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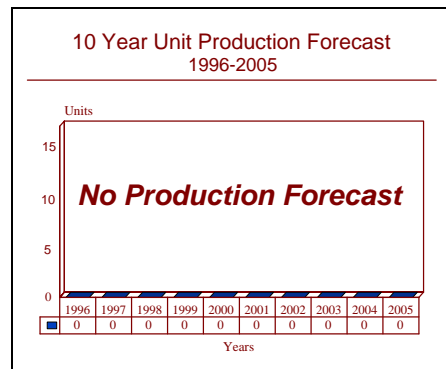
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Gepard Twin 35 mm Self-Propelled Anti-Aircraft Artillery System - Archived 6/97

Outlook

- Production dormant but available for order.
- Various modernization and retrofit programs available.



Orientation

Description. A tracked anti-aircraft-artillery system.

Sponsor. The development and German procurement of the Gepard/CA 1 has been sponsored by the Ministry of Defense of the Federal Republic of Germany through the Rüstungsabteilung (Armament Department) and the Bundeswehrverwaltungsamt (Federal Office of Defense Administration) and Bundesamt für Wehrtechnik und Beschaffung (Federal Office for Military Technology and Procurement; the CA 1 has been sponsored by the Netherlands Ministry of Defense.

Contractors. This weapon system was developed by Contraves AG; Zurich, Switzerland and manufactured by Krauss-Maffei AG; Munich, Federal Republic of Germany. Contraves and Krauss-Maffei as a unit are considered the prime contractor. Major subcontractors include Daimler-Benz, Hollandse Signaalapparaten, Motoren- und Turbinen-Union, Örlikon-Contraves, Siemens AG, Siemens-Albis and Zahnradfabrik Friedrichshafen.

Licensees. None

Status. The Gepard production line has been dormant for many years; the system remains in service with three nations. Enhancements to the system have been planned but were suspended for some time; in early 1996, the Germans and Dutch reinstated the program.

Total Produced. A total 593 Gepard systems, including prototypes and development vehicles, was manufactured.

Application. A mobile anti-aircraft artillery system optimized for use in forward areas against low-level air attacks.

Price Range. Research indicates that, based on a twenty unit buy, the Gepard, fitted to the latest specifications, would cost the equivalent of 7.55 million 1992 United States dollars. To date, this system has not been traded on the export market but the Belgian systems are for sale.

Technical Data

Crew. Three: commander, gunner and driver

Gun Type. Two Örlikon-Contraves model KDA

Caliber. 35 millimeter

Breech Mechanism. Positive lock reciprocating bolt

Recoil System. Hydromechanical

Ammunition. The KDA cannon used on the Gepard is chambered for standard 35x228 ammunition in the

following types: High Explosive Incendiary, High Explosive Incendiary-Tracer, Armor Piercing Discarding Sabot-Tracer, Semi-Armor Piercing High Explosive Incendiary-Tracer, Target Practice, Target Practice-Tracer

Dimensions. The following data are for the latest production standard. The length is with the cannon in the 12 o'clock position. The width is without the armored skirts and the height is with the radar unit in the lowered position.

	<u>SI units</u>	<u>US units</u>
Length	7.73 m	25.36 ft
Width	3.27 m	10.73 ft
Height	3.29 m	10.79 ft
Combat weight	46 tonnes	50.7 tons
Fuel capacity	985 liters	261.96 gal

Performance. The Gepard is based on the Leopard 1 tank, full details of which are found in the pertinent report in the Military Vehicles book that is a companion volume to this.

Maximum speed	65 km/h	40.36 mph
Maximum range	550 km	341.55 statute miles
Step	1.15 m	3.77 ft
Trench	3.00 m	3.28 ft
Slope	30%	30%
Gradient	60%	60%
Fording without kit	1.20 m	3.94 ft
Fording with kit	2.25 m	7.38 ft

Engine. Motoren- und Turbinen-Union supplies the MB 838 Ca M 500 supercharged, liquid-cooled, multifuel prechamber diesel engine which develops 610 kilowatts (817.69 horsepower) at 36.67 revolutions per second (2,200 revolutions per minute). The cooling system capacity is 165 liters (43.59 gallons). The engine is fitted with a 24 volt 9.0 kilowatt generator and eight 12 volt/100 amperehour batteries are provided. The power to weight ratio is 13.26 kilowatts per tonne (16.13 horsepower per ton). The 66 kilowatt auxiliary power unit is built by Daimler-Benz.

Gearbox. Zahnradfabrik Friedrichshafen supplies the 4 HP 250 planetary steer shift gearbox with four forward and two reverse gear ratios, hydraulic torque converter and mechanical lock-up.

Suspension and Running Gear. A torsion bar suspension with seven dual tired road wheels is used on this system. The first, second, third, sixth and seventh

road wheel stations are fitted with hydraulic shock dampers. Four track return rollers are fitted.

Armament. The turret is fitted with twin belt-fed model KDA 35 millimeter automatic cannon from Örlikon-Contraves. The cyclic rate of fire for the system is 1,100 rounds per minute, muzzle velocity is 1,175 meters per second, and range is 4,000 meters (4,374 yards). Elevation limits are -5° to +85°. Six hundred forty High Explosive and 40 Armor Piercing rounds are carried.

Fire Control. The MPDR-12 E/F band fully coherent pulse Doppler search radar is supplied by Siemens AG for the German and Belgian production; the same firm also supplies the MSR-400 identification friend or foe system. Siemens-Albis supplies the pulse Doppler tracking radar which operates in the J band. Hollandse Signaalapparaten supplies an integrated search and tracking radar system for the Dutch Army version.

Variants/Upgrades

No variants of the Gepard have yet been developed.

Retrofit and Modernization Program Discussions. In a trinational German/Dutch/Belgian program, it was decided in the mid-eighties that all Gepard anti-aircraft systems were to be improved. By the latter eighties, it was thought that the increasing technological threat from highly maneuverable aircraft, combat helicopters, and

electronic combat means, had to be countered by improving the combat effectiveness of the weapon system. However, in the early nineties, due to the dramatic geo-political changes in Europe along with the changed threat scenario put the enhancements to the Gepard on hold.

The following measures that were to have been implemented were related to:

1. The use of ammunition with increased velocity (flight time reduction) and increased efficiency at the target such as subcaliber non-explosive projectiles with fragmentation effect.
2. The integration in a command and control and reconnaissance system with external sensor (Heeres Flugabwehr Führungs System or the command, control and communications for the German army).
3. A passive optronic sensor with thermal imaging unit and tracking device.

4. The digitalization of fire control, internal control and monitoring system by a digital computer which processes the information of the command and control system (unknown tactical air situation).

These measures would have resulted in the following:

1. An improved hit/kill capability.
2. Passive operation, that means that the active-radiating radars will be used for short time operation only in order to reduce the enemy reconnaissance as well as the danger of anti-radiation missiles.

A coordinated battle against a great many of attacking enemy aircraft and combat helicopter formations.

In early 1996, the Germans and Dutch decided to reinstate the Gepard upgrade program in order to extend the service life of the system into the 21st Century. The Belgians decided to sel their Gepard systems.

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