

# Russian Heavy Artillery: Leaving Depots and Returning to Service

**OE Watch Commentary:** The Soviet Union developed large caliber artillery, such as the 2S4 ‘Tyulpan’ 240mm mortar and the 2S7 ‘Pion’ 203mm howitzer, to suppress lines of communication, destroy enemy headquarters, tactical nuclear weapons, logistic areas, and other important targets and to destroy urban areas and field fortifications. After the end of the Cold War, the Russian Federation placed most of these large caliber artillery systems into long-term storage depots for several reasons. The first is that they were intended to deliver nuclear, as well as conventional, munitions (the end of the Cold War meant that a long-range tactical nuclear weapon delivery was no longer needed). Another reason is that better tube (2S19M Msta-SM) and missile (MLRS/SRBM/GLCM) systems, such as new 300mm MLRS platforms, the Iskander missile system, and the 2S19M Msta-SM 152mm howitzer, allow Russia to fulfill many of the same tasks as large caliber artillery to varying degrees.

The 2S4 ‘Tyulpan’ self-propelled mortar is equipped with a 240mm 2B8 mortar mounted on a modified Object 123 tracked chassis (similar to the 2S3 Akatsiya self-propelled howitzer) with a V-59 V-12, 520 horsepower diesel engine, capable of 60 km/h road speed. The Tyulpan has a crew of four, but five additional crewman are carried in the support vehicle that typically accompanies it. The system is capable of firing conventional, chemical, and nuclear munitions at a rate of one round per minute, although Russia reportedly now only has conventional munitions in service. The standard shell fired by the 2S4 weighs 130 kg, and is capable of delivering a high-explosive (HE) fragmentation munition to a maximum range of 9.5 km. The Tyulpan also fires a rocket-assisted munition (with a shell weight of 228 kg) to a maximum range of 18 km. Tyulpan munitions have long (since the Soviet-Afghan War) been able to be equipped with a Smelchak laser-guidance system to increase accuracy. The 2S4 is reportedly being upgraded to interface with modern Russian artillery command and control systems, to include improved communication and fire control systems. In addition, barrels and recoil mechanisms are being refurbished or replaced.

The 2S7 ‘Pion’ self-propelled howitzer is equipped with a 203mm 2A44 howitzer mounted on a tracked chassis with a V-46, 780 horsepower diesel engine capable of a 50 km/h road speed. The 2S7 has a crew of seven (six for the 2S7M, but seven additional crewman are carried in the support vehicle that typically accompanies it. The system is capable of firing conventional, and nuclear munitions at a rate of 1.5 rounds per minute, although Russia reportedly now only has conventional munitions in service. The 2S7 can fire a variety of shell and munition combinations.

2S7M ‘Malka’ Shell/Munition Table

	3OF43 (long)	3OF43 (short)	3OF44 (rocket)	3O14 (long)	3O14 (short)	3VG11 (concrete)
Propulsion Type	standard	standard	rocket-assisted	standard	standard	standard
Warhead Type	HE-Frag	HE-Frag	HE-Frag	cluster munition	cluster munition	concrete piercing
Warhead Weight	17.8 kg	17.8 kg	13. kg	24x 0.23 kg submunition	24x 0.23 kg submunition	???
Charge Type	3VO34	3VOF42	3VOF35	3VO15	3VO16	???
Charge Weight	43.2 kg	25 kg	43.2 kg	43.2 kg	25 kg	???
Range	37.4 km	25.4 km	47.5 km	30.4 km	13 km	???

In 1983, Russia began fielding a modernized version of the system, the 2S7M ‘Malka.’ The 2S7M is equipped with a V-84V, 840 horsepower diesel engine, has an upgraded fire control system, and has an improved fire rate of 2.5 rounds per minute. As stated in the accompanying excerpted article from *Krasnaya Zvezda*, laser guided munitions (such as the ‘Krasnopol’ laser guidance system) are being considered for development for the 2S7M.

The accompanying articles from *Krasnaya Zvezda* and *Armeyskiy Sbornik* discuss Russian efforts to now draw these large caliber artillery pieces out of storage, modernize them, and place them into Russia’s (only) 45th heavy artillery brigade, and the artillery brigades assigned to Combined Arms Armies, Tank Armies, and (possibly) Army Corps. Typically, large caliber artillery systems are organized into battalions with 8-12 tubes (2-3 batteries) per battalion, and use the same artillery command and control systems (such as the 1V12M ‘Kharkov’ Artillery Fire Control System) that are found in standard artillery battalions. Interestingly, although there has been much discussion about the capabilities of large caliber artillery pieces, there has not been a mention of why they are being returned to service. Since there is little need for a tube-based nuclear artillery delivery system, and there are efforts to equip the systems with laser-guided munitions, it is likely that these systems are envisaged to pulverize urban areas and field fortifications, tasks which are difficult for standard Russian 122mm and 152mm artillery pieces.

Another possibility about why these systems are being reintroduced are concerns about the quantity of missiles in Russian depots (magazine depth). Although missile artillery such as the Iskander SRBM/GLCM and new 300mm MLRS platforms have greater ranges, and may be more capable of performing certain tasks better than the 2S4 or 2S7, Russia’s industrial base and financial resources to rapidly replenish sophisticated and expensive missiles at a level needed for large scale war may be in question (the production of 2S4 and 2S7 shells is much faster and cheaper than the production of any missile). In short, new missile artillery systems may be better, but the 2S4 and 2S7 give Russian planners a more sustainable and economical way of conducting heavy fires, and their use would allow the missile artillery to focus upon more specialized targets.



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*“As part of the scheduled reoutfitting of military district troops, high-power self-propelled artillery battalions in artillery brigades are being rearmed and are beginning scheduled combat training.”*

**Source:** A. Aleksandrovich: “Оттачивая точность попаданий (Honing Impact Accuracy),” *Armeyskiy Sbornik*, May 2018.

*Tactical exercises for rocket, self-propelled, and mortar artillery batteries have been staged at the Sergeyevskiy firing range within the framework of training camp sessions for the 5th Combined-Arms Army’s missile troops and artillery...*

*The world’s largest mortar is surprisingly quiet. And it is only by virtue of how long the Tyulpan’s barrel continues to sing after firing off a round that you realize what a heavy “gift” will be landing in a few seconds’ time on the heads of the adversary. A mortar shell weighing almost a hundredweight and a half is loaded into the 240mm self-propelled mortar with the aid of a hoist. The sound from the discharge is relatively quiet -- more of a clap -- but it’s such that you sense through your entire body. By that time the shell is already lost in the sky, on its way to shortly coming down to earth on the far side of the darkening hills in the distance. The Tyulpan’s are also irreplaceable inasmuch as they can dispatch their munition over a distance of 20 kilometers, and they can strike almost right up against a target, they can literally “throw” a mortar through a multistory building. This heaven-sent surprise can penetrate a standard ‘khrushchevka’ [a common style of five-story apartment buildings found in the former Soviet Union] from attic to basement. And this is with a conventional high-explosive warhead. But many types of munition have been developed for the 2S4 Tyulpan -- right up to nuclear. A Tyulpan battalion has taken part in tactical exercises for 5th Combined-Arms Army artillery at the Sergeyevskiy range in Primorskiy Kray...*

*The secret was confided by Lieutenant Colonel Aleksandr Polshkov, senior officer of the 5th Combined-Arms Army’s Missile Troops and Artillery Department: “This year our army’s officers have undergone conversion training at scientific research institutes and will shortly be instructing all artillery battery commanders in performing fire missions using the precision-guided munitions. The munitions in question will be allocated to us for firing practice. We are ready to instruct our men for future operations in contemporary conditions, because area targets are becoming a thing of the past. Victory in a modern engagement depends both on the objective to be hit and with what accuracy in the shortest available time.”*

*The Krasnopol system directly incorporates the gun, munition, and laser target-indicator. The operator aims this device at the chosen target, and a beam is reflected back. Ejected from the gun, in flight the munition engages a homing head, locks onto the beam reflected from the target, and independently guides itself onto the target, thereby ensuring a hit. This can be any target, from a building to an automobile -- the munition is guaranteed to destroy it at a range up to 30 kilometers...*



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2S4 Tyulpan self-propelled mortar.

Source: Vitaly Kuzmin, <https://www.vitalykuzmin.net/Military/ARMY-2017-Demonstration-p1/i-WF4zcrx#>, CC 4.0.

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**Source:** Yuriy Avdeyev, “«Малка» – аргумент большой мощности (The ‘Malka’ is a High-Power Argument),” *Krasnaya Zvezda*, 16 July 2018. <http://redstar.ru/malka-argument-bolshoj-moshhnosti/>

*As part of the scheduled reoutfitting of military district troops, high-power self-propelled artillery battalions in artillery brigades are being rearmed and are beginning scheduled combat training. Twelve of the newest Malka 203mm self-propelled guns entered the Central Military District...This version was developed on the basis of the 2S7 Pion system. The preliminary specifications envisaged a substantial increase in technical, operating, and combat characteristics. An updating of the base chassis and fire control system was envisaged.*

*Specialists previously declared that the main drawback of Malka's predecessor was insufficiently high accuracy and a lengthy fire control process. This negative point has been eliminated in the new vehicle. The 2S7M Malka is equipped with automated means of communications and command and control. The self-propelled gun was equipped with a system for receiving data from the battery senior officer. All data received for conducting fire are output in an automatic mode to digital displays mounted at workstations of the self-propelled gun commander and gunner. On receiving the data, they can lay and prepare the gun for firing. This is yesterday's modernization, so to speak, but modifications of the artillery complex continue with consideration of state-of-the-art technologies. At the present time control of artillery subunits is exercised using modernized IV12M command vehicles, which include optical reconnaissance devices and a system of topographic tie-in based on the GLONASS global positioning system. The complex is designed for automated and non-automated control of fire and combat actions of the artillery battalion (battery) of self-propelled artillery systems, and for preparation during battle in coordination with Ground Troops units and subunits...*

*Meanwhile, specialists note that the self-propelled gun has good potential for subsequent modernization with consideration of capabilities of modern innovations. Its combat capabilities will be developed along the path of using smart ammunition. At the present time laser guidance systems are on the agenda for the ammunition, as they say. No less pertinent, according to estimates of artillerymen, is the use in the munition of a fuse with controlled aerodynamic effect, which will permit reducing the round's circular error probable to five meters. The use of cluster munitions with self-aiming submunitions is considered no less promising. Add to this the round's improved aerodynamics and the 30 percent increase in range of targets being engaged. What appears as a result is the look of a new, advanced high-power artillery complex.*



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2S7M Malka self-propelled gun.

Source: Vitaly Kuzmin, <https://www.vitalykuzmin.net/Military/ARMY-2017-Demonstration-p1/f-WF4zcrx#>, CC 4.0.