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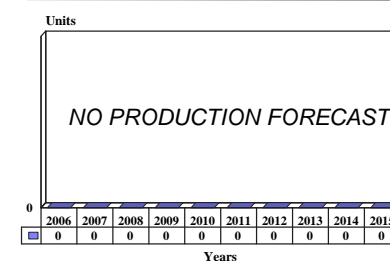
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SM-120 (2S23) Nona-SVK 120mm Self-Propelled Howitzer/Mortar

Outlook

- SM-120 (2S23) Nona-SVK reportedly completed low-rate serial production for Russian Army procurement last year
- Rosoboronexport continues to promote the SM-120 (2S23) on the international market, albeit with no apparent success since the 1997 export sale to the People's Republic of China
- Production forecast reflects lack of new orders for 2S23; as of early 2006, there are no reported sales prospects on the horizon

10 Year Unit Production Forecast
2006 - 2015



Orientation

Description. A wheeled 120mm self-propelled artillery system.

Sponsor. The Ministry of Defense of the Russian Federation sponsored the development and procurement of the SM-120 (2S23) system.

Licensees. None

Status. Development through serial production.

Total Produced. Through 2005, the contractor produced 285 SM-120 (2S23) self-propelled artillery systems.

Application. Mobile indirect fire artillery support for airborne, naval infantry, and light armored forces.

Price Range. In equivalent 2006 U.S. dollars, the SM-120 (2S23) carries a unit price of \$989,720.

Contractors

Prime

Federal State Unitary Enterprise "Rosoboronexport," Rosoboronexport State Corporation	http://www.rusarm.ru , 27/3 Stromynka St, Moscow, 107076 Russia, Tel: + 7 095 964 61 40, Fax: + 7 095 963 26 13, Prime
Motovilikha Plants Corporation	http://www.artillery-mz.com , 1905 Goda St, Perm 35, 614014 Russia, Tel: + 7 3422 60 73 01, Fax: + 7 3422 65 62 63, Email: info@artillery-mz.com , Second Prime

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Subcontractor

Arzamas Machine-Building Plant JSC	http://www.amz.nnov.ru, 2, 9th May St, Arzamas, 607220 Nizhny Novgorod, Russia, Tel: + 7 83147 4 07 80, Fax: + 7 83147 4 48 33, Email: amz@arzamas.nnov.ru (BTR-80 Chassis)
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Comprehensive information on Contractors can be found in Forecast International's "International Contractors Series." For a detailed description, go to www.forecastinternational.com (see Products & Samples/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA., rich.pettibone@forecast1.com

Technical Data

Crew. Four: commander, gunner, loader, and driver.

Muzzle Brake. None

Recoil System. Hydro-pneumatic.

Breech Mechanism. Semi-automatic wedge.

Ammunition. The 2A60 Nona rifled ordnance fires a new family of rifled 120mm ammunition, including High Explosive Anti-Tank (HEAT) for direct fire

applications, High Explosive Fragmentation (OF-54), Smoke, Illumination, and White Phosphorous types. The 2A60 ordnance can also fire the same line of ammunition used in the Thomson-Brandt 120mm mortar.

Armor. Conventional steel alloy, 16 millimeters (0.63 inches) thick on the hull and 7 millimeters (0.275 inches) thick on the turret.

Dimensions. The SM-120 (2S23) is based on a modified BTR-80 8x8 armored personnel carrier chassis. For more information concerning the BTR-80, see the "BTR-80" report in Tab C (Wheeled Vehicles) of our *Military Vehicles* Forecast.

	<u>SI units</u>	<u>U.S. units</u>
Length overall	7.40 m	24.28 ft
Width	2.91 m	9.55 ft
Height	2.5 m	8.20 ft
Combat weight	14.5 tonnes	15.98 tons
Fuel capacity	290 liters	77.13 gal
Ordnance caliber	120 mm	4.72 in
Ordnance length	24.2 cal/2.9 m	24.2 cal/9.53 ft

Performance. The maximum road speed and vehicle range data reflect use on a paved road. The maximum ordnance range data reflects the 2A60 Nona in the mortar mode, firing the unassisted 3VOF49 High Explosive (HE) projectile; the assisted projectile has a range of 12,800 meters (13,998.1 yd). In the direct fire mode, firing High Explosive Anti-Tank (HEAT) ammunition, the 2A60 has a maximum range of 800 meters (874.9 yd).

	<u>SI units</u>	<u>U.S. units</u>
Maximum road speed	80 kmph	49.7 mph
Maximum water speed	9 kmph	5.58 mph
Maximum range	600 km	372.6 statute mi
Step	50 cm	1.64 ft
Trench	2.1 m	6.89 ft
Slope	29%	29%
Gradient	60%	60%
Fording	amphibious	amphibious
Elevation	+80 deg	+80 deg
Depression	-4 deg	-4 deg
Traverse	35 deg left and right	35 deg left and right
Maximum ordnance range	8.8 km	9,623.7 yd
Maximum rate of fire	10 rounds/min	10 rounds/min
Sustained rate of fire	6 rounds/min	6 rounds/min

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Engine. KaMAZ 7403 liquid-cooled supercharged V-8 diesel engine. This powerplant generates 193.9 kilowatts (260 hp), with a power-to-weight ratio of 13.37 kilowatts per tonne (16.27 hp/ton). The engine powers a hydrojet unit for amphibious operation. A 24-volt electrical system supports vehicle operations.

Gearbox. A manually operated constant mesh gearbox, with one reverse and five forward gear ratios. The SM-120 (2S23) features a hydraulically assisted steering system.

Suspension and Running Gear. Lever-type torsion bar suspension system, with double-action hydraulic shock dampers on each of the eight wheels. A central tire pressure system supports the 13.00x18 run-flat tires.

Fire Control. In the indirect fire (mortar) role, the SM-120 (2S23) relies on targeting data from a forward observer; a fire direction center command post processes the data for the individual SM-120 (2S23). The SM-120 (2S23) also features a direct-fire sight and an indirect-fire panoramic sight.

Variants/Upgrades

Variants. None

Modernization and Retrofit Overview. Not applicable at this time.

Program Review

Background. As a product of the former Soviet Union, the SM-120 bears the Soviet industrial designation 2S23; NATO initially identified the vehicle as the M-1990. Reflecting Soviet combat experience in Afghanistan, the 2S23 design emphasizes high mobility, ease of maintenance, and low cost.

Proven Components

The design integrates the Bronetransporter (BTR-80) wheeled armored personnel carrier chassis with the turret and ordnance of the tracked SO-120 (2S9) Nona-S self-propelled mortar system. Development commenced in 1986; initial fielding occurred in 1990.

Description. The BTR-80, one of the later armored personnel carrier designs of the Soviet Union, serves as the basis for the SM-120 (2S23). The driver sits at the left-front of the vehicle; during travel, the vehicle commander sits to his right. The engine and gearbox mount at the rear of the vehicle. The BTR-80 represents an evolutionary improvement of the long-serving BTR design. The SM-120 (2S23) retains the amphibious capability of the BTR-80 through employment of an engine-powered hydrojet, two bilge pumps, and folding trim vanes. (For a detailed discussion of the BTR-80, see the "BTR-80" report in Tab C of our *Military Vehicles* Forecast.)

The nearly circular turret, which mounts at the middle of the vehicle, houses the 120mm 2A60 Nona breech-loaded howitzer-mortar. In the turret, the gunner sits to the left of the ordnance; the loader sits to the right. The gunner's station features a single vision block, panoramic viewer, and direct fire telescope. Both the gunner's and loader's stations feature hemispherical hatch covers. The commander's cupola at the left-rear

of the turret features a 7.62x54Rmm PKT machine gun, linked to a TKN-3A sight. The commander's station also features TNPO-115 vision devices.

The SM-120 (2S23) carries 30 rounds of 120mm ammunition behind and below the turret. Turret operation is electrical, with manual backup. Six 3D6 launchers for the 902V smoke screening system mount on each side of the turret.

Innovative Ordnance Package

The 120mm 2A60 Nona rifled howitzer-mortar is a breech-loaded weapon, featuring a semi-automatic breech assembly. While the crew loads the 2A60 manually, the system also employs a pneumatic rammer. After firing, the rammer blasts compressed air into the 2A60 chamber to keep fumes from entering the vehicle.

The SM-120 (2S23) features a combination over-pressure and filtration-type nuclear, biological, and chemical (NBC) protective suite and night vision devices.

Optimized for Light Forces

Like the earlier SO-120 (2S9) and newer SP-120 (2S31), the amphibious SM-120 (2S23) is optimized for the airborne, assault, and other light forces of the new Russian Army. The SM-120 (2S23) design offers high mobility and considerable firepower in a cost-effective package.

The enclosed turret of the SM-120 (2S23) offers significant tactical advantages over conventional mortar carriers, which usually feature an open-top turntable-mount configuration. The design of the SM-120 (2S23)

SM-120 (2S23) Nona-SVK 120mm Self-Propelled

provides the mortar crew protection from small arms fire, ballistic fragments, and NBC contamination.

Significant News

Indonesia May Buy Russian Weapons – In October 2005, the Forecast International Weapons Group reported that Indonesia wants to invest more in its armed forces. Many military modernization requirements have gone unfunded due to political instability in Indonesia. Now, Jakarta is said to be prepared to purchase 12 Su-30 fighters from Russia with another 36 to follow at a later date. Purchasing Russian-built fighters is seen as the least expensive option for Indonesia. Most of Indonesia's current fighter fleet is made up of U.S.-built aircraft including F-16s, F-5s, and A-4 Skyhawks. Fewer than half of these aircraft are operational due to a U.S. arms embargo imposed following the violence in East Timor.

In addition to fighters, Jakarta may be negotiating with Russia for the procurement of diesel-electric submarines, tanks, and surface-to-air missile systems. Indonesia may be interested in man-portable SAMs, which can be carried by individual soldiers and mounted on vehicles. (FI, 10/05)

Russia Sending Troops to Sudan – Supporting a proposal by President Vladimir Putin, the Russian Federation Council endorsed a plan in October 2005 to use Russian troops in the U.N. peacekeeping operation in Sudan. Under U.N. Security Council Resolution 1590 of March 24, 2005, around 200 Russian troops will be deployed in southern Sudan. The U.N. resolution called for the deployment of a military contingent in Sudan to uphold a peace agreement signed in January 2005 to end the two-decade-long civil war. More than 10,000 peacekeepers are being deployed in southern Sudan, while 6,000 troops of the African Union attempt to contain the violence in Darfur in the western part of Sudan. (Interfax, 10/05)

Desantniki Test New Equipment – Russian Airborne Forces received samples of small arms and antitank weapons for testing in October 2005. The weapons have been supplied primarily to reconnaissance and permanent-readiness units, mainly the all-volunteer 76th Airborne Division in Pskov. Currently, the Russian paratroopers ("desantniki") are testing the 12.7mm Kord heavy machine gun, AGS-30 and AGS-57 grenade launchers, Kornet antitank missiles, and GSh-18 and Grach pistols. Also, the units have received supplies of the new AK-74M assault rifles fitted with Tulpan optic devices. Sources from the Airborne Staff have commented that through live-fire exercises, the accuracy with these new assault rifles has increased by nearly 35 percent. (Agentstvo Voyennykh Novostey, 10/05)

Note: Market Intelligence Service Subscribers: For additional news, go to the online E-Market Alert page located in the Intelligence Center at www.forecastinternational.com and click on the links to the products you subscribe to.

Funding

The Ministry of Defense of the Russian Federation funded the development and Russian Army procurement of the SM-120 (2S23) Nona-SVK.

Contracts / Orders & Options

Not available, as the Russian government has not released contractual information regarding the 2S23.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1986	Development begun
	1990	Soviet Army publicly reveals 2S23
Late	1990	Low-rate serial production begun; Initial Operational Capability
	1997	Export sale to People's Republic of China
	2006	Production dormant, available for new orders

SM-120 (2S23) Nona-SVK 120mm Self-Propelled

Worldwide Distribution / Inventories

Export Potential. In 1997, the People’s Republic of China made several large purchases of weapons from the Russian Federation, including 100 SM-120 (2S23) Nona-SVK systems. This represented the first – and, to date, only – export sale of the SM-120 (2S23). The Russian Federation continues to promote the SM-120 (2S23) on the international market, albeit with no further success.

Countries. People’s Republic of China (100); Russian Federation (185)

Forecast Rationale

Low-rate serial production of the 120mm SM-120 (2S23) Nona-SVK system for Russian Army procurement fell dormant last year. During a decidedly short production run, the Russian contractors produced 185 units for the Russian Army and 100 units for the People’s Republic of China.

Victim of Hard Economic Choices

Entering service just as the Soviet Union was breaking up, the SM-120 (2S23) has fallen victim to the economic chaos and severely truncated military procurement of the fledgling Russian Federation.

Like its tracked counterparts, the earlier SO-120 (2S9) and newer SP-120 (2S31), the amphibious SM-120 (2S23) is optimized for the airborne, assault, and other light forces of the new Russian Army. The SM-120 (2S23) design offers high mobility and considerable firepower in a cost-effective package.

At the end of the day, however, it appears the Russian Army favors the tracked SP-120 (2S31) Vena over the wheeled SM-120 (2S23) Nona-SVK.

Simply No Takers

With last year’s completion of the low-rate production run for Russian Army procurement, our 10-year production outlook reflects the utter lack of sales prospects for SM-120 (2S23) Nona-SVK during the foreseeable future. While Rosoboronexport continues to promote the SM-120 (2S23) on the international market, the fact remains that this highly effective system may simply fall by the wayside.

We will continue to monitor this program for any signs of life. However, if nothing emerges on the SM-120 (2S23) Nona-SVK horizon during the coming year, we will drop this report from our active *Ordnance & Munitions Forecast*.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Ordnance	(Engine)	thru 05	High Confidence Level				Good Confidence Level				Speculative		Total 06-15	
			06	07	08	09	10	11	12	13	14	15		
MOTOVILIKHA ZAVOD/GORKY AUTO Z														
SM-120 (2S23) (a)	KAMAZ-7403	285	0	0	0	0	0	0	0	0	0	0	0	0
Total Production		285	0	0	0	0	0	0	0	0	0	0	0	0

(a) The through 2005 production includes six prototypes and the 100-unit PRC order.

SM-120 (2S23) Nona-SVK 120mm Self-Propelled



120mm SM-120 (2S23) Nona-SVK Self-Propelled Howitzer/Mortar

Source: Rosoboronexport