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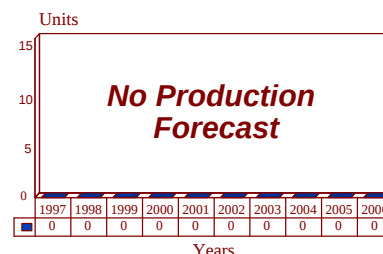
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EE-T4 Ogum - Archived 6/98

Outlook

- Program never got off the ground
- Due to the demise of Engenheiros Especializados, no production is forecast
- The technical data package is being offered by the creditors
- This vehicle was heavily promoted on the international market

10 Year Unit Production Forecast
1997 - 2006



Orientation

Description. A tracked vehicle

Sponsor. The EE-T4 is a private development program that was funded by the prime contractor.

Contractors. The EE-T4 was developed by Engenheiros Especializados SA (ENGESA); Sao Paulo, Brazil. If the program is revived and an order is placed for the vehicle, it will be manufactured by a yet to be selected firm. Major subcontractors include Bavarian Motor Works, Diehl Group (Tracks and Suspension), Perkins Engines Limited and Zahnradfabrik Friedrichshafen.

Licensees. None

Status. Although the technical data package is available for production orders, Engenheiros Especializados ceased

to exist in late 1993 and the future of this program is uncertain.

Total Produced. As of January 1, 1997, a total of two prototypes had been manufactured.

Application. A light reconnaissance vehicle for use by rapid deployment, paratroop and similar units.

Price Range. In equivalent 1992 United States dollars, the EE-T4 had a unit price of \$288,060. This price is for the basic vehicle with a cupola mounted 12.7 millimeter machine gun. If the EE-T4 were placed into production today, the unit price in a ten unit buy would be the equivalent of 319,000 United States dollars.

Technical Data

Crew. Two: driver and commander

Dimensions. The following data are for the second prototype.

	SI units	US units
Length	3.70 meters	12.14 feet
Width	2.22 meters	7.28 feet
Height	1.35 meters	4.43 feet
Combat weight	4.90 tonnes	5.40 tons
Fuel capacity	160 liters	42.55 gallons

Performance. The following performance data are with the Bavarian Motor Works M21 D24WA engine; the data are for a metallated road.

	SI units	US units
Maximum speed	70 kilometers per hour	43.47 miles per hour
Maximum range	450 kilometers	279.45 statute miles
Step	40 centimeters	1.31 feet
Trench	1.5 meters	4.92 feet
Slope	30%	30%
Gradient	60%	60%
Fording	80 centimeters	2.63 feet

Engine. For the prototype vehicles, Perkins Engines Limited supplied the QT 20B4 four-stroke, supercharged liquid cooled diesel engine rated at 93.25 kilowatts (125 horsepower) at 26.67 revolutions per second (1,600 revolutions per minute). The power-to-weight ratio is 19.03 kilowatts per tonne (23.15 horsepower per ton) with this engine. For the production vehicles, it was planned to use Bavarian Motor Works' M21 D24WA supercharged four cylinder diesel engine. This engine is rated at 96.38 kilowatts (129.2 horsepower) at 80 revolutions per second (4,800 revolutions per minute). The power-to-weight ratio with this engine is 19.67 kilowatts per tonne (23.92 horsepower per ton). A 24 volt electrical system with two 12 volt/105 ampere-hour batteries is standard.

Gearbox. In the first prototype, Clark Equipment supplied the model 240V manual unit with five forward

and one reverse gear ratios. Following evaluations, it was decided to replace this gearbox with an automatic one in order to reduce driver fatigue. The production standard vehicles would use the Zahnradfabrik Friedrichshafen 4 HP 22 automatic gearbox with four forward and one reverse gear ratios.

Suspension and Running Gear. This vehicle uses a torsion bar type suspension with four dual tired road wheels and two track return rollers on each side. The first, second and third road wheel stations are fitted with double acting shock dampers.

Armament. The basic armament of this vehicle is a 12.7 millimeter M2HB machine gun in a cupola mount. Other armament options for the Ogum were still being evaluated when the program went dormant. Under consideration were 20 millimeter cannon, anti-tank missile systems and a mortar.

Variants/Upgrades

Not applicable, as this is a new program.

Program Review

Background. In February of 1985, the then dynamic Engenheiros Especializados SA firm began the development of a new member of its armored fighting vehicle family; this was in response to a statement of requirement from a yet unknown Middle East nation. The new vehicle is a tracked design similar in concept and design to the Wiesel; this German program is covered in the pertinent reports in this section. The Ogum is named after an African war god.

In late 1993, following several years of financial problems, Engenheiros Especializados SA ceased operations; the firm went out of existence. Research indicates that the technical data package for the EE-T4 is available for sale but, as of mid-1997, no definitive information on the status of this program is available.

Description. The Ogum is quite similar in appearance to the Wiesel; the hull is fabricated from ENGESA's dual

hardness armor which affords protection from small arms fire and ballistic fragments. The driver is seated to the left in the center of the vehicle with the powerpack opposite; the drive sprocket is forward with the idler at the rear. Two fuel tanks are located on either side of the rear of the vehicle. A torsion bar type suspension is used with hydraulic shock absorbers on the first, second and third road wheel stations; the double pin track is provided by Diehl Group (Track and Suspension Division). The driver is provided with three forward-facing periscopes and a swiveling hatch cover. The commander, who also acts as the gunner, is placed to the rear. External storage racks are provided for tools and cable.

Production Models. When Engenheiros Especializados ceased operations in late 1993, the armament options for the Ogum were still in development; they were expected to result in a number of models including the following:

Anti-tank vehicle fitted with the MSS 1.1 or a similar anti-tank guided missile system.

Armored personnel carrier with a four man capacity. This version of the Ogum is armed with a 7.62 millimeter machine gun mounted on the roof of the vehicle.

120 millimeter mortar carrier.

120 millimeter mortar ammunition resupply vehicle.

Ambulance vehicle with a longer hull and a door/ramp at the rear for accommodation of stretcher patients.

Fire support vehicle with a 20 millimeter cannon mounted in a turret; this model is designated ET-20.

Command post vehicle based on a longer hull with communications equipment and operator, map table and an extendible tent.

The ET-20, armed with a turret mounted 20 millimeter cannon with 100 rounds at the ready and an additional 200 rounds in reserve. Day/night vision devices are mounted.

The ET-50, mounting a 12.7 millimeter machine gun in a one man turret; the turret is fitted with two smoke grenade launchers on each side.

The ET-7.62 millimeter Twin, mounting two 7.62 millimeter machine guns in a one man turret placed to the rear of the vehicle.

Funding

The funding for the development of this vehicle has been provided by the prime contractor.

Recent Contracts

Not available as contractual information is not released.

Timetable

This timetable relates to the EE-T4 only and to no other product of Engenheiros Especializados SA.

Feb	1985	Development began
Nov	1985	Fabrication of first prototype began
May	1986	First prototype completed
Late	1986	Initial prototype tested in Middle East
Nov	1986	Second prototype completed
Early	1987	Second prototype tested in Middle East
May	1989	Ogum displayed at Baghdad weapons fair
Late	1993	Engenheiros Especializados ceased operations
Mid	1997	Program dormant

Worldwide Distribution

Export Potential. As of mid-1997, the EE-T4 (if indeed it is still available), along with the Wiesel, remain the only combat vehicles of their type available in the world. The EE-T4 Ogum combat vehicle represents one of the main avenues that our research indicates the future tracked vehicle market will take; given the advanced "intelligence" of weapon systems of all types, the days of the 50+ tonne main battle tank are numbered.

The ongoing interest in the German Wiesel (even by the United States) are indications of the potential for this class of vehicle. Given the well-known reputation of Engenheiros Especializados and its products, and provided the program can be revived in some form, it could be expected that the EE-T4 Ogum could be sold to more than a few nations in the coming ten years. The one criticism of this vehicle seems to be the rather open position of the commander/gunner; whether Engenheiros Especializados's market research indicated that this would be acceptable in light of the Ogum's projected missions and customers, or that Engenheiros Especializados would have rectified this feature, is unknown at this time. In any event, our research indicates that (with the caveat of Engenheiros Especializados's recovery or someone picking up on the technical data package) the Ogum has the potential to do rather well on the export market.

Before its demise, Engenheiros Especializados SA offered the Ogum for licensed manufacture.

User Countries. **Brazil** (two prototypes with the receivers of the contractor).

Forecast Rationale

As of mid-1997, our latest review of the Ogum program still finds that there is essentially no production future for the vehicle. Engenheiros Especializados has ceased to exist after it wound up its operations in late 1993 and there has been no apparent interest by any other firm in

acquiring the technical data package, which is available from the company's receivers. While we will continue to follow the Ogum program for new developments and will update this report if needed, if nothing new happens over the next year, this report will be dropped from the book.

Ten-Year Outlook

		ESTIMATED CALENDAR YEAR PRODUCTION												Total 97-06
		High Confidence Level				Good Confidence Level				Speculative				
Vehicle	(Engine)	through 96	97	98	99	00	01	02	03	04	05	06		
ENGESA														
EE-T4(a)	QT20 B4	2	0	0	0	0	0	0	0	0	0	0	0	
Total Production		2	0	0	0	0	0	0	0	0	0	0	0	

(a) The through 1996 production is the initial prototypes and contractor demonstration vehicles.