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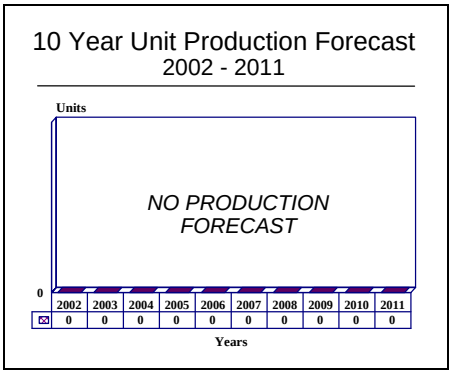
RASIT - Archived 08/2003

Outlook

- Several orders for MSTAR, RASIT's replacement, are being placed
- Last known contract for RASIT was in 1996
- Barring any further activity, this report will be archived in the near future



Orientation

Description. I-band pulse Doppler battlefield surveillance radar.

Sponsor

Direction Technique des Armaments Terrestres
10 Place Georges Clemanceau
F-92211 St. Cloud
France

Bundesamt fur Wehrtechnik Beschaffung (BWB)
PO Box 7360
D-5400 Koblenz
Germany
Tel: +49 261 4001

Contractors

Thales (formerly known as Thomson-CSF)
Division Systemes, Defense et Controle
40 Rue Grange Dame Rose
PO Box 34
F-92360 Meudon-le-Foret
France
Tel: +33 1 46 302380
Web site: http://www.thalesgroup.com

Licensees

LMT Radio Professionnelle
46 Quai Alphonse le Gallo
BP 402
F-92103 Boulogne-Billancourt
France
Tel: +33 1 4608 6000

Bharat Electronics Limited (BEL)
Trade Center
29/4 Racecourse Road
Bangalore 560001
India
Tel: +91 812 2751/2
Web site: http://www.bel-india.com

Status. In production and service.

Total Produced. Approximately 728 radars of the RASIT family have been delivered to at least 30 countries.

Application. The RASIT radar has been mounted on the following vehicles: 4K7FA (Austria), AMX-10 (France), AMX-VTT (France), VAB (France), M3-VSB (France), TPz-1 (Germany), YPR-765 (the Netherlands), and M-113 (US). In each case, the country indicated is the platform manufacturer. In addition, the French Army has mounted RASIT in shelter-housed mounts for electromagnetic pulse (EMP)

protection. The system also breaks down into component parts for manpacking, but usually is transported in four parts for rapid battlefield deployment on or off the transporting vehicle. The German Army ordered RASIT for mounting below TCOM tethered balloons.

Price Range. Price appears to vary according to sale. The estimated unit cost is US$350,000, based on known prices for similar systems.

Technical Data

	Metric	US
Characteristics		
RASIT 3190B		
Operating frequency	I-band	
Peak power	2 kW	
Range (pedestrian)	18 km	11.5 mi
Range (vehicle)	30 km	19 mi
Range (helicopter)	15-25 km	9.5-15.5 mi
Accuracy azimuth	+/- 10 m	+/-33 ft
Accuracy range	+/- 10 m	+/-33 ft
Sub-clutter visibility	43 dB	
Azimuth	360º	
Automatic scanning	Adjustable 20-130º	
Reflector angle	-10º to +20º	
RASIT E		
Range (pedestrian)	23 km	14.5 mi
Range (vehicle)	40 km	25 mi
Azimuth	360º	

Design Features. RASIT 3190B is a lightweight, highly mobile system, suitable for mounting on APCs or light reconnaissance vehicles down to Land Rover size. The antenna can be remotely deployed from the command vehicle using a 50 meter cable, or the entire system can be used as an integral unit for deployment as part of a ground-defense plan. RASIT consists of four major components that assemble to form two basic units: the antenna and the operator unit.

The antenna contains all equipment required for transmission and reception and folds flat for transport. The RF head consists of an antenna and sighting telescope mounted on an hermetically sealed case housing the transmitter/receiver. The RF head fits onto the rotating unit and is connected to the operator unit by a single cable.

The operator unit can be remotely operated from the antenna and contains all the radar information, control and monitoring equipment, and the results display. The operator unit consists of a console with a built-in loudspeaker and a power supply converter located on the right side of the console. The unit provides operating voltages from a primary 23-volt to 28-volt DC supply. Optional equipment includes a 50-meter reel of cable for remote operation, a tripod unit for autonomous deployment, a power supply battery unit, shock mounts, headphones, interface equipment for transmission of data to the central data processing station, a plotting board, interface equipment for central operation of the plotting board, and an integral identification friend or foe (IFF) transceiver.

In general-surveillance mode, the RASIT antenna scans the terrain, with the direction and beam width preselected by the operator. At the same time, sweeping range gates analyze the sector to a depth of 20 kilometers (either 0 to 20 kilometers or 10 to 30 kilometers from the antenna). The operator can observe either the complete landscape, or just the moving targets within the sector under surveillance.

In manual-scanning mode, the equipment does not scan, but acquires and identifies the target by means of range and bearing cranks that allow the operator to move a luminous marker over the echo, which still is visible on the screen. The coincidence of the marker and the echo produces a Doppler tone characteristic of the type of object and its radial speed. The path of the target can then be followed on the scope or committed to memory.

At the same time, the plotting board displays the target's position on a map.

In zone-scanning mode, the radar scans an area of 2.5 kilometers depth, between 0 and 28 kilometers from the antenna. This allows accurate scanning of a particular zone without the possibility of triggering an alarm.

In target-tracking mode, the radar does not scan, but fixes on a particular target to a depth of 2.5 kilometers, allowing the operator to accurately mark the position of the target or follow it manually, keeping the echo in exact coincidence with the range marker. The coordinates are displayed continually and the plotting board copies the target's trajectory. Acceptable standards of proficiency can be achieved by relatively inexperienced operators in a variety of conditions. Typical operating times are 10 seconds to survey a zone 100 degrees wide and 20 kilometers deep, and 30 seconds to acquire a target. The antenna is equipped with a polarizer, making the radar insensitive to atmospheric disturbances.

RASIT also has very good electronic counter-countermeasures (ECCM) characteristics. The radar has built-in fault testing circuitry, and a third- or fourth-echelon test bench is available for more sophisticated field maintenance. A tactical simulator also is available to train one operator or several operators simultaneously.

In RASIT E, the range has been increased by about 40 percent. LMT Radio Professionnelle has added a microprocessor and a data-storage facility. The RASIT E is said to have enhancements to the electronics package that enable it to distinguish between hostile and friendly objects (both moving and static). Automatic target acquisition and tracking facilities, as well as a 360-degree sweep, are now incorporated.

Operational Characteristics. RASIT is designed to detect, acquire, identify, and locate moving targets such as tanks, trucks, small vehicles, troops, individuals, helicopters, and light aircraft on or near the ground, and to guide ground or airborne attack units, helicopters or low flying aircraft. RASIT is also used for border surveillance in areas where radar use is facilitated by level terrain, or at chokepoints in mountainous regions.

Variants/Upgrades

There have been a number of earlier versions of the RASIT radar prior to the two described in this report. In addition, two other radars, RATAC and Stentor, use considerable RASIT technology.

In September 1994, Thomson-CSF received a contract to upgrade the French Army inventory of RASIT radar to improve range, increase resistance to electronic countermeasures, and provide automatic target tracking.

Program Review

Background. RASIT is the most recent member of the family of ground surveillance radars developed under the supervision of the French Ministry of Defense. RASIT production began in 1975, initially by LCTAR. Mass production of RASIT DDMT 1A for the French Army and other customers was under way by 1976. Full production of RASIT by LMT began in 1977. In 1977, LCTAR announced a contract award from the German government for a new medium-range ground-surveillance radar prototype to be based on RASIT. This emerged as RATAC. Assistance in development was provided by the German company SEL.

By 1980, 100 RASIT sets had been delivered, including three shelter-housed versions for the French Army. Further orders for 200 sets were disclosed. In 1983, LMT signed an agreement with LCTAR and SEL whereby the former supplied one-third of the subsystems for RASIT sets built by SEL for the German Army. Although an agreement was concluded with SEL of Germany for the license production of RASIT, this extended only to the production of equipment for the German Army and did not allow the export or sale of equipment to third parties.

In 1987, LMT Radio Professionnelle announced that more than 500 RASIT systems had been ordered. With the exception of German equipment and some early systems manufactured by LCTAR, all of these had been built by or were on order from LMT. License production of RASIT has been considered in a number of countries. It is likely that other countries in addition to Germany and Egypt have taken out licenses, but they remain undisclosed. LCTAR was formed in January 1987, when the former LCT joined Thomson-CSF Aerospace Group following an agreement reached between Thomson-CSF and MATRA. LMT Radio Professionnelle introduced the RASIT E radar system at the Satory French Army Equipment Exhibition in 1987.

In March 1989, the RASIT 3190B was proposed to the Saudi Arabian government in response to its

requirement for a replacement for its PPS-5 and ZB-298 battlefield radar. Other competitors included Thorn-EMI's MSTAR and Amex Systems' PPS-15A. At that time, DDMT-1A, the French Army designation for RASIT, was in its fifth generation of development. LMT Radio Professionnelle stated that around 700 systems had been delivered to, or were on order with, 20 countries. Interestingly, in connection with a 1995 upgrade, Thomson-CSF stated that approximately 700 RASIT radars had been delivered or were on order by that year, again for around 20 countries. This confirmed the impression that the orders obtained were for relatively small numbers. RASIT E was acquired by Thailand, Argentina, and South Korea, and was in service with Iraq.

In 1993, the RASIT E radar, along with SEL's RATAC-S system, was shortlisted by the Indian Army to fulfill the requirement for its new battlefield radar. If the RASIT E were to win this deal, between 120 and 140 radars would be added to its production total. The Indian requirement would initially be filled by the contractor, providing 25 to 30 complete systems, then by licensed production from Bharat Industries. India's search for a radar system had been spurred on by Pakistan's acquisition of the RASIT E in the late 1980s.

Both radars underwent extensive technical and field trials, after which the Indian Army said either system would be acceptable, but price would be the deciding factor. SEL's RATAC-S bid came in 35 to 40 percent cheaper in June 1993, according to Indian MoD sources. The Indian Army said it preferred RASIT E, but India's MoD refused to relent and purchase the more expensive French system. In early 1995, the Indian Army reneged, claiming it no longer had a pressing need for a battlefield surveillance radar.

The following year, 1996, the Indian Army reversed itself, with the requirement resurfacing as a priority. However, no immediate selection was made based on the 1993 testing and bids. The Indian Army took its project back to the drawing board. India's MoD issued new Requests for Proposals (RFPs) to its originally shortlisted choices, Thomson-CSF and Alcatel SEL, as well as to Hughes Aircraft Co's (now Raytheon's) Aerospace & Defense Sector, Racal-Thorn, and ELTA Electronics. It was reported in July 2000 that India had entered preliminary talks with Thomson-CSF (now Thales) about the RASIT-E system.

Also in 1996, Estonia was said to have to have procured a RASIT unit from Thomson-CSF that was to be used as part of a US$10 million turnkey contract for border surveillance equipment. Accordingly, the RASIT was supplied in a vehicular configuration so Estonia could monitor its land-based borders.

Since 1996, no new contracts involving the RASIT system have been publicly disclosed. In fact, a FY00 sale of 51 Australian Manportable Surveillance and Target Acquisition Radar (AMSTAR) designated for the replacement of the Australian Defense Forces' (ADF) RASIT systems, indicated a significant downturn in the program.

Funding

RASIT development was initially funded under a French government contract. The subsequent adaptation of the design for German service was carried out by SEL under a German government contract.

Recent Contracts

No contractual information has been made publicly available.

Timetable

Year	Major Development
1983	LMT signs with LCTAR (formerly LCT) and SEL
	300 sets delivered, 50 ordered
1985	450 sets delivered
1986	China orders RASIT
1987	RASIT E unveiled; ordered by Iraq
1993	RASIT E ordered by Thailand
1996	RASIT procured by Estonia for border surveillance

Worldwide Distribution

Known RASIT users include **Argentina**, **Austria**, **Australia**, **Cameroon**, **Canada**, **China**, **Congo**, **Egypt** (60), **Estonia** (1), **Finland**, **France** (220), **Germany** (110), **Iceland**, **India**, **Iraq**, **Italy**, **South Korea**, **Libya**, **Mexico**, **Morocco**, the **Netherlands**, **Nigeria** (4), **Norway**, **Pakistan**, **Senegal**, **Sierra Leone**, **Spain**, **Sudan** (2), **Thailand**, **Vietnam**, **Yemen AR**, **and Zimbabwe** (2).

Forecast Rationale

The RASIT battlefield surveillance radar system is a pulse-Doppler radar system that operates in I-band and is used for detecting targets either on or near the ground in all weather. This long-range ground surveillance radar is designed for target detection, acquisition, localization, and recognition.

Since its development in the mid-1970s, over 700 systems have been sold to more than 30 nations. The largest of these customers have been France and Germany. As with many systems, time has become its enemy. Newer and more technologically advanced products, such as the Manportable Surveillance and Target Acquisition Radar (MSTAR), are starting to push RASIT out of the market. In recent years, MSTAR has become a high-demand item. Canada, the US, and Australia have all placed large contracts for MSTAR. The Australian order specifically indicated that these systems were earmarked to replace Australia's aging RASIT systems.

Although there were talks of a sale to India, this discussion has been going on for an extended period of time. With US arms-sales sanctions being lifted from India, there is a chance that India will be interested in the newer, and now available, MSTAR system. Although there may still be the possibility of additional sales, any new production will most likely be for an insignificant quantity of RASIT systems. If no further activity is detected, this report will be archived in the near future.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

			High Confidence Level				Good Confidence Level			Speculative			
Designation	**Application**	**Thru 01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**Total 02-11**
RASIT	Prior Prod'n:	728	0	0	0	0	0	0	0	0	0	0	0