

## SA-22 Greyhound to Syria: Could Russian Air Defense Units Sent to Syria End Up in Hizbullah Hands?

Contributed by Naharnet-EditorCRN  
Sunday, 19 August 2007  
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Russia has started delivering sophisticated air defense systems to Syria, while rejecting speculation that some of them could reach Iran and Lebanon's Hizbullah, a Russian newspaper reported.

"The first part of the delivery to Syria has started," the centrist daily Nezavissimaya Gazeta reported, quoting a domestic military information agency.

A spokesman for Russia's arms export agency Rosoboron export declined to comment on the newspaper report.

The report acknowledged that the delivery of the weapons, the Pantsyr-S1E self-propelled short-range air defense missile system, was particularly sensitive in light of Israeli claims last year that Russian arms sold to Syria had ended up in the hands of Hizbullah.

Israel fought a brief war with Hizbullah fighters in Lebanon in July 2006 and afterwards accused Russia of indirectly supplying the party with relatively sophisticated anti-tank weapons, an accusation Moscow denied.

Nezavissimaya Gazeta quoted an official involved in Russian arms export policy as describing concerns that Russian air defense weapons could be re-exported to Iran as "silly rumors".

"This is not possible," Vitaly Shlykov, a member of the state committee on foreign and defense policy, was quoted as saying. "One of the conditions for every deal is the prohibition on transfer of the weaponry to a third country."

Officially, the contract was for the sale of 50 Pantsyr units for about 900 million dollars (670 million euros). Media reports have put the number of units sold to Syria at around 36.

In May, the London-based arms specialist magazine Jane's Defense Weekly reported that Syria had agreed to send Iran at least 10 of the Pantsyr units.

That report was categorically denied by a range of top Russian officials including First Deputy Prime Minister Sergei Ivanov.(AFP-Naharnet)

Beirut, 17 Aug 07, 16:47

<http://www.naharnet.com/domino/tn/NewsDesk.nsf/getstory?openform&D49F8D7FC454498FC225733A004BACA7>

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Reference Video: Shows the earlier version Tungushka - instead of the Pantsir, The Pantsir is the most advanced. Showing The Anti Aircraft Weapon System able to deploy both Guns and Missiles at Aircraft.

{youtube}xP-mQIy-jX0{/youtube}

This film shows the mobility of such a system - this video shows the tracked vehicle Tungushka, the Pantsir is 8-Wheeled Vehicle and thus more mobile - thus the reason why such systems could easily be transferred from Syria to proxies.

{youtube}iqqD3sEPqGU{/youtube}

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Reference Article from Archive

Jane's Defence Weekly Exclusive: Iran to acquire advanced air defence system via Syria  
18 May 2007

Iran is set to acquire at least 10 96K6 Pantsyr-S1E self-propelled short-range gun and missile air defence systems, resulting from a major deal struck between Syria and Russia earlier this year.

A source close to the deal told Jane's Defence Weekly that Moscow has agreed to sell Damascus "some 50 Pantsyr-S1E systems," with initial deliveries set to begin later this year.

While most of the Pantsyr's are earmarked for the Syrian Air Defence Command, "the end user for 10 of the systems is Iran," said the source, adding that these should reach Tehran via Syria, in late 2008.

The contract signed by Syria and Russia is valued at USD730 million and according to the source, Iran will part finance the Syrian acquisition along with payment for its own 10 systems, to recompense Damascus for its compliance in the deal.

While Tehran has indicated the urgency of the requirement to Damascus, the source says the 10 systems to be transferred to Iran will not be taken from the first systems delivered to Syria, but rather from later deliveries.

The source said that both sides have agreed that when the first shipments of Pantsyr-S1E systems are delivered to Syria, specialists and senior officers from the Iranian Air Force's Air Defence Command will travel to Syria to familiarise themselves with the system.

"It has also been agreed that some of the Iranian Air Force specialists will participate in instruction and training given to the Syrians on the Pantsyr system — including participation in future tests," added the source.

Moscow was subject to particular diplomatic pressure for earlier agreeing to supply Iran with the TOR-M1 air defence system. Both Tehran and Damascus are anxious not to subject Moscow to further criticism from the west and as such the Russian government has, officially, not been made aware of the Syrian arrangement with Iran.

UN member states, if knowingly party to such an arrangement, could be in violation of the spirit of UN Security Council Resolution 1747, passed on 27 March this year. However, the source told Jane's Defence Weekly that the relatively small and indirect Iranian element of Syria's significant procurement deal avoids the potential for Moscow to fall foul of UN action under Security Council Resolution 1747.

Resolution 1747 imposes a ban on Iranian arms exports and calls upon member states to refrain from selling specific military materiel to Tehran.

Faced with the possibility of an air strike against its nuclear infrastructure assets, Iran has accelerated its procurement of various advanced air defence systems in the past few years.

This procurement has been most notably from Russia and has included various types of advanced air defence systems, including the S-300PMU-1/2 systems; 29 Tor M1 systems and the S-125M1 Pechora-2A (SA-3 "Goa") low-to-medium altitude air defence system and deployed these systems at its most sensitive infrastructure assets. (ENDS)

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Iran set to obtain Pantsyr via Syria

By Robin Hughes, Deputy Editor

Iran is set to acquire at least 10 96K6 Pantsyr-S1E self-propelled short-range gun and missile air-defence systems as a derivative of a major deal struck between Syria and Russia earlier this year.

A source close to the deal told Jane's that Russia has agreed to sell Damascus "some 50 Pantsyr-S1E systems", with initial deliveries set to begin later in 2007. Syria is understood to be receiving the Pantsyr-S1E equipped with the latest Roman I-Band fire control radar.

While the source noted that most of the Pantsyrs are earmarked for the Syrian Air Defence Command, "the end user for 10 of the systems is Tehran". These should reach Iran, via Syria, in late 2008, the source told Jane's.

According to the source, Iran will part finance the Syrian acquisition along with payment for its own 10 systems to

recompense Damascus for its compliance in the deal.

Syria is understood to have signed a contract with Russia, with an estimated value of USD730 million, for the supply of the Pantsyr-S1E. While Tehran has indicated to Damascus the urgency of the requirement, the source said that the 10 systems to be transferred will not be taken from the first ones supplied to Syria but from later deliveries. The source added Iran has also disclosed plans to acquire at least 50 Pantsyr-S1E systems and is currently now exploring potential options to realise this. He additionally confirmed that Iran has now acquired at least two longer-range S-300PMU-1/2 Favorit (SA-10c/d 'Grumble') air-defence systems.

Syrian consent to enable Iran to procure the Pantsyr-S1E systems through Syria is an implementation of the military and technological co-operation mechanism stipulated in a strategic accord signed by both countries in November 2005.

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DEBKAFile Exclusive: Iran acquires Russian-made air defense and anti-tank systems to repel a possible US attack

April 14, 2007, 11:02 AM (GMT+02:00)

The Pantsyr 1 (known in the West as SA-19 GRISOM) system is designed to engage aerial targets, including missiles; the Khrizantema (9M123), to strike advancing tank columns at long range and destroy bunkers.

Our military sources report that the two weapons systems combined are built to repel advancing armored units while at the same striking helicopter commando drops behind their lines. A third recently-delivered Russian system, the TOR M1, has been put into service by the Revolutionary Guards to protect nuclear and other strategic sites against missile attack, including cruise missiles.

The Israeli military fears Moscow is also planning to supply Syria and Hizballah with the sophisticated SA-9 and 9M123. DEBKAFile's military sources say that the two weapons in Syrian hands could seriously impair Israeli tank and helicopter movements and hit IDF positions and command posts deep inside the Golan.

Col. Yury Solovyov, commander of Russia's Air Defense Forces Special Command, told Novosti news agency Friday, April 6, that Iran's air defense system is strong enough to repel a US strike.

"Currently Iran has our defense missile systems which are capable of tackling US combat aircraft," he said. "Iran also has French and other countries' defense systems."

Earlier, Russian Dept FM Alexander Losyukov stated that no US attack on Iran is expected in the coming days, contradicting a previous quote by Novosti from Russian intelligence officials who predicted a US missile strike against Iran, codenamed Operation Bite, at 4:00 a.m. April 6. Other Russian sources speak of an April attack.

The Pantsyr 1 is a radar command-guided, two-stage surface-to-air missile battery mounted on a 2S6 integrated air defense system, which is fitted with two banks of four missiles in blocks of two. Each can be independently elevated vertically. The weapon can engage aerial targets moving at a maximum speed of 500 meters per second at altitudes ranging from 15 to 3,500 meters. Its effective range is 2.4 to 8 km. A high-explosive fragmentation warhead is activated within 5 metres from target with a kill probability of 70%.

The Khrizantema's supersonic missiles shoot at a speed of 400 meters per second to hit moving targets, including armored vehicles, at a distance of 6 km. This weapon can pierce 1,200mm of steel armor — even explosive reactor armor (ERA) - making both the US Abrams and Israeli Chariot tanks vulnerable. It can also destroy bunkers and engage low-flying helicopters. The Khrizantema uniquely features two guidance modes - automatic by roof-mounted radar, and semi-automatic by a laser beam rider.

[http://www.debka.com/headline\\_print.php?hid=4033](http://www.debka.com/headline_print.php?hid=4033)

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Russia has developed a new concept of a multi-purpose short-range AD system with combined missile/gun armament capable of engaging all types of targets, including the ground ones.

Surface-to-air missiles (SAMs) are fired at air targets throughout the entire engagement envelope starting from the far zone. Guns are used to destroy such targets as aircraft flying at extremely low altitudes and helicopters appearing unexpectedly from behind covers in near zone. Again, owing to low cost of their ammunition, guns are appropriate for

defeating relatively cheap and mass targets, such as RPVs and ground targets.

The Pantsir-S1 air defense missile/gun system is a leader of the short-range air defenses; it embodies all the provisions of the KBP-developed and realized concept of a multi-purpose short-range AD system, which ensures its superiority over foreign counterparts. It constitutes that missing link in the air defenses with introduction of which the air assets formations acquire highest effectiveness and stability in environment of intense ECM and counter-fire. And the entire structure of air defenses becomes highly adaptable to alterations in performance of air threat and modes of their combat application. On the whole, high performance missile/gun armament and adaptive control system for various battle conditions implemented in the weapon system render the Pantsir-S1 air defense missile/gun system one of the most advanced samples of the 21st century's highly intelligent weapons.

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The Pantsyr-S1 is a close-in air defense system of a new generation built on the same principles as the Tunguska. Currently, its development and tests are nearly completed, and series production is scheduled for 1998.

The Pantsyr system is designed to protect vital facilities of the armed forces and economy against modern air attack weapons and augment low altitude air defense groupings.

The Pantsyr is primarily intended to engage a wide array of air targets, known as precision guided munitions.

The Pantsyr system possesses the following additional potential:

- enemy denial to use mass weapons because it ensures preventive strike at hostile carriers;
- wider possibilities to use radar guidance modes owing to the availability of a two-band radar. This ensures the high accuracy of SAM guidance due to a narrow beam and error reduction in engaging low flying targets in the millimetric wave band, as well as the joint processing of signals in centimetric and millimetric wave bands;
- high combat capacity of the system owing to two independent guidance channels and possibility to engage a target by two SAMs concurrently, as well as the short time of the battle performance cycle.

The 57E6 surface-to-air missile of the Pantsyr system deserves special mention.

The missile is of the bicaliber tandem configuration with a separable booster. The small caliber of the second stage (sustainer) ensures superior terminal phase characteristics of the SAM and, respectively, the short time of flight to target.

This missile configuration allows for the use of an elongated rod warhead. The effectiveness of the rod warhead rises with an increase in length and decrease in diameter. What is more, the effectiveness of the rod warhead in a certain zone, determined by the rod ring uniformity, insignificantly depends on the miss value, while the effectiveness of the fragmentation warhead decreases depending on a miss according to the normal distribution law.

A high length-to-diameter ratio ensures a uniform blast wave front over the warhead length and reduces the aerodynamic drag. This increases the rod spray velocity (up to 1,600 m/s), thereby ensuring better conditions to straddle a target.

The rod warhead is essentially a directional warhead. Compared to the fragmentation warhead, which mainly ensures functional defeat of a target (incapacitates the control system components), the rod warhead disintegrates the flying vehicle airframe owing to the cutting action of rods against the body and incendiary effect against the engine.

Consequently, only the employment of the 57E6 rod warhead allows the SAM to outperform the missiles of the same class, fitted with the fragmentation warhead, 1.5-2 times in terms of effectiveness.

The 57E6 missile surpasses the best world items of the same class system by 1.8-2.5 times by the following parameters:

- high average flight speed (good terminal phase characteristics);
- higher effectiveness of the rod warhead;
- controlled flight range;
- warhead-to-missile weight ratio. A modular principle was used during design work, which allowed:
- placement of the system on various carriers;
- creation of other modifications.

The basic version of the system is mounted on the 10-t Ural-5323 truck chassis.

The following modifications of the system are also developed:

- shelter version when the system is operated from remote control panels with the crew accommodated in an equipped and protected enclosure;
- versions placed on small ships (patrol and escort).

A version is also developed with simplified instrumentation including only optronic control channels. It is simpler

functionally and, consequently, cheaper. This version may prove preferable for countries with favorable climates (Middle East, Latin America, Africa, a number of regions in South East Asia) where no use limitations are imposed owing to adverse weather conditions.

In terms of combat characteristics and design, the Pantsyr-S1 system belongs to a new generation of air defense systems based on the introduction of latest control systems, which ensures its high competitiveness and leading positions in this class of arms and military equipment in the world.

Capable of accomplishing a wide range of missions to engage air and ground targets, the systems of this class are comparatively easy to operate, reliable and relatively inexpensive, allowing for their production in large numbers and providing counterair cover of numerous facilities.

The aforementioned problems pertaining to the Ground Forces arise during the organization of surface ship air defense.

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## Pantsyr-S1 - Pantsyr-S1

Pantsyr-S1, or Panzir (Shell in English), is a short-range, mobile, fully autonomous air defense system combining two 2A38M 30mm anti-aircraft guns and six 57E6-E ready-to-fire missiles in steered launch containers. It provides air defense to small-size administrative, industrial and military installations against air-to-surface missiles and strike aircraft flying at medium altitudes. Despite by default this system is being offered mounted on a 8x8 truck, Pantsyr-S1 can be mounted on tracked chassis. The fire control system comprises both a jam-resistant radar and electro-optical sight system and can fire both weapons (gun/missile) on-the-move.

Typically, Pantsyr-S1 battery includes up to six combat vehicles equipped with 8 to 12 57E6-E missiles and 1,400 30mm rounds. In addition, the battery includes a command post vehicle, transporter/loader, spare transport and repair vehicles. These vehicles are equipped with satellite-based navigation system, air conditioning, electric power supply, voice and data communications, meteorological and combat recording equipment. Each weapon system vehicle has a crew of three-man and a reaction time over 4 - 6 seconds.

The sensor package includes a target detection and designation radar, target and missile tracking radar and electro-optical systems. The first radar can detect targets of 2 square meters Radar Cross Section (RCS) at ranges between 32 - 36 km while tracking simultaneously up to 20 targets. The tracking radar is able to follow the same kind of target at ranges 24-28 km but tracking only one target and guiding up to two 57E6-E missiles. The electro-optical system has a maximum range of operation 17-26 km tracking a single target and a single missile.

Pantsir-S1 can shot down airborne threats flying up to Mach 3 (1,000 m/s) at ranges between 1.2 to 20 kilometers and altitudes varying from 5 to 10,000 meters. The two automatic anti-aircraft guns deliver a maximum rate of fire between 4,500 and 5,000 rounds per minute. The gun system is able to take out targets at ranges between 200 to 4,000 meters at altitudes between zero (on-the-ground) and 3,000 meters.

According to Russian press, the Pantsir-S1 was qualified and delivered to the Russian anti-missile defense in late 2004.

### Specifications Notes

Ceiling 10,000 m (32,808 ft) -

Crew 3 -

Main Gun Caliber 30 mm -

Main Gun Max Range 20,000 m (65,617 ft) -

Max Rate of Fire 5,000 rounds per minute -

Number of Weapons 1,400 -

Wheels 8 -

### 2A38M - Pantsir-S1-2A38M-Air Defense Automatic Gun

The 2A38M is a 30mm automatic anti-aircraft gun derived from GSh-30 twin-barrel 30mm aircraft-mounted cannon. KBP designed the 2A38M cannon to equip the latest generation of Russian-made air defense gun systems such as Tunguska and Pantsir-S1 providing high rates of fire of 1,950 to 2,500 rounds per minute.

### 57E6-E - Pantsir-S1-57E6E-SAM

The 57E6-E is a medium-range surface-to-air missile extremely flexible which allows for engagement of airborne threats at ranges from 1.2 to 20 kilometers and altitudes from 5 to 10,000 meters. It may engage both fixed- and rotary-wing aircraft and strike missiles/bombs flying near Mach 3 (1,000 m/s). The 57E6 has been integrated into the Pantsyr-S1 short-range mobile air defense system where 8 to 12 missiles are carried within. Typically, two of such missiles are directed against a single target to maximize kill probability.

## Summary:

### Pantsyr S1 Air Defense Missile / Gun System, Russia

Pantsyr-S1 (also known as Pantsir) is a close-in air defence system designed to defend ground installations against a variety of weapons including both fixed-wing aircraft and helicopters, ballistic and cruise missiles, precision-guided munitions and unmanned air vehicles. It can also engage light-armoured ground targets.

It was designed by the KBP Instrument Design Bureau of Tula, Russia, and is manufactured by the Ulyanovsk Mechanical Plant, Ulyanovsk, Russia.

"Pantsyr-S1 (Pantsir) is a close-in air defence system designed to defend ground installations against a variety of weapons."

The system is undergoing trials with the Russian Air Force, with first deliveries of production systems due in 2008.

In May 2000, the United Arab Emirates ordered 50 Pantsyr-S1 systems, half to be mounted on tracked GM-352M1E vehicles from Minskiy Traktorniy Zavod of Belarus and half on wheeled chassis.

The first batch of was delivered in November 2004. However a new radar was requested by the UAE and first deliveries of the completed system are planned for 2007. Final deliveries are scheduled for 2009.

It has been reported that Syria has placed an order for 50 Pantsyr-S1 systems with deliveries to begin by the end of 2007. Jordan has also place an order for an undisclosed number of systems.

## ARMAMENT

Pantsyr-S1 carries 12 57E6 surface-to-air missiles on launchers. The missile has a bicalibre body in tandem configuration, separable booster and sustainer with separation mechanism. The sustainer contains the warhead and contact and proximity fuses. The fragmentation rod warhead weighs 16kg. The missile weighs 65kg at launch and has a maximum speed of 1,100m/s. Range is from 1km to 12km.

Two 2A72 30 mm guns are fitted with 750 rounds of a variety of ammunition - HE (High Explosive) fragmentation, fragmentation tracer, armour-piercing with tracer. Ammunition type can be selected by the crew depending on the nature of the target. Maximum rate of fire is 700 rounds per minute. Range is up to 4km.

## FIRE CONTROL

The Pantsyr-S1 fire control system includes a target acquisition radar and dual waveband tracking radar, which operates in the mm and cm waveband. Detection range is 30km and tracking range is 24km for a 2cm<sup>2</sup> - 3cm<sup>2</sup> target. This radar tracks both targets and the surface-to-air missile while in flight.

As well as radar, the fire control system also has an electro-optic channel with long-wave thermal imager and infrared direction finder, including digital signal processing and automatic target tracking. A simplified, lower-cost version of Pantsyr-S1 is also being developed for export, with only the electro-optic fire control system fitted.

"The radar tracks both targets and the surface-to-air missile while in flight."

The two independent guidance channels - radar and electro-optic - allow two targets to be engaged simultaneously. Maximum engagement rate is 12 targets a minute.

The Pantsyr-S1E systems for the UAE will be fitted with a new MRLS fire control radar. MRLS is a phased array radar operating at 40 GHz (K-band), with a range of up to 28km.

## VEHICLE

Pantsyr-S1 is mounted on a 10t Ural-5323 truck chassis with a turret that houses the armament, laying drives, sensors, control equipment and crew.

The Ural-5323 truck is four-axle, 8 x 8 all-wheel drive with single tyre wheels. The first and second axle wheels are steerable. The engine is an air-cooled diesel Ural-745.10 providing 290hp. The dual-plate mechanical clutch has a pneumatic booster and three-range five-speed gearbox. A two-stage transfer case has lockable symmetrical interaxle differential. Suspension is by rigid-axle bogie on longitudinal semi-elliptical leaf springs. Front suspension is fitted with hydraulic shock absorbers.

The Ural-5323 can ford up to 1.75m of water.

A shelter-based version of the Pantsyr-S1 is also being developed.