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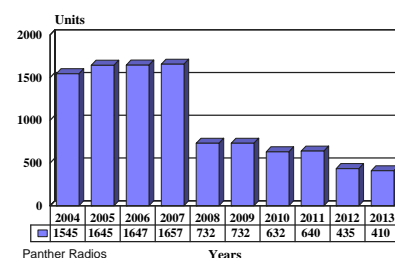
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Jaguar/Caracal/Panther - Archived 6/2005

Outlook

- Forecast International projects defense departments worldwide to purchase some 10,075 Panther tactical radios over the next decade
- Expect Thales to deliver the last Jaguar tactical radios to Saudi (from a 1997 contract) in 2007

10 Year Unit Production Forecast
2004 - 2013



Orientation

Description. Jaguar, Caracal, and Panther are military radios manufactured by Thales Communications. The radios are used for tactical communications.

Sponsor

Thales

45 rue de Villiers

Paris, France 92526

Web site: <http://www.thalesgroup.com>

Status. The Panther tactical radio is currently in production.

Total Produced

Jaguar/Caracal. Through 2003, some 75,550 tactical radio systems had been manufactured.

Panther. Through 2003, approximately 8,085 Panther tactical radio systems had been produced.

Application. Communications

Price Range

Jaguar/Caracal. Forecast International estimates the average price for each tactical radio to be between US\$40,000 and US\$50,000. The estimate is based on existing contracts for the Jaguar tactical radio (Saudi contract = US\$40,000; Oman contract = US\$50,000).

Forecast International estimates the handheld versions to cost between US\$9,000 and US\$11,000. The more sophisticated sets designed for Canadian and U.K. military requirements are more expensive.

Panther. Forecast International estimates the price of a single Panther tactical radio to be US\$22,000. This value was determined by the average price per radio for a Saudi Arabian order. The Saudis ordered 7,500 Panther radios at a cost of US\$164 million.

Contractors

Thales, HQ, <http://www.thalesgroup.com>, 45, rue de Villiers, Paris, 92526 France, Tel: 33 1 57 77 80 00, Fax: 33 1 57 77 86 59, Prime

Technical Data

Design Features

Jaguar. The Jaguar radio was designed to provide a secure combat net communications system that includes a frequency-agile option for use in ECM-intensive

environments. Variants of the basic system are suitable for vehicle installations or as man-portable units.

The Jaguar is based on a common transceiver unit. In the manpack role, the tactical radio is transported on a frame with a battery, whip antenna, and handset.

The Jaguar V tactical radio has two power outputs: 10 W and 4 W. In the frequency-hopping mode, this radio unit has a high degree of resistance from interception. Interception protection can be further enhanced by the addition of a white-noise communications security (COMSEC) module.

The Jaguar V low-power vehicle-interface unit provides interfaces between the transceiver module and the vehicle antenna, vehicle intercom, and vehicle power supply. The high-power vehicle station has a radio-frequency amplifier that raises the power output to 50 W.

Caracal. The Caracal tactical radio is a compact and lightweight Very High Frequency (VHF) FM transceiver. It weighs 1 kilogram, including battery, built-in microphone, and speaker. The radio provides secure speech and has frequency hopping capabilities. The Caracal is intended for military applications where a handheld or small body-worn radio with enhanced security is required.

Both narrowband and wideband hopping are available with the Caracal. The radio also contains internal

digital encryption. The insertion of frequency and security codes for the 10 pre-programmable channels of the radio is carried out using a MA 4073B programmer. Once the codes have been fed into the programmer, they can be loaded into the radio.

The Caracal provides 2,320 channels that are available in the 30 to 87.975 MHz range. Additionally, the radio can be programmed to operate in either simplex or two-frequency simplex (half duplex) modes.

Panther. The Panther family of tactical radios has started to replace the older Jaguar radios. The Panther radios are lighter, can transmit farther, and have Internet messaging capabilities. The Panthers are more resistant to electronic countermeasures and include advanced frequency hopping.

The Panther Enhanced Digital Radio (EDR) is specifically designed to take advantage of the digital battlefield. The Panther EDR consists of two basic transceivers: Panther P at 5 W; and Panther V at 5, 20, or 50 W depending upon power supply and configuration. By building the Panther EDR family around a digital architecture, future upgrades will be software-based rather than hardware-based and will be implemented without opening the case.

Variants/Upgrades

Jaguar H. The Jaguar H is a single sideband system. The unit divides the 2 to 30 MHz spectrum into 280,000 channels. The hopping rate is 10 to 50 hops per second across a 400 kHz segment of the HF band.

Jaguar U. The Jaguar U is a high-technology transceiver designed to interoperate with existing airborne UHF radios in fixed-frequency mode. It has the added capability of utilizing frequency hopping to defeat electronic countermeasures (ECM). The Jaguar U has a 225 to 400 MHz frequency range. It hops within 19.2-MHz-wide bands to give a total of 7,000 channels for greater anti-jam protection. Though developed mainly for airborne use, the small size and advanced electronic counter-countermeasures (ECCM) of Jaguar U have made it suitable for other purposes.

5W Leprechaun. The Leprechaun is a handheld portable transceiver. The radio features frequency-hopping technology, embedded data, communications security, and GPS capabilities. The unit contains all the features of the basic 4 W Single Channel Ground and Airborne Radio System (SINCGARS) in a 1.36 kilogram package.

Panther V. The Panther V represents the smallest and lightest tactical 20 W manpack and vehicle radio

available today. It offers user capabilities in the 30 to 108 MHz military radio band.

Co-site filtering is built in to the basic transceiver of the Panther V. By connecting the radio directly to the 24-volt vehicle supply, Panther V will operate as a compact 20 W vehicle station. For higher power, Panther V connects to a vehicle interface unit, providing a power output of 50 W.

Panther P. Panther P is a 5 W radio providing full over-the-air compatibility with the frequency-hopping and encryption modes of the Panther V in the 30 to 88 MHz frequency band. It comes in a small handheld package weighing less than 1 kilogram. With full EPM protection and digital encryption, the Panther P provides all the capabilities of much larger man-pack radios in a size easily carried by the soldier.

Panther H. Panther H is a frequency-hopping transceiver that provides a low probability of intercept (LPI) and anti-jamming protection. Panther H operates in three distinct modes: Standard, Adaptive, and Intelligent.

Standard fixed frequency voice allows interoperability with existing HF radios. Adaptive fixed frequency provides automatic clear channel search to counter high levels of interference. Intelligent frequency hopping

gives high-grade ECCM communications in a congested band.

Program Review

Development of the Jaguar tactical radio system began in mid-1977. The first public demonstration of the new system took place two years later in October 1979; this was the first public demonstration of a frequency-hopping tactical radio.

In May 1981, a production order was received from the British Army. The order covered both vehicle-mounted and man-pack configurations.

By early 1982, Jaguar radio sales totaled approximately GBP5 million, with some 20 defense forces worldwide evaluating the system. Currently, the Jaguar tactical radio is in service with 42 nations including four NATO countries; Iraq, Saudi Arabia, Oman, other Middle Eastern countries; and users in the Far East and Latin America.

In October 1990, the Canadian government announced it had selected Jaguar as the basis for the C\$1 billion IRIS program. This program aimed to replace the existing Canadian tactical radio family (which dated from the 1950s) with a modern mobile combat net radio.

In July 1994, Racal (now Thales) won a tactical radio contract from an unidentified customer in South America. Shortly thereafter, an African country placed a similar order. Oman ordered Jaguar tactical radios for its Piranha armored vehicles in December 1994.

In 1997, Saudi Arabia chose the Panther V radio to replace the aging Jaguar V and other tactical radios. The radio order was valued at US\$165 million.

Also in 1997, Thales Communications (formerly Racal Communications) signed a US\$14.2 million contract with Romania to supply Panther H and Panther V radios to the country. Romania then contributed the radios to the NATO-led Stabilization Force in Bosnia-Herzegovina. In March 1998, Thales signed another Panther radio deal with Romania valued at US\$14.2 million. Almost 3 years later (January of 2001), Thales Communications signed yet another contract with Romania (valued at U.S.\$17 million) to provide Panther EDR sets to the Eastern European country.

Recent Developments. Public information concerning Thales's Panther radio is sparse. The latest procurement information obtained by Forecast International is a US\$18.6 million contract the Romanian Ministry of National Defense awarded Thales Communications in March of 2001 to supply the Romanian Armed Forces with Thales's Panther family of tactical radios. Under the contract, Thales's VHF Panther EDR and Panther-H manpack and vehicular tactical radios are being supplied, along with the Panther P radio, which is being used by Romania for the first time in the handheld and mini-manpack roles. The contract represents the continuation of the ongoing program to re-equip completely Romania's battlefield units with the latest generation of tactical communications equipment.

Funding

Thales funds the research, development, and production of the Jaguar, Caracal, and Panther tactical radios.

Recent Contracts

<u>Contractor</u>	<u>Award (US\$ millions)</u>	<u>Date/Description</u>
Thales Communications	17.0	2001 – In January, Thales Communications signed a US\$17 contract with Romania to supply Panther EDR sets to the Eastern European country.
Thales Communications	18.6	2001 – In March, the Romanian Ministry of National Defense awarded Thales Communications a US\$18.6 contract to supply the Romanian armed forces with its Panther EDR family of tactical radios.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1977	Jaguar radio development commences
Oct	1979	First Jaguar V prototype demonstrations
May	1981	British Army orders Jaguar V radios
	1983	Oman orders Jaguar V
	1987	Technology transfer agreement signed with the Brazilian company Microlab
Oct	1990	Canadian government announced selection of the Jaguar radio for the IRIS program
	1993	Saudi Arabia orders Jaguar V radios
	1997	Saudi Arabia orders Panther V radios
	1997	Romania orders Panther family of radios
Mar	1998	Romania signs a deal worth \$US14.2 million to purchase additional Panther radio systems
Jan	2001	Romania signs a US\$17 million contract to procure Panther EDR sets
Mar	2001	Romanian Ministry of National Defense awards Thales a contract to supply the Romanian armed forces with the Panther family of tactical radios
	2007	Look for the last Jaguar radios to be delivered to Saudi Arabia from a 1997 purchase agreement

Worldwide Distribution

Forty-two nations use Jaguar tactical radios. Specific users of the Jaguar radio include the **United Kingdom** (Army), **Canada**, the **United States** (Navy), **Oman**, **Saudi Arabia**, **Kuwait**, **Syria**, **Iraq**, **Jordan**, **Malaysia**, and **Brazil**.

Forecast Rationale

Jaguar, Caracal, and Panther are military radios manufactured by Thales Communications. Thales designed the radios for battlefield communications.

As indicated by the **Ten-Year Outlook** chart, Forecast International projects defense departments worldwide to purchase some 10,075 Panther tactical radio units over the next decade. Romania and Saudi Arabia will be purchasing most of these Panther radios.

Information regarding Jaguar, Caracal, and Panther tactical radios is difficult to ascertain. The latest open

source information obtained by Forecast International is a November 2003 article written by TradeArabia.com stating that a company named AEC possesses a manufacturing license to produce the Panther Tactical Communication system with Thales and to market the radio in Saudi Arabia. The Panther radios are produced from the component level using SMT technology with AEC also having the capability to support and repair the radios locally. Moreover, AEC has "Arabised" all the screens and menus of the product in co-operation with Thames.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

<u>Designation</u>	<u>Application</u>	<u>Thru 03</u>	<u>High Confidence Level</u>				<u>Good Confidence Level</u>				<u>Speculative</u>		<u>Total 04-13</u>
			<u>04</u>	<u>05</u>	<u>06</u>	<u>07</u>	<u>08</u>	<u>09</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	
JAGUAR/CARACAL	Prior Prod'n:	19750	0	0	0	0	0	0	0	0	0	0	0
JAGUAR/CARACAL	Prior Prod'n:	55800	0	0	0	0	0	0	0	0	0	0	0
PANTHER EDR	TACTICAL COMMUNICATIONS (ROMANIA)	230	50	50	52	52	52	52	52	60	60	60	540
PANTHER EDR	TACTICAL COMMUNICATIONS (VARIOUS)	400	200	250	250	250	300	300	300	300	300	300	2750
PANTHER EDR	Prior Prod'n:	780	0	0	0	0	0	0	0	0	0	0	0
PANTHER-P	Prior Prod'n:	1560	0	0	0	0	0	0	0	0	0	0	0
PANTHER-V	TACTICAL COMMUNICATIONS (SAUDI ARABIA)	4100	975	975	975	975	0	0	0	0	0	0	3900
PANTHER-V/H	TACTICAL	465	70	70	70	80	80	80	80	80	75	50	735

PANTHER-V/H	COMMUNICATIONS (ROMANIA) TACTICAL COMMUNICATIONS (VARIOUS)	550	250	300	300	300	300	300	200	200	0	0	2150
Total Production		83635	1545	1645	1647	1657	732	732	632	640	435	410	10075