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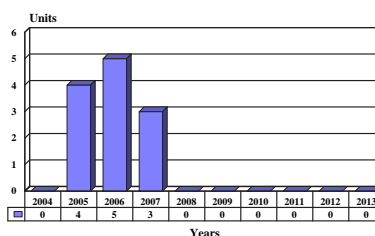
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## Wildcat Twin 30 mm Self-Propelled Anti-Aircraft Artillery System - Archived 6/2004

### Outlook

- System available for production orders
- Wildcat is available in several different configurations to enhance marketability
- Development and heavy marketing effort continue
- No forecast modernization or retrofit potential in the coming 10 years

10 Year Unit Production Forecast  
2004 - 2013



### Orientation

**Description.** A wheeled or tracked anti-aircraft artillery system.

**Sponsor.** This mobile air defense system was developed with private funds of the contractor Krauss-Maffei Wegmann in cooperation with leading European firms in the area of air defense armament and vehicle technology.

**Contractors.** The Wildcat has been developed and, if ordered, will be manufactured by Krauss-Maffei Wegmann AG, Munich, Federal Republic of Germany. Major subcontractors include AEG Telefunken, Hollandse Signaalapparaten, Rheinmetall DeTec (Kuka Wehrtechnik), Mauserwerke Oberndorf, and Siemens.

**Licensees.** None

**Status.** The Wildcat is available for production orders. The system continues to be developed for integration with different platforms.

**Total Produced.** As of January 2003, a total of three prototype and developmental Wildcat systems had been manufactured.

**Application.** A highly cost-effective mobile air defense system for use against both fixed- and rotary-wing aircraft. Wildcat has a modular fire control system which can be tailored to the needs of individual clients for air defense or ground defense against armored targets.

**Price Range.** The unit prices of the Wildcat depend on version, chassis, and numerical quantities. The serial production price for a fair-weather Wildcat version is approximately \$3.97 million, while the V5 version has a unit price of around \$8.127 million. This price information is in equivalent 2003 United States dollars.

### Technical Data

The following data are based on the system mounted on the MC 601 wheeled chassis.

**Crew.** Three: commander, driver, gunner.

**Configuration.** 6x6 on MC 601 chassis.

**Ammunition.** The 30 millimeter MK 30F cannon of the Wildcat is chambered for standard 30x173 ammunition in Semi-Armor Piercing High-Explosive Incendiary, High-Explosive Incendiary-Tracer, High Explosive Incendiary, Armor Piercing Discarding

Sabot-Tracer, Target Practice, and Target Practice-Tracer types.

Dimensions. The weight can vary slightly as to the particular fit of the fire control suite.

	<u>SI units</u>	<u>US units</u>
Length:	6.87 meters	22.54 feet
Width:	2.98 meters	9.78 feet
Height:	3.05 meters	10.0 feet
Combat weight:	17.5 tonnes	19.29 tons
Fuel capacity:	430 liters	114.36 gallons

Performance. The following data are for the automotive performance only; the cannon performance parameters are detailed in the **Program Review** section below.

	<u>SI units</u>	<u>US units</u>
Maximum speed:	100 kilometers per hour	62.10 miles per hour
Maximum range:	800 kilometers	496.8 statute miles
Step:	50 centimeters	1.64 feet
Trench:	1.3 meters	4.27 feet
Slope:	30%	30%
Gradient:	60%	60%
Fording:	1.01 meters	3.32 feet

**Engine.** The MC 601 chassis application uses the OM 402A 90° V8 supercharged diesel engine, which is rated 240 kilowatts (321.72 horsepower). The power-to-weight ratio on this chassis is 13.64 kilowatts per tonne (16.59 horsepower per ton).

**Gearbox.** On the MC 601 chassis, Zahnradfabrik Friedrichshafen provides the 6 HP 500 automatic gearbox with one reverse and six forward gear ratios and a torque converter.

**Armament.** The basis of the Wildcat armament suite is a fully rotating powered turret fitted with twin Mauserwerke Oberndorf MK 30F 30 millimeter automatic cannon. The cyclic rate of fire is 1,600 rounds per minute, the muzzle velocity is 1,100 meters per second (3,608.9 feet per second), and the maximum effective range is 3,000 meters (3,280.8 yards). The elevation and depression limits are +85° and -5°, respectively. AEG Telefunken provides the turret drive as well as the weapon drives, while Rheinmetall DeTec (formerly Kuka Wehrtechnik) provides the ammunition feed system.

A more recent development is the integration of the FIM-92 Stinger and 9M313 Igla 1/9M39 Igla (NATO-SA-16/SA-18) anti-aircraft missile systems with the turret.

**Fire Control.** Hollandse Signaalapparaten supplies the fire control computer, tracking sensors, and necessary control units. Siemens AG of Germany supplies the MPDR 18X frequency agile X (I)-band search radar, along with the Identification Friend or Foe system. A laser rangefinder is incorporated into the system. The target is designated on the plan position indicator display by a joystick mechanism, and a gun-laying periscopic sight is automatically slaved to the target. Following the determination of target elevation, the electro-optic tracking system is automatically locked onto the target; tracking is then automatic. The periscopic sight can be uncoupled from the fire control suite and used to engage ground targets. Other options are available, including the integration of the Stinger and Igla anti-aircraft missiles with the system.

## Variants/Upgrades

**Variants.** The 6x6 MC 601 chassis of the Wildcat is based, with minor modifications, on the Daimler-Chrysler Transportpanzer 1, an amphibious wheeled multipurpose armored vehicle. The initial serial production of the baseline Transportpanzer 1 (also known as the Fuchs, which is covered in Forecast International's *Military Vehicles* binder) for the Bundeswehr has been completed, but the vehicle remains in production for follow-on orders. No major

variants of the Wildcat have been developed and none are foreseen. The Wildcat is a modular system available in several levels of sophistication and designed to be mounted on a variety of chassis. Several improvements and modifications are being offered and are outlined below in the **Program Review** section.

**Modernization and Retrofit Overview.** This is not applicable to this system at this time.

## Program Review

**Background.** The private venture launched by Krauss-Maffei for an armored vehicle mounting an air defense turret puts wheeled armored vehicles into direct competition with tracked anti-aircraft systems such as the Gepard. The Wildcat is considered by most analysts to be the first system that is not *inferior* to tank-based anti-aircraft artillery systems providing anti-aircraft protection to armored units on the move.

The development of the Wildcat system began in 1979 following extensive studies conducted by Krauss-Maffei. Originally, the program was called the Anti-Aircraft Armored Truck. While the initial development of the Wildcat system integrated the turret with the Transportpanzer 1 vehicle, the turret can be integrated with any tracked or wheeled vehicle as long as a 220 centimeter (86.61 inch) turret ring can be fitted. Examples of such vehicles include the Puma and the Shark; these vehicles have been integrated with the Wildcat turret for trial purposes. The most recent proposal, to date only on paper, integrates the Wildcat turret with the Russian BMP-2 and BMP-3 tracked vehicles. Unless otherwise noted, the data below are concerned with the original platform, the MC 601, for which the above technical data are pertinent. More recently, the marketing effort has been related to the turret rather than the complete weapon system.

**Description.** The hull of the Wildcat on the MC 601 chassis is of all-welded steel construction designed to provide the maximum protection; certain portions of the hull are provided with spaced armor. The hull comprises three separate compartments divided by steel bulkheads. The crew is housed in the front, with the turret in the center and the powerpack to the rear. The powerpack can be quickly removed for service or replacement, as all connections are of a simple quick-release type. An escape hatch is standard, as are bilge pumps, bulletproof windscreens, periscopes, fording equipment, fire detection systems with fire extinguishers, and extra sound insulation. Optional

equipment includes a Teldix vehicle navigation system, a full nuclear, biological, and chemical protection system, and additional fire detection/suppression equipment.

The powered turret is a Krauss-Maffei design of all-welded aluminum construction. The commander is provided with a single-piece hatch cover and six periscopes. While traverse is normally powered, emergency hand operation is provided for. The twin MK 30F 30 millimeter cannon are locked, cocked, and triggered hydraulically. The hydraulic system consists of the hydraulic drive unit, two accumulators, and the associated hardware. In an emergency, hydraulic pressure can be generated by a hand pump. The search radar antenna is raised and lowered hydraulically.

**Cannon Characteristics.** The MK 30F cannon has a rate of fire of 800 rounds per minute, meaning the system delivers 1,600 rounds per minute. Standard 30x173 ammunition, as used in the GAU-8/A cannon, is normally used. Should some countries object to the use of the depleted uranium ammunition, a round with a conventional tungsten penetrator is available.

**Production Models.** The Wildcat is offered in five different models of the fire control system, V1 to V5, which are described below. These versions offer the customer an anti-aircraft vehicle to fit almost any climate or mission need. The first version to be fabricated was the V3; it was mounted on the MC 601 chassis. It has been demonstrated in Denmark and Germany to officials of at least 12 nations, including Norway and Venezuela. The initial V3 turret has also been fitted to a Motorwagenfabrik Shark 8x8 vehicle; however, the Shark program was canceled without being ordered. In 1986 a second prototype turret was completed. It was also mounted on a Shark vehicle. Integration studies with other armored vehicles, both wheeled and tracked, are ongoing, with the BMP-3 integration being the most recent.

<u>Function</u>	<u>V1</u>	<u>V2</u>	<u>V3</u>	<u>V4</u>	<u>V5</u>
Weather type:	fair	fair	fair	adverse	all-weather
Day/night:	day	day	day	day/night	day/night
Target detection:	optical	optical/datalink	radar/optical	radar/optical	radar/optical
Target tracking:	manual/automatic	automatic	automatic	automatic	automatic
Identification:	visual	visual/datalink	integral	integral	integral

To perform these functions, the variants are equipped differently as follows:

	<u>V1</u>	<u>V2</u>	<u>V3</u>	<u>V4</u>	<u>V5</u>
Radar tracker:	no	no	no	no	yes
Infrared tracker/laser:	no	no	no	yes	no
EO tracker/laser:	optional	yes	yes	no	no
Search radar:	no	optional	yes	yes	yes

In addition, a missile-armed Wildcat V6 can be provided with either infrared homing-type missiles such as the FIM-92 Stinger, the Iгла series, or the Mistral, or with a command to line-of-sight missile such as the RBS70 or Javelin.

The Wildcat provides high vehicle endurance and mobility, while combining an anti-aircraft cannon with sophisticated fire control options that are superior to anti-aircraft tanks. In the present environment of budgetary constraints, a relatively lightweight, low-cost, yet highly effective low-level air defense vehicle becomes very attractive for an obvious global requirement.

New Production Model. An upgraded version of the Wildcat system has been developed by Krauss-Maffei;

development began in 1998 and was complete as of early 2003. The new version is aimed toward the Middle Eastern marketplace. Mounted with the latest Dutch Signaal Mirador fire control unit, the fire control package includes a target tracker, infrared camera, and laser rangefinder. The Mirador electro-optical unit's target engagement capabilities will be aided by an Italian Galileo 2D search radar. The Wildcat could be fitted for an alternate radar such as the Ericsson HARD 3D system currently in production for the Swedish Army.

Because the system was upgraded with a Middle Eastern buyer in mind, additional cooling is provided for both the electronics and the crew.

## Funding

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The development of the Wildcat has been privately funded by the contractor.

## Recent Contracts

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None

## Timetable

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This timetable relates to the development of the Wildcat system only and not to the MC 601 or Shark vehicles.

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Early	1979	Initial private development of a new anti-aircraft artillery system begun
	1980	Initial production of V3 prototype begun
May	1980	First V3 turret integrated with MC 601 vehicle
June	1981	Initial appearance of V3 prototype at Paris Air Show
February	1982	V3 demonstrated in Denmark
Early	1983	Initial prototype on MC 601 vehicle tested in Italy
November	1983	Initial prototype turret integrated with Shark vehicle
	1986	Second and third prototypes completed
	1998	Development of new version begun
Mid	2003	Available for production; development continues

## Worldwide Distribution

**Export Potential.** Despite the warming of East-West relations, air defense technology of all types is still in demand almost everywhere in the Western world. In the past few years, there has been an increasing amount of interest in the lighter wheeled systems of this type. The highly versatile Wildcat may well find its first sale as a result of this interest.

A caveat, however, is that despite the known qualities of the Wildcat, as well as its proven effectiveness in operational and contractor demonstration tests, a couple of factors have hindered its marketing. First, at least three of the nations that have expressed serious interest in the system continue to experience budgetary constraints that are preventing the purchase of the Wildcat. Second, legal restrictions on who can purchase German military technology represent a severe handicap to the sale of the system; at least two nations that cannot purchase military hardware from Germany would otherwise be likely purchasers of the Wildcat.

In addition to Germany's Bundeswehr, the Wildcat has been heavily promoted on export markets as an inexpensive alternative to Roland and similar systems. According to some analysts, the unit price is about 40 percent less than that of the Gepard. Thailand, Kenya, Italy, Denmark, Norway, Venezuela, the United Kingdom, and possibly Portugal have expressed interest in the Wildcat weapon system.

**Countries.** Three prototypes with the contractor in **Germany**.

## Forecast Rationale

As of mid-2003, the Wildcat self-propelled anti-aircraft system, either as a complete system or for the turret only, has yet to be sold. Despite the fact that the contractor has continued to enhance the performance of the system over the years, including its integration with additional vehicle types, the Wildcat has yet to click on the market.

Nevertheless, the contractor, Krauss-Maffei Wegmann, continues to heavily promote the Wildcat system on the international market. The new upgrades, ranging from an advanced search radar to additional crew cooling, should help in finding a buyer in Krauss-Maffei's most

recently targeted marketplace, the Middle East. In point of fact, our latest research supports a sale to an as yet undetermined nation in this region within two years.

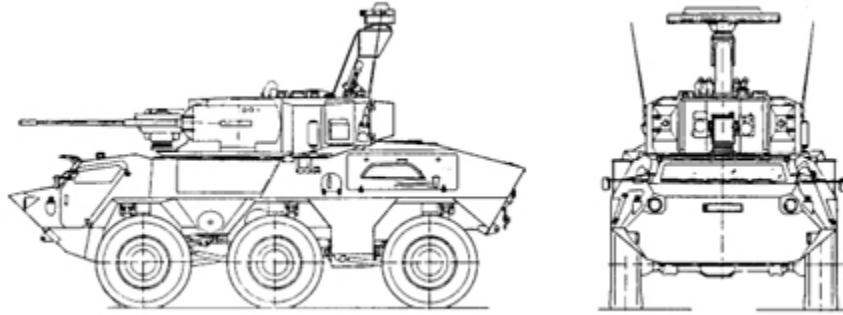
The main market interest continues to be in relation to a wheeled application of the Wildcat turret, although the proposed integration of the Wildcat turret with one of the Russian BMP series, currently in service with several countries in the Middle East, has generated interest. The competitive unit price, effectiveness, and sophistication of the Wildcat make it a highly attractive alternative to OTOMATIC, Gepard, and similar heavy-tracked systems.

## Ten-Year Outlook

### ESTIMATED CALENDAR YEAR PRODUCTION

Ordnance	(Engine)	High Confidence Level					Good Confidence Level				Speculative			Total 04-13
		thru 03	04	05	06	07	08	09	10	11	12	13		
KRAUSS-MAFFEI WEGMANN GMBH														
WILDCAT (a)	OM 402A	3	0	4	5	3	0	0	0	0	0	0	0	12
Total Production		3	0	4	5	3	0	0	0	0	0	0	0	12

(a) The through 2003 production is for the prototype/development turret systems.



Wildcat

Source: Krauss-Maffei Wegmann