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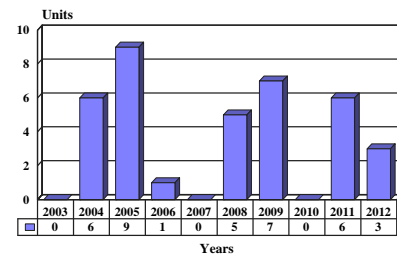
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Condor - Archived 8/2004

Outlook

- Production of the Condor is on an as-needed basis
- This vehicle continues to be promoted on the export market, but sales have been uneven
- The Condor has only a moderate potential for modernization and retrofit
- Further enhanced version (Condor II?) expected in outyears

10 Year Unit Production Forecast
2003 - 2012



Orientation

Description. A wheeled vehicle.

Sponsor. The Condor vehicle program is a private development effort funded by the contractor, Rheinmetall Landsysteme.

Contractors. The Condor was developed and is manufactured by Henschel Wehrtechnik (formerly Thyssen-Henschel), which was taken over by Kuka in 1996; the firm is located in Kassel, Federal Republic of Germany. In early 2000, Kuka and Henschel Wehrtechnik became components of the Rheinmetall Landsysteme organization. Major subcontractors include DaimlerChrysler, Örlikon-Contraves, and Thales AFV Systems (formerly Helio Mirror).

Licensees. None

Status. The Condor is in production on an as-needed basis mainly for export customers. Development of the

vehicle continues, mainly in relation to the integration of different weapons and turrets.

Total Produced. As of January 1, 2003, a total of 624 Condor vehicles had been manufactured.

Application. A multipurpose wheeled amphibious armored vehicle that serves primarily as an armored personnel carrier. The vehicle has been developed to address other mission areas and can be used as a mechanized infantry combat vehicle, reconnaissance/patrol vehicle, internal security vehicle, ammunition and cargo carrier, fitter's vehicle, and ambulance.

Unit Price. In equivalent 2003 United States dollars, the unit price of the Condor with the turret mounting twin 7.62 millimeter machine guns is \$295,700. Other turret and armament fits can change this figure.

Technical Data

Crew. Three (commander, gunner, driver), plus nine infantrymen in the standard armored personnel carrier version.

Armor. The hull of the Condor is fabricated from steel alloy armor that is proof against 7.62 millimeter armor piercing projectiles and ballistic fragments.

Configuration. 4x4

Design Features. The Condor is a rugged amphibious vehicle that offers a very high degree of cost-effectiveness due to the extensive use of commercial truck components in the design.

Dimensions. The following data are for the latest production standard of the base model with no armament fitted. When fitted with a winch, the length of the Condor is 6.47 meters (21.23 feet).

	<u>SI units</u>	<u>US units</u>
Length:	6.13 meters	20.11 feet
Width:	2.47 meters	8.10 feet
Height:	2.18 meters	7.51 feet
Combat weight:	12.04 tonnes	13.27 tons
Fuel capacity :	280 liters	74.47 gallons

Performance. The maximum speed and range figures are on a metaled road. The Condor is capable of achieving 10 kilometers per hour (6.17 miles per hour) in water via its rear-mounted propeller.

	<u>SI units</u>	<u>US units</u>
Maximum speed:	100 kilometers per hour	62.1 miles per hour
Maximum range:	900 kilometers	558.9 statute miles
Step:	55 centimeters	1.80 feet
Trench:	84 centimeters	2.76 feet
Slope:	60%	60%
Gradient:	30%	30%
Fording:	amphibious	amphibious

Engine. DaimlerChrysler provides the six-cylinder, supercharged, OM 352 A liquid-cooled diesel engine with a maximum output of 125.27 kilowatts (168 horsepower) at 46.67 revolutions per second (2,800 revolutions per minute). The power-to-weight ratio is 10.40 kilowatts per tonne (12.66 horsepower per ton). As an option, the higher rated OM 366 LA supercharged and intercooled diesel engine can be fitted. This engine is rated at 152.12 kilowatts (204 horsepower) at 46.67 revolutions per second (2,800 revolutions per minute). The power-to-weight ratio is 12.63 kilowatts per tonne (15.37 horsepower per ton). The engines, gearbox, and axles of the Condor are standard DaimlerChrysler commercial components, and a logistical/maintenance base is in place. A 24 volt electrical system with four 12 volt batteries is fitted.

Gearbox. DaimlerChrysler provides the model UG3/40-8/13.01 GPA manually operated unit with eight forward and eight reverse gear ratios, all synchronized, equipped with a single-plate dry clutch.

Suspension and Running Gear. The four-wheel-drive Condor has coil springs and a double-acting hydraulic shock damper at each road wheel position. The engine torque is transmitted by Cardan shafts, which are mounted within torque tubes. The run-flat tires are 13.00x20 pattern.

Armament. The first production Condor vehicles were armed with a Rheinmetall Rh 202 20 millimeter cannon with a coaxially mounted 7.62 millimeter machine gun in a Thales AFV Systems (formerly Helio Mirror) FVT 900 turret; the Rheinmetall DeTec TF 20.15 turret is a major option. Later models offer a wider range of armament options.

Variants/Upgrades

Variants. The Condor is available in several noncombat versions, including a workshop (fitter's) vehicle, ambulance, and command post. Other versions have been developed on paper. During trials in 1999, a Condor was fitted with the ASRAD missile-based anti-aircraft system, a product of STN Atlas Elektronik. Four FIM-92 Stinger missiles are mounted at the ready on this system, which is based on the one fitted to the Wiesel light tracked vehicle. In addition, other armament installations are available; these are discussed below.

Modernization and Retrofit Overview. As of mid-2003, other than for the Malaysian program described further on, no significant upgrade programs for the Condor are known. There is an unconfirmed report of

one unidentified user adding some type of appliqué armor to its inventory.

Malaysian Upgrade. Malaysia, the largest user of the Condor, has upgraded at least 250 units of its 459-unit inventory. From 1991 to 1993, MMC Engineering Services Sdn Bhd upgraded 100 Condor vehicles; a further 150 were upgraded beginning in 1997 at 50 vehicles per year. A further contract for the remaining vehicles is expected in the near future. The extent and other particulars of the upgrade are not known.

Program Review

Background. The Federal Republic of Germany is one of the few highly developed nations where most of the armored infantry fighting vehicle inventory has not been amphibious. Basically, this philosophy was a result of geography and the decision to sacrifice a combined land/water capability for better protection. However, in the late 1970s, this doctrine began to change with the introduction of a series of wheeled amphibious vehicles manufactured by (then) Thyssen-Henschel. The 4x4 model is designated UR-425 and called Condor and was the result of Thyssen-Henschel's 1970s design work to replace its UR-416 vehicle. The Condor, conceived mainly for the export market, is an "instant" amphibian capable of achieving 10 kilometers per hour (6.2 miles per hour) in water via its rear-mounted propeller. This entire marketing strategy was designed to rectify the UR-416's lack of amphibious capability. As part of the reorganization of the German defense industry in the late 1990s, Thyssen-Henschel was taken over by Kuka and became Henschel Wehrtechnik in 1996; in early 2000, Kuka and Henschel Wehrtechnik became components of the Rheinmetall Landsysteme organization.

Description. The Condor is a simple vehicle based on off-the-shelf DaimlerChrysler UNIMOG commercial truck parts. Specifically, this includes the engine, gearbox, suspension, and axle assemblies. The crew compartment of the vehicle can hold nine men as an armored personnel carrier; it can also be deployed as a reconnaissance, anti-guerrilla, and command post vehicle. A wide range of turrets, machine gun mounts, and types of weapons can be fitted to the Condor. The following turret/weapon installations have been the most popular options:

- Rheinmetall DeTec (Henschel) TH-1 turret with twin 7.62 millimeter machine guns
- Thales AFV Systems (formerly Helio Mirror) FVT 900 turret armed with an Örlikon 20 millimeter cannon
- MBDA (Euromissile) HCT (formerly HAKO) turret with HOT anti-tank missiles
- Rheinmetall DeTec (Kuka) Type 605 turret with an M2HB 12.7 millimeter machine gun

The hull is of all-welded steel construction that provides protection from 7.62 millimeter armor piercing projectiles, anti-personnel mines, and ballistic fragments. The driver is seated at the front to the left and is provided with an access hatch and bulletproof windows. The engine and radiator are located in the front to the right-hand side of the driver. The engine is mounted on three shock-absorbing suspension points. Propulsion in the water is by a steerable propeller.

The commander is seated to the rear of the driver facing the center; a single-piece hatch is over his position. In the basic model, the TH-1 one-man turret is mounted in the forward portion of the vehicle offset to the right. It is fitted with a single-piece hatch cover, a periscopic sight, and two observation periscopes. Five vision blocks are also installed. Turret traverse and cannon elevation are manual. Three electrically operated smoke grenade launchers are mounted on each side of the turret.

The nine infantrymen are individually seated to the rear. The infantrymen enter and exit the Condor via two doors on each side of the vehicle and a two-piece flap door at the rear. Two circular hatches are in the roof over the infantrymen. Various combinations of firing ports and vision blocks can be fitted to the crew compartment.

Optional equipment for the Condor includes air conditioning, additional heating equipment, a nuclear, biological, and chemical protection system, radios, night vision devices, a winch, and an intercom set.

Enhanced Version? In early 2000, some sources indicated that an enhanced and modernized version of the Condor (Condor II?) was in development. As of 2003, this had not yet been confirmed by the contractor.

TM 170. Rheinmetall Landsysteme makes another 4x4 vehicle in this class that is often confused with the Condor, the TM 170 armored personnel carrier. This vehicle, covered in a separate report, entered production in 1978 for the Federal Republic of Germany's Ministry of Interior for border patrol.

Funding

Funding for the development of the Condor was provided by the contractor.

Recent Contracts

Not available, as contractual information is not released.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1975	Design initiated
November	1977	First prototype completed
August	1978	Second prototype completed
May	1979	Serial production initiated
Late	1979	First deliveries made
Mid	2003	Production continues on an as-needed basis

Worldwide Distribution

Export Potential. An ongoing concern for Rheinmetall Landsysteme with the Condor program is the increasing number of competitors in this market, among them TRACE Bravia of Portugal, ROMARM of Romania, and other emerging Eastern European firms. Additionally, the longtime big-name producers of this class of vehicle (Textron Marine & Land Systems [Cadillac Gage], Panhard, General Dynamics [including the former General Motors of Canada/Motorwagenfabrik], and so on) continue to provide stiff competition in this increasingly crowded market. Another factor affecting sales of the Condor is the rather restrictive export policy of the Federal Republic of Germany. It is well known that one reason for the remarkable success of the French players in this market is that France seldom places any strings on the sale of its military products.

Despite these restrictions, the Condor has done rather well on the export market, with well over 600 vehicles produced to date. However, it is difficult to establish the complete customer base since a good number of sales are to local or regional internal security units for only a few vehicles, and therefore go unreported. The Condor's marketing assets include a well-known and highly regarded manufacturer and a reputation for quality and ruggedness.

Countries. The announced sales of the Condor to date have been to **Argentina** (20), **Malaysia** (459), **Portugal** (12), **Thailand** (19), **Turkey** (25), and **Uruguay** (55), although at least five other countries, possibly including Indonesia, operate this vehicle.

Forecast Rationale

The Condor program has seen few changes over the last year. The most significant item of late remains the integration of the ASRAD anti-aircraft system with the vehicle. This development greatly expands the versatility of the already versatile Condor, but as of mid-2003, it had yet to be sold. Other than this, all the evidence indicates that the Condor remains in production on an as-needed basis.

Based on the historical trends, sales of the Condor will likely continue in small numbers to police and various other internal security organizations. As these sales

often go unreported, the true level of production can be ascertained only through secondary sources.

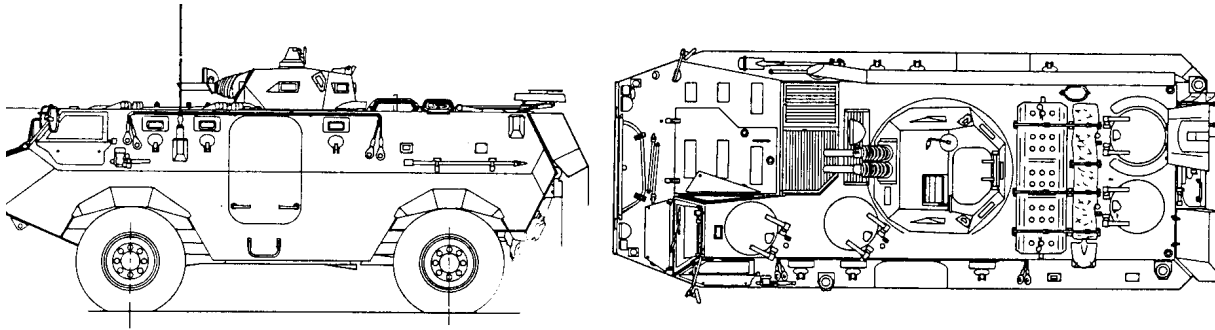
Our forecast assumes that the production rate of the Condor will be uneven in the coming 10 years. We continue to bear in mind the possible development of an enhanced version, which we are designating the Condor II for the time being. However, this development has yet to be confirmed by the contractor. While there is a potential for another major order similar to the one from Malaysia, the likelihood is very remote.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Vehicle	(Engine)	High Confidence Level				Good Confidence Level				Speculative			Total 03-12
		through 02	03	04	05	06	07	08	09	10	11	12	
RHEINMETALL LANDSYSTEME													
CONDOR (a)	OM 352A	624	0	6	9	1	0	5	7	0	6	3	37
Total Production		624	0	6	9	1	0	5	7	0	6	3	37

(a) The through 2002 production figure includes four prototype and developmental vehicles.



Condor

Source: Rheinmetall Landsysteme