

From Fields to War

James Kinnear looks at the role played by the Soviet KhT-16 Armoured Tractor during times of war

In the final years of the post-Soviet era when demilitarisation was popular, the phrase “from swords to ploughshares” was commonly used for all manner of military conversion to civilian applications. As was discovered at the end of World War Two, tanks and military vehicles do not necessarily convert easily to civilian application, not least due to the high running and maintenance costs involved.

As has often been the case in history however, civilian vehicles can in times of emergency often be adopted for military use. World War One and the years that followed, witnessed the conversion of many civilian vehicles for military use. Russia in particular developed an industry to build armoured cars on imported truck chassis, with names such as Austin-Putilov, Fiat-Izhorsky and Russo-Balt becoming integral to the history of the Russian Revolution and the civil war that followed.

The 1920s and early 1930s were relatively quiet in Europe, but the outbreak of the Spanish Civil War again witnessed the conversion of civilian ve-

hicles to military use, with all manner of ad-hoc armoured vehicles being built on available chassis, a pattern repeated as recently as 2014-15 during the currently dormant conflict in Ukraine.

Although some tracked agricultural tractors were converted to military use during the Spanish Civil War, they were generally slow and unwieldy as armoured fighting vehicles. In the desperate days of late 1941 however, the Soviet Union made some attempts at converting tracked agricultural tractors to military use that ranked positively industrial in scale.

Dark Days in the Soviet Union

On June 22, 1941 German Axis forces crossed into Soviet territory and “Operation Barbarossa” began. The scale of Soviet tank losses was such that within three weeks the Red Army had lost more than 50 per cent of its available tank park, which, to put things in perspective, was greater than the rest of the world’s armies combined.

The majority of the tanks lost were out-dated de-

signs from the early 1930s, such as the T-26 light tank, early BT fast tanks and the T-28 medium, but new generation tanks such as the T-34 and KV were also lost in significant quantities. Plans for a stratospheric ramp up in tank production were immediately implemented; however, converting paper plans into manufacturing production reality was a significant challenge.

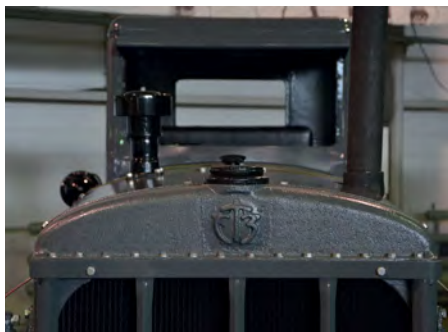
The situation with light tanks was particularly difficult, as the decision to replace the T-26 with the new and better armoured T-50 had been taken, but the T-50 was a significantly more complex tank, particularly its new diesel engine, and it took far longer to put into series production than expected, such that war ultimately interrupted its timely introduction.

The engine for the T-50 was built at Plant №75 in the Ukrainian industrial city of Kharkov; however the same plant also produced engines for the T-34 being built at Plant №183 also located in the city, which was at that time the main Soviet production facility for assembly of the new T-34 medium tank.

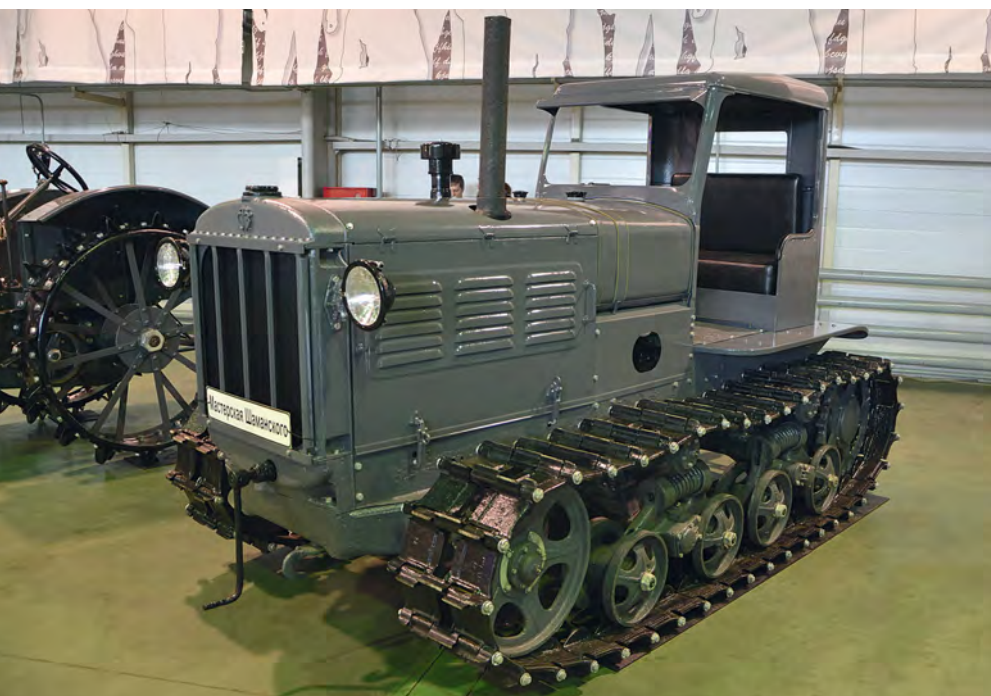
Understandably, the T-34 was given priority with regard to engine deliveries, to the extent that some T-50 engines (which used the same cylinders, liners, cranks and other components) were stripped down to ensure engine deliveries to Plant №183. In parallel with tank production, Kharkov was also the Soviet production centre for light agricultural tractors, which were assembled at the Kharkov Tractor Plant (KhTZ), so Kharkov was a major production centre for tracked vehicles. And in the late summer of 1941 it was under immediate threat of being captured by advancing Axis forces.

Civilian Production

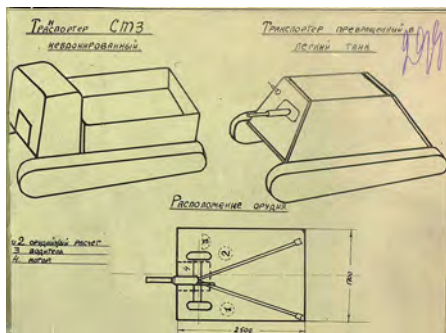
In 1937, KhTZ had begun series production of a tracked light agricultural tractor designed by the Moscow-based Scientific Auto Tractor Institute (NATI), which entered production in Kharkov as the SKhTZ-NATI and at Stalingrad as the STZ-3. Documents show that a small number of SKhTZ-NATI and STZ-3 tractors were also used by the Red Army pre-war as artillery tractors, but they were not particularly suited to the role, as they had no cargo area for ammunition and the



The STZ motif cast into the STZ radiator housing. The Stalingrad-built STZ-3 and Kharkov-built SKhTZ-NATI were based on the same Moscow-based NATI institute design, and were near-identical. Both versions were used by the Red Army and latterly also the Wehrmacht (ANDREY AKSENOV)



ABOVE & OPPOSITE: An STZ-3 restored by the Shamansky Company on display at an exhibition in Moscow. The STZ-3 and Kharkov built SKhTZ-NATI were diminutive compared to the larger Chelyabinsk built S-60 and S-65 tractors, such that turning the design into an armoured fighting vehicle was no small challenge (ANDREY AKSENOV)



tracks were not designed for road use.

In parallel with the original NATI designs for a tracked agricultural tractor, a military version was designed, with a reconfigured mechanical arrangement, front-mounted cab and rear cargo area that would enter production at STZ in Stalingrad as the STZ-5. With the outbreak of war and the massive losses that followed, all distinctions between civilian and military were blurred, and any available vehicle was pressed into service in any role as required.

The KhTZ tractor plant was clearly in a very similar line of business to the nearby №183 and №75 'military' plants with their official military plant designators, and the question arises why KhTZ was not drawn into dedicated military production earlier. In fact the KhTZ plant was considered as a centre for T-50 'light' tank production, but the machine tooling required to produce the T-50 was not available at the plant, and a new dedicated workshop and machine tooling was required to expand the plant's capability, though this would still not resolve issues related to engine production for the T-50 at Plant №75.

All such plans were cancelled when, on July 13, 1941, GKO Resolution №124 was issued allocating machine tooling destined for the new workshop at KhTZ to the STZ plant in Stalingrad for increasing production output there.

In the late summer of 1941, the KhTZ plant in Kharkov was thereby directly in the path of an



ABOVE: An STZ-3 in standard civilian configuration, with agricultural tracks, perhaps at the end of the war judging by the 'scrapyard' setting

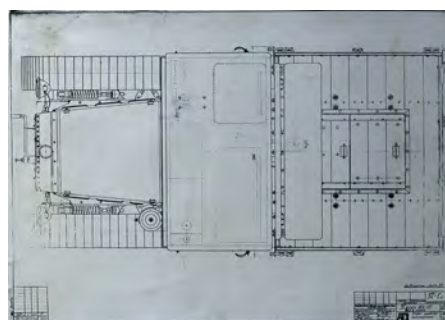
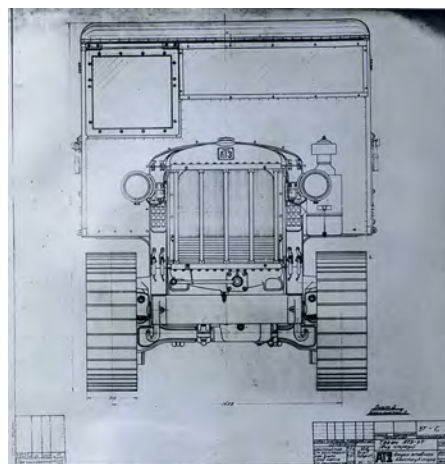
LEFT: A similar Plant №264 project to modify the STZ-5 artillery tractor as an armoured tractor

impending onslaught by Axis forces but not in a position to directly contribute militarily to the fight. It was at this point that local engineers determined to manufacture brone-traktori, ersatz tanks based on available agricultural tractor chassis.

Available records do not indicate whether the original initiative came from NATI, KhTZ or the Red Army, but most likely the decision was taken locally, as with the 'Na-Isput' (frightener) ersatz tanks built from tracked tractor chassis in Odessa to the south-west, in almost identical circumstances.

Back in Moscow, with Axis forces then still far distant, designers at the NATI institute in early July 1941 returned to plans developed in the early 1930s to build armoured tracked vehicles and self-propelled guns on the basis of tracked agricultural chassis.

The NATI development team was headed by V Ya Slonimsky, who had led the development of what became the SKhTZ-NATI, and E G Popov, who would later create the NATI-D tracked tractor, which would enter series production as the Ya-11. They were assisted by A M Cherepyn and by A V Sapozhnikov.



ABOVE & ABOVE MIDDLE: The ATZ-3T was a diminutive artillery tractor developed at the ATZ plant at Rubtsovsk in 1943 by the same team that developed the KhTZ-16 at KhTZ in Kharkov. It did not enter series production as by 1943 the faster, purpose built Ya-11 artillery tractor was being assembled in Yaroslavl

By mid-July the technical project for developing armoured tractors on the basis of the SKhTZ-NATI was prepared and sent to the People's Commissar for Medium Machine Building (NKSM) V A Malyshev. The NATI proposed armoured tractor was approved with some reservations, and on July 19, Malyshev sent Stalin the draft of a resolution to produce 2,000 of these "KhTZ" combat vehicles.

Resolution №019 of the State Defence Committee: "About the additional armouring of light tanks and the armouring of tractors", suggests that production was assigned to both KhTZ (producing the SKhTZ-NATI) and STZ (producing the near identical STZ-3). However, GKO Resolution №219/ss signed on July 20, 1941 and entitled "About the organisation of production of two thousand armoured tractors" does not mention STZ, and it would appear that the production of these new armoured tractors was to be undertaken exclusively at KhTZ in Kharkov.

This would seem realistic in that STZ was involved in the assembly of tanks, not least preparations to build the T-34 in massive quantities, and producing hybrid tanks on tracked tractor chassis would be a major distraction, particularly with Axis forces moving rapidly eastward. Resolution №219/ss, which details not the development of the tractor, but rather implementing its series production, specified that KhTZ should deliver its first 50 brone-traktori - or armoured tractors - in August 1941, with a further 850 in September and rising to 1,100 in October. There are some indications that four prototypes were built in August, but this is not supported by available plant documents and a single prototype was sent to the NIIBT proving grounds at Kubinka for evaluation.

In addition to clearly defining the base chassis as the SKhTZ-NATI, Resolution GKO №219/ss specified the required performance characteristics for the new armoured tractor. Armament was to be a 45mm tank gun, then standard armament on Soviet light and fast tanks, with a co-axial 7.62mm DT machine-gun. The frontal armour basis was to be 30mm, with 13.5mm on the hull sides. The tractor was expected to travel at a speed of 18-20 km/h on made roads and 10 km/h when travelling cross-country.

The KhT-16 Enters Production

The specific designation KhTZ-16 rather than the generic term brone-traktori appears in formal correspondence at the beginning of August 1941, by which time engineers at NATI and KhTZ were already working together to introduce the new brone-traktori into series production. Engineers at KhTZ, working under the direction of chief design engineer M S Sidelnikov worked to assemble two prototypes by August 12, but managed to complete only one by this date, which was subjected to accelerated plant testing before being shipped to the NIIBT tank-proving polygon at Kubinka.

The prototype was assembled from available components, which inevitably led to compromises. Due to the lack of 13.5mm steel plate, the prototype used 10mm plate on the hull sides, and the majority of the armour was from non-hardened steel.

By the time the prototype was released for testing, KhTZ was already well advanced in making the chassis for the new brone-traktori. Historically it was always assumed that the Stalingrad-built STZ-3 and / or STZ-5 was used as the chassis



ABOVE FROM TOP: The driver-mechanic had his own side hatch, which was not replicated on the left side of the vehicle; The KhTZ-16 prototype, NIIBT polygon Kubinka, August 1941. Full and formal prototype testing was conducted on the KhTZ-16 despite the fact that within weeks the Kubinka polygon would be on the front line, and Kharkov would be captured; The frontal armour plate on the KhTZ-16 was bolted on to allow for engine maintenance access; The rear access hatch with firing port

for the KhTZ-16, but recently available Russian wartime archive material would suggest that this is not the case.

The technical drawings for the KhTZ-16 clearly indicate that the chassis was the Kharkov-built SKhTZ-NATI agricultural tractor (albeit the STZ-3 was essentially the same NATI design built at another plant - so the base chassis were effectively interchangeable and either plant could have supplied chassis). The base SKhTZ-NATI required 27 significant engineering changes to make it suitable as the chassis for the KhTZ-16. This is not surprising; since SKhTZ-NATI with its front

mounted engine and rear cab did not immediately lend itself to providing good internal space for an armoured fighting vehicle. The 1-MA engine was also updated from 52 to 58bhp; not a huge increase, but with the KhTZ-16 adding 3.5 tonnes of armour and armament onto the base chassis (5.1 tons for the SKhTZ-NATI versus 8.6 tonnes combat weight for the KhTZ-16) any additional power output from the engine was critical.

Due to the significantly increased and now 'combat' weight, and updated engine, the transmission also had to be strengthened. For good measure, the chassis was extended, new wheels as used on the STZ-5 were used and the return rollers moved forward slightly. The road track from the STZ-5 also replaced the agricultural track used on the SKhTZ-16 and STZ-3 as it was far better suited for a combat vehicle, allowing higher road speed, with less vibration and far longer track life.

The fuel tank was moved to the left of the vehicle, and the driver-mechanic's position moved forward and to the right. These changes provided room for the fighting compartment, which housed the commander and gunner/loader. All-in, the engineering changes to the base chassis were significant.

Effectively armouring the diminutive SKhTZ-NATI was a challenge. The base SKhTZ-NATI chassis was only 3.451m long, while the lengthened KhTZ-16 was 3.83m long and 1.87m wide (no larger than a modern saloon car), and 2.30m to the casemate superstructure roof. The 30mm glacis armour protecting the engine was sloped at 200, and the fighting compartment increased in slope to 250. The frontal elevations were thereby protected from large-calibre machine guns and cannon fire up to 20mm in calibre. The KhTZ-16 could not withstand fire from anti-tank guns, but it was nevertheless heavier than most Soviet contemporary light tanks.

The armoured casemate was of welded construction, with the frontal glacis plate bolted on so as to allow engine access. Crew access hatches were confined to the vehicle right side and rear, and visibility was reasonable. As regards armament, although the 45mm tank gun was considered obsolescent by the autumn of 1941, it compared not unfavourably with the armament of the majority of contemporary Soviet and Axis tanks.

Prototype Testing & Early Production

Despite the urgency of the time, the prototype KhTZ-16 was subjected to an extensive programme of mobility and firing trials as would have been conducted with any pre-war tank design. During these trials, the KhTZ-16 travelled 470km, of which 139km was on made roads, 240km on cobbled roads, 69km on a graded dirt roads, and 22km on other surfaces, significant testing for a hybrid tank design to be built under emergency conditions. The KhTZ-16 managed an average road speed of 17km/h, reducing to approximately 9km/h when travelling across terrain. Range for the underpowered brone-traktori was another matter, limited to 119km on roads and with an all-terrain range of 61km. The vehicle was however expected to participate in critical local defence rather than a march across Europe to Berlin, so these figures were not at the time of any consequence.

Again unsurprisingly, considering the increased weight, the updated engine ran very hot during testing, not aided by the fact that cooling air was

SPECIFICATIONS

Make and Model **KhT-16**
(Kharkov Tractor Plant)
Nationality **Soviet**
Year **1941**
Production Run **142**
Armament **1 x 45mm 20K
M-1932/34/37 tank gun**
(depending on availability)
**1 x 7.62mm DP Section
Machine Gun**
Engine **1-MA four-cylinder**
Fuel **Kerosene**
Power Output **58bhp**
Suspension **Tracked chassis,
as SKhTZ-NATI agricultural
tractor**
Brakes **Skid turn**
Crew **Two-three**

Dimensions (metres)

Length **3.83m**
Width **1.87m**
Height **2.30m**
Weight **Approximately seven
metric tonnes**
(varied by vehicle)

Performance (kilometres)

Maximum road speed
17-20km/h
Maximum road range **120km**
Armour basis **5-25mm**



A captured SKhTZ-NATI or STZ-3 pressed into Wehrmacht service as an artillery tractor. Note the non-standard wide tracks

'Range for the underpowered bronetraktori was another matter, limited to 119km on roads and with an all-terrain range of 61km'

drawn via the fighting compartment and that testing was conducted in summer temperatures of nearly 30 degrees. Other than some track damage, the tests did not indicate other significant issues.

Firing trials were also extensive, with 247 rounds fired of which 147 were armour-piercing. Accuracy was observed as slightly below the standard firing table for the 45mm weapon, which was attributed to recoil forces affecting the weaker gun mounting. The average rate of fire was five rounds per minute. The armour around the rear of the gun mantlet was observed as inadequate, allowing small arms fire and shrapnel to penetrate when directed obliquely from behind the vehicle centreline.

Test results might be described as not untypical, and for an emergency hybrid tank designed

under wartime conditions rather impressive; however the hierarchy within the Red Army was not impressed and dissenting opinion demanded the establishment of fully-fledged (T-60) tank production at KhTZ in the shortest possible time. GKO Resolution №222 issued on July 20, 1941 instructed KhTZ to prepare for series production of the T-60 small tank, which might have terminated all further consideration of the KhTZ-16. The T-60 would not however be leaving the KhTZ plant gates anytime in the immediate future, and on August 18, as KhTZ was still receiving the production drawings and preparing machine tooling for T-60 production, there were 329 chassis for the KhTZ-16 then in various stages of final assembly at the same plant, albeit many were awaiting electrical components and road tracks.

By August 30, 1,037 chassis were complete - in other words approximately 70 chassis a day were being built - but the situation was critical in that the armoured hulls for completing and delivering KhTZ-16 armoured fighting vehicles were not available in anything like the required quantities.

Meantime some components arriving for the T-60 such as the observation devices were purloined for KhTZ-16 assembly.

The production of welded casemate hulls for the KhTZ-16 (and the T-60) was assigned to the Voroshilovgrad and Novo-Kramatorsk plants. As of the end of August neither plant had delivered a single armoured hull, largely due to problems with a lack of furnace capacity for heat treatment of the armour plate. The situation being critical, the first 33 KhTZ-16s were completed with hulls constructed of mild steel.

The first KhTZ-16 to be completed, which in GABTU correspondence also became known as the T-16, was released through the KhTZ plant gates on September 7, 1941. The vehicles had serial numbers beginning with №16 (№16-001, etc); however the serial number was attached to the chassis rather than the completed bronetraktori, so vehicles had numbers such as №16-1672, even though production of the KhTZ-16 never reached anything like this quantity.

36 KhTZ-16 bronetraktori had been delivered by September 14, 1941, by which time a backlog



ABOVE LEFT & RIGHT: A KhTZ-16 destroyed in the winter of 1941-42. A wartime "souvenir" photograph for the two German infantry; however their lightweight uniforms and attempts to keep warm as the bitter Russian winter approached are in more ways than one a moment frozen in time

of some 1,528 assembled chassis had been accumulated at KhTZ, of which 717 were without tracks, 1,334 without fuel tanks and 1,304 without electrical equipment. The overriding problem remained however an acute shortage of armoured casemate hulls from the sub-contractor plants, which prevented the delivery of the urgently required KhTZ-16 armoured fighting vehicles.

Two days later, on September 16, Resolution GKO №681 was issued, instructing the evacuation of the machine tooling from KhTZ to Stalingrad. The production of KhTZ-16 brone-traktori continued after this date, but the total planned production of 2,000 vehicles was now out of the question. The total number of KhTZ-16 armoured tractors actually delivered was 142, a fraction of what could have been delivered had the manufacture of armoured hull sets kept up with chassis production.

The KhTZ-16, the correct description of which has been only recently understood from original wartime military and plant documents, was historically often cited as having been produced at the STZ plant in Stalingrad on the STZ-3 and / or STZ-5 chassis. This was considered by Plant №264 (which manufactured hull and turret sets), and indeed in mid-August, while the Kharkov designed KhT-16 was undergoing trials at Kubinka, the engineers Krasilshikov and Nemchinsky at Plant №264 in Stalingrad had written a letter to Stalin and the people's Commissar of Shipbuilding Industry (NKSP) I I Nosenko suggesting that their plant could build armoured tractors using the Stalingrad built STZ-5 artillery tractor chassis, but this request was refused.

Even had the request been approved, Plant №264 in Stalingrad was loaded with building hull and turret sets and many other components for final T-34 assembly at STZ in Stalingrad, and had additionally received orders to manufacture the T-60 small tank (T-60s were defined as such, and not as light tanks).



The STZ-3 assembly line in Stalingrad pre-war
 BELOW RIGHT: The approval, signed by Stalin on July 19, 1941, for the production of 2000 KhTZ armoured tractors on agricultural tracked tractor chassis in accordance with GKO Resolution №219/ss (top secret)

A Short Combat History of the KhT-16 Armoured Tractor

The original batch of KhTZ-16 (T-16) brone-traktori built with unarmoured steel hulls was according to available plant documentation sent to training units, located not just in Kharkov but also in Ulyanovsk, Armavir and Stalingrad. The first KhTZ-16s produced with armoured steel hulls were delivered to the 12th tank brigade, which received 14 vehicles. The largest individual batch of KhTZ-16s was received by the 133rd tank brigade, which received 36 vehicles. Eight KhTZ-16s went to the 14th tank brigade, one to the 13th tank brigade, and five to the 7th tank brigade. Eight were received by the 47th tank division and the 23rd reserve regiment. Doc-

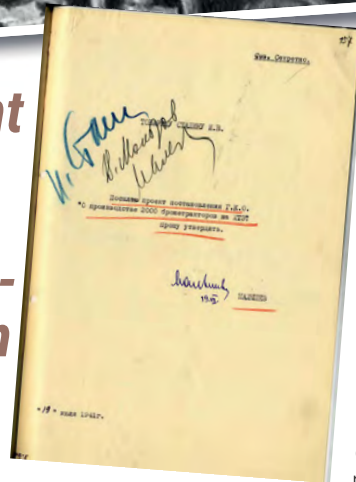
'Surviving plant documents show that a prototype ATZ-3T was built in the summer of 1943'

Further, Plant №264 was having significant issues with maintaining required production schedules for both tank types, so was in no position to also assemble KhTZ-16 or similar tractors. Thereby, in both Kharkov and Stalingrad it was not the lack of tracked tractor chassis that was the problem, but a lack of capacity to manufacture the armoured hulls for KhTZ-16 type armoured tractors. The machine tooling from the KhTZ plant was also only partially evacuated to Stalingrad before Kharkov fell to advancing Axis forces, so overall it is unlikely that any KhTZ-16-type armoured tractors were built as the STZ-16 at Stalingrad.

umentation confirming dispatch did not necessarily confirm receipt; for example, the 35th tank brigade formally received eight KhTZ-16s, but in reality they never arrived.

The combat debut of the KhTZ-16 was in and around the Ukrainian city of Kharkov where it was built, as KhTZ-16 brone-traktori were used by the Soviet 38th Army in the defence of Kharkov from the German 6th Army in the autumn of 1941.

The strange looking KhT-16 had its combat debut in heavy fighting against Italian forces when on September 22, the 12th tank brigade was given the task to take Krasnograd in the Kharkov region. A few days later the 12th tank brigade



LEFT: The SKhTZ-NATI tracked agricultural tractor was produced at KhTZ in Kharkov. After the outbreak of war it was also used as an artillery tractor
 BELOW: An STZ-3 agricultural tractor destroyed while in use as an artillery tractor with the Red Army



including KhTZ-16 brone-traktori was engaged in heavy street fighting in the city suburbs. On September 27, Red Army units had to go on the defensive, and the brigade suffered heavy losses in tanks and personnel. One KhTZ-16 is documented in action on 24th Oct 1941 in support of militia troops near the TsUM (Central Department Store) in Kharkov, during which action the KhTZ-16 was destroyed and the crew killed. Kharkov fell to the German 6th Army the same day, but the defensive action by the Red Army with its eclectic mix of tanks including the KhTZ-16 had bought sufficient time to organize the evacuation of the machine tooling and personnel from some 70 military plants. These were moved out of Kharkov



ABOVE: **The almost identical STZ-3 was produced at STZ in Stalingrad and similarly drafted for military service in 1941**

BELOW: **STZ developed a military version of the STZ-3, with significant modifications, an open cab for maximum military driver comfort and road tracks. This is the prototype as completed at STZ**



to other cities on 320 individual trains for ongoing use in the war effort. Soviet documents indicate that 809 chassis for KhTZ-16 'brone-traktori' remained at the plant in later October when Kharkov fell to the advancing Axis forces

A small number of KhTZ-16 brone-traktori survived the combat engagements of 1941, with documented use of a handful of KhTZ-16s extending as late as May 1942, though for obvious reasons Soviet records of the time are minimal.

New Ownership and New Roles

The German 6th Army inherited considerable amounts of Red Army military equipment when it captured Kharkov and its immediate region. A few KhTZ-16s survived intact but were of little operational use to the Wehrmacht; and although a large number of chassis were captured within the KhTZ plant, there were no armoured hulls available, which had limited the number of KhTZ-16s the Red Army could

deploy against the advancing Axis forces.

What the Wehrmacht lacked however, was mechanised transport, and a significant number of SKhTZ-NATI agricultural tractors, KhTZ-16 chassis and miscellaneous other tracked vehicles were captured with the fall of Kharkov. A significant number of captured KhTZ-16 chassis were modified as artillery tractors by simply fitting an ad hoc seat or cab arrangement on the available chassis; however there were a myriad of variants, entirely based on available components to get the vehicles running and serviceable. Some were fitted with cabs, others were open, some had STZ-5-type road tracks, and others were fitted with standard agricultural track. The Wehrmacht used most as artillery tractors.

ATZ-3T

The wartime emergency KhTZ-16 brone-traktori almost had a second lease of life in Red Army service. Part of the machine tooling evacuated from KhTZ was sent by train to the town of Rubtsovsk in the mountainous Altai region where tracked tractor manufacture was re-established within the newly formed Altai Tractor Plant (ATZ). The chief design engineer at the plant was M S Sidelnikov, who had developed the KhTZ-16 brone-traktori at KhTZ in Kharkov prior to the plant's partial evacuation.

In August 1942, the ATZ plant began series production of its first new tracked agricultural tractor design, the ATZ-NATI, which bore more than a passing resemblance to its pre-war SKhTZ-NATI forebear. The country had a more urgent requirement for artillery tractors rather than agricultural tractors however, and having established series production of the latter, the design bureau (KB) at ATZ in 1943 developed under the direction of Sidelnikov a new tracked artillery tractor, the ATZ-3T. This was similar in design to the Stalingrad-built STZ-5 but utilised many of the design changes originally incorporated into the KhTZ-16 when modifying it from the KhTZ-NATI agricultural base chassis, including the uprated engine developing 58bhp. The fuel tank was moved to the left, and the driver located on the right, which in the case of the ATZ-3T allowed for a small load area behind the cab for transporting ammunition.

Surviving plant documents show that a prototype ATZ-3T was built in the summer of 1943. On July 1, 1943, the head of the Artillery Directorate (GAU), General-Colonel Yakovlev, approved the production of an establishment lot of ATZ-3T tracked artillery tractors for military evaluation purposes. But a larger and purpose-designed artillery tractor, the Ya-11, which was clearly more suitable for its intended role than the Altai design, had already entered production in Yaroslavl.

The ATZ-3T was shelved, ending the history of a vehicle chassis which had started life as the agricultural KhTZ-NATI tracked tractor, had been developed into the wartime KhTZ-16 armoured tractor with its 45mm tank gun armament, and later in the war, had almost seen a third role as a specialized tracked artillery tractor. By 1943 the desperate need for using agricultural-tracked tractors as military vehicles had passed however, and new generations of dedicated artillery tractors such as the Ya-11 were entering series production, designed with the road speed to keep up with Red Army tanks as the Soviet Union moved from defensive to fast-paced offensive operations.



A "civilian" STZ-3 with cab at the STZ plant, assembled directly alongside T-34s



Another KhTZ-16 destroyed in 1942, which also appears to have faded whitewash camouflage from the preceding winter



A KhTZ-16, stripped of its armoured casemate hull and reconfigured as a makeshift artillery tractor in Wehrmacht service. Or perhaps a KhTZ-16 chassis taken directly from the KhTZ plant



A partially burned out KhTZ-16. The photograph and faded camouflage would suggest this KhTZ-16 survived through the winter of 1941-42 and was destroyed in the spring of 1942. Note also the unit markings



A KhTZ-16 abandoned in a cornfield having been destroyed in the spring of 1942