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HBJ/ABD-2000 - Archived 5/2008

Outlook

- With no new orders on the horizon, Dassault indicated in early 2006 that the Mirage production line would be shut down after completion of the existing 15-plane order from Greece
- Dassault Aviation has removed Mirage from the Indian Air Force competition
- Barring the release of further information, Forecast International will archive this report in May 2008

Orientation

Description. The High-Band Jammer/Airborne Broadband Defense (HBJ/ABD) detector-jammer system protects aircraft against surface-to-air and air-to-air threats, including fire-control radars, target designators, and radar homing systems.

Sponsor

Delegation Generale pour l'Armement (DGA)
10/14 Rue Saint Dominique
F-75997 Paris Armees
France

Licensee. No known production licenses have been granted.

Status. In service.

Total Produced. As of January 2007, an estimated 422 HBJ/ABD-2000 systems have been delivered.

Application. The primary function of HBJ/ABD-2000 is to protect aircraft against surface-to-air and air-to-air threats, including fire control radars, target designators, and electromagnetic homing systems. It is an internally mounted system designed primarily for the -C, -E, -5F, and -9 versions of the Dassault Mirage 2000. The HBJ/ABD-2000 is also suitable for the Jaguar, Alphajet, F-16, Mirage F-1, and AMX.

Price Range. Based on the known costs of a comparable system (the Lockheed Martin ALQ-178), a unit price of approximately \$1.5 million is estimated.

Contractors

Prime

Thales Airborne Systems

<http://www.thalesgroup.com/airbornesystems>, Manor Royal, Crawley, RH10 2PZ West Sussex, United Kingdom, Tel: + 44 1293 528787, Fax: + 44 1293 542818, Prime

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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

HBJ/ABD-2000

Technical Data

Characteristics

Coverage	H, I, and J bands (6-20 GHz)
Sensitivity	Up to -60 dBm
Reaction time	0.6 seconds
Coverage	All sectors
Measured parameters	RF frequency, frequency agility, pulse width, PRI, duty cycle, sector, polarization, level, type
Main jamming modes	Continuous and spot noise, barrage noise, cover pulse jamming, count down, velocity deception, blinking
Weight	80 kg (176 lb)



Dassault Mirage 2000 aircraft, the main platform for the HBJ/ABD detector-jammer system

Source: French Ministry of Defense

Design Features. The HBJ/ABD detector-jammer system was developed by Dassault Electronique (now a part of Thales) for the Mirage 2000. The HBJ/ABD is an internally mounted, radar signal detection analysis and jamming system. It incorporates a modular threat-analysis package capable of countering all current and foreseen radar threats. The system is composed of the following four modules:

- Main Unit – contains the receiver, jamming channels, transmitter, and aft antennas
- Left-Hand Conformal Unit – contains the electrical power supply for the system
- Right-Hand Conformal Unit – contains the control computers
- Antenna – located on the vertical fin of the aircraft; provides forward coverage

Operational Characteristics. The system is able to discriminate between multiple radio frequency (RF) emissions and alert the pilot to only the most dangerous ones. Jamming for a particular RF is initiated automatically. The entire system is computer-controlled and can be updated for new threats or specific electronic warfare (EW) environments as needed via software.

The system can be operated from a control panel located in the cockpit. A pilot can set the system to one of four channels as follows:

- Off
- SIL – threat detection only
- Jam – autonomous detect/jam
- Test

Variants/Upgrades

ABD-2000. Export name of the HBJ/ABD system.

HBJ/ABD (Pod). If customer requirements emerge, the HBJ/ABD can be manufactured as a pylon-mounted pod system.

ICMS. The HBJ/ABD is part of the Thomson-CSF/Matra/Dassault Integrated Countermeasures Suite (ICMS) Mk I and Mk II suite developed for the Mirage 2000. ICMS combines jamming, chaff, flare, RF detection, and decoy launchers into one comprehensive EW package.

Program Review

Background. The design history of HBJ/ABD started in 1962 with the installation of prototype HBJ/ABD systems on the Mirage IV. The HBJ/ABD system was continually upgraded and improved throughout the 1960s with installations on the Mirage IV and Mirage IVP. With the creation of the Mirage 2000, a new jamming system was required. HBJ/ABD evolved from the earlier designs and was specifically tailored for that aircraft. Design studies started in 1977, and full-scale development took place between 1978 and 1981.

The first prototypes were available for trials in 1981, and the system finally entered production in 1986. This was two years after the Mirage 2000 entered service for France, and a year after export deliveries to India commenced. Some analysts believe this is further evidence of developmental problems with the system. It is not clear if all of the French Air Force Mirage 2000 aircraft have been equipped with the HBJ/ABD.

Limited International Sales

The system began to make progress in the international market. The HBJ/ABD was installed on 18 of the 36 Mirage 2000s exported to the United Arab Emirates (UAE), on all 20 of the aircraft delivered to Egypt, and 45 of the aircraft delivered to India.

During 1992, Dassault Aviation received a \$3.8 billion order from Taiwan calling for 60 Mirage 2000-5D aircraft and 1,000 Magic-2 and MICA air-to-air missiles. Also in 1992, the Greek and French governments reached an agreement on an outstanding portion of a Mirage 2000 order. The aircraft were re-equipped with improved versions of their EW systems.

After procuring 36 Mirage 2000-5 aircraft, the UAE placed a follow-on order in December 1997 for additional 30 Mirage 2000-9s. At the same time, the UAE also signed a retrofit contract to upgrade its current 2000-5s to the -9 configuration. These aircraft have the HBJ/ABD installed as part of the Integrated Countermeasures Suite (ICMS).

Greece also gave a boost to the Mirage 2000 production when it ordered 15 2000-5 models fitted with the HBJ/ABD and contracted for the upgrade of 10 Mirage 2000s in May 1999. The first aircraft of this order arrived in Greece in July 2004 and Initial Flight Evaluation (IFE) was completed in late August 2004. Thales completed deliveries of the HBJ/ABD systems for these Greek Mirages by 2006.

Significant News

French Mirage Pulls Out of Indian Air Force Deal – Dassault Aviation has pulled the Mirage 2000-5 out of the Indian fighter aircraft competition because India is taking too much time to decide. France is still considering whether to field the Rafale. (IBNLive, 2/06)

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HBJ/ABD-2000

Contracts/Orders & Options

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Dassault Electronique	1,000	May 1999 – Greek order for 15 Mirage 2000-5 platforms and the upgrade of 10 Mirage 2000 aircraft. The first delivery of the new Mirage 2000-5 is due 35 months after the down payment, with the fifteenth due to follow eight months later. The upgrade of the ten earlier Mirage 2000s will be carried out by Hellenic Aerospace Industries, with the first post-upgrade aircraft to be delivered three months after the last new 2000-5 delivery.
Dassault, Thompson-CSF and Snecma	N/A	Sep 2000 – Defence Ministry of India order for 10 Mirage 2000-H aircraft (six twin-seat and four single-seat).

Timetable

<u>Year</u>	<u>Major Development</u>
1997	Additional 30-unit order from the UAE
2000	Greek order for 15 Mirage 2000-5s, upgrade of 10 Mirage 2000s
2005	Brazil cancels F-X fighter program tender
2006	France withdraws Mirage from Indian 126 fighter competition
2006	Last Greek Mirages delivered
2006	French production to end

Worldwide Distribution/Inventories

Egypt, France, Greece, India, Peru, Qatar, Taiwan, and the **UAE** all maintain HBJ/ABD systems in their inventories.

Forecast Rationale

The HBJ/ABD-2000 is a component of the Thales' Integrated Countermeasures Suite (ICMS), which is an integrated, internally mounted EW suite for the Dassault Aviation Mirage 2000/2000-5 family. Since Dassault has filled all of its existing Mirage orders, the HBJ/ABD-2000 is more than likely out of production.

India had been the only prospect for a large potential sale. However, Dassault Aviation has decided to remove the Mirage from India's competition. The Mirage was the rumored front-runner, but Dassault says it cannot keep its production line waiting for the notoriously slow Indian Defence Ministry. Whether

Dassault was bluffing and hoping to force India's hand into signing a contract is not known. If Dassault was hoping for a quick contract, this has not worked. India has not picked a winner and the U.S.'s F/A-18 Super Hornet and F-16, Europe's Typhoon, Sweden's Gripen, and Russia's MiG-29 are still hoping for part of this 200-aircraft order. If Dassault gets part of this order, it will be with its Rafale fighter.

Brazil canceled its F-X fighter program in February 2005. Although unlikely, the Brazilian Air Force could procure up to 72 fighters under this program near the end of the decade.

Ten-Year Outlook

Because no production is forecast, the **Ten-Year Outlook** chart has been omitted.

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