

# ARCHIVED REPORT

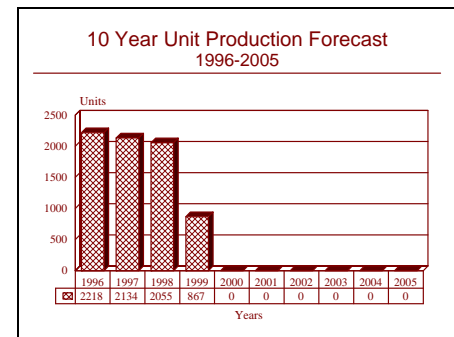
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## RPG.16 - Archived 9/97

### Outlook

- Continued production is forecast for (minimal) domestic and export requirements.
- Production forecast to run into 1999.



### Orientation

**Description.** A man-portable anti-armor weapon

**Sponsor.** The RPG.16 was developed under the sponsorship of the Ministry of Defense of the former Union of Soviet Socialist Republics. The continued procurement (and further development of the munitions) of the weapon is sponsored by the Ministry of Defense of the Russian Federation.

**Contractors.** The RPG.16 was developed by the State Research and Production Enterprise "Basalt"; the weapon is manufactured by the Russian Federation Arsenals at undisclosed locations in the Russian Federation.

**Licensee.** None

**Status.** The RPG.16 manufacturing program in the Russian Federation is ongoing; the weapon is in service in the Russian Federation and other nations of the Commonwealth of Independent States. Afghanistan is also reported to have this weapon in service; other users are possible.

**Total Produced.** As of January 1, 1996, a total of 116,883 RPG.16 weapons had been manufactured.

**Application.** A light anti-armor weapon for infantry on the move, the RPG.16 was designed to augment then possibly replace the RPG.7 in the (former) Soviet Army. The RPG.16 is also used as an assault-type weapon for the destruction of buildings, bunkers and fortifications.

**Price Range.** Reliable sources put the unit price of the RPG.16 launcher at \$2,422 in equivalent 1996 United States dollars. A High Explosive Anti-Tank round for this weapon has a unit price of around \$47 in those same year dollars.

### Technical Data

**Design Features.** The RPG.16 is a simple rocket launcher of especially rugged design; an improved version of the RPG.7.

**Dimensions.** The following data are based on weapons captured in Afghanistan. The relevant projectile is the PG.16 High Explosive Anti-Tank round. Note that the projectile length is not added to the launcher length to yield a carry length. This is due to the fact that the weapon is normally carried in an unloaded state with the round assembled and inserted into the weapon just before use. The projectile diameter is at its widest point; unlike the RPG.7, the projectile does not protrude from the launcher in a major way when loaded. The launcher bore diameter is 58.3 millimeters (2.3 inches).

	<u>SI units</u>	<u>US units</u>
Projectile length	60.0 cm	1.97 ft
Launcher length	1.09 m	3.58 ft
Projectile diameter	58.3 mm	2.3 in
Launcher diameter	7.3 cm	2.87 in
Projectile weight	3.0 kg	6.6 lb
Firing weight	13.3 kg	29.26 lb

**Performance.** The range figure is the effective range using the PG.16 round. The armor perforation figure is for the PG.16 round from data supplied from open sources based on information out of Afghanistan.

Maximum speed	351 m/sec	1,151.6 ft/sec
Altitude	line of sight	line of sight
Range	800 m	874.9 yd
Armor perforation	38.2 cm	15.04 in

**Propulsion.** The RPG.16 projectiles use an initial boost charge and a solid fuel rocket motor of undetermined composition and thrust. Due to the backblast that is the norm for this type weapon, the RPG.16 weapon should not be fired close to a wall or the ground.

**Control and Guidance.** The RPG.16 projectiles are stabilized in flight by four spring-out knifelike fins which

deploy after the rocket exits the launcher; these fins are canted in order to impart a slow roll to the projectile.

**Warhead.** The PG.16 rocket has a tandem High Explosive Anti-Tank warhead 65.2 millimeters (2.57 inches) in diameter. A High Explosive/Fragmentation round is also in use. Both projectiles are probably fitted with a piezoelectric nose fuze and base detonator. Both also self-destruct after a few seconds.

## Variants/Upgrades

None at this time.

## Program Review

**Background.** One of the most successful weapons ever manufactured, the RPG.7 (RPG = Reaktivniy Protivotankoviy Granatomet) has turned up almost everywhere in the world, being used in all levels of conflict from terrorist ambushes to major wars. The development of this weapon began in the late fifties and was an outgrowth of the RPG.2. The RPG.2 was a direct descendent of the German Panzerfaust 150 which was developed during the Second World War. The development of the RPG.7 proceeded normally and the weapon was first introduced to units of the (former Soviet) Army in 1961. The production of the RPG.7 was at a very high level through the seventies, as the weapon was distributed to every motorized rifle and airborne squad as well as to numerous other front line and reserve units. Additional tens of thousands of weapons were provided to the Eastern European nations that were closely allied with the former Soviet Union. And finally, an even greater number of

RPG.7 weapons were distributed under the former Soviet Union's military aid programs; beneficiaries included many African, Middle Eastern and Asian nations. Some of these nations, such as Angola, Cuba, Egypt, Syria and Vietnam, received huge quantities of the weapon and associated ammunition. Finally, the RPG.7 has been widely distributed through a number of channels to various terrorist nations worldwide.

In the early seventies, the development of an enhanced version of the RPG.7 and its various munitions was begun. This effort was to eliminate several shortcomings of the RPG.7 as well as the ammunition developed for the weapon. These shortcomings, described in detail in the pertinent report in this section, are as follows:

- Poor ballistic performance of the projectile.

- Suspect armor perforation performance against the latest armor.
- A difficult-to-master optical sighting system.
- Lack of a bipod.

The result of the development program was a weapon so different from the original RPG.7 that it was given a new designation, RPG.16. The RPG.16 is also called the Grom by the Russian troops.

**Description.** Like the RPG.7, the RPG.16 is a simple, yet ruggedly designed, rocket launcher. Unlike the RPG.7, the projectile does not protrude from the launcher in a major way when loaded. The forward end of the launch tube mounts the forward sight and the bipod. Further to the rear is the combined grip/trigger/firing mechanism. Immediately behind the grip/trigger/firing mechanism to the top of the weapon is mounted the adjustable rear sight. This device is a much simpler and easier to use design than that of the RPG.7. The sight can be replaced by the NSP-2 active infrared sight or the PGN-1 passive image intensification sight. To the rear of the sight, the weapon design terminates with a metal convergent/ divergent nozzle.

Two types of rounds have been developed for the RPG.16. The first is the PG.16 High Explosive Anti-Tank round. This munition is effective against explosive reactive armor. The other tactical round is a combined High Explosive/Fragmentation round of unknown designation. The rockets are positively indexed in the launcher and are fired by a percussion mechanism. Both rocket munitions are faster and more aerodynamically refined than the PG.7/PG.7M rounds used in the RPG.7. This allows for the RPG.16 to be much more effective and easier to use.

**Sequence of Operation.** In order to fire the RPG.16, the rocket munition must first be assembled. Assembly is accomplished by attaching the warhead to the propulsion unit. The munition is then loaded and indexed in the launcher. Once the target is acquired, the range is estimated and correction for the wind is allowed for and the trigger is depressed. The munition is accelerated to 130 meters per second (426.5 feet per second). After the munition exits the launch tube, the four fins spring out and the warhead arms itself. The rocket then further accelerates the munition to 351 meters per second (1,151.6 feet per second). If the munition strikes no object after a certain period of time (approximately four seconds), it self-destructs.

Like the RPG.7, the RPG.16 has been used in Afghanistan for a variety of anti-tank and assault missions such as ambushes and protection of longer ranged anti-tank guided missile crews. In Afghanistan, the RPG.16, in conjunction with the High Explosive/ Fragmentation round, was used as a mortar.

**Production Models.** To date, the RPG.16 has been manufactured in two distinct models.

RPG.16 - This is considered the standard model for which the above technical data are pertinent.

RPG.16D - This model of the RPG.16 was developed specially for airborne troops and similar units in which the compact carriage of the RPG.16 is desirable. This version of the RPG.16 can be quickly broken down into two parts.

**Explosive Reactive Armor.** In our other reports on man-portable anti-armor systems, we make a caveat related to the almost total lack of effectiveness of High Explosive Anti-Tank warheads against explosive reactive armor. However, the PG.16 munition used in the RPG.16 has a tandem High Explosive Anti-Tank warhead. This technology has proven to be an effective countermeasure against explosive reactive armor.

## Funding

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The funding profile for the RPG.16 is not available.

## Recent Contracts

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Not available as contractual information is not released.

## Timetable

The following timetable is for the RPG.7 and RPG.16 only and does not relate to any other RPG type weapon.

	1956	Development of RPG.7 began
	1960	Serial production of RPG.7 began
	1970	Development of improved version of RPG.7 began
	1976	RPG.16 introduced into Soviet Army as replacement for RPG.7
	1980s	RPG.16 used in combat in Afghanistan
Mid	1996	Production of RPG.16 ongoing in Russian Federation

## Worldwide Distribution

**Export Potential.** In terms of distribution, the RPG.7 is one of the most successful weapons programs ever, matched by only a few other programs such as various small arms types. While the RPG.16 is a greatly improved weapon, it is highly unlikely that it will match the almost unparalleled success of the RPG.7. This is mainly due to the dramatic changes that have taken place in the nations that comprised the former Soviet Union. That nation used weapons, including large numbers of the RPG.7, as a major instrument of its foreign policy. While the present Russian Federation is aggressively marketing its weapons, it is doing so under the laws of capitalism. For the RPG.16, this spells trouble due to the highly competitive nature of this market.

**Countries.** Aside from the **Russian Federation**, the RPG.16 is in service in the following nations: **Afghanistan, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.** In addition, **Bulgaria, Estonia, Iran, Iraq, Latvia, Lithuania, Romania and Syria** may have the RPG.16 in inventory; this list may not be all-inclusive.

## Forecast Rationale

The RPG.16 represents a significant improvement over the highly effective and successful RPG.7. The newer weapon is much easier to use and its basic design allows for a large measure of product improvement. However, due to the still ongoing geo-political changes in what was the Soviet Union, the production of the RPG.16 will come nowhere near that of the RPG.7. Already having a good exposure

on the export market, the RPG.16 is expected to continue to expand its presence in that market a little further. Based on the known and projected inventories of the major users, the manufacture of the RPG.16 is expected to run a few more years and then terminate as the much more effective RPG.29 becomes fully integrated in the Russian Federation's military infrastructure.

## Ten-Year Outlook

Munition	through 95	ESTIMATED CALENDAR YEAR PRODUCTION									Total 96-05
		High Confidence Level			Good Confidence Level			Speculative			
	96	97	98	99	00	01	02	03	04	05	
RUSSIAN FEDERATION ARSENALS											
RPG.16 (a)	116883	2218	2134	2055	867	0	0	0	0	0	7274
Total Production	116883	2218	2134	2055	867	0	0	0	0	0	7274

(a)All production is for service deliveries only.