit information for details.

Polish units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Pociag Pancerny I	H	•		•1			A		•		1				•	4-H-12-4-8
	Pociag Pancerny II	H	•		•1			A		•		1				•	7-H-12-4-8
	Pociag Pancerny III	H	•		•1			A		•		1				•	10-H-20-5-8
	Pociag Pancerny IV	H	•	•	•1			A		•		1				•	15-H-25-5-8
	TK-R-TK	I	•		•1			A			&	1					1-H-2-2-15
	TK Scout	A	•		•			A			&	1					1-I-2-1-6
	Tatra	H	•		•1			A				1					1-I-2-2-15
	C4P rail rider	A	•					NA		•2	&	1					0-C-0-1-12
	Ti3 Locomotive	T	•					NA		•3		1					0-T-0-1-8
	Assault platoon	H	•			•		NA				1					2-I-4-6-1

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

2 Unit may transport Engineer units

3 The exact units that can be carried by a locomotive must be determined by the players

& Unit has rail riding device or adaptation to enable it to travel along railways. This unit may be able to leave the railway hex; check individual unit information for details.

PanzerZug 22; showing artillery wagon from former Polish train No. 54 "Grozny"

Finnish units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Panssarijuna 1	H	•		•1			A		•		1				•	4-H-6-3-8
	Panssarijuna 2	H	•		•1			A		•		1				•	6-H-8-4-8
	BP-35 Light (captured)	H	•		•1			A		•		1				•	17-H-6-5-8

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

Hungarian units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	No. 1 1940	H	•		•1			A		•		1				•	4-H-3-3-8
	No. 4 1940	H	•		•1			A				1				•	2-H-2-1-10

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

Croatian units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Oklopni vlak	H	•		•1			A		•		1					2-H-2-8

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

Italian units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Littorina Blinda I	A	•		•1			A				1					5-A-3-1-23
	Littorina Blinda II	A	•		•1			A				1					6-A-3-2-23
	Tren blinda I	H	•		•1			A		•		1					4-H-6-3-8
	Tren blinda II	I	•		•1			A		•							2-I-2-1-8
	AB41 rail	H	•		•1			A				1					1-H-2-1-14

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

Japanese units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Type 94	H	•	•	•1			A		•		1					6-H-4-3-8
	Experimental	H	•	•	•1			A		•		1					14-H-4-3-8
	Sumida	I	•		•1			A			&	1					3-I-6-1-12
	Shi-Ki 98/100	-						N/A		•		1					0-C-0-1-10
	So-Ki	I	•		•1			A			&	1					1-I-2-1-13

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

& Unit has rail riding device or adaptation to enable it to travel along railways. This unit may be able to leave the railway hex; check individual unit information for details.

Sumida Type 91 (So-Mo)

British and Commonwealth units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	UK 1940 A-M	H	•		•1			A				1					2-H-4-2-8
	Rail Jeep	-						NA		•2		1					0-C-0-1-12
	FMS/Krohcol	I	•		•1			A		•		1					0-T-0-1-8

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

2 Unit can be equipped to tow a range of equipment and personnel. Players should agree beforehand what can be towed by this unit.

Slovakian units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Stefanik	H	•		•1			A				1					2-H-2-2-8
	Masaryk	H	•		•1			A				1					3-H-2-2-8
	Hurban	H	•		•1			A				1					4-H-2-2-8

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

Generic assault / engineer platoons

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Assault platoon	I	•			•		N/A				1					2-I-2-4-1
	Assault platoon	I	•			•		N/A				1					3-I-1-4-1
	Assault platoon	I	•			•		N/A				1					2-I-4-5-1
	Assault platoon	I	•			•		N/A				1					3-I-4-6-1
	Engineer platoon	I	•			•		N/A				1					2-I-2-3-1

Chinese / Russian Civil War units

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Train 1	H	•		•1			NA		•		1					4-H-4-1-8
	Train 2	H	•		•1			A		•		1					2-H-2-2-8
	Train 3	H	•		•1			A		•		1					4-H-4-2-8
	Train 4	H	•		•1			A		•		1					4-H-4-3-8
	Train 5	H	•		•1			A		•		1					4-H-6-3-8
	Train 6	H	•		•1			A		•		1					4-H-8-2-8
	Train 7	H	•		•1			A		•		1					4-H-8-3-8
	Train 8	H	•		•1			A		•		1					8-H-6-2-8
	Train 9	T						N/A		•2		1					0-T-0-1-8

Notes:

1 Units restricted to rail movement may only conduct an over-run attack against enemy units in a rail hex. It is assumed unless agreed otherwise by the players that the rail-line are single track, except at designated stations or town hexes; therefore one rail unit cannot conduct an over-run attack against another rail unit. Units marked "N/A" may only overrun non-armoured units.

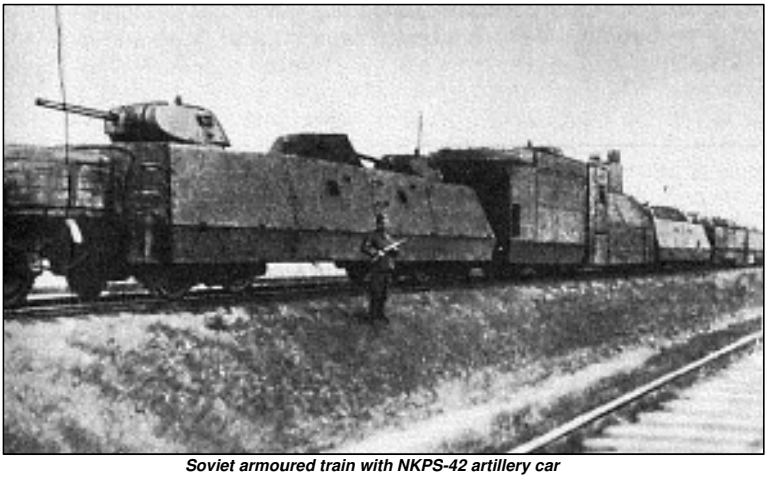
2 The exact units that can be carried by a locomotive must be determined by the players

Other counters

POINTS	UNIT	COMBAT							MOVEMENT				OR	EXP			FACTORS
		WEAPON	ATTACK MODES					TARGET	TRUCK	CARRIER	PASS	STACK	QM	TUR AFV	ARTY FOF	SSC	
			DF	IF	OR	CAT	AA										
	Damaged track											[1]					

Notes:

1 A unit restricted to rail movement may not enter a hex containing a Damaged Track counter. Stacking restrictions and movement of other units are not affected.



Soviet armoured train with NKPS-42 artillery car

Design notes

The Z-factor values for these counters were developed using the PanzerBlitz design articles written by Alan Arvold, available on the IMSTRAT website. Some departures from these notes were required to account for some of the unique qualities of armoured trains. For example, although some armoured trains carried more than 50mm of armour, a hit on the engine could put the entire train out of action. Perversely, a hit on an armoured train that did not penetrate the armour could knock the train from the tracks, and armoured train designers of all nations incorporated this into their design – sometimes it was better to lose a carriage that have the whole train rendered immobile! Armoured trains do not have the ability to disperse in the same way a tank platoon can; however the entire train can move as one, and this was often used to enhance the protection of the train. These factors lead to assigning a lower Defense Factor to an armoured train than originally anticipated; the ready availability of medium sized anti-tank guns contributed to the demise of the armoured train as a battlefield unit, especially in a PB situation when a battery of AT guns is the norm.

Attack factors were influenced by several considerations, including the availability of gun sights. Soviet intra-train communication systems were greatly superior to anything available to Soviet tank units, allowing the commander to focus the fire of all weapons on the one target with ease. Depending on the construction of the rail-line, the train can obtain superior lines of sight to other, dispersed units (skulking from cover to cover) by virtue of being raised up higher that the surrounds. Artillery cars often mounted an armoured observer's turret. One complicating factor is the mix of weapons available on an armoured train. In some cases this amounted to a battery or more each of several types of weapons, including A, H and AA class. In some cases compromises were required, based on the typical mission of the train. For instance, the NKPS-42 AF was based on the A class 76mm guns; the RF was maintained but the AF was increased to account for the H class weapons available.

The speed of many armoured trains was similar, with a MF of 8 being average. Although some armoured trains were capable of moving faster than this, there was a cost in that the constant jinking movements experienced by a train were damaging to the fabric of the armoured train. Armour could be loosened, and wheels and frames damaged by moving the train too quickly. Additionally, as an armoured train cannot disperse, examples exist of extremely cautious movement by trains in the face of possible attack. Railway construction was not consistent, with certain areas of track not able to withstand trains over a certain weight or moving at a higher speed. Other factors include coal and water quality, cold temperatures, weight of armour and wagons, number of engines, and engine maintenance.

In PB terms, many different tanks can outrace the train. The true value of the train's speed is strategic in its ability to maintain this speed, using a pre-existing infrastructure for refuelling quickly, and in only requiring a small number of people to drive it. In crude terms the tanks are sprinters and the trains are marathon runners. The Split-Fire rule with trains helps to restore some of the glamour to the armoured train, by accounting for its ability to fire then move away as one unit.

The various Z-factors represent my view of armoured trains. Due to the ease with which artillery cars can be attached or detached, I feel quite relaxed about modifying these factors – an armoured train unit may change significantly over its lifetime, and a counter represents a snapshot rather than a set value. These counters represent average values for the armoured trains depicted.

During discussion on and off the CONSIMWORLD PanzerBlitz Forum, the issue of how to represent an armoured train arose.

There were essentially four views of thought:

a. **represent the entire train with one counter.**
Arguments for this approach include simplicity of play and ease of movement across the board; stopping confusion over stacking limits; consistency with PB approach; avoiding complex rule requirements (eg if the second lead artillery car is destroyed, does this mean the first car has to be abandoned and the rest of the train can only move in the opposite direction…and how long does it take to unhitch the destroyed car from the train under fire, roll a dice to see if they warped and can't be undone in game terms etc etc)

b. **represent the individual components (eg artillery car, assault car, engine, etc) of the train with separate counters.**
Arguments for this approach include a more accurate representation of the unique features of armoured trains; the ability to accurately reflect the weapons mix of an armoured train, and the ability to produce a mix-n-match train to reflect historical situations.

c. **represent each weapon type with separate counters**
Arguments for this approach include representing the full offensive capability of the armoured train. However this issue does not address issues of defence or movement, especially when different weaponry can share the one artillery car or truck.

d. **use counters with dual or triple values**
Applied to the "one counter" approach, this method allows representation of two major weapon types (more becomes too awkward). There are problems with this where the train had more than two major weapon types (eg the Soviet *Kozma Minin* class mounted artillery, AT guns, MGs, rockets *and* AA guns). Other issues include the *handedness* of some of the weapons – for instance, many armoured trains had significant MG armament that was designed to provide supporting cover to its assault troops, but only half could be fired from a given side.

Applied to the "multiple counter" approach, this method allows for accurate representation of weapons used, but creates other problems regarding number of allowed attacks (the *Kozma Minin* could potentially make 10-12 attacks each turn on different targets). This situation creates a non-historical super-unit, as well as leading to complicated accounting during attacks.

The system chosen for *PanzerZug!* was to represent each armoured train with one counter. Several factors influenced this decision; including

- keeping the game and counters simple
- realising that most trains have a relatively low Defence Factor, meaning that individual rail-car counters would have a DF of 1 and a very short life expectancy
- realising that most games are unlikely to have more than two armoured trains on the board – who wants to make twelve counters to represent two obscure (yet fascinating) units?
- Any quirks of individual trains could be easily met with a special rule rather than the need to make more counters.

Units that historically had an independent function, such as infantry assault platoons or scout draisines, received their own counters. The train transports these units until they dismount to perform their own mission; a function consistent with the PB / PL rules for transporting units. In some case they may fire from the train. Regarding Attack and Range factors, some compromises had to be made, based on the typical mission the train had, the likely ammunition available, intra-train communication etc, as well as the weapon mixes' relationship to existing PB / PL counters.

Some dual factor counters were created, primarily where a train's anti-aircraft weapons approximated or equalled that represented by existing PB / PL counters. These counters are offered as alternatives for players interested in this approach.

One idea for players interested in simulating the quirks of armoured trains without creating multiple counters could be to apply an attrition system, where a paper record is kept of losses to Z-score factors. When a D or DD is rolled, a number of factors equal to the adjusted AF of the attacking weapon less the number rolled on the die is removed from one or more factors.

DF cannot go below 1. T o be destroyed, an X must still be rolled.

If AF or RF goes to 0, the train cannot attack.

If MF goes to 0, the train is immobilised.

These modified factors are then used in future combat, movement or defence. This simulates some of the things that happened to armoured trains – engine destroyed or damaged and train unable to move or to move only at reduced speed; forward artillery car damaged; train unbalanced and likely to roll off tracks; intra-train communications lost.

The following chart is designed to keep track of any changes to Z-score factors. Players are free to design their own versions of this chart.

Train Name: _____

Turn	AF	RF	DF	MF	AA AF	AA RF
1						
2						
3						
4						
5						
6						
7						

Appendix 1 – Resources for Armoured trains in Panzer Blitz

- **IMSTRAT**
  Ward McBurney's Imaginative Strategist website contains a wealth of information for the PB/PL enthusiast, including new maps and counters, key heritage articles and PB/PL design notes by Alan Arvold. A critical unifying theme to the IMSTRAT collection is that all items must conform to the original design parameters of PB/PL. A number of the new maps include railway lines.

  http://www.imaginative-strategist.layfigures.com/

- **POLAND 1939** (VAIPA Quarterly)
  This module includes counters for Polish armoured trains, with individual artillery cars, assault cars and engines being depicted on their own counters. A unique map is supplied, with a railway depicted on it; however the map is not compatible with any other PB/PL maps. Also included is an overlay of track sections designed for use on the original PB maps.

- **THE PANZERBLITZ MODULE SYSTEM** (Jagdpanther #4)
  Edited by Steven V. Cole, this article contains a hundred ideas for enlivening PanzerBlitz games. Included are several ideas for using armoured trains.

- **PANZER LEADER IN POLAND**: **10 Scenarios from the Polish Campaign**
  In Vol.1/No.2 of Old Soldiers Magazine, Gilbert Gaza presented scenarios and counters that include the use of Polish armoured trains.

- **ADDITIONAL PANZERBLITZ UNITS Part III**
  Writing in Outpost Magazine in a five-part article, John Garrett proposed numerous new counters, including a French "Artillery Train", with he states consisted of two 75mm gun batteries. France did not use any armoured trains, although it did have a number of railway guns available that saw little or no use in the 1940 campaign.

Appendix 2 - Nomenclature

Armoured trains have been known by a variety of names and terms. Individual trains might be named; classes of trains might be named, although the actual composition of the units varied enormously; and the title of the train might depend upon who was responsible for it, its function or original purpose, its armament, or how far away the frontline was.

The term *PanzerZug* is used throughout this article. Three different spellings of this term have been noted during research into this area. It is a German term used to describe armoured trains, and applied by them to all such trains. Other terms also existed, reflecting the origins of railway security within Germany.

panzerzug; panzerzuge; eisenbahnpanzerzuge; panzerzeuge	German terms for "armoured train"
Pociag pancerny	Polish for "armoured train"
Oklopni vlak	Croatian for "armoured train"
Tren blinda	Italian for "armoured train"
Bron pancerne; Бронепоезда	Russian for "armoured train"
мотоброневагоны	Russian for "motorised armoured rail car" - draisene
ВЕРО; БЕПО	Russian abbreviation for "armoured train"
Panssarijuna	Finnish for "armoured train"
Bahnschuetzwagen	German-built closed wagon, protected from the inside, serving as an infantry wagon
Kommandowagen; assault car	A wagon designed to accommodate an infantry platoon, from which it could both fire its weapons and conduct an assault. Also used as the command car for the train.
Draisene	An armoured, self-propelled unit
Panzertriebwagen	An armoured, self-propelled unit; a German version of draisene.
Panzerjaegerwagen	"Tank hunting wagon"; a wagon mounting the turret and upper body of a Pz IV tank mounting 75mm KwK-40 gun. Capable of limited self-propelled movement; normally attached to an armoured train to improve its anti-tank capability.
Panzertraegerwagen	Flatcars carrying a tank that can be dismounted for action away from the train.
Streckenschutzzug	"Track protection train"; these trains were designed for railway security duties, especially in captured territories. Their armament and carriages were often locally produced, and might incorporate captured tanks or tank turrets. As the war progressed, many *streckenschutzzug* were upgraded to *panzerzug* status and given additional armament.
Panzerjäger-Triebwagen	A self-propelled unit, mounting two turrets from the Pz IV H. Designed to provide anti-tank protection.
Geschutzwagen	Artillery car
Abstosswagen	Flat car at the front or rear of the train; carried supplies and detonated mines

Appendix 3 – Bibliography

Title	Author	Publisher	Date
Armored Trains of the Soviet Union 1917-1945	Wilfried Kopenhagen	Schiffer Publishing	1997
Armour on Rails *(Armoured trains in the Spanish Civil War)*	Raymond Surlémont	Military Modelling (July 1995)	1995
Armoured Trains	Steven Zaluga	Osprey New Vanguard	2008
Arteries of war : military transportation from Alexander the Great to the Falklands - and beyond	Joseph Sinclair	Shrewsbury	1992
China Interlude; *Railroad* Vol. 53 No. 2	Jesse D. Cope	Popular Publications	1950
Die Panzerzuge des Deutschen Reiches 1899-1945	Wolfgang Sawodny	EK-Verlag	1999
German Armored Trains in World War II	Wolfgang Sawodny	Schiffer Publishing	1989
German Armored Trains in World War II Vol.II 1939-1945	Wolfgang Sawodny	Schiffer Publishing	1991
German Armored Trains on the Russian Front 1941-1944	Wolfgang Sawodny	Schiffer Publishing	2003
Les trains blindés 1826-1989	Paul Malmassari	Heimdal	1994
№ 3-2004 г. Бронепоезда Красной Армии. 1930-1941 гг. *(Armoured trains of the Red Army 1930-1941)*	Максим Коломиец *M.Kolomiets*	Frontline Illustration	2004
№ 5-2005 г. Отечественные бронедрезины и мотоброневагоны *(Soviet armoured self-propelled rail units)*	Максим Коломиец *M.Kolomiets*	Frontline Illustration	2007
№ 7-2007 г. Бронепоезда Красной Армии в Великой Отечественной войне. Часть 1 *(Armoured trains of the Red Army in the Great Patriotic War. Part 1)*	Максим Коломиец *M.Kolomiets*	Frontline Illustration	2007
№ 8-2007 г. Бронепоезда Красной Армии в Великой Отечественной войне. Часть 2 *(Armoured trains of the Red Army in the Great Patriotic War. Part 2)*	Максим Коломиец *M.Kolomiets*	Frontline Illustration	2007
The Armoured Train: It's Development and Usage	George Balfour	Batsford	1981
War Machine Vol. 1 Issue 10 Railway Guns and Armoured Trains		Oris Publishing	1983

Websites

http://derela.republika.pl/armtrain.htm	Excellent site for information about Polish armoured trains and AFVs
blinda.ld.infoseek.co.jp/vkg_214b.html	Japanese language site with broad ranging information. Hasn't been updated for several years
http://mechcorps.rkka.ru/files/bepo/pages/bepo.htm	Russian language site with very detailed information about armoured trains used by the Red Army and NKVD
www.dampflokomotiven-dr.de\index.html	No longer available on the Web, but can be downloaded as a file. Excellent material on German armoured trains
http://www.railwaygun.co.uk	Railway gun and armoured train website; also has an active Yahoo group forum
Military discussion forums	Too many to mention, but most military discussion forums have at least one thread on armoured trains. Russian, Czech, Polish, Slovak and Hungarian language sites are particularly valuable
http://talk.consimworld.com	Consimworld is a meeting place for wargame enthusiasts. Look for the PanzerBlitz/PanzerLeader/Arab-Israeli Wars discussion group