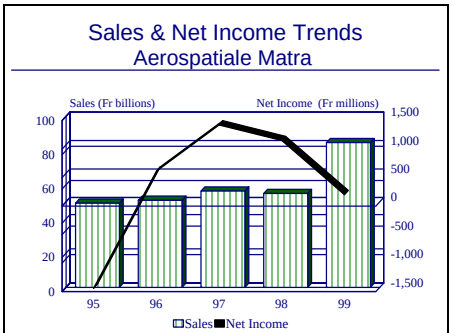
Aerospatiale Matra - Archived 9/2001

Outlook

- Aerospatiele Matra has been transformed yet again with the formation of the new European Aeronautics, Defense and Space Company (EADS)
- Creation of EADS is a major step in the consolidation of the European aerospace and defense industry
- EADS formation could jump start a number of Franco-German projects stalled due to a lack of workshare or funding agreements



Headquarters

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In July 1998, the French government jump started that country's defense industry consolidation with the announcement that it would merge Aerospatiale and Lagardère's Matra Hautes Technologies into a new, publicly held corporation – Aerospatiale Matra.

The new company was formally launched at the Paris Air Show on June 11, 1999. The formal launch followed the successful public offering of Aerospatiale Matra stock on June 4, 1999 on the Paris stock exchange, the Bourse.

While the new company is largely private, the government retains a stake of about 47 percent. Officials have stated that this share would be reduced gradually over the years ahead. Lagardère is the largest private shareholder with 33 percent. The flotation in June 1998 concerned 17 percent of the equity in the group while the remaining 3 percent was reserved for the staff of the new company.

The new company employs some 38,660 people.

In December 1999, Lagardère, the French state, the German DaimlerChrysler group, and Spanish aerospace company CASA agreed to merge their respective aerospace and defense activities into a new company. The new corporation, to be called European Aeronautic, Defense and Space Company (EADS) will be the world's third largest aerospace company.

Structure and Personnel

Management Board

Philippe Camus
Chairman
François Auque
Chief Financial Officer, Group Managing Director, Satellites
Jean-François Bigay
Group Managing Director, Aeronautics
Jean-Paul Gut
Chairman, Aerospatiale Matra Lagardère Int'l
Group Managing Director, Defense and Space Transportation
Denis Verret
CEO, Aerospatiale Matra Lagardère Int'l

Group Managing Director, Business Development
J. Vannier
Business Group Manager, Systems, Services and Telecommunications
Jean-Louis Gergorin
Group Managing Director, Strategic Coordination
Frédéric D'Allest
Advisor To The Management Board For Space
R. Sanguinetti
Corporate Vice President, Communications and External Relations
René Chabod
Corporate Executive Vice President, Human Resources
Jean-Marie Mir
Corporate Secretary

Product Area

Aerospatiale Matra designs and manufactures a large variety of aerospace, defense, and space-related equipment for both domestic and export markets. The new company is believed to be organized as follows.

1. Aeronautics
1.1 Aerospatiale Matra Airbus
1.2 Airbus Industrie GIE
1.3 Aerospatiale Matra ATR
1.4 ATR GIE
1.5 Eurocopter
1.6 Sogerma
1.7 Socata
1.8 Dassault Aviation
2. Satellites
2.1 Matra Marconi Space
2.2 Arianespace
2.3 Starsem
2.4 Aerospatiale Matra Lanceurs Stratégiques et Spatiaux
3. Defense
3.1 Aerospatiale Matra Missiles
3.2 Matra BAe Dynamics
3.3 Euromissle
3.4 Eurosam
3.5 Celerg
3.6 Matra Defense
4. Systems, Services & Telecommunications
4.1 Systems of Systems Directorate
4.2 C4ISR
4.3 Services and Tests
4.4 Design and Industrial Manufacturing
4.5 Internet and Operator Services
4.6 Telecommunications

Facilities

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Aerospatiale, Aircraft, Bouguenais, BP 81925, 44019 Nantes Cedex 1.

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Aerospatiale, Defense, Bourges, 18 Rue le Brix, PO Box 35, F-18020 Bourges Cedex.

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Euromissile GIE, 12 Rue de la Redoute, F-92260 Foutenay-aux-Rose. Telephone: (33 1) 41 87 14 14.

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Corporate Overview

The new Aerospatiale Matra is a leading European aerospace, defense, and space company, ranking number two in Europe and number five worldwide – behind Boeing, Lockheed Martin, the new British Aerospace, and Raytheon.

New Products and Services

NH90. In June 2000, the European Aeronautic Defense and Space Company (EADS - see section below) announced the signing of the production contract for 298 NH90 transport helicopters. Eurocopter, which has a 62.5 percent production share in the program, is a wholly owned subsidiary of EADS. The total requirement reaches 595 NH90s. The parliamentary approval of the participating nations, France, Germany, Italy and Netherlands, was given with the MoU signature in Berlin during the ILA Airshow on June 8, 2000. The total value of the contract amounts to 6.6 billion euros. NH90 is the biggest helicopter program ever launched in Europe. Italy is ordering 60 TTHs (Tactical Transport Helicopter) for the Army, 46 NFHs (NATO Frigate Helicopter) and 10 TTHs for the Navy; France will receive 27 NFHs for its naval forces; Germany will receive 50 TTHs for the Army and 30 TTHs for the Air Force, of which 23 are envisaged for Combat Search and Rescue missions following further development; the Netherlands will receive 20 NFHs.

Vesta. In November 1997, Aerospatiale was awarded a FRF750 million contract to design, develop and test the Vesta missile, a technology demonstrator for a high-speed air-to-ground missile powered by a ramjet. The missile will be developed over the next five years with flight tests completed by 2002.

Plant Expansion/Organization Update

Finmeccanica chooses EADS. In April 2000, Finmeccanica and the partners of EADS, Aerospatiale Matra, DASA and CASA, signed an agreement for the creation a new military and civil aircraft joint venture company. The joint venture company will have 17,000 employees and pro-forma revenues of over 2.5 billion euros. It will be owned on a 50:50 basis by Finmeccanica and EADS with a corporate governance based on equal rights between the partners. The new group will encompass all the military and civil activities of Finmeccanica's Alenia unit, the military aircraft activities of DASA and CASA, as well as aerostructures activities of DASA's military aircraft division. The future company will have a leading position in the military aircraft business in Europe, holding a majority share in the Eurofighter program.

Also as part of the deal, EADS intends to further link Finmeccanica with Airbus. Under the agreement, Finmeccanica has been invited to join the Airbus Integrated Company as a shareholder with an option for five percent stake, and will have a participation of up to ten percent in the future A3XX program.

European Aeronautic Defence and Space Company. In October 1999, DaimlerChrysler, the French Lagardère Group and the French state agreed to merge the respective aerospace and defense activities into a new company which will be the world's third largest aerospace company. The new corporation, to be called European Aeronautic, Defense and Space Company (EADS), will be created through the combination of Aerospatiale Matra SA and DaimlerChrysler Aerospace AG (DASA) and will be Europe's largest aerospace company. In December 1999, the Spanish aerospace company, CASA, joined EADS as a founding member (Note: Spain's state holding company SEPI, (Sociedad Estatal de Participaciones Industriales) currently holds the majority stake in CASA).

DASA CEO Dr Manfred Bischoff and Lagardère chairman Jean-Luc Lagardère will head the board of EADS. The operative business will be headed by a two CEOs, a Frenchman, Phillipe Camus, and a German, Rainer Hertrich. EADS will be registered in the Netherlands and have dual headquarters in Munich and Paris.

As could be expected, EADS is owned through a complex structure that is designed to assuage the concerns of DASA over French state ownership, and the French government and union officials over workforce security. The primary shareholder of EADS

will be the Dutch Holding Partnership with a 65.57 percent stake. This partnership is composed as follows:

1. French pooling company (45.75 percent) - This is composed of the French government (50 percent), Lagardère (37 percent), private institutions (13 percent).
2. DaimlerChrysler (45.75 percent).
3. SEPI (8.5 percent).

The remaining 34.43 percent of EADS will be floated as a Dutch company on both the Paris and Frankfurt stock exchanges. EADS went operational on July 10, 2000.

With a workforce of 96,000 and combined revenues of approximately EUR 21 billion, EADS is the largest aerospace company in Europe and one of the three largest aerospace companies in the world. The combination of Aerospatiale, DASA, and CASA makes EADS:

- the world's second-largest civilian aircraft manufacturer through Airbus
- the world's market leader in helicopters through Eurocopter
- a world leader in satellite launching systems through Ariane and
- a leading provider of satellites, military aircraft and defense systems.

Aerospatiale Creates Four New Subsidiaries. In April 1999, Aerospatiale created four new subsidiaries in preparation for its impending merger with Matra. The four new subsidiaries of the Aerospatiale group are: Aerospatiale Airbus, Aerospatiale ATR, Aerospatiale Lanceurs Stratégiques et Spatiaux and Aerospatiale Missiles.

French Consolidation Accord. In December 1998, the French government reached an agreement with Aerospatiale, Alcatel, Lagardère and Thomson-CSF regarding respective competencies and relationships between Thomson-CSF and Alcatel on the one hand and the future Aerospatiale-Matra Hautes Technologies company on the other. The details of the plan were announced as follows:

In avionics, Thomson-CSF will become the 100 percent owner of Sextant Avionique. In addition, Aerospatiale and Sextant Avionique will plan a new division for their avionics activities, to be concentrated within Sextant Avionique in Toulouse, with the exception of those activities which Aerospatiale and its partners must directly control in order to design the Airbus family of aircraft.

In missiles, Aerospatiale and Thomson-CSF, the two companies which are partners in the EUROSAM consortium with Alenia, have confirmed their commitments to developing and marketing systems and equipment belonging to the medium-range Future Surface Air Family (FSAF). In signing this agreement, with a lifetime of 10 years, the two partners have confirmed that they, along with their partner Alenia, wish to attack this market through the EUROSAM structure exclusively. This structure's responsibilities cover global defense proposals for the French, European and export markets, including medium-range surface-to-air systems with component subsystems drawn from the FSAF programs.

In satellites, Alcatel, Alcatel Space and Thomson-CSF renounce the right to invoke the clause of non-re-establishment in the field of satellite activities against the future Aerospatiale-Matra Hautes Technologies company, in respect of Lagardère's contribution of the Matra Hautes Technologies shares.

Alcatel and Thomson-CSF expressed their satisfaction that the French government is confirming the pre-eminent role played by Alcatel Space in the field of military space systems (telecommunications, optical observation and radar). Alcatel Space is thus reinforcing its position in the space systems field and promoting synergies between its civilian and military activities.

Mergers/Acquisitions/Divestitures

Embraer Stake Acquired. In October 1999, Aerospatiale Matra, Dassault Aviation, SNECMA and Thomson-CSF announced that they would jointly acquire a 20 percent stake in Brazilian aircraft manufacturer Embraer. The four companies, paying $200 million for the stake, will become the partner wanted by Embraer in order to boost its defense business. The control of Embraer will not be affected by the acquisition of the shares. The four companies are buying into the Brazilian aerospace industry with the hopes that Brazil's next fighter purchase will be French, specifically the Mirage.

European Missile Merger. In October 1999, Aerospatiale Matra, British Aerospace and Finmeccanica signed a Heads of Agreement to establish a joint venture in missiles and missile systems, bringing together their current activities in this field. The key parts of merger include Matra BAe Dynamics, a 50-50 joint venture of BAe and Aerospatiale Matra; the missiles systems divisions of Alenia Marconi Systems, a 50-50 joint venture of Finmeccanica and Marconi Electronic Systems, which has been merged with BAe; and the wholly owned missile subsidiary of Aerospatiale Matra.

Aerospatiale Matra and BAE Systems and will each own 37.5 percent of the as yet unnamed group; Finmeccanica will hold the remaining 25 percent.

The new European missile group expects sales of about EUR2.5 billion (£1.5 billion), and will employ over 10,000 people in Italy, the United Kingdom and France. The group will also hold 30 percent shareholding in LFK, the main German guided weapons business currently owned by Matra BAe Dynamics.

Aerospatiale Matra Formed. On June 11, 1999, Aerospatiale and Matra merged into a new entity, Aerospatiale Matra.

In forging the new company, Lagardère contributed 100 percent of Matra Hautes Technologies, the company which contains all of the defense and space activities of Lagardère (including its 50 percent stake of Matra BAe Dynamics, 100 percent of Matra Systèmes & Information, 100 percent of Matra Defense Equipements et Systèmes, and 51 percent of Matra Marconi Space), together with 50 percent of Matra Nortel Communications.

As part of the deal, Lagardère will receive 33 percent of Aerospatiale's share capital in exchange for the transfer of Matra Hautes Technologies to Aerospatiale and a payment of FRF850 million to the French Government. Lagardère could be required to make further payments to the French Government, up to a maximum amount of FRF1,150 million, depending on the future performance of Aerospatiale Matra shares on the Paris stock exchange.

According to the deal, if the stock falls eight percent below the CAC40 stock index two years after the offering, Lagardère will pay the whole FRF1,150 million. If the shares remain equal with the index, the company will have to pay a little more than half (about FRF600). But, if the share price does well and rises 10 percent above the CAC40, Lagardère will pay nothing. The plan's incentive is aimed at ensuring that Lagardère has sought maximum value for its shareholders.

At 33 percent, Lagardère is the largest stockholder in the Aerospatiale Matra. Coupled with the public flotation of 20 percent of the stock (17 on the Paris Bourse and 3 percent set aside for staff), the state's holding in Aerospatiale Matra has been reduced to about 47 percent, effectively privatizing the company. The government has stated that this stake will be reduced even more in the coming years. However, the government will retain a "golden share" or veto authority in the company to ensure that France's national security interests are protected.

Dassault Shares Transferred. In November 1998, following months of wrangling with Serge Dassault, the French government transferred its 45.7 percent holding in Dassault Aviation to Aerospatiale. The Dassault family still owns a controlling stake, holding 49.9 percent of the shares of Dassault Industries. The remaining 4.3 percent of Dassault is traded on the Paris stock exchange. According to reports, the deal calls for equal representation of Aerospatiale and Dassault on the Dassault Aviation board, common decision-making on important matters, and the formation of a strategic committee. Although full details have not been released, it is believed that Dassault's fighter aircraft unit will be absorbed into Aerospatiale Matra, while its civil division, which produces business jets, will operate as a semi-independent unit.

French Defense Consolidation. In April 1998, the French government decided that it would hold a 47 percent stake in a new company that will be home to five of the countries top defense and space companies. This latest agreement formalizes the details regarding the partial privatization of Thomson-CSF, which will be merged with the defense electronics assets of Alcatel Alsthom, Dassault Electronique and the satellite business of Aerospatiale. Earlier, in October 1997, a team led by Alcatel and including Dassault and Aerospatiale won the right to help Thomson privatize. Under this new plan, the government will hold about 43 percent of its current 58 percent stake in Thomson-CSF, plus four percent of Aerospatiale's satellite business. Under the agreement that was reached, the defense electronics units of Alcatel and Dassault would be consolidated within the new Thomson-CSF. Meanwhile, the satellite business of Aerospatiale, Alcatel, and Thomson-CSF would be formed into a joint venture, called Société Commune de Satellites, 51 percent owned by Thomson-CSF and 49 percent owned by Alcatel. According to reports, Aerospatiale would sell its minority holding in other satellite ventures for about $208 million to the new company. Overall, this plan appears to be set to finally complete the privatization of Thomson-CSF originally begun in 1996. Once completed, this restructuring should pave the way for the consolidation of the remainder of France's defense industry, which the government has said is a prerequisite for transnational defense industry consolidation in Europe.

Matra BAe Takes Stake in LFK. In October 1997, Daimler-Benz Aerospace (DASA) and Matra BAe Dynamics signed an agreement with DASA to take a 30 percent minority share in DASA's LFK-Lenkflugkörpersysteme GmbH (LFK) subsidiary. One of the first tasks the two companies is undertaking is the formation of a joint strategy on future programs,

especially in the medium air-to-air missile market. The new alliance will be the largest missile manufacturer in Europe and the third largest in the world behind Lockheed Martin and Raytheon.

Sextant Avionique. Thomson-CSF acquired the Dutch military electronics company Hollandse Signaalapparaten from Philips and formed a new avionics entity with Aerospatiale called Sextant Avionique. In 1999, Thomson-CSF assumed total control of this operation.

Teaming/Competition/Joint Ventures

Astrium. In March 2000, Matra Marconi Space and the space divisions of DaimlerChrysler Aerospace received the permission from the European Commission authorizing the formation of Astrium joint venture. The new venture focuses on space systems, from ground systems to satellites, launch vehicles and orbital infrastructure. In 1999, Astrium's proposed merger partners had a pro forma consolidated turnover of 2 billion euros. The company employs 7,500 people.

Originally announced in mid-1999, Astrium included the space assets of Matra Marconi Space of France, DaimlerChrysler Aerospace of Germany, and later on, of Alenia Aerospazio of Italy. Initially, DASA would own half of Astrium and its Franco-British partners the remaining half. Italy's Alenia Spazio, a Finmeccanica subsidiary, widened the company's base even further by joining Astrium within a number of months of its creation.

Vegaspazio. In April 1999, FiatAvio and Aerospatiale Lanceurs Stratégiques & Spatiaux, signed a contract to collaborate within a new company, Vegaspazio. The equally owned joint venture will manage the Vega light launch vehicle program for the European Space Agency. With headquarters in Collefero, Vegaspazio is a management company which will act as prime contractor and as design authority during both the development and production phases.

Lockheed Martin. In February 1998, Lockheed Martin and Aerospatiale entered discussions that could link the companies on a number of major military programs. Talks are being held with Aerospatiale because it is the focal point for the military activities of Airbus, with whom Lockheed Martin had begun talks in 1997. According to this latest report, Lockheed Martin is interested in working with Airbus exclusively on military programs. Specifically, Lockheed Martin wants to team to compete for the KC-X, a new long-range tanker that would replace KC-135 tankers currently in service. In addition, Lockheed Martin would also like a role in the Future Large Aircraft (FLA) program.

Prior to this, in early 1997, Aerospatiale and Lockheed Martin entered into discussions concerning possible tie-ups in several military and commercial market segments. Mutual interests explored by the two companies include military tankers/transports, tactical missiles, and commercial space boosters.

Kongsberg. In August 1997, Aerospatiale and Kongsberg of Norway teamed to develop a new, stealthy anti-ship missile. The New Surface Missile (NSM) is being designed to fulfill a requirement by the Royal Norwegian Navy, and ultimately, by the international market. The NSM should complete development in 2003, in time to equip six new navy and four Norwegian coast guard frigates. Aerospatiale will handle the propulsion system as well as radar signature reduction efforts. Kongsberg will handle production of the missile's front end.

Denel. In March 1997, Aerospatiale and Denel announced the signing of a broad industrial partnership agreement that could lead to joint ventures in a number of programs in the missiles and aircraft markets.

Renault. In January 1997, Aerospatiale and Renault joined forces to develop and market a new generation of light aircraft piston engines in the 180 to 300 horsepower class. Renault Sport will handle design, development, manufacture and certification of this new family of engines, which will power aircraft produced by Aerospatiale's Socata subsidiary.

Matra BAe Dynamics. Formed in 1996, Matra BAe Dynamics is a 50-50 joint venture between Matra and BAe. The group designs, develops and manufactures missiles, unmanned vehicles, and countermeasure systems. The entity is Europe's largest guided weapons business with annual turnover of approximately $1.5 billion, an order book of roughly $4 billion, and over 6,000 employees in six plants throughout France and the UK. The deal was officially signed in August 1996, following closely on the heels of the hotly contested CASOM award which was won by the BAe and Matra team. The company became operational on November 1, 1996, after gaining all regulatory and governmental approvals.

Starsem. French and Russian government officials in July 1996 gave the nod to create a new company to market Soyuz space launches from the Baikonur Cosmodrome in Kazakhstan. Called Starsem, the venture is similar to International Launch Services, a company formed by Lockheed Martin Corp and Russian companies Khrunichev State Research and Production Space Center, and RSC Energia, which will market Atlas and Proton rockets together. Starsem is a 50-50 joint venture between France and Russian organizations. Aerospatiale has a 35-percent stake in

the company, while Arianespace, provider of satellite launches, has a 15-percent share. The Russian Space Agency (RKA) and the Samara State Research and Production Space Center (Samara TsSKB Progress) will split equally Russia's 50 percent share. Starsem will be registered in France and headquartered in Paris. Its primary aim will be to offer Soyuz rockets for missions involving small payloads to low or medium orbits.

Aero International Regional. In 1996, Aerospatiale, Alenia, and British Aerospace announced the joint formation of a new regional aircraft company, Aero International Regional (AIR). The new joint venture was aimed at consolidating the three partners' wide range of 29- to 115-seat regional commercial transports. Each partner had an equal share (33.3 percent) in AIR, which was headquartered in Toulouse. AIR's product range included: Jetstream turboprops, ATR twin turboprops, and Avro jet transports. The company was seen as a first step in a forthcoming consolidation of the regional aircraft market. In May 1998, this partnership was dissolved when the three partners failed to come to agreement on $1.2 billion AIRjet program business plan.

HAI. In January 1996, Aerospatiale and Hellenic Aerospace Industry signed a Framework Cooperation agreement. The aim of the agreement was to reinforce the links between HAI and Aerospatiale, in order to explore and define new or complementary areas of cooperation on aircraft, helicopters, missiles, and space projects. Currently, HAI provides Aerospatiale with the A300/A310 door frame.

Alenia and British Aerospace. In January 1995, Aerospatiale, Alenia, and British Aerospace announced that they were forming a cooperative organization to market their turboprop and turbofan regional aircraft. The agreement was considered the first step toward a wide-ranging industrial alliance that eventually would give birth to a streamlined range of products and pave the way for new jointly developed regional aircraft. Each company will own 33.3 percent of the new company that will be headquartered in Toulouse, France. A company name has not yet been chosen.

European Supersonic Research Program (ESRP). In April 1994, Aerospatiale, British Aerospace, and DASA signed a memorandum of understanding to create the European Supersonic Research Program to study a potential new-generation supersonic transport. The program will consider a number of integral issues such as aerodynamics, materials, systems, noise and engine airframe integration. The ESRP group will not compete with the Supersonic Study Group, an international effort initiated by Boeing, McDonnell Douglas, Aerospatiale, British Aerospace, DASA, Alenia and several Japanese and Russian manufacturers. SSG partners are conducting more broad-based studies linked to environmental issues and market assessments.

Eurocopter. In January 1992, Aerospatiale and MBB, the latter a subsidiary of Germany's Deutsche Aerospace AG (DASA), consolidated their helicopter divisions. Share capital is held on two levels; Eurocopter Holding SA's primary share owner is Aerospatiale with 60 percent and 40 percent held by DASA; in turn Eurocopter SA is held 75 percent by Eurocopter Holdings and 25 percent by Aerospatiale. Following the formation of Eurocopter, all national and international subsidiaries and partially owned companies formerly belonging to DASA/MBB and Aerospatiale are now under the management of Eurocopter SA. Eurocopter is structured as follows:

1. Eurocopter Holding SA
1.1 Eurocopter SA
1.1.1 Eurocopter France
1.1.2 Eurocopter Deutschland
1.1.3 Eurocopter International
1.1.4 Eurocopter Participation

Matra Marconi Space was created in 1990 when the space activities of Matra (51 percent) were merged with those of the British group, GEC-Marconi (49 percent). In August 1994, Matra Marconi Space acquired the space operations of British Aerospace (BAe). Europe's first integrated space contractor, Matra Marconi Space is active in all major military and non-military space markets. Matra Marconi Space is involved in the Ariane program (supply of onboard software), ERS-1 satellite (active radar system), Eureca (communications equipment), Eutelsat (communications payload), Intelsat (manufacture of beacon transmitter), Meteosat (communications equipment, imaging systems, AOCS and attitude measurement), and the Skynet-IV (communications payload).

Eurosam. On June 5, 1989, Aerospatiale, Thomson-CSF and Alenia created the Eurosam consortium, taking overall responsibility for the development of Future Surface to Air Family of missile systems. In addition to the development of the FSAF systems, Eurosam is also developing the ASTER 15/ASTER 30 missiles. Currently, Eurosam is also proposing the development of an ASTER 60. Each of the three partners in Eurosam holds a 33.33 percent share.

Eurosatellite. Eurosatellite GmbH, a European company founded in 1978 and headquartered in Munich, has formed a permanent association of five large parent companies for the promotion, development and production of telecommunications satellites, particularly direct broadcasting satellites. Shareholders with a 24 percent stake in the company include Alcatel-Espace

(France), Aerospatiale (France), and Deutsche Aerospace (DASA) (Germany). ETCA (Belgium) holds the remaining 4 percent.

Euromissile. This is an industrial consortium for the production and sale of Milan, HOT, Roland and TriGAT missile systems. Euromissile was formed in 1972 by Aerospatiale and MBB; each holds a 50 percent stake.

Airbus Industrie. Aerospatiale is an integral part of the Airbus consortium created in late 1970. Airbus Industrie (GIE) is located in Paris, France. This consortium consists of Aerospatiale (37.9 percent), Deutsche Airbus (37.9 percent), British Aerospace (20 percent), and CASA (4.2 percent). Belairbus of Belgium and Alenia of Italy are associate members of the consortium. Additional risk-sharing partners may be added for this particular aircraft's development. Aerospatiale has been involved in the development of all of the Airbus series airliners.

The present production aircraft are the A300 and A310 wide-body transports, and the A320 twin-engine narrow-body aircraft. A follow-on to the A320, the A321, is in development. Among the new wide-body efforts are: the A330, the A340 and the A350. The A330 has undergone full-scale development; it entered production in the early 1990s. The A340 has undergone full-scale development; production commenced in 1994. Preliminary market studies and design definition are being conducted on the A350. If a full-scale development program is commenced by the mid-to-late 1990s, the aircraft would be available toward the beginning of the next decade.

A major subsidiary of Airbus is Aeroformation, based in France, a training center for the consortium's aircraft.

Arianespace. This organization was established in 1980 by 36 aerospace and electronics companies to contract, finance, market and conduct launches of the Ariane family of commercial space vehicles. Aerospatiale is the Ariane launch vehicle's overall industrial prime contractor.

Aerospatiale Helicopter Australia. Aerospatiale Helicopter Australia, headquartered at Bankstown Airport, New South Wales, is a joint venture company between Aerospatiale, Rex Aviation of Australia and OFEMA.

Avions de Transport Regional (ATR). This joint venture company produces the ATR-42/ATR-72, a pressurized twin-turboprop-powered, regional/commuter transport aircraft. This joint venture consists of Aerospatiale (50 percent) and Alenia of Italy. The consortium is currently manufacturing the ATR-42 and ATR-72, and has commenced full-scale development of the ATR-82.

European Future Large Aircraft (FLA). FLA is another of Europe's proposed joint aircraft development programs. It is an advanced-technology, multi-engined, tactical and strategic military transport aircraft sponsored privately by the five participating European aerospace companies. The present contractor is EUROFLAG, a study team composed of Aerospatiale of France, British Aerospace of the UK, Deutsche Aerospace of Germany, Alenia of Italy, and CASA of Spain. Of particular note is the fact that EUROFLAG is made up of all of the Airbus Industrie partners. A feasibility study was begun in July 1993. First flight was expected in 2000 and production should begin by the year 2003.

GIAT Industries. Aerospatiale and GIAT have signed a general cooperation agreement to unite efforts by the two companies in the areas of nonguided anti-tank arms systems and warheads. The agreement will be made formal through the SERAT – the Technical Applications Design and Manufacturing Company – which is located in Paris and completes projects in areas that include electronics and arms. Both companies become shareholders of the SERAT. Aerospatiale will provide its resources in tactical missile systems, while GIAT will provide expertise in land armaments.

SNP. Aerospatiale and SNP created two companies specializing in missile production. Aerospatiale maintains a 50-percent share in each of the two new companies, named Celerg International and Celerg France.

STN Atlas Elektronik. STN is developing the Brevel reconnaissance drone in cooperation with Matra Defense of France (the two companies have formed the Eurodrone Consortium for the purpose of developing the Brevel). Eurodrone is now a 50-50 joint venture between Matra Defense and STN of Germany.

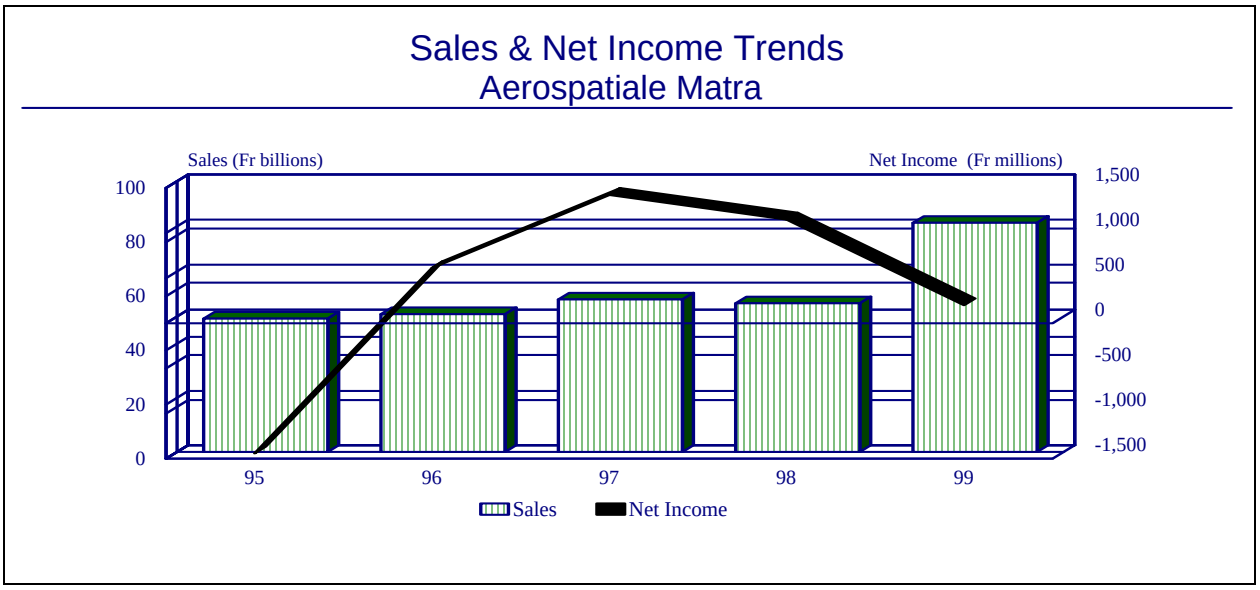
Tupolev. Aerospatiale and the Russian company Tupolev are discussing the possibility of a joint venture for the production of the Tu-334 100-seater project.

Yakovlev. An agreement has been signed to begin talks between Aerospatiale and the Russian aircraft manufacturer Yakovlev for the licensed production of the ATR turboprop aircraft intended for sale in Russia.

Financial Results/Corporate Statistics

1999 was Aerospatiale Matra's first year as a consolidated company. The company posted revenues of FRF84.6 billion (EUR 12.9 billion), an increase of nearly 5 percent over pro forma results for 1998. Net income for the period was FRF200 million (EUR 30 million) versus FRF2.8 billion (EUR 436 million) for 1998. This decline was due to an exceptional loss of FRF1.68 billion (EUR 256 million) in 1999, which was attributed to restructuring of currency hedging instruments and costs of privatization. 1998 results were higher, due to exceptional income of FRF932 million (EUR 142 million) primarily from the sale of satellite operations. Latest year statistics are provided below. The US dollar figure, in millions, is translated as of December 31, 1999 average at the rate of US$1=FRF6.5329.

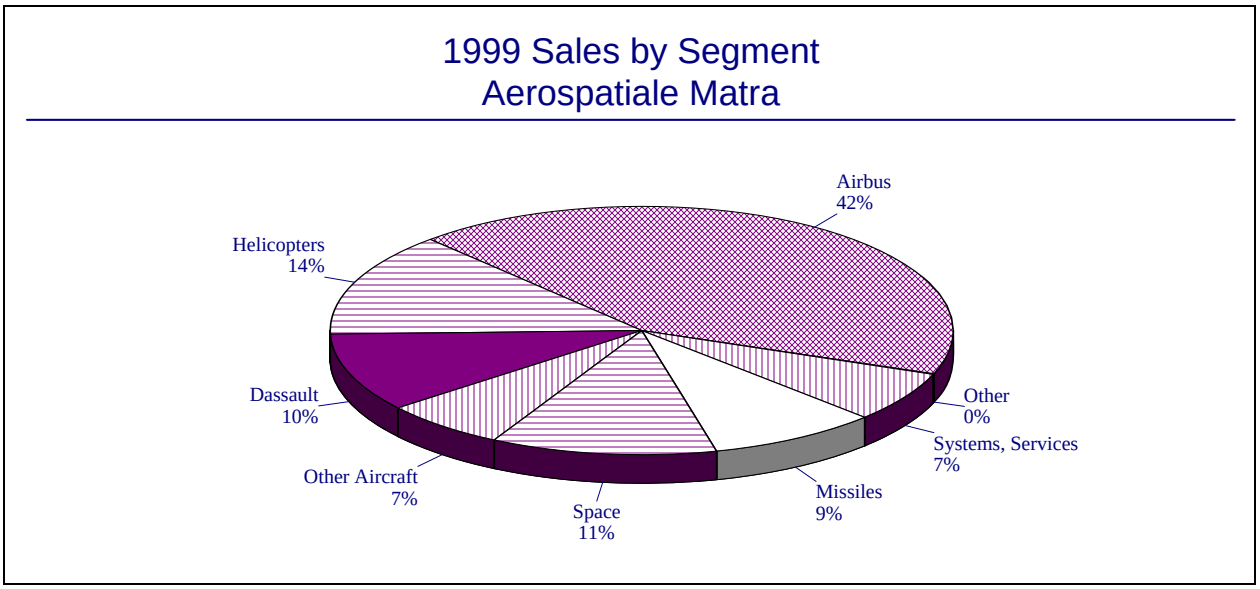
Y/E December 31	1995	1996	1997	1998	1999	1999
(Fr millions)						**(US$)**
Net Sales	49226	50885	56293	54869	84600	12959
Net Income	-1442	613	1423	1150	200	30
R&D Expenditures	3982	4239	4351	4945	NA	-
Backlog	101500	129900	160900	181900	101500	15547



Industry Segments

A breakdown of Aerospatiale Matra's segment sales is illustrated in the following chart.

SALES	1998	1999
(FRF millions)		
Airbus	28626	35887
Helicopters	11139	11500
Dassault	9217	8648
Other Aircraft	5084	5581
Space	9910	9719
Missile Systems	10931	7567
Systems, Services & Telecom	5651	5643
Other	76	63
TOTAL	**80634**	**84608**



Strategic Outlook

Following its first year as a newly merged company, Aerospatiale Matra was transformed yet again with the formation of the new European Aeronautics, Defense and Space Company (EADS). Aerospatiale Matra along with partners DASA and CASA, have in a single stroke created a Continental industrial giant capable of taking on giants such as Lockheed Martin and BAE Systems.

The creation of EADS, which completed its global offering of shares in July 2000, is a major step in the consolidation of the European aerospace and defense industry. In as much as the deal was one driven by economic reality, the formation of EADS is also a political entity which has so far restored relationships between France and Germany especially.

Specifically, the deal could jump start a number of Franco-German projects that have stalled due to a lack of workshare or funding agreements. The proof was put in this statement in June 2000 when a contract for the long delayed NH90 program was signed approving production of the first batch of 298 helicopters, giving EADS it first taste of success.

Other programs that may soon see the green light include the Airbus A400M military transport and the German-French-Italian Polypheme missile. In addition, thanks to the new arrangement, Germany may return to France's Helios-2 military observation satellite program, which it left in huff over a workshare dispute.

In the commercial arena, EADS now controls a majority stake in Airbus Industrie. With three of Airbus' major partners now merged together, the deadlock over the transformation of the commercial aircraft consortium into a Single Corporate Entity should be broken. Prior to the formation, Airbus' partners had failed to meet a September 1999 deadline imposed by the governments to submit a plan for the SCE, a joint stock company that will replace the current GIE (Groupement d'Interet Economique) industrial grouping.

Now, with 80 percent of Airbus controlled by EADS, negotiations with remaining partner British Aerospace should become much simpler. Even if a new plan is not initiated, the simple fact of majority ownership should allow Airbus to speed up its decision-making process. Further if no agreement is reached quickly, EADS could begin simple rationalization programs aimed at cutting costs and improving efficiencies.

However, despite these positive gains there remain some thorns among the roses. With its formation complete, the three partner companies are faced with the daunting task of combining operations. With more than 96,000 employees working in three languages, this is not expected to be an easy transition.

Despite pronouncements that there will be no job cuts, the harsh reality is that something will have to go somewhere. This is where one EADS' major stumbling blocks lies. As has been proven in defense consolidation's of the past decade, such transformations come at the cost of redundant jobs and facilities. In this case, many French jobs are expected to be targeted, since DASA has already cut employment levels through earlier restructuring efforts. The question that remains now is whether or the not the French government will

really be able deal with factory closings, especially if dictated by Munich.

In any event, EADS will be a force to be reckoned with in the years to come. As its partners come to grips with what they have created, it is expected to have some growing pains in the near future, but the long term prospects for EADS look good.

Prime Award Summary

Information unavailable.

Program Activity

Some important aerospace and government programs currently under way at Aerospatiale are listed below. The briefs are intended to provide a listing of programs that are of major importance to the company. For detailed information or analysis of specific aerospace and defense programs or equipment, please refer to the appropriate FORECAST INTERNATIONAL binder (for example, AIRCRAFT, MILITARY VEHICLES, WARSHIPS, MISSILES, ELECTRONICS, and GAS TURBINES). The following is an outline of the company's business interests:

- Aircraft
- Civil and Military Fixed-Wing Aircraft
- Civil and Military Helicopters
- Defense Electronics
- Avionics
- Radar
- Sensors
- Missiles
- Ordnance Systems
- Space Systems
- Systems Integration
- Training Systems
- Unmanned Vehicles

Aircraft Programs

Aerospatiale/Alenia ATR Series

This is a series of twin-engine regional/commuter transport aircraft developed and manufactured by Avions de Transport Regional, a joint venture of Aerospatiale and Alenia. Production of both ATR-42 and ATR-72 is currently ongoing.

Aerospatiale/SOCATA TBM 700

This is a pressurized, four- to six-passenger, single-engine, turboprop-powered, cabin-class business transport aircraft. Military applications include pilot, navigator, and EW training, and liaison duties. The TBM 700 is currently in production. Full-scale engineering development and certification flight testing were completed in the spring of 1990. Development of stretch TBM 700S model was announced in late 1994.

Airbus Industrie A300/A310/A320/A330/A340/A350/A3XX

Aerospatiale is an integral part of Airbus Industrie (GIE). This consortium consists of Aerospatiale (37.9 percent), Deutsche Airbus (37.9 percent), British Aerospace (20 percent), and CASA (4.2 percent). Belairbus of Belgium is an associate member of the consortium. Additional risk-sharing partners may be added for this particular aircraft's development. Please see the AIRBUS report located in this binder for more details.

Eurocopter AS.332/532 Super Puma/Cougar

These are Eurocopter's premier twin-engine, tactical military and commercial medium-lift transport and special-purpose helicopters, which are manufactured at Eurocopter France, Marignane, France. Sales and marketing is performed by Eurocopter International, Paris, France. Production is continuing.

Eurocopter AS.350/550

This single-turboshaft-powered, commercial and military utility helicopter is in production for domestic and international orders. Production of AS.350BA, AS.350B2, and AS.550 Fennec is ongoing. The AS.350B3 version was introduced at 1995 Paris Air Show, and is currently in development.

Eurocopter AS.355/555

The AS.355/55 series is a twin-turboshaft-powered, commercial and military utility helicopter. Production of AS.355N and AS.555UN/SN/MN/AN for foreign and domestic needs is continuing.

Eurocopter AS.365/565/EC155

The AS.365 series is a 10- to 15-seat, intermediate twin turboshaft-powered commercial and military multirole helicopter. Production is ongoing.

Eurocopter SA.341/342 Gazelle

This is one of Aerospatiale's best-known helicopter programs. These are five-seat, single-turboshaft-powered military and commercial utility and military anti-armor helicopters. Production was completed in 1991. Military missions include reconnaissance, surveillance, target acquisition and designation, light attack. Commercial uses included resource development, aerial photography and surveillance, pipeline and utility power line patrol, border patrol and drug interdiction, fishery protection, flight training, and media reporting. Upgrades of French Army Gazelles are possible if the Eurocopter Tiger is delayed significantly or canceled by its sponsoring governments.

Eurocopter Bo.105

This is a five- to seven-seat, twin-engine, single-rotor commercial and military utility helicopter. Production of the Bo.105 is centered at Donauwörth, Germany, and at Eurocopter Canada facilities in Fort Erie, Ontario, Canada.

Eurocopter EC120

This is a five-place, single-engine, advanced technology light helicopter designed for flight training; EMS; short-haul scheduled, nonscheduled, and corporate passenger transportation; environmental protection; resource development; and law enforcement. Principal military mission is pilot training. Development phase began in late 1991. First flight occurred in June 1995; certification was awarded in June 1997. Initial deliveries occurred in 1998.

Eurocopter EC135

This is an advanced technology, seven-place, commercial light twin-turbine helicopter. Civil applications include corporate and charter transportation, resource development, environmental protection, fisheries protection, border patrol, drug interdiction, general law enforcement, and EMS. The EC135 is in full-scale engineering development and flight testing. To date, Eurocopter had produced two Bo.108 demonstrators, three EC135 prototypes, and 68 production aircraft.

Eurocopter Tiger

This is an advanced-technology, twin-engine, anti-tank/attack helicopter being developed by Germany and France for all-weather, day/night primary anti-tank, ground attack, anti-helicopter, and armed escort missions. Full-scale engineering development and flight test is under way. First flight occurred in late April 1991. Development had begun in 1988. France is planning to procure 115 HAP escort and fire-support helicopters and 100 HAC anti-tank helicopters, with initial deliveries to occur in 2001. Germany is planning to purchase 212 UHU combat support helicopters, with deliveries beginning in 2002. The initial production contract, for 160 helicopters, was signed in June 1999. To date, Eurocopter has produced five Tiger prototypes.

European Future Large Aircraft (FLA)

This is another of Europe's proposed joint aircraft development programs. It is an advanced-technology, multi-engine, tactical and strategic military transport aircraft. Feasibility study phase began in October 1993 and was completed in 1995.

Falcon 50/900

Dassault Aviation, Vaucresson, France, is the prime contractor on this intercontinental-range, high-capacity, three-engine executive transport aircraft. Aerospatiale manufactures approximately 55 percent of the airframe. Production of both aircraft is under way.

High Speed Commercial Transport (HSCT)

These are government and industry supported studies of the next-generation commercial supersonic passenger transport aircraft. The US High Speed Commercial Transport (HSCT) is sponsored by both the industry and the National Aeronautics and Space Administration (NASA). European Supersonic Research Program (ESRP) is sponsored by French, British, and German industry. Japanese HSCT efforts are sponsored by industry and the Ministry of International Trade and Industry (MITI). Russian Tu-244 is sponsored by industry and the Russian government. In April 1994, a memorandum of understanding was signed by British Aerospace, Aerospatiale, and DASA regarding a future supersonic transport project. The firm's individual conceptual studies were merged into a joint program called the European Supersonic Research Program (ESRP).

Electronic Programs

NAVSTAR GPS Terminals

This is a three-dimensional (3-D) space-based navigation system that was used for the first time in combat during Operation Desert Storm in 1991. These terminals can be used for both military and commercial applications. They can equip aircraft and individual soldiers with the ability to locate their current position with extreme accuracy. Various receivers are in production and development. Contractors for the program are quite widespread, including the prime contractor Rockwell International Collins Government Avionics Division, Cedar Rapids, Iowa, USA, and subcontractors such as Elbit Computers Ltd, Ferranti International Signal, Racal Avionics Ltd, and STC plc STC Navigation Systems Division, Harlow, Essex, UK (licensed GPS airborne antennas to Collins,

Aerospatiale subcontractor for GPS receivers for French C-160 Transall Navigation Update Program).

Missile Programs

APACHE

The Arme Propulsee A Charge Ejectable (APACHE) is a modular air-to-surface weapon system. This is France's newest modular air-to-surface weapon system. The company developed this system privately after it withdrew from the cooperative NATO Modular Stand-Off Weapon (MSOW) system program. Aerospatiale Matra is the program prime. Production is under way. France expected to deliver first APACHE-AP units to its armed forces in 2001.

ARMAT

The ARMAT is essentially an improved MARTEL anti-radiation missile. Matra is the ARMAT program's prime contractor and is responsible for the missile's design and development. The ARMAT is a combat-proven system that has been used by Iraqi Mirage F1s and possibly by French aircraft during the Persian Gulf War. In eight reported engagements against Iranian MIM-23 HAWK radar sites, the Iraqi Air Force claimed seven definite kills. ARMAT has also been employed by Armée de l'Air Jaguars in Chad. The performance of the ARMAT is greatly enhanced over the AS.37 Martel; in fact, it is said to be equal to, and in some cases superior to, the AGM-88 HARM. A follow-on to the ARMAT, called Anti-Radar Futur (ARF), is under consideration for development and could be available for service in the next few years.

AS.30 Laser

This is a family of tactical air-to-surface missiles developed and manufactured for the French Air Force by Aerospatiale's Division Engins Tactiques. Production of the original AS.30 has concluded, but was followed up by the AS.30 Laser (which saw action in the Persian Gulf War against Iraq). Production continuing, but nearing its conclusion.

ASMP/ASLP

The Air-Sol Moyenne Portee (ASMP) and Air-Sol Longue Portee (ASLP) are standoff missile systems with nuclear and conventional payloads. Both missiles are developed and manufactured by Aerospatiale Missiles. Fabrication of the ASMP has concluded; the initial operating capability with the Mirage IVP was achieved in May 1986. The ASMP is to be superseded by the ASMP Plus, also called ASMP A, around the 2007-2008 time frame. Conventional versions of the ASMP have been proposed to perform anti-ship (ASMP-N), anti-radar (ASMP-R) and fixed-site attacks (ASMP-C). Aerospatiale Matra is also developing the ANF (Anti-Navires Future).

Aspide

This program includes a family of all-weather, medium-range, multirole missiles, developed by Selenia Industrie Elettroniche Associate SpA, Defense Systems Division, Rome, Italy, and Contraves Ag, Zurich, Switzerland. Selenia is developing an active radar seeker-equipped Aspide, the Aspide Mk 2, which could eventually replace the older Mk 1s. In order to reduce the amount of duplication in development efforts and to share risk, Selenia has merged its air-to-air portion of the Aspide program with the Aerospatiale/Thomson-CSF Family of Anti-Air Missile Systems (FAAMS). Fabrication of the Aspide missile is being continued to fill orders for the Albatros, Skyguard and Spada systems. Production of the initial air-to-air Aspide version has concluded. The follow-on air-to-air Aspide effort has been discontinued.

ASTER 15/ASTER 30

This is one of Aerospatiale's major new missile development efforts. The ASTER systems are designed for multiplatform air defense missions. The systems are being developed under the Eurosam consortium. Aerospatiale is responsible for development of the ASTER missile/launcher hardware. Thomson-CSF, Electronic Systems Division, Bagneux, France, is the overall system prime contractor, and will develop the dedicated Arabel H/I-band 3D phased array radar systems and fire-control equipment. Overall development of the new Famille de Systems Anti-aeriens Futurs (FSAF) will be managed by the Eurosam consortium consisting of Aerospatiale, Thomson-CSF and Alenia. The United Kingdom joined the FSAF, represented by British Aerospace Dynamics and GEC Marconi Radar Systems, and has formed UKAMS Limited to manage its part of the PAAMS project. PAAMS will be developed by the joint firm EuroPAAMS, which includes Eurosam. Full-scale development of ASTER 15/SAAM and ASTER 30/SAMP Terrestres is under way. A PAAMS full-scale development and initial production contract was officially awarded in August 1999. The United Kingdom's withdrawal from the Horizon CNGF program will not affect the development of PAAMS. Eurosam is proposing the development of an anti-missile version called ASTER 60.

ERYX

This is a new manportable short-range anti-tank missile that Aerospatiale is offering to the French Army (as well as export customers) as an alternative to unguided rockets and heavier medium-range systems. Production is under way in France, although problems with the performance of the propellant in cold weather – with the result that the missile hit short of its target – did cause some delays. These problems have been corrected, but the program is over a year behind schedule. The Eryx was accepted for service by the French Army in June 1991. Deliveries commenced in late 1991. Over 570 missiles (200 in Canada and 370 in France) have been fired during various demonstrations. Serial production commenced in October 1991, full-scale production followed in 1993. Canadian evaluations of the Eryx commenced in April 1991 and continued through February 1992. Deliveries of the first units were begun in 1994 and are continuing.

EXOCET

This is Aerospatiale's premier anti-ship missile family. Developed and produced at the Aerospatiale Tactical Missiles Division's Bourges Production Plant, Bourges, France, the Exocet is among the best known anti-ship missile systems in the world. Fabrication of the AM39, MM40 and SM39 Exocet missiles is continuing, but in their Block 2 configurations. This production includes the fabrication of new units and the remanufacture of existing systems.

HADES

This was France's next-generation land-based mobile tactical nuclear missile. The Hades was to replace the Pluton in French military service. Production has been halted, although the French government did decide to complete almost 20 missiles. Plans to dismantle the missiles and destroy their warheads have been postponed. The missiles have been placed in storage so that they can be reactivated should France become involved in a prolonged military crisis in Europe. The Hades was to be declared operational on September 1, 1991. Development work was carried out by Aerospatiale, Division des Systemes Balistiques et Spatiaux.

HOT/HOT 2/HOT 2T

As part of the Euromissile consortium, Aerospatiale has been involved in the development and production of the HOT high-subsonic, optically guided, tube-launched anti-tank missile. Additional HOT 2 missile models are in production, although orders have yet to be placed for the new HOT 2MP which is now available. HOT 2T (previously called HOT 3) is in service with the French Armed Forces. Euromissile has also introduced the HOT 3, which has the same characteristics as the HOT 2T, but will be outfitted with an anti-jamming device.

Mer-Sol Balistique Strategique (MSBS)

This is France's submarine-launched strategic missile program. Aerospatiale's Division des Systemes Balistiques et Spatiaux is the prime contractor. Production and development is continuing. The original M4 model is no longer in production, and fabrication of the upgrade variant, the M4C, has been completed. The M4 is operational; development of the missile and warhead continues. All French nuclear submarines, with the exception of *Le Redoutable*, were retrofitted with the M4 missile through 1990. France introduced a new interim system, the M45, due to delays in the M51 development program. Production has been suspended, but France's development of new sea-launched ballistic missiles continues.

MICA

The Missile d'Interception et de Combat Aerien (MICA) is a short-, medium-, and long-range air-to-air missile. The MICA is currently transitioning to full-scale production. The infrared MICA missile system is expected to be available after production of the active radar version. The MICA missile incorporates a number of different possible mission configuration options, including MICA (can be offered in a short-, medium- and long-range configuration); MICASRAAM (short-range MICA missile jointly developed by Matra and GEC-Marconi as an alternative to British Aerospace's ASRAAM); and SAMAT 1/2/3 (the Surface-to-Air MATra). SAMAT is a Matra study effort aimed at using the MICA in a surface-to-air capacity for interception of aircraft and sea-skimming missiles. Matra is rumored to be considering the development of a Super MICA, also known as MICA Mark 3, but so far no specifics are available.

MILAN

Considered a standard among manportable medium-range anti-tank missile systems, MILAN is produced by the Euromissile consortium consisting of DaimlerChrysler Aerospace and Aerospatiale. The MILAN missile system is being, or will be, offered in various configurations, including the original MILAN also known as MILAN 1; the MILAN 2, with a new larger 115 mm warhead; MILAN 2, with a multipurpose 115 mm warhead; the MILAN 2T and its new tandem warhead; and finally the MILAN 3, which offers guidance upgrades.

MILAS

The MILAS (MIssile de Lutte Anti-Sous-marine) is an ASW weapon that incorporates a missile as the launch vehicle, and a lightweight torpedo as the warhead.

MILAS is a joint program of the French company Matra and the Italian company OTO Melara, answering requirements from both the French and Italian navies for an ASW missile for use aboard destroyers, frigates and corvettes. MILAS uses the OTOMAT missile as a booster and the French Murene or the Italian A 290 lightweight torpedoes as the warhead. MILAS also is expected to be common with other lightweight torpedoes, including the A 244, Mk 46, Mk 50 and Sting Ray.

Mistral (SATCP)

The Matra Mistral is a short-range anti-aircraft missile capable of being carried by two persons and operated by one. Mistral is similar in general configuration to Swedish Ordnance/Bofors Missile Group's RBS70. Mistral was formerly known as SATCP, the French acronym meaning short-range surface-to-air missile.

OTOMAT

The OTOMAT is a multipurpose, long-range anti-ship missile. There are French and Italian OTOMAT versions of the Mk 1 and Mk 2 missiles. OTO Melara, a world leader in naval guns and missile systems, and Matra privately entered into a joint venture in 1968 to produce a first-generation anti-ship missile. The missile was labeled OTOMAT, a combination of the first three letters of the Italian (OTO) and French (MAT) corporate titles. In 1976, the OTOMAT Mk 1 became operational with the Italian Navy, where the entire system is called Teseo. The OTOMAT is in production. Production of the Mk 2 missile is expected to continue until these orders are filled. The new Matra-proposed OTOMAT Mk 3 could be available in the near future, depending on when an initial order is placed.

PARS-3/TRIGAT

This is a third-generation anti-tank missile system for medium- and long-range application on helicopters and land vehicles. The system is known as the PARS-3 (Panzerabwehr Raketensystem 3 or anti-tank rocket weapon system - third generation), but also by the British designation TRIGAT. The two missiles are designated ATGW3/MR and ATGW3/LR for Anti-Tank Guided Weapon - third-generation Medium Range and Long Range, respectively. The missiles are being developed by the Euromissile Dynamics Group (EMDG), composed of Aerospatiale, British Aerospace, and DaimlerChrysler Aerospace (formerly represented by Messerschmitt-Bolkow-Blohm). France is responsible for the development of the medium-range system, while the United Kingdom and the Federal Republic are working on the long-range variant. Full-scale engineering development continuing. Development of the medium-range variant is running ahead of the long-range variant. The TRIGAT-LR received a blow when the French decided not to buy this missile.

Polypheme

This is an air-, sea- (surface and submarine) and ground-launched fiber-optics guided missile for multiple applications. Aerospatiale Missiles and DaimlerChrysler Aerospace are cooperating in the development of Polypheme. DASA will work on the missile's imager, while Aerospatiale will concentrate on its fire/command unit and the rear portion of the missile. Italy joined the program in 1993 and will participate through the Italmissile consortium. The consortium includes OTO Melara, SNIA-BPD, and Alenia. Italy will take additional tasks not originally includes in the Franco-German accord. Specifically, Italy will work on the system's ground station and launcher (developing and testing experimental tubes). Once the Polypheme reaches its full-scale development phase, Euromissile will take over direct management. A concept study is under way. Two four-year development contracts were awarded to Aerospatiale and DASA in 1992. The development team will examine various applications, with the exception of the submarine-based model. The first flight test was conducted in July 1995, which concluded the exploratory development phase of this program. A definition phase is to be launched in mid-2001. Full-scale development would last roughly six to seven years and may commence in 2002. Funding constraints in both Germany and France will likely push any deployment date to 2006.

R.440/R.460/VT-1

These are all-weather, short-range surface-to-air missiles. The R.440/R.460 missiles were developed and produced by Matra SA. Aerospatiale and DaimlerChrysler Aerospace will manufacture the VT-1 in Europe under the Euromissile consortium. The VT-1 is in production.

R.550 (Magic 1/Magic 2)

Matra began development of the Magic series of short-range air-to-air missiles in 1968 as a private venture, aiming it specifically at the Mirage F1. The French government began funding the program in 1969. The series now includes two variants: the R.550 Magic 1 (original Magic air-to-air missile) and the R.550 Magic 2 (a greatly enhanced version of the R.550 missile that is 100 percent interchangeable with the Magic 1). The Magic 2 is in production and is operational with at least 17 air forces around the world.

PLUTON

This was France's land-mobile tactical nuclear missile. The missile was developed and manufactured by Aerospatiale, Division des Systemes Balistiques et Spatiaux. The Pluton has been withdrawn from service, a process that was completed in 1995.

ROLAND

This is a short-range, surface-to-air missile system for defense against low-level attack aircraft. Aerospatiale participates in this program through the Euromissile consortium. The Roland III is in production. Full-scale development of a new hypervelocity version of Roland, RM-5, was not commenced.

SS.12M - AS.12/AS.15TT/MM.15

These are lightweight tactical anti-ship missiles launched from seaborne or aerial platforms. Aerospatiale is program prime contractor with Thomson-CSF as the major subcontractor for the supply and integration of the Agrion 15 radar components. Production of the SS.12M/AS.12 has been completed. The serial production of the AS.15TT (Tous Temps, meaning all-weather) is under way. Delivery of an initial Saudi Arabian order for 221 missiles was completed in 1988. It is thought that firm orders are held for a further 75 missiles, but whether these are against anticipated requirements for Bahrain, Saudi Arabia, the United Arab Emirates and the Indian Navy, or for a previously undisclosed customer, is not certain. The MM.15 is being offered on the export market.

Ordnance Programs

Multiple Launch Rocket System (MLRS)

This is a tracked multiple-launch rocket system developed and manufactured by Loral Vought Systems (formerly LTV Aerospace Corporation, Missiles and Electronics Group). Aerospatiale is among the contractors for this system's production in Europe. The United Kingdom, France and the Federal Republic of Germany signed a Memorandum of Understanding with the United States in July 1979, which has resulted in the Western European coproduction of the 227 mm Multiple Launch Rocket System. Aerospatiale provides the self-propelled loader-launcher, vehicle integration and other various components.

Aimed Controlled Effect Anti-Tank Mine

The Aimed Controlled Effect Anti-Tank Mine program is a tri-national effort sponsored by the Ministries of Defense of France, Germany, and the United Kingdom. The actual contracting action is done on behalf of the three-member nations by the Direction des Armement Terrestres, a component of the French Ministry of Defense. The Aimed Controlled Effect Anti-Tank Mine is being developed and is to be manufactured by a consortium consisting of Giat Industries of France, Dynamit Nobel and Honeywell Regelsysteme of Germany, and Hunting Engineering of the United Kingdom. The Société d'Etudes, de Réalisations & d'Applications Techniques, a firm jointly held by Giat Industries and Aerospatiale, is acting as a subcontractor to Giat Industries on this program.

Space System Programs

1300

This is a communications satellite model being privately developed by Space Systems/Loral (now Loral Space & Communications). Aerospatiale is a subcontractor to Loral. Production is under way. This is a high-power satellite intended to meet current and future civilian communications requirements.

ARABSAT

Geostationary commercial telecommunications satellite developed for the Arab Satellite Communications Organization (ASCO), Riyadh, Saudi Arabia. The main contractors are Aerospatiale, Space and Strategic Systems Division, Les Mureaux Cedex, France, and Space Systems/Loral (formerly Ford Aerospace), Arlington, Virginia, USA. Aerospatiale is the prime contractor for ARABSAT 1 and 2, with Space Systems/Loral supplying the payload and ASCO components. Arabsat 1A, 1B, and 1C are in orbit, although only 1C is operational. Arabsat bought the former Anik D2 and D1 satellites in March 1993 and August 1994, respectively; however, only the D1 unit remains operational. Arabsat 3A was launched in 1999.

Ariane 4

Expendable launch vehicles derived from the Ariane 1 space booster, and developed for the French space agency Centre National d'Etudes Spatiales (CNES), Paris, France, for the European Space Agency (ESA). All Ariane space launch vehicles are produced by Arianespace, Evry, France. Companies supplying components for the Ariane family include Aerospatiale, which has provided the L-220 first stage, H-10 third stage, and the Ariane Dual Launch System (SYLDA), a carbon fiber structure used to launch two satellites. The Ariane 1, 2 and 3 are out of production. The main production version is the Ariane 4.

Ariane 5

The Ariane 5 is a European heavy lift expendable launch vehicle. Ariane 4 to Ariane 5 transition phase to run through 2010. Arianespace, Evry, France, is responsible for Ariane 5 production, marketing and operational launch services. Aerospatiale Matra is the Ariane industrial architect and also responsible for the

cryogenic main stage (EPC), solid booster stage (EAP), and Vehicle Equipment Bay (VEB).

Cassini

Cassini is a science spacecraft to explore Saturn and its moon Titan. The National Aeronautics and Space Administration, Jet Propulsion Laboratory (JPL), is responsible for the Cassini spacecraft and Titan Centaur launch vehicle. JPL is developing the Cassini spacecraft, with Aerospatiale (with partners DaimlerChrysler Aerospace and Alenia) responsible for building the Huygens Titan moon probe. Cassini will orbit Saturn and survey its atmosphere's chemical composition, temperature, winds, and other features. The spacecraft's Huygens probe will descend to the surface of the Saturn's moon, Titan, to conduct in-situ physical and chemical analyses of its methane-rich, nitrogen atmosphere. The Cassini spacecraft will use its radar to map most of Titan's surface. The spacecraft will orbit Saturn for four years beginning in June 2004.

CBERS

The China/Brazil Earth Resources Satellite (CBERS) is a remote sensing spacecraft. Brazil's Instituto Nacional de Pesquisas Espaciais (National Institute for Space Research, INPE), Sao Jose dos Campos, Sao Paulo, is responsible for development of the CBERS satellite structure, power supply, TT&C, electrical ground support equipment and assembly. The Chinese Xian Institute of Space Radio Technology, Xian, Shaanxi Province, is supplying the CBERS 1 and 2 spacecraft's CCD imaging sensors, while Aerospatiale of France will be responsible for optical imaging systems on two follow-on satellites. China Great Wall Industry Corporation, Beijing, will provide the Long March 4 (CZ-4) expendable launch vehicles. CBERS-1 was launched in October 1999.

Columbus Laboratory

The Columbus Laboratory is a European science laboratory that will be attached to the International Space Station Alpha. DaimlerChrysler Aerospace's Space Infrastructure Division is developing and producing the Columbus Laboratory and will support it under a $838 million fixed-price contract. Alenia Aerospazio is responsible for definition, development and pre-integration of the complete thermo-mechanical part of the Columbus Laboratory system, called the PICA. Alenia Aerospazio has selected Aerospatiale to build the meteoroid-debris protection subsystem for the Columbus Laboratory. The Columbus Laboratory is in the development phase; Alenia Aerospazio is scheduled to ship the Columbus Laboratory module to DaimlerChrysler Aerospace in 2000 for completion. The laboratory is scheduled for launch on a Space Shuttle orbiter in late 2004.

DBS-TV

Direct Broadcast Satellite Television (DBS) systems allow TV signals to be broadcast directly from a satellite to a home receiver without the intermediary of a local TV station or cable system. Companies involved in DBS-TV satellite manufacturing include Lockheed Martin Astro Space, Princeton, New Jersey; Space Systems/Loral, Newport Beach, California; Hughes Aircraft, El Segundo, California; Orbital Science Corp's Germantown Operations, Germantown, Maryland; International Technologies, McLean, Virginia; Intraspace Corp, Salt Lake City, Utah; Eurosatellite GmbH, Munich, Germany; and Matra Marconi Space, France. There are approximately 25 proposed or operational DBS-TV systems.

DRS/Artemis

The Data Relay Satellite (DRS) is a civilian communications satellite which will provide high-capacity data relay services for European Space Agency (ESA) members. Artemis (Advanced Relay and Technology Mission Satellite) will carry experimental payloads to demonstrate new technologies and services. The laser optics portion of the Semiconductor Intersatellite Link Experiment (SILEX) is being developed for Artemis by Matra Marconi Space. The first satellite, DRS-1, launched in 1999. Work on DRS Phase 1 (system definition, and predevelopment of certain platform and payload equipment) is currently on hold, pending a solution to the Artemis funding dilemma and clarification of the option to be pursued in Phase 2 (system development).

EUTELSAT

This is a European commercial communications satellite system sponsored by EUTELSAT (European Telecommunications Satellite Organization) for the European Broadcast Union (EBU). Prime contractor for the EUTELSAT II satellite (Spacebus 1000 bus) is Aerospatiale. Seven EUTELSAT satellites are currently operational. Aerospatiale is supplying the Spacebus 3000 bus for the Eutelsat 3 program. Working with the French aerospace manufacturer is DaimlerChrysler Aerospace, which is building the satellite frame, and Space Systems/Loral, responsible for the communications payload. Each Eutelsat 3 satellite is designed to operate for 12 years. The Eutelsat system provides regional telecommunications in Europe: full-time transponder leases, telephony, occasional TV, VSAT, direct-to-home television and land-mobile communications by way of the Euteltracs system.

ESA Polar Platform

The European Space Agency (ESA) Polar Platform program is developing a series of Earth resources

satellites. Matra Marconi Space is the prime contractor for the Envisat-1 spacecraft, which will use the Polar Platform bus, and the advanced synthetic aperture radar (ASAR) design. Other contractors include Alenio Spazio (radar altimeter); Sira (analog processing unit for the medium resolution imaging spectrometer [MERIS]) and global ozone monitoring by occultation of stars (GOMOS); Aerospatiale (lead contractor for IASI infrared atmospheric sounding instrument and MERIS); Dornier (MERIS prime contractor); UK Rutherford Appleton Laboratory (advanced along-track scanning radiometer (AATSR) development); Logica (prime contractor for Envisat-1 ground segment); and Lockheed Sanders (high-capacity tape recorders). Envisat-1 is scheduled for launch in mid-2001, while Metop-1 will ride into low-Earth orbit in 2003.

Eurostar

Eurostar is a medium-weight, high-output telecommunications platform produced by Satcom International. Satcom International is a joint company consisting of British Aerospace plc, Space & Communications Division, Stevenage, Herts, England, and Matra Marconi Space, Matra Espace, Paris, France. Approximately 14 Eurostar satellites have been produced to date. The satellite remains in production.

Globalstar

Globalstar is a satellite-based mobile communications system. Loral Space & Communications, Palo Alto, California, is responsible for development of the Globalstar satellite bus. TESAM, a joint venture between France Telecom and Alcatel, will be an owner and exclusive franchise operator for Globalstar in France. Other contractors involved in the Globalstar venture include Alcatel (communications payloads); Alenia Spazio (investor in the project and providing the Globalstar active antennas and integrating the satellite's payload and skeletal structure); DaimlerChrysler Aerospace (solar arrays and propulsion and attitude systems); Aerospatiale Matra (56 structures for the Globalstar satellites and part of the thermal control system); Raytheon (transmit and receive modules); and Qualcomm (Globalstar handsets and ground control stations). Globalstar commercial operations began in late 1999.

Helios

Military imaging reconnaissance satellite being developed for the Delegation Generale pour l'Armement/Direction des Engins (DGA/DEN - Executive program management) and Centre National d'Etudes Spatiales (CNES - overall responsibility for systems and spacecraft architecture). The Helios program is a cooperative venture among France (79 percent), Italy (14 percent) and Spain (7 percent), with Matra Marconi Space, Paris, France, in charge of the spacecraft and processing center. Companies working with Matra on the project include SAT Control and Aerospatiale; Alenia and ISC Laben; and INTA, Sener, Inisel and Telefonica. The French Ministry of Defense is procuring two Helios 1 satellites, the first of which was launched aboard an Ariane 4 expendable launch vehicle in 1995 and the second in 1999. The first Helios 2 satellite is slated for launch in 2003, with the second unit expected to be available in 2004.

Inmarsat

The Inmarsat system is a constellation of telecommunications satellites. The Inmarsat satellite system provides phone, fax, telex, data, and compressed video to customers aboard ships, yachts, cruise vessels, oil-drilling rigs, commercial aircraft, automobiles and trucks. Inmarsat 2 was produced by Satcom International, Paris, France. It is currently operational. Satcom is a joint company consisting of British Aerospace plc, Space & Communications Division, Stevenage, Herts, England, and Matra Marconi Space, Paris, France. Additional contractors include Hughes Aircraft Co of the United States, Matra of France, Fokker of the Netherlands, Spar of Canada, NEC of Japan and MBB of Germany. The Inmarsat 3 satellite is being developed by Lockheed Martin Corp, Princeton, NJ, with Matra Marconi Space providing the communications payload. The first Inmarsat 3 satellite was launched in 1996.

International Space Station

The International Space Station (ISS) is an orbiting crewed research and work center. Aerospatiale Matra is working on the ATV; CRV study; and Columbus meteoroid/debris protection under this program.

ISO

Infrared astronomy satellite for the European Space Agency. Aerospatiale, Division Systems Balistiques & Spatiaux, Cannes-la-Bocca, France, is the ISO prime contractor and is responsible for design/development of the telescope equipment. The ISO was launched aboard an Ariane rocket in November 1995. The satellite was switched off in May 1998. A follow-on to ISO, called FIRST, is scheduled for launch on an Ariane 5 booster in 2007.

Italsat

Italsat is a three-axis stabilized domestic telecommunications satellite that forms the space-based portion of the Italian Space Agency's Advanced Satellite Communications System. Alenia is prime contractor for the satellite and related ground stations. Aerospatiale, which provides the feed systems, is among the major subcontractors. Italsat F1 was

launched aboard an Ariane 44L booster January 15, 1991. Italsat F2 followed on a 44L in 1996.

Meteosat

A family of geosynchronous meteorological satellites. The European Meteorological Satellite Organization (EUMETSAT) is sponsoring this program. EUMETSAT members' contribution to the METEOSAT Operational Program (MOP) are as follows: France, Italy, the UK and Germany together pay 80.75 percent of the MOP budget; Belgium, the Netherlands, Spain and Switzerland together pay 15.67 percent; and Denmark, Finland, Greece, Ireland, Norway, Portugal, Sweden and Turkey together contribute 3.57 percent. Aerospatiale, Space and Ballistic Systems Division, is METEOSAT prime contractor, responsible for system AIT and development of mutation dampers (with Onera), and head of the COSMOS industrial consortium, which comprises MBB (structure, thermal controls and solar array), ETCA (power supply and conditioning), Marconi Space Systems Ltd (AOCS, EGSE, radiometers and amplifier equipment), SAT (telemetry equipment and solar cells), Selenia (data transmission equipment) and Siemens (S/UHF transponders). Follow-on generation to begin service in 2000.

Skylark

This is a family of one-, two-, and three-stage sounding rockets. Skylark sounding rockets are used to perform suborbital microgravity experiments. Applications include crystal growth, biotechnology and the melting of metals. Depending on payload mass, Skylark sounding rockets can provide up to 21 minutes of weightlessness. The rockets are also useful for studies in astrophysics and geophysics. More than 430 rockets have been produced to date.

Skynet

Skynet is a military communications satellite used by the United Kingdom Ministry of Defense. The Skynet satellite communications network is designed to link UK defense forces around the world. Skynets 4A and 4B are equipped with EHF, SHF and UHF receiver payloads. Matra Marconi Space, Portsmouth, Hants, England, is the prime contractor. Fokker Space & Systems BV and TRW are jointly providing the solar panels for Skynet 4D and 4E. Skynet 4D was launched aboard a Delta II rocket in January 1998, while Skynet 4E was launched aboard an Ariane 4 in February 1999. Skynet 4F is slated for launch in 1999.

SPOT

SPOT satellites are a series of remote sensing spacecraft deployed in low-Earth polar orbit. The SPOT series of satellites is proving to be quite successful, following the launch of the first SPOT in 1986. SPOT 2, the second SPOT series satellite, was launched in 1989. Both systems continue to operate and provide agricultural and crop data. SPOT 3 was launched in September 1993. SPOT 4 was launched in March 1998. A SPOT 5 spacecraft could be launched in 1999.

Spacebus Series

This is a family of communications satellite models being provided developed by Eurosatellite GmbH. Eurosatellite GmbH is located in Munich, Germany. Prime contractor for the EUTELSAT II satellite (Spacebus 1000 bus) is Aerospatiale. The Spacebus satellite series is intended for use in telephone/data communications and direct broadcast television. Spacebus 1000 and 3000 are in production.

Spacelab

Spacelab is a manned orbital scientific laboratory developed for the European Space Agency and National Aeronautics and Space Administration. The prime contractor for this program is MBB-ERNO Raumfahrttechnik GmbH, Space Systems Group, which is now part of DaimlerChrysler's Aerospace (DASA), Bremen, Germany. MBB-ERNO is responsible for overall system design and testing. Aerospatiale, which provides the cryostat, is among the major contractors. The Spacelab is in operational use.

Stentor

Stentor is an experimental French communications satellite. CNES, the French space agency, is the prime sponsor for Stentor, with additional support coming from state-owned French Telecom. Aerospatiale, Alcatel and Matra Marconi Space are sharing in the development and production of the Stentor satellite. Société Européenne de Propulsion (SEP) is developing the spacecraft's electric propulsion system, while SAFT is supplying new lightweight batteries. Stentor is slated for launch aboard an Ariane 5 booster in 2000.

Tele-X/Sirius

Tele-X is a Scandinavian data, telecommunications, and direct TV broadcasting satellite. Tele-X and Sirius-1 (formerly Marcopolo) are operational. Sirius-2, based on the Spacebus 3000, is being built by Aerospatiale.

Telecom 1/2

Telecom 1/2 are French domestic telecommunications satellites. Major contractors are Matra Marconi Space NV, Matra Espace SA, Velizy, France (prime contractor), and Alcatel Espace, Courbevoie, France (communications payload). Aerospatiale is providing the solar arrays and thermal equipment.

Topex/Poseidon

Topex/Poseidon, the Ocean Topography Experiment, is a joint French/NASA oceanographic program to study the surface topography and other physical characteristics of the global oceans. It maps the circulation of the world's oceans in conjunction with major international experiments in oceanography. Topex/Poseidon was launched aboard an Ariane 42P expendable launch vehicle on August 10, 1992. Program officials expect the satellite to operate until at least 1999. Centre Nationale d'Études Spatiales (CNES) tapped Aerospatiale in May 1996 to build the Topex/Poseidon Follow-on, which will use the Proteus satellite platform.

Unmanned Vehicle Programs

BREVEL

The BREVEL is a reconnaissance drone developed by Eurodrone GIE (Groupement d'Interet Economique), a joint venture company established in 1989 involving Matra and STN Atlas Elektronik GmbH. It is a private development effort, although it will fulfill national requirements within France and Germany. The German Ministry of Defense is supporting both the PAD and BREVEL development efforts, while the French Defense Ministry is supporting only the BREVEL program. The BREVEL (KZO/ALT variants) has received the development go-ahead from Germany and France. Germany placed BREVEL order in late 1998; could receive 80 BREVEL air vehicles as part of this contract. France could make a decision on procurement in 2000.

C.22

This is a variable-speed recoverable subsonic target drone developed and manufactured by Aerospatiale. This subsonic target drone is equipped with a towed target for the training of anti-aircraft gun crews and ground-to-air missile batteries (including Roland, HAWK, Crotale/Shahine and other missile systems). Additionally, air forces can employ short- and medium-range air-to-air missiles to refine guidance technology, along with aerial gunnery skills. Full-scale fabrication of the production variant began in 1990. The current variant is in operation at the French Landes Test Center (CEL). Over the long term, the company could develop a ground- and sea-launched cruise missile based on the C.22.

CL-89/289

These are airborne battlefield surveillance remotely piloted vehicles developed and manufactured by Canadair of Canada, a subsidiary of Bombardier Incorporated. The CL-289 was a joint development effort between Canadair and Dornier of the Federal Republic of Germany, with collaboration from French contractors (such as Aerospatiale). Production of the CL-289 has commenced for French and German needs.

CT.20/R.20

These are French target and reconnaissance drones developed by Aerospatiale. CT.20/R.20 will eventually be superseded by the new C.22 target drones; production of these systems (CT.20/R.20) has been completed.

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