

RED FLAK TRAINS

by Maj. Alan R. Koenig

During World War II, Russian railroads conveyed huge quantities of men and munitions to the front. The Luftwaffe accordingly sought to interdict these vital arteries through which supplies constantly flowed. In response, the Russians strengthened their antiaircraft defenses and employed about 200 armored trains of the PVO (*Protivo-vozhdushnaya oborona* [air defense command]). This article examines the composition and employment of these Soviet “flak trains.”

Armored trains were certainly not new weapons; various nations had used them since the mid-19th century. During the Russian Civil War (1918-1921), a conflict especially well-suited for armored train mobility and firepower, more than 150 of these heavily armed behemoths served in various capacities. They supported maneuver forces, safeguarded rails against enemy depredations and acted independently or in task forces — not unlike wolf packs — to seize vital objectives and accomplish other missions.

By World War II, however, improvements in aviation and armor had reduced armored train effectiveness. During the summer of 1941, head-to-head encounters with Axis aircraft and tanks knocked out many of the Red Army artillery branch’s armored trains. To counter the aerial threat, the Soviets mounted antiaircraft artillery on armored railway cars. They kept their lumbering trains in the rear, far from the

potent high-velocity guns of the agile panzers. Red Army artillery branch armored trains enjoyed far greater survivability just behind the front providing indirect fire support for the infantry and armor.

During World War II, the primary role of Soviet armored trains shifted from artillery support to antiaircraft defense. The PVO began the war with just one flak train, but by the war’s end more than 200 flak trains protected junctions, bridges and other critical targets from Luftwaffe attacks. This huge increase in flak trains suggests that the Soviets found them effective, and they evidently had more of these than artillery trains, though it seems that the trains differed very little.

Flak trains had an armored locomotive, a tender and seven armored flat cars. A typical two-axle armored flatcar weighed about 20 tons and bore weapons. Its sides were one meter high and 12mm to 15mm thick. Builders even armored the floor to protect the interior from mines, bullets and fragments.

Flak trains had a variety of weapons to engage all aircraft types. To ward off dive bombers and fighters, two cars each had one 37mm antiaircraft gun and one 12.7mm DshK machine gun. Three other open-top cars had 76mm antiaircraft guns to engage horizontal bombers. Niches in the cars held ammunition, and the car’s low sides allowed all guns to depress to engage low-flying aircraft and ground targets if

necessary. The remaining two cars carried additional equipment, personnel and track repair equipment.

Weapon systems are only as good as the intelligence system that supports them; therefore, an extensive PVO observer network constantly searched for German aircraft. Spotters radioed or telephoned sightings to PVO headquarters, which then relayed warnings to firing batteries. In some instances, PVO units sent reports directly to moving flak trains, where observers in the command post acquired targets and determined ranges with stereoscopic rangefinders. The command post, which served as the communications center and the fire direction control, was located in one of the large gun cars. Computers sent firing data telephonically, as all cars were linked with electric cables. A crewman then repeated fire commands aloud to the gun crew.

A logistics, or “base” train, supported each flak train in the same manner that submarine tenders supported submarines. A base train accommodated personnel and stored ammunition, track repair materials, equipment, supplies and rations. It had one unarmored locomotive, a few flatcars, covered sleeping wagons, a kitchen, a medical station and additional cars when necessary.

Controlling many flak trains demanded an efficient command, control and communications system. PVO headquarters, therefore, radioed orders to flak trains daily at a pre-designated time. After this transmission, the trains relayed their own reports to headquarters. When radios failed, signalmen used radios from nearby PVO units.

The Reds organized their flak trains like other PVO units to ease interoperability and assigned each train a number to help keep track. Some of these trains appear to have had names just as artillery trains did, but Soviet sources provide little information on how they were designated.

Competent train commanders arranged their cars to exploit firepower when stopped or on the move. When



A Russian armored anti-aircraft artillery train, used near Leningrad.

defending a station, the locomotive dispersed cars along available branch lines, sidings or spurs. Commanders placed large gun cars in the middle of sidings, flanking them with lighter gun cars by the switches. Officers strove to obtain good circular fields of fire, and gunners quickly entered pertinent firing data on ordinary range cards. If an area lacked sidings, the crew simply uncoupled cars along the track. After a battle or after reconnaissance aircraft flew by, the crew moved the cars to new positions to confuse would-be attackers.

When flak trains moved, a specific march order or sequence of cars exploited weapon capabilities and reduced vulnerability. Cars with small-caliber guns rode near the front and rear, while cars with large guns stayed next to the

locomotive. This arrangement reduced dead space and optimized fields of fire. Flak trains avoided interfering with scheduled traffic by avoiding delays and assembly points for new trains. Avoiding assembly areas also improved flak train survivability, since neighboring trains or prominent obstructions compromised fields of fire. Competent commanders shunned situations that prevented their guns from engaging attackers.

The Soviets learned this lesson the hard way near Stalingrad in July 1942. A flak train suddenly found itself between two arriving trains and could not effectively engage an attacking German plane. As a result, German bombs and burning trains heavily damaged it.

Flak trains were often in harm's way as they escorted lucrative targets such as troop, ammunition and fuel trains that lacked anti-aircraft weapons. Some flak trains also patrolled sectors frequented by Axis aviation. When close to the front, flak trains might support Red Army units. With three 76mm guns and a few smaller weapons, their firepower was comparable to that of an artillery battery. The Axis accordingly gave these rolling behemoths a high priority for destruction.

Flak trains operated all over the Soviet Union during World War II. Soon after the Germans invaded, Leningraders equipped the first anti-aircraft train. Eight flak trains fought in the Battle for Stalingrad in 1942

and 1943 and, in the summer of 1943, 35 flak trains operated at Kursk.

Clever train commanders sometimes used deception to accomplish their missions. In April 1943, PVO Train #190 was protecting tank cars destined for Murmansk. Capt. Mironenko, the flak train commander, spotted a German reconnaissance plane watching the train. Mironenko stopped the train at the nearest sidetrack, coupled his locomotive to the rear of the train and backed up, causing the German pilot to think the train was headed south. When the pilot, having summoned bombers, departed, Mironenko reversed the train and headed north. Bombers arrived and flew southward from the point where the reconnaissance plane had spotted the train. Failing to spot their target, they dropped their bombs in a swamp and left.

When the Reds could not employ deception, firepower often proved effective, as Axis aircraft found heavily armed trains formidable opponents. PVO Train #201 was on patrol near Kandalaksha (near Finland) in May 1943 when four German fighters tried to strafe it repeatedly. The Red gunners repelled all attacks, shooting down one fighter and driving off the rest. Nine Stuka Ju-87 dive bombers replaced the fighters and attacked for 40 minutes. The Germans knocked out several command post personnel, but the Soviets still downed two Stukas. Another flak train fought seven Stukas and four Messerschmitt 109 fighters nearby in early June. This encounter cost the Germans three aircraft.

While Soviet sources often lack credibility, another anecdote may provide more insight on Red flak trains in combat. Knowing that moving targets are hard to hit, Soviet train commanders preferred to shoot on the move when engaging Axis aviation. PVO Train #2 engaged German aircraft in a running battle that started at dawn on June 28, 1942, when four groups of 10 to 15 Junkers approached. One of the groups headed for the siding Train #2 was protecting. In response, the train moved

onto the main tracks and went to battle stations. Soon a group of 18 aircraft turned and dive-bombed the train, which opened fire as bombs exploded next to it, wounding and killing crewmen. One Junker soon trailed smoke and returned to the west. Another never pulled out of its dive, and the crew bailed out just before the crash. Upon landing, the three German aviators hid behind a stack of railroad ties near the tracks. Three Reds tried to capture the flyers. The Reds killed two Germans in the ensuing fight and captured and interrogated the third in the train. All of this evidently transpired after the German planes had left, and the Germans attacked again 30 minutes later. Planes dived one after another, but the train's firepower allowed only near misses and downed yet another airplane. A third attack wounded more crewmen, who were evacuated by car to a hospital.

In the next attack a bomb landed between the cars and destroyed a section of the track. The repair crew lacked a steel rail to replace it, so they improvised a rail with a reinforced oak beam. The train slowly crossed it, only to be assaulted again by more Junkers. Soviet machine gun fire set a Junker's fuselage ablaze, and it crashed into the forest. The battle dragged on for half a day before the Germans switched from bombing to strafing. The armor nevertheless protected the train crew from the attacks, and they shot down the Junkers as they pulled out of their strafing runs. The train crew repelled 10 attacks in the 14-hour battle, which took pressure off other Russian targets. PVO Train #2 returned to base at the end of the day, after it ran out of ammunition.

Finding flak trains dangerous adversaries, the Luftwaffe revised tactics for raids on railroad stations guarded by trains. Groups of 20 to 30 aircraft attacked in short intervals to overwhelm the defense. PVO Train #129 repelled such a raid in March 1943 on the Voronezh Front. In another instance, 21 Stukas and Junker 88s attacked a station from an altitude

of 5,000 to 6,000 meters. Three Ju-88s dropped bombs from horizontal flight, which started several small fires. The next group of planes dived in circular formation, dropping bombs and firing machine guns and cannons at the station. The train crew put up a great volume of fire and downed a bomber by skillfully leading it with a 76mm gun. Switching tactics, the gunners of the light antiaircraft weapons and machine guns deceived the Germans by dry firing, which lured the bombers into attacking again. When the last plane dived, the train opened fire. It purportedly shot down four German planes besides saving the main station.

With the exception of one case, Soviet sources neglect to tell how and where their flak trains failed. A critical analysis of German sources might reveal some telling information on their vulnerabilities.

In conclusion, the Reds effectively employed large numbers of flak trains during World War II. The large numbers alone suggest that Soviets considered them valuable components of their overall air defense network. Employing a march order that exploited every weapon's field of fire, the Reds transformed vulnerable trains into formidable opponents. Effective command and control integrated more than 200 PVO trains into an overall system of defense, while imaginative and innovative commanders and crewmen sometimes even overcame the Luftwaffe through deceptive measures and firepower.

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