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Curtains go up on Aero India 2009



By Air Marshal (Retd) B.K. Pandey

The seventh edition of Aero India, a five-day event organised by the Ministry of Defence takes off today, February 11. It will be flagged off by A.K. Antony, the Indian Defence Minister. Air Force Station Yelahanka, Bangalore is all decked up to host this prestigious international event which is being managed by the Confederation of Indian Industry (CII), and is supported by the Government of Karnataka. The show will bring together at the venue nearly 600 exhibitors. Armament manufacturers from several countries, including the US, the UK, Russia, France, Germany, Italy, Israel, Belgium, Brazil, Spain, Ukraine and The Netherlands are participating in this mega event.

Aero India will include both flying and static displays of a wide range of military and civil aircraft from aerospace majors and a wide range of related industries from across the world. Visitors to the air show would have the oppor-

Continued on page 2



"It is a matter of pride that Aero India, Asia's premier event in the aviation sector has gained worldwide recognition in the short span since its inception in 1996."
A.K. Antony, Defence Minister of India

ROMANIA

TOGETHER INTO THE FUTURE



You are welcome at AERO INDIA "Asia's Premier Air Show" to find out the latest technologies presented by the Romanian companies. VISIT US between 11st - 15th February 2009, in Hall A1, Air Force Station Yelahanka, Bengaluru.

Day 1, Wednesday, 11 February 2009		Day 2, Thursday, 12 February (Entry from 0900 hrs)	
1000 – 1200 hrs	Inauguration of Aero India 2009 at Air Force Station, Yelahanka (AFSY) (entry by invitation only)	1000 – 1700 hrs	Structured Aero India 2009 B2B meeting, – DHRUV Pavilion, INAUGURAL AREA
1315 – 1345 hrs	Inaugural Press Conference, Air Force Station, Yelahanka (AFSY) (entry by invitation only)	1000 – 1700 hrs	Exhibitors' Press Conferences, Press Centre, Hall E, AFSY
1430 - 1700 hrs	Structured Aero India B2B meetings – DHRUV Pavilion, INAUGURAL AREA	1000 – 1200 hrs	Flight Display
1400 – 1700 hrs	Show open for Business visitors	1100 hrs	Press Conference by Chief of Air Staff
1430 – 1630 hrs	Flight Display	1230 hrs	Reception hosted by German Embassy & BDLI at German Pavilion, Hall C, Stand 26.1 (Entry by invitation only).
1400 – 1700 hrs	Exhibitors' Press Conferences, Press Centre, Hall E, AFSY	1430 – 1630 hrs	Flight Display
1430 hrs	Demonstration flight of MiG-35, and Presentation (Briefing) at Static Chalet	1500 hrs	Session on Indo German Cooperation in Defence, DHRUV Pavilion, INAUGURAL AREA
1930 hrs	Reception by Secretary (Defence Production) at Hotel Taj Westend (entry by invitation only)	2000 hrs	Dinner hosted by Hindustan Aeronautics Ltd at Hotel Lalit Ashok (Entry by invitation only)
2030 hrs	Dinner by Hon'ble Defence Minister, Govt of India at Hotel Taj Westend (entry by invitation only)		
Day 3, Friday, 13 February (Entry from 0900 hrs)		Day 4, Saturday, 14 February (Entry starts 0900 hrs)	
1000 – 1700 hrs	Structured Aero India B2B meeting – DHRUV Pavilion, INAUGURAL AREA	1000 – 1700 hrs	Structured Aero India 2009 B2B meeting – DHRUV Pavilion, INAUGURAL AREA
1000 – 1700 hrs	Exhibitors' Press Conferences, Press Centre, Hall E, AFSY	1000 – 1700 hrs	Exhibitors' Press Conferences, Press Centre, Hall E, AFSY
1000 – 1200 hrs	Flight Display	1000 – 1200	Flight Display
1430 – 1630 hrs	Flight Display	1430 – 1630 hrs	Flight Display
Day 5, Sunday, 15 February (Entry from 0900 hrs)			
1000 – 1700 hrs	Structured Aero India 2009 B2B meeting – DHRUV Pavilion, INAUGURAL AREA		
1000 – 1700hrs	Exhibitors' Press Conferences, Press Centre, Hall E, AFSY		
1000 – 1200 hrs	Flight Display		
1430 – 1630 hrs	Flight Display		

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SP GUIDE PUBLICATIONS

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Curtains go up on Aero India 2009...Continued from page 1

tunity to witness flying displays by the leading combat aircraft in the world such as the Lockheed Martin F-16IN Super Viper, Boeing F/A-18 Super Hornet, the Eurofighter Typhoon and the Russian MiG-35D. Lockheed Martin will also display the C-130J, Super Hercules, recently contracted by India for Special Operations. The Light Combat Aircraft Tejas, the Advanced Jet Trainer Hawk and the Advanced Light Helicopter Dhruv will showcase the achievements of Hindustan Aeronautics Limited. The colourful nine aircraft formation aerobatic team and the three helicopter team Sarang, both of the Indian Air Force, will enthrall the audience every day.

In the business jet segment, apart from others, Embraer will have on display a range of aircraft such as the Phenom 100, the Phenom 300, Legacy 600 and the Lineage 1000. Cessna will showcase its Citation XLS model.

Aero India will draw the spotlight on the aerospace industry of India and the world. Serving as a platform for interaction between the industry and potential customers, it paves the way for joint ventures, partnerships and other

forms of collaborative effort. India has opened up its defence sector to foreign direct investment, affording new and exciting opportunities. The armed forces of India are also in the midst of a major modernisation plan that will include massive re-equipment and upgrades.

The civil aviation sector has also been growing rapidly over the last four years, and despite the current, slowdown, holds promise for the future. Aero India 2009 will provide an ideal window of opportunity for companies to not only network with the Indian industry but also to benefit from the sharing of expertise in the fields of R&D production and product support with other global players.

Aero India 2009 will showcase the latest in the field of military and civil aircraft, vital components for aircraft engines, avionics systems and sub-systems, airfield radars and new age technologies used in the defence sector. For the first time in its brief history, Aero India will witness participation by China who will have a 10-member delegation led by its Deputy Chief of Air Staff. •



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MRJ



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SELEX Galileo: The Seaspray family

SELEX Galileo, a Finmeccanica Company, will showcase its world-class capabilities in Surveillance, Electronic Warfare, Electro-Optics and Naval Systems at the Aero India 2009 air show in Bangalore. At the event SELEX Galileo will actively promote its new partnerships with local industry players in the region in line with Finmeccanica's commitment.

A leading company in the field of advanced surveillance solutions, SELEX Galileo an extensive product portfolio and exceptional capability in developing systems tailored to the client's needs. The company's ATOS, Airborne Tactical Observation and Surveillance System has been sold to customers worldwide with more than 40 systems installed, or in process to be installed, on an a broad range of platforms. The company's cutting edge Active Electronically Scanned Array (AESA) Radar technology, the Seaspray family, has been selected by the UK Royal Navy, US Coast Guard, Italian Air Force and Ecuadorean Navy.

In surveillance, the Company provides complete UAV solutions and has more than 60 years of experience in this field. A recent service contract for the Mirach 100/5 for use at the Integrated Test Range (ITR) of the Indian Ministry of Defence achieved positive results and SELEX Galileo is

now pursuing the opportunity to sell complete target drone systems.

Additionally, as a world player in the development, manufacture and integration of advanced self-protection and countermeasure systems, SELEX Galileo has achieved success with Boeing Integrated Defence Systems for the installation of its Aircraft Gateway Processor (AGP) on board the all of the US Army's extended Block II Apache Longbow helicopters; with AgustaWestland, also a Finmeccanica company, and the UK's Royal Navy in the Future Lynx programme; and with its strong presence in the Eurofighter Typhoon programme, all of which position the Company well to deliver a high level of protection for both rotary and fixed wing platforms.

In Electro-Optics, SELEX Galileo strongly values partnerships and is actively working with Indian Industry to assist in the development and support of its Infra Red products.

In recent years, SELEX Galileo was awarded a contract to supply the Precision Approach Radar 2080 C to the Indian Navy for their Goa Naval base and the same PAR is operating at the Indian Air Force's bases. SELEX Galileo's contract with the Indian Air Force foresees the supply of 17 PAR systems. •



Lufthansa Technik: A force to reckon with

Lufthansa Technik is an approved MRO facility; it is approved as a design agency and even holds a manufacturer approval. The company offers innovative products for commercial and VIP aircraft and invests in latest technology, besides holding a most modern product portfolio. Recently, capabilities have been developed for Airbus A380, Boeing 747-8, Boeing 787 and Embraer Regional Jets.

Lufthansa Technik has numerous customers in Asia and also on the Indian subcontinent. Among others, these are Kingfisher, Jet Airways and Indian Airlines. The maintenance, repair and overhaul (MRO) volume of the Indian market persistently gains weight in Asia. We offer a full assortment of MRO services through our worldwide group network. We have 29 MRO facilities around the world. Among

these, we have two in China, one in the Philippines and one in Malaysia.

Lufthansa Technik has a strong commitment towards the Indian market and has established considerable customer base in the country. In addition, we have the company Lufthansa Technik India Services located in Bangalore. The company provides regional supply of aircraft components for Indian customers and customer service. Further, it offers airframe related components lease, technical training and logistics. The company will expand its services in the region as the market demands.

As already mentioned, we expect the Indian civil aviation market to grow further, even though we might see a period of reduced growth or even stagnation during the financial crisis. In the medium term, it will return to growth. •

WHO SAID WHAT



"We seek to obtain the best and latest equipment and utilize our innate capability to modify, improvise and integrate them to obtain world class products."
—Air Chief Marshal F.H. Major, CAS



"Reconnaissance and Surveillance Helicopters will replace the existing fleet of Cheetah/Chetak helicopters. While some helicopters will be procured as 'Buy' category, others will be 'Designed and Developed' by the Hindustan Aeronautics Limited as 'Make' category."
—Major General Ajit Hari Gadre, ADGAAC



"Plans are afoot to expand the naval aviation capability commensurate with the increased responsibilities in the Indian Ocean Region that we share with the international community. We have identified areas where we need to supplement our capabilities or seek newer capabilities."
—Rear Admiral S. Vadgaokar, Assistant Chief of Naval Staff (Air)



"The Technical Evaluation of MMRCA is almost in the final stages of being completed and the acquisition process is on schedule. We have plans to commence flight evaluations this summer with the entire process being completed by the year-end."
—Air Marshal N.A.K. Browne, DCAS

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is Lufthansa Technik Total Support.**

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In 1993, we had the vision of a completely integrated service portfolio. Our goal was to relieve airlines of the burden of maintenance as much as possible to enable them to concentrate on their core tasks.

We called this vision Total Technical Support, or TTS[®]. Today, it's clear: with this step, Lufthansa Technik wrote a new chapter in the history of aircraft maintenance.

Meanwhile, our vision has grown to become a service portfolio that is successful all over the world.

As early as 2005, we signed a contract for the 1000th aircraft to be maintained under Total Support. And now we're adding even more value to the original—with Technical Operations Management (TOM) for fleet and contract management, a service that

makes us a genuine strategic partner to our customer airlines. You see, we can make even "total" more complete! Interested? Let's talk about it.

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Lufthansa Technik

Alenia Aeronautica C-27J

Alenia Aeronautica, a Finmeccanica company, develops its role as global aeronautical player active in the military and civil markets. The company is continuously increasing its ability to design, build, integrate and support complex systems and by grasping the opportunities for selective partnerships offered by evolving scenarios and growing markets. The Alenia Aeronautica product portfolio includes proprietary products like the C-27J, the only true modern tactical airlifter available today worldwide, or the ATR42MP and ATR72ASW, special mission aircraft developed for maritime patrol roles. The company also plays key roles in world-class programmes like Eurofighter Typhoon, the F-35 Joint Strike Fighter and the Neuron European UCAV demonstrator. It also plays leading roles in commercial aircraft, designing and building advanced aerostructures for state-of-the-art airliners including the Airbus A380 and Boeing 787 Dreamliner.

C-27J

The C-27J twin turboprop is the only medium tactical airlifter flying today designed to truly military specifications. In June 2007, it won the US Air Force/US Army Joint Cargo Aircraft competition. It has been sold to



ON A MISSION: C-27J IS THE ONLY TRUE MODERN TACTICAL AIRLIFTER AVAILABLE WORLDWIDE

four other NATO countries and is a leading candidate in several export markets.

The success in the US Army and US Air Force joint cargo aircraft confirms the C-27J as the only true, modern and effective tactical airlifter available anywhere in the world. Italy, Greece, Lithuania, Bulgaria and Romania have already ordered 39 state-of-the-art Spartans and are exploiting their ability to deliver top performance in every condition.

Spartan offers ruggedness, survivability, threat avoidance capabilities, reliability and manoeuvrability. Excellent handling, advanced systems and superior safety levels further enhance the C-27J operational capability.

The C-27J has the largest cargo box in its category and a wide fuselage cross-section that accommodates military vehicles, over 11 tonnes of payload, 60 troops or 46 paratroopers.

Mission-critical features include three-spar wing, 3 g manoeuvrability, 2.5g sustained rate at 180 knots, redundant and segregated systems, cockpit visibility. The Spartan operates easily from short and rough airstrips in remote areas, independently from external support thanks to its internal auxiliary power unit. •

Alenia Aeronautica Maritime Patrol

“Indian Navy and Indian Coast Guard are looking for a new medium-range aircraft and there is only one real cost-effective solution that can offer the added value of state-of-the-art technology, operational effectiveness and a common platform for an efficient technical support, training and logistics: the ATR family,” Marco Boni, International Sales, India Area Manager at Alenia Aeronautica explains.

“The ATR72 ASW and ATR42 MP, the first for the sea warfare requirements of the Navy and the last for the maritime patrol requirements of the Coast Guard, have better endurance, much better hot and high performances, higher speed and must not bear the heavy burden of a useless rear ramp that other possible contenders have. They are more suitable for the typical low-level, long, all-weather, maritime patrol missions than their competitors, some of which are derived from regional jets or business jets, with their long and thin wings optimised for high-level, fast, cruise flights. They are only marginally slower than a jet on the typical operational profile (five minutes out of a one-hour trip when operating at 200 NM from the base) but much more—up to 40 per cent—fuel efficient. And, last but not least, the ATR are “combat proven”. Italian Coast Guard and Italian Guardia di Finanza have seven aircraft in service since some years, routinely performing border control and protection

tasks and with an excellent record in operational missions against smugglers and illegal immigration.”

Recently, Italian Air Force has ordered four examples of a new aircraft version: the ATR72 MP, with an up-to-date mission system based on an advanced E-scan radar as the SELEX Galileo Sea Spray, already in service with the US Coast Guard’s Hercules.

The ATR72 ASW, the ATR72 MP and ATR42 MP are all variants of the next-generation ATR-600 family (recently launched by ATR, including glass cockpit, uprated engines, better hot and high performances, increased MTOW and payload), specifically developed by Alenia Aeronautica to be an operationally flexible military platform and to perform a wide range of missions. In India, there are about 100 ATR regional aircraft in service with Indian air transport carriers.

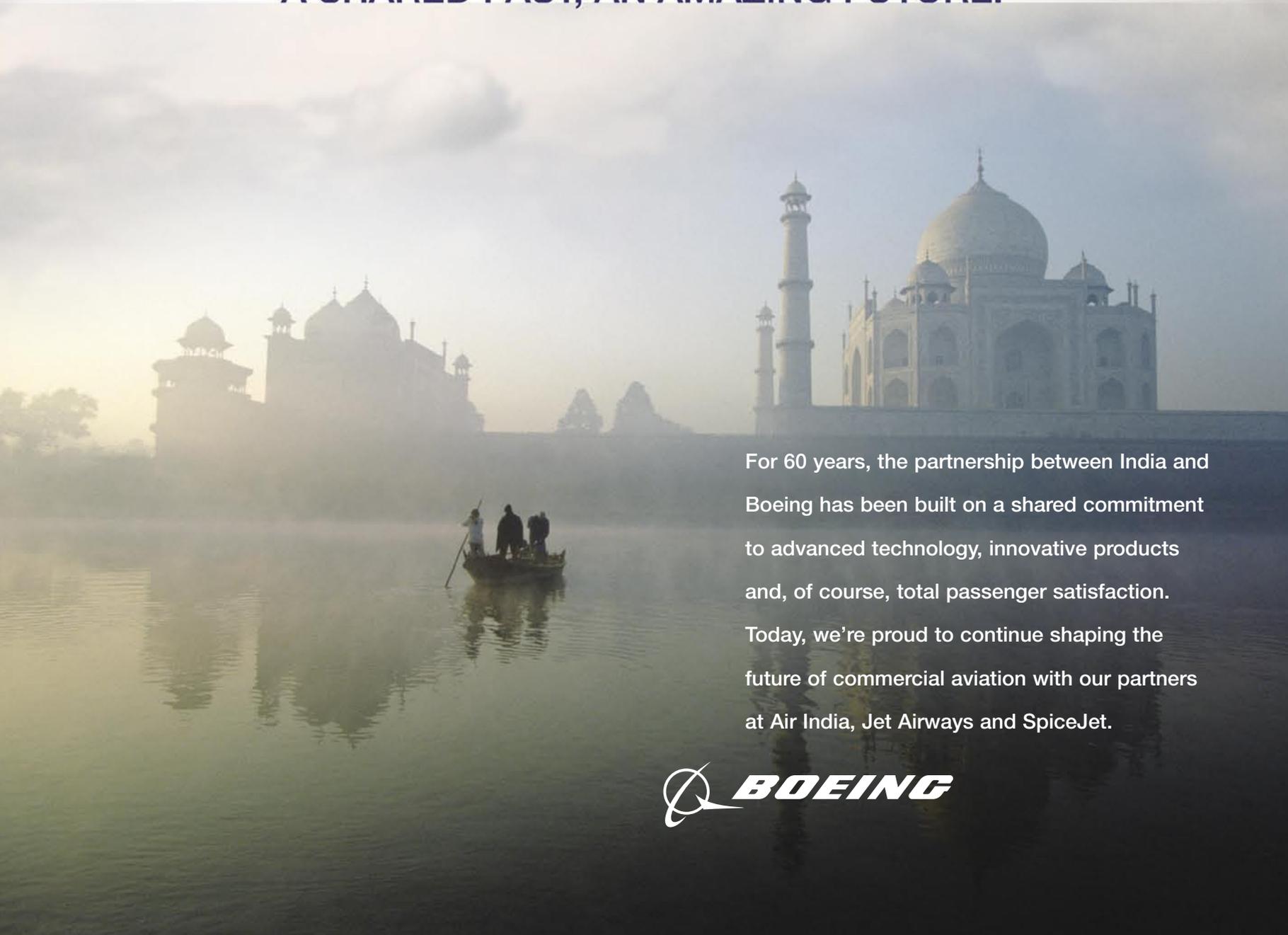
The Indian Navy and the Indian Coast Guard are planning to completely renew their land-based maritime patrol assets. The recently-ordered P-8 Poseidon for the long-range anti-submarine and anti-ship tasks, but the available fleet of small and old HAL-built Dornier Do-228s and the surviving Britten-Norman BN-2 Defenders, able to do short-range surveillance tasks only, are quickly becoming inadequate to cope with the current and emerging needs in this arena. •



FOR WARFARE & PATROLLING: ATR72 ASW AND ATR42 MP HAVE BECOME ESSENTIALS FOR BOTH NAVY AND THE COAST GUARD



A SHARED PAST, AN AMAZING FUTURE.



For 60 years, the partnership between India and Boeing has been built on a shared commitment to advanced technology, innovative products and, of course, total passenger satisfaction. Today, we're proud to continue shaping the future of commercial aviation with our partners at Air India, Jet Airways and SpiceJet.

 **BOEING**

Live the Eurofighter dream



The cockpit of the Eurofighter Typhoon is unique: Eurofighter Typhoon pilots benefit from one of the most advanced cockpit environments ever developed. The most advanced fighter cockpits are dominated by large multi-function display screens with a Head-Up Display (HUD) and throttle controls and stick covered by control switches and buttons. However, there is much more to a fighter cockpit. The Human-Machine Interface (HMI) is of critical importance and Eurofighter Typhoon designers have combined the following elements:

- HUD—the bigger the better
- Active Matrix LC Displays make the difference
- HMI for optimum awareness
- Voice Control plus HOTAS: the ease of flying
- A helmet to look over your shoulder •



Boeing C-17

The most cost effective and best-suited military aircraft for strategic airlift is the Boeing-built C-17 Globemaster III, the workhorse of the U.S. Air Force since 1995. Because of its versatility, reliability and high-mission capability rates, the C-17 has become the airlifter of choice for the Royal Air Force, the Royal Australian Air Force, the Canadian Forces and, recently, NATO and Qatar.

The C-17 can take off and land on runways as short as 3,500 feet and only 90 feet wide. Even on such narrow runways, the C-17 can turn around using a three-point star turn and its backing capability. On the ground, a fully-loaded aircraft, using engine reversers, can back up a 2 per cent slope. A key feature of the C-17 is that it is the only platform available that can support a large military or humanitarian operation on austere landing sites in a timely manner.

Maximum payload capacity of the C-17 is 1,70,900 pounds, and its maximum gross takeoff weight is 5,85,000 pounds. With a maximum payload and an initial cruise altitude of 28,000 feet, the C-17 has an unrefueled range of approximately 2,400 nautical miles. The C-17 is also designed to airdrop 102 paratroopers and equipment.

It is operated by a crew of three—pilot, copilot and loadmaster—reducing manpower requirements, risk exposure and long-term operating costs. Cargo is loaded onto the C-17 through a large aft door that accommodates military vehicles and palletized cargo. In the cargo compartment, the C-17 can carry Army-wheeled vehicles in two side-by-side rows.

The C-17 forms the backbone of international airlift missions, supporting numerous contingency, humanitarian relief and peacekeeping efforts around the world. Its versatility has allowed it to excel in both inter-and intra-theater operations as well. High reliability and operational flexibility are key attributes that have made the C-17 the airlifter of choice for the U.S. and its allies.

Significant upgrade modifications have been made since the C-17 was first rolled out, including an extended range and software to improvements to the Aerial Delivery System and communications architecture. Defensive Systems and an Electronic Flight Control System and a Formation Flight System have also been added. The support infrastructure for the C-17 is in operation worldwide, and participation in the C-17 global support programme provides for significant cost savings.

Today, the C-17 supports troops fighting terrorism in Afghanistan and Iraq and those responding to humanitarian disasters globally. The C-17 brought supplies to thousands impacted by Hurricane Katrina, and aided victims in storm-ravaged Myanmar and to earthquake victims in China in May 2008.

In August, Canadian C-17s helped evacuate residents of New Orleans as hurricane Gustav approached. In September, C-17s provided humanitarian aid to the Republic of Georgia.

Since first flight in 1991, the fleet has amassed more than 1.5 million flying hours. Worldwide, there are nearly 200 C-17s in service, most of them with the U.S. Air Force. Internationally, the RAF has received six C-17s, and the Royal Australian Air Force and Canadian Defence Forces have each received four. •

Boeing's Success



BY CHRIS CHADWICK AND
VIVEK LALL

The Indian Navy recently announced the purchase of eight new Boeing maritime patrol aircraft, known by the designation of P-8I (I is for India). Our company is pleased and honored by this vote of confidence in Boeing. Throughout the year-long negotiations, both sides worked diligently to bring India the most advanced anti-submarine and anti-surface warfare weapon system in the world today. ,

The P-8I is a uniquely Indian derivative of the new P-8A Poseidon designed for the U.S. Navy, now being assembled at our plant in Renton, Washington. This maritime patrol aircraft is built upon Boeing's 737 platform whose dependability has already made it the world's best-selling commercial airliner. With its advanced electronics, speed and time-on-station, the P-8I will be a daunting deterrent to seaborne territorial incursions.

Further on.


FINMECCANICA
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A legacy for the future.

C-27J SPARTAN

THE MARKET SAYS: ONLY ONE CHOICE

The only real military airlifter.

Up to now more than 120 aircraft for:

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- Italian Air Force
- Hellenic Air Force
- Bulgarian Air Force
- Romanian Air Force
- Lithuanian Air Force
- Royal Moroccan Air Force



FINMECCANICA



AleniaAeronautica

DPP 2008: Two-Minute Manager

Applicability

Only for cases where request for proposal (RFP) issued post September 01, 2008. Cases under progress to be governed by earlier versions.

Publicity

Generic requirements of the services would be advertised on the MoD website.

Selection of Production Agency for Receipt of Transfer of Technology

The production agency for receipt of ToT could be from any of the public/private firms including a joint venture company.

Trials

Trial methodology would be spelt out in RFP itself to let the vendor know upfront the parameters against which their equipment would be evaluated and also the methodology.

Extension of Time for submission of Proposals

Maximum extension period not to exceed eight weeks from the originally stipulated date of submission of offer.

Field Evaluation

Field evaluation shall be conducted in the conditions under which the equipment is likely to be deployed and operated. Vendor will be informed of compliance or otherwise at the trial location itself.

Staff Evaluation

The results of the field evaluation will be analysed by the staff at service headquarters who will then recommend the selected equipment. In case no vendor is found SQR compliant, the case will be foreclosed and a fresh RFP issued after reformulating SQR.

In case a single vendor emerges SQR compliant, it will not be

treated as a single vendor case as the original bids were competitive in nature.

Intimation of Results to Vendors

To promote transparency, results of technical trials and evaluation along with reasons for disqualification will be intimated to the vendor.

Commercial Negotiations

Prior to opening of commercial offers, CNC would establish a benchmark as regards the reasonableness of price in an internal meeting. If L1 vendor's quote is within the benchmark, there would be no need for any further price negotiation.

In case L1 is unable to supply the entire quantity within the prescribed time frame, CNC has the right to divide the quantity among other successful bidders if they accept the L1 terms.

Ethical Aspects

For all procurements over Rs 100 crore, an integrity pact to be signed (No offering/accepting bribes) between Government and Vendor.

Repeat Orders

DPP 2008 contains guidelines for repeat orders. Such a case would not be construed as a single vendor.

Offsets

- Offset banking allowed.
- Free to choose Indian partners for offset obligation.
- FDI in civil infrastructure and such technologies will not qualify for offsets.

Quality and Reliability

Vendors are to provide details for reliability model and basis of reliability prediction. The efficacy of such a model will be verified during technical and environmental evaluation. •

Selex Communications



LOAM AVIONIC

SELEX Communications, a Finmeccanica Company, is a global supplier of advanced communication, navigation and identification solutions to protect communities and critical national infrastructure. With over 100 years of experience and driven by a relentless quest for innovation, the company delivers advanced, secure, integrated and interoperable networked solutions.

With a complete portfolio of Communication, Navigation and Identification, and Mission Support integrated equipment and systems, SELEX Communications offers a wide range of avionics solutions for both fixed and rotary wing aircraft for different operational requirements including combat, transport and search and rescue. SELEX communications is recognised worldwide for its advanced, field proven, fully integrated military communications solutions for strategic, tactical, naval and satellite applications. The company's land and satellite systems and networks meet challenging C2 requirements supplying the transmission of voice, video and data and are fully integrated and fully interoperable with the new network centric warfare architectures. Designed to offer maximum level of robustness and reliability, they can withstand difficult environmental conditions and electromagnetic disturbance. •

General Dynamics opens India office

The US-based General Dynamics, a global leader in providing defence-related information and communication systems, combat vehicles, munitions, weapon systems, special-mission aircraft and commercial space-related systems, today announced that it has opened a liaison office in New Delhi. The liaison office will provide assistance and information to potential Indian customers as well as facilitate meetings among representatives of General Dynamics, the Government of India and potential partners.

Speaking on the occasion, William O. Schmieler, Vice President-International, for General Dynamics, said, "As India addresses its future defence and security requirements, General Dynamics is eager to become a partner in meeting the needs of the Indian Armed Forces and other elements of the Government of India and identify opportunities where our expertise may be of value in meeting India's objectives. Our office in India will provide local representation and pursue opportunities to supply defence-related products and services to the Government of India."

The liaison office will be directed by a newly appointed Country Head, Subimal Bhattacharjee. He will have responsibility for supporting the full range of General Dynamics business pursuits in India. For the past eight years, Mr Bhattacharjee has worked in the Indian defence industry with responsibility for business planning and strategy. He will work to establish a strong local presence and working relationships with the Indian government and forge industry partnerships. •

SELEX Galileo

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DEFENSE AND SECURITY

TECHNOLOGY TO MAKE THE WORLD MORE SECURE

Homeland Security

C4i

Radar

ATM

Space

Electro-optics

Simulation and Training

EW

IFF/BTID

Automatic Test Systems

At Indra, we offer and deliver the most advanced defence and security technology together with our scientific vocation and the talent of our professionals. Faced with a critical challenge, Indra responds with innovation.

Security and National Defence in 5 continents, 28,000 professionals, 90 countries, 500 M€ in R&D in 3 years.



INDRA – Excellence in Airborne Solutions

Indra Sistemas will highlight its extensive portfolio of defence solutions at Aero India 2009. Indra is a multinational information technology and defence & security systems company with headquarters in Madrid, Spain, that recently opened an office in Delhi. Indra utilizes a client-oriented approach and its own technological base to establish a leadership position in the global market for sophisticated electronic systems in the aerospace and defence fields. Indra employs over 28,000 highly qualified engineers and development staff in over 30 international locations. Annual turnover exceeds 2 Billion, a third of which is from international sales.

The company's defence & security offerings include an array of systems covering communications, command and control, radars, electronic warfare, electronic intelligence, self-protection, surveillance, identification, protection, crisis management, simulation, automatic test systems and satellite ground segment. Indra is currently supplying advanced wide band digital receiver electronic warfare systems to the Indian MoD.

Indra's wide-band digital radar warning receiver ALR-400 and self-protection suite SIMBA, which also integrates missile and laser warning systems, are supplied for the European transport aircraft Airbus A400M, Spanish Air Force F-18, Eurocopter platforms including NH-90, Tigre and Cougar, as well as Boeing's Chinook and German Army Sikorsky's CH-53. Indra's digital radio frequency memory based jammer and deceiver ALQ-500 protects Spanish Air Force F-18s with the most sophisticated and power efficient deception techniques.

Indra has developed advanced identification friend-foe (IFF) and combined interrogator transponder systems, incorporating mode 5 and

S operation. Recent references include CIT-25A for the Spanish and French Tiger and TXP-2000 for the European Airbus A400M.

Indra's airborne offering goes far beyond EW, radar, and IFF systems. Eurofighter Typhoon is a prime example with contributions to close to 40 different elements.

Indra's offering in radars covers all the necessities in the different fields of radar application. The LANZA 3D radar is a brand new Long Range D Band 3D solid state technology radar. All the radars of such a kind operating in Spain are LANZA. ARIES is an LPI radar family, especially devoted to detection, tracking and identification of surface and low flying targets with a range resolution in the order of a few centimetres. Indra provides complete solutions for Air Defence systems. Existing resources are integrated along with all the new ones required to count on a complete efficient C4I system for Air Defence. During the last 25 years Indra has designed, developed and deployed this type of systems for the Spanish Air Force and major South American countries. Our systems are modular, scalable, upgradeable, and can be provided in different configurations fixed or deployable.

Indra's core defence technologies and systems are fully developed and owned by Indra. This includes one of the largest and most modern RF hybrid clean-room facilities in Europe, wide band digital receiver designs, radio frequency hybrids, infra-red optics, advanced digital processing hardware, software and firmware.

India is a focal market for Indra Sistemas. The company is committed to become a key technological partner to the Indian end-user and domestic industry alike. •

Northrop Grumman: Dual Advantage



AN/APG-80 FIRE CONTROL RADAR FOR THE F-16IN SUPER VIPER



737 AEW&C MULTIROLE ELECTRONICALLY SCANNED ARRAY (MESA)

sion areas from the surface of the ocean to outer space. "In the area of airborne surveillance, Northrop Grumman has decades of experience as the radar provider for the AWACS aircraft. We continue our tradition of excellence by now offering the Multi-role Electroni-

Northrop Grumman understands the importance of regional leadership in peacekeeping and the importance of sensor technology in making that a reality. Northrop Grumman has the unique ability to provide national air and ground security solutions by applying AESA technology on two fronts:

- 737 Airborne Early Warning and Control (AEW&C) Multirole Electronically Scanned Array (MESA)
- AN/APG-80 Fire Control Radar for the F-16IN Super Viper Providing India the best fighter sensor solution for the MMRCA: Block 60 AN/APG-80 and Integrated Electronic Warfare Suite

"The AN/APG-80, designed for the F-16 Block 60 aircraft, was the first active electronically scanned array (AESA) fighter fire control radar sold internationally, and has been in operational use for 4 years. Northrop Grumman remains the world leader in AESA technology represented by APG-80," said Katie Gray, Vice President of Global Sensor Solutions.

"The APG-80 is able to simultaneously engage Air-to-Air and Air-to-Ground targets, significantly increasing overall combat effectiveness. An AESA also offers much greater reliability than mechanically scanned array radars."

"The APG-80 provides all-weather attack capability, day or night, with high resolution Synthetic Aperture Radar (SAR) mode providing photo quality ground imagery and Ground Moving Target Indication (GMTI) to track slow moving ground targets."

Solving India's Airborne Surveillance Requirements

The 737 Airborne Early Warning and Control (AEW&C): A large part of the corporation's success has been the ability to apply Active Electronically Scanned Array (AESA) radar technology across different mis-

sion areas from the surface of the ocean to outer space. "In the area of airborne surveillance, Northrop Grumman has decades of experience as the radar provider for the AWACS aircraft. We continue our tradition of excellence by now offering the Multi-role Electroni-

cally Scanned Array (MESA) radar aboard a Boeing 737 Aircraft to give modern air forces world wide the best in airborne surveillance technology," said Hendrix. "The 737 Airborne Early Warning and Control (AEW&C) system is the right choice for airborne surveillance and control missions. With the Northrop Grumman Multi-role Electronically Scanned Array (MESA) radar, the Boeing 737 AEW&C system offers exceptional performance, low life cycle costs and the technology necessary to meet current and future evolving surveillance requirements. The 737 AEW&C is the most advanced system in its class, establishing the standard for performance required by the modern air force of the 21st century," he said.

"The MESA radar benefits customers by ultimately providing high performance AESA capabilities at low cost. The electronically steerable surveillance capabilities extend 360-degrees around the aircraft. With this capability the MESA can focus in particular areas of highest interest, while simultaneously continuing surveillance in all directions," said Hendrix.

With high-altitude, jet speeds, and long-range endurance, customers can expect a larger surveillance volume than provided by other platforms. Modernization of air forces is guaranteed with next-generation airframe and avionics technology. The Boeing 737-700 Aircraft is equipped with a modern, two-crew glass flight deck and high-bypass CFM56-7 engines with increased IDG capability.

The modular, open system design provides for multi-mission flexibility and growth options. The MESA can conduct air to air and maritime modes simultaneously, with integrated Identification - Friend or Foe (IFF). Customers may perform passive surveillance and HF, VHF/UHF, SATCOM and data link communications with the robust communications suite that are integrated in the 737 AEW&C System. •

Eurocopter 2008 sales up 7%; books orders for 715 new helos



The company's CEO Lutz Bertling said that Eurocopter delivered 588 helicopters in 2008 (100 more than the previous year), generated a consolidated turnover of €4.5 billion, up 7.5 percent, and has so far not felt any significant effect from the worldwide financial crisis. The company registered "just over 30 order cancellations" in 2008, and saw the commercial market slowing in the second half, but is nonetheless counting on booking orders for about 450 new helicopters in 2009.

Eurocopter also plans to substantially grow its business in China, India and the US. The company is also bidding for several military contracts in India. One is for 200 light helicopters, which it has won in 2007 before it was cancelled, and a separate one for over 200 reconnaissance/scout helicopters which was won by India's Hindustan Aeronautics Ltd., which is looking for a foreign technology partner. Eurocopter is also offering the naval NH90 for a competition for ship borne helicopters and plans to offer its Tiger for a fourth competition to buy an attack helicopter for the Indian Army. •

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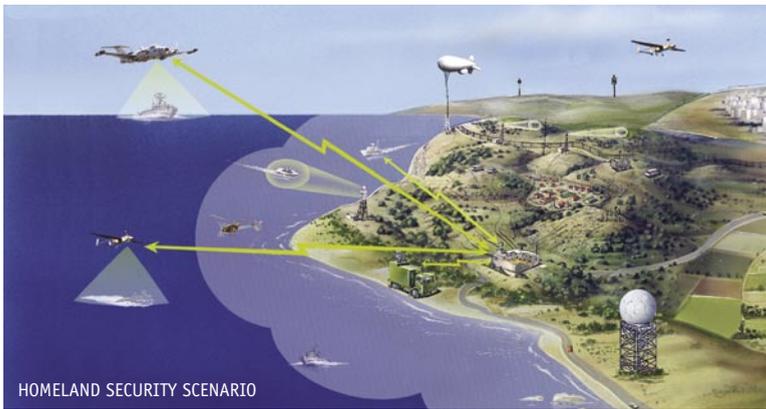
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ELTA Homeland Security Systems



Israel Aerospace Industries' ELTA Systems Group (IAI/ELTA) was awarded \$65 million in contracts for Homeland Security (HLS) systems in 2008, from various customers worldwide.

IAI/ELTA Systems offers a variety of solutions for HLS challenges, including the protection of "green" (ground) and "blue" (sea) borders; international points of passage such as airports, harbors and ground passages, and protection of strategic sites; civil aircraft Self Protection Systems; and monitoring of cellular communications and City Emergency Centers. •

Air Defense Radar Systems



Israel Aerospace Industries' ELTA Systems Group (IAI/ELTA) was awarded \$300 million in contracts for Air Defense Radar systems in 2008 from various customers worldwide.

IAI/ELTA Systems Ltd. develops and manufactures long, medium and short range Air Defense Radar Systems. The long range and medium range radar systems are advanced Active Electronic Steering Array (AESA phased array) radars capable of detecting low radar cross section (RCS) targets from long ranges, even in the presence of heavy ground clutter and electromagnetic interference. Their high accuracies allow them to provide target data to Surface-to-Air (S/A) weapon systems. Air Defense Radar Systems feature high mobility, fast and easy deployment, high availability and reliability. •

IAI/ELTA Awarded Radar Contract

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Boeing to showcase commercial and defense products

The Boeing Company will spotlight its broad range of aerospace capabilities at the upcoming Aero India 2009 show, which opens February 11 in Bangalore.

"India's rapidly growing aerospace and defense industry offers significant opportunities for growth and productivity," said Boeing India President Ian Thomas. "Our companywide participation at Aero India will underscore our enduring commitment to India and foster stronger ties with our Indian customers and partners."

Boeing Integrated Defense Systems (IDS) will display the combat-proven F/A-18F Super Hornet strike fighter and conduct daily aerial demonstrations with a full weapons payload during the show. The C-17 Globemaster III strategic air-lifter will also be on display and participate in daily aerial demonstrations.

The Boeing exhibit will feature large-scale models of the company's commercial airplanes, as well as interactive displays featuring a wide range of products and services. Included are the Boeing 787 Dreamliner, the popular 777 family, the 747-8 passenger and freighter series, and the best-selling Next-Generation 737 family. Boeing plans a series of briefings on key programs and issues. Members of the media are requested to check the briefing program at the Media Center each day for additions and changes to the schedule. •

AgustaWestland Awarded Helicopter Tactics Programme Implementation Study Contract

AgustaWestland, a Finmeccanica company, is pleased to announce that it has recently been awarded a contract by the European Defence Agency (EDA) to conduct a six month Helicopter Tactics Programme (HTP) Implementation Study.

This contract follows an award made in November 2008, by the EDA, for AgustaWestland to conduct a six month feasibility study into HTP for nations deploying on multinational operations. As part of the UK-France helicopter initiative, the EDA has taken the lead in co-ordinating training among its participating Member States. The HTP Implementation Study is a key part of the initial work. It includes a training analysis across all participating Member States, establishing a common operational task list for support helicopter crews deploying on operations.

In addition, the study will seek to catalogue and quantify total training capability and capacity within participating Member States, as well as identifying best-practice methodology for adapting to lessons learnt from operational theatres. Drawing on experience from the previous feasibility study, this

work will also outline an initial training syllabus. The study will conclude with an analysis of the potential training needs within Member States' support helicopter crews, and provide costed options for addressing any shortfalls in training capability.

AgustaWestland is a provider of professional training services to a wide range of military, commercial and industrial customers around the world. Operators are assured of receiving highly effective training solutions, designed to meet their requirements to achieve high levels of individual, team and collective performance and to enable customers to fully exploit AgustaWestland's high capability aircraft by integrated learning environments. AgustaWestland is committed to offering the best training services as essential enablers in the delivery of mission capability to operators. The "A. Marchetti" Training Academy in Italy and Training Academies located in Philadelphia, USA, and in Yeovil, UK, utilise the latest e-learning, part-task maintenance and procedures trainers through to full mission and state-of-the-art Level D flight and mission simulators. •

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EADS CASA: Aircraft, maintenance & space

Since being set up in 1923, the Spanish aeronautical sector's leading company, Construcciones Aeronáuticas S.A., has constantly developed a technological and productive capacity that enables it to compete in international aerospace markets for design, manufacture and maintenance contracts. CASA's commercial department is efficiently oriented towards export markets which account for more than 80% of the company's business. The company remains competitive by investing about 15% of annual turnover in research and development. CASA's workforce is made up of more than 7,000 highly qualified workers with long experience in the aeronautical industry. The company carries out continuous training in order to attune staff to the most modern technological advances and new manufacturing processes. CASA is firmly established in the aeronautical market in the civil and military fields and concentrates on the following areas: aircraft, maintenance and space. Since the company was founded, CASA has been designing, manufacturing and commercializing aircraft. We have given wings to more than 50 countries and to the world's leading aerospace companies.

C-212: The EADS CASA C-212 is a high wing, twin turboprop, multi-purpose aircraft, with a conventional structure and a fixed landing gear. With more than 470 aircraft sold worldwide, the C-212 has operational capabilities which have made it the most reliable, efficient, robust and unrivalled aircraft in its category. Its efficiency and low fuel consumption

power plant, advanced digital avionics, loading versatility, high manoeuvrability at low speeds, STOL performance, a strong undercarriage equipped with low pressure tyres and low life cycle costs make the C-212 the optimum response to the military light transport market. The C-212 airframe and systems have been designed under a concept of great strength, extreme simplicity and top reliability. Its ample and unobstructed cargo cabin with high floor strength can be quickly adapted for a variety of roles, such as personnel transport, cargo transport or Medevac.

Maximum payload: 3,000 kg,

Troop transport: 25 soldiers

Cargo transport: Two 88" x 54" pallets; one EJ200 engine for the Eurofighter Medical evacuation: 12 stretchers and 4 seats. There is also a maritime patrol version of the C-212 (C-212 Patrullero), in service in eight countries.

EADS CASA C-212 Patrullero: Based on the C-295, CN-235, C-212 platforms and the Fully Integrated Tactical System (FITS), the Military Transport Aircraft Division solutions cover a wide variety of Maritime Patrol and Homeland Security missions: law enforcement, maritime pollution and the Economic Exclusive Zone (EEZ) control, search and rescue, anti-submarine and anti-surface warfare (ASW/ASuW). The EADS CASA platforms are perfectly adapted to the maritime patrol missions, with high manoeuvrability at low altitude and outstanding mission performance. •

P&W: Leader in aero engines



PW-4000 ENGINE

Pratt & Whitney, a United Technologies Corp. company, is a world leader in the design, manufacture and service of aircraft engines, industrial gas turbines and space propulsion systems. Pratt & Whitney reported an operating profit of \$2.12 billion in 2008 on revenues of \$12.97 billion.

Pratt & Whitney was founded in Hartford, Conn., in 1925 by Frederick Rentschler. Pratt & Whitney's first aircraft engine was the 410-horsepower, air-cooled Wasp, which delivered unprecedented performance and reliability for the time and transformed the aviation industry. Pratt & Whitney has been leading change ever since.

Pratt & Whitney Canada has produced more than 60,000 engines which power corporate jets, regional aircraft and helicopters around the globe. Pratt & Whitney's large commercial engines power more than 30 percent of the world's passenger aircraft fleet. The company continues to develop new engines and work with its partners in International Aero Engines and the Engine Alliance to meet airline customers' future needs.

Pratt & Whitney's broad portfolio of businesses includes industrial gas turbines that light cities and power ships, and rocket engines that

send payloads into orbit at 20,000 miles an hour.

Pratt & Whitney is developing game-changing technologies for the future, such as a Geared Turbofan™ engine for next generation single-aisle aircraft and hypersonic propulsion systems for aircraft that will travel more than six times the speed of sound. Through Global Service Partners, Pratt & Whitney is also developing innovative new services that will delight customers around the globe. Pratt & Whitney Global Material Solutions is the first

OEM to re-engineer, certify and manufacture both gas-path and life-limited parts for the CFM56-3 engine.

MAJOR PRODUCTS

Commercial Engines

PW2000 for Boeing 757
PW4000 for Boeing 747, 767 and 777 and Airbus A300, A310 and A330
PW6000 for Airbus A318
GP7000 for Airbus A380
V2500 for Airbus A319, A320 and A321
GTF for Mitsubishi Regional Jet (MRJ) and Bombardier CSeries Aircraft

Military Engines

F100 for F-15 Eagle and F-16 Fighting Falcon
F117 for C-17 Globemaster III
F119 for F-22 Raptor
F135 for F-35 Joint Strike Fighter

Small and Medium Engines

Pratt & Whitney Canada builds 10 families of engines used in a variety of applications, including the PW307A for the Dassault Falcon 7X and the PW600 family for a new generation of Very Light Jets. •

UAS from Elbit Systems

Skylark® I: A mini/man-pack UAS ideal for lower echelons self support reconnaissance close range beyond-the next-hill missions, the Skylark® I is specially designed for counter-terror applications. Performance-proven in cloudy, rainy and windy weather conditions, Skylark® I has demonstrated excellent optical survey, target identification and surveillance capabilities.

Skylark® II: A Covert Tactical UAS for day, night and adverse weather observation, data collection and target marking at mission ranges exceeding 60 kilometers, the Skylark® II system is designed to operate in the battlefield. It uses a highly deployable single vehicle equipped with an integral launcher for point launch and recovery and an advanced dual station Ground Control Station. The Skylark® II system full cycle operation is possible with a 2-person crew.

Hermes® 900: The Hermes® 900 is an all weather UAS. Its IATOL (Independent Auto Takeoff and Landing) system enables auto-landing even in alternate non-instrumented runways. Like the Hermes® 450, internationally renowned for its safety record and reliability, the Hermes® 900 features full redundancy and fault tolerant avionics and electronics architecture. Its fully-certified Rotax engine is safe and quiet.

The Hermes® 450: The Hermes® 450 is a versatile, long-endurance UAS. It is equipped with Elbit Systems' CoPASS EO/IR/LD gimbaled electro-optical payload, can adapt to a wide range of payloads and including SAR/GMTI radar and dual payload configurations. It is equipped with sophisticated communication systems transmitting imagery in real time to ground stations. •



As more militaries explore and expand their use of unmanned aerial vehicles (UAVs), they are finding that modeling and simulation plays a key role in the UAV's complete lifecycle – from experimentation and evaluation to training and operations.

CAE-Macmet, India's leading simulation company, has developed new simulation-based UAV solutions to address emerging requirements for UAV operations and training. An example is our high-fidelity UAV simulator that can also serve as a ground control station for operating actual UAV platforms, thus merging the live and virtual worlds. Users can operate this integrated simulation solution for research, training, and operations requirements. We are also designing and developing comprehensive UAV Mission Training Centres to ensure pilots, sensor operators and commanders are fully prepared to utilize the information and intelligence provided by UAVs.

As UAVs change the nature of warfare in the 21st century, CAE-Macmet is developing innovative simulation solutions to help customers stay one step ahead and achieve mission readiness.

Come visit CAE's booth (Hall H, Booth #23) at Aero India 2009 to see a demonstration of CAE-Macmet's UAV simulator and learn more about our comprehensive UAV training solutions.



UAV simulator



Common database (CDB)



Mission training centre

AV090a



one step ahead

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CAE demonstrates GenNext Medallion-6000 visual system



CAE IS DEMONSTRATING ITS MEDALLION-6000 VISUAL SYSTEM AT ITS BOOTH (HALL H, BOOTH 23) DURING AERO INDIA.

the latest display systems, the Medallion-6000 truly gives military customers an immersive, realistic synthetic environment for better training and mission preparation.”

The CAE Medallion-6000 is based on commercial-off-the-shelf (COTS) graphics processors from NVIDIA Corporation, the same graphics chips used for mainstream computing gaming applications. Some of the key features of the CAE Medallion-6000 include:

- Increased sustained polygon capacity, meaning more realistic three-dimensional (3D) content and detail;
- Use of next-generation shaders to improve realism, such as dynamic shadows;
- 3D volumetric cloud layers for enhanced training cues in adverse weather;

In a full-mission simulator, the virtual or synthetic world that aircrews see “out-the-window” is created by three things: a database represents all the data in the virtual world, an image generator renders the images you see, and those images are displayed on a visual display system. CAE’s Medallion-6000 is one of the simulation industry’s leading image generators, but CAE also offers a range of capabilities related to the overall synthetic environment, including databases and display systems.

For example, the CAE Medallion-6000 image generator includes full support for CAE’s breakthrough motif compositing technology. Motif compositing generates rich and realistic database content by automatically enriching sparse source data. Using motif compositing with runtime publishing of the CAE-developed common database (CDB) gives users the ability to quickly and cost-effectively generate more realistic database content.

CAE is demonstrating a range of simulation technologies at its booth (Hall H, Booth #23) during Aero India, including the new CAE Medallion-6000 image generator. •

CAE’s latest visual system for the military simulation market, called the CAE Medallion-6000 and launched just two months ago, is making its debut in India at the Aero India 2009 show. Using the CAE Medallion-6000, the Company is demonstrating a high-fidelity virtual environment of the Mumbai airport and surrounding area. During the demonstration, Indian Air Force fighter jets perform an aerial refueling mission.

The demonstration is designed to show how high-fidelity simulation can be used to significantly enhance training and mission rehearsal.

“The CAE Medallion-6000 image generator has a well-earned reputation as a visual solution ideally suited for demanding military simulation requirements,” said H J Kamath, President of CAE-Macmet, based in Bangalore. “Combined with CAE’s enhanced database content capabilities and

Embraer promotes defense solutions

Embraer will promote its full portfolio for the Defense and Government segment at the seventh International Aerospace & Defense Exhibition – Aero India 2009 (www.aero-india.in), to be held at Air Force Station Yelahanka, in Bangalore, India, February 11-15.

“Due to its growth in recent years, the Indian market is very special to Embraer, in terms of its potential for Defense and Government aircraft,” said Sergio Bellato Alves, Embraer’s Vice President, Marketing and Sales, Asia – Defense and Government Market. “Our Asia Pacific efforts have found this strong, emerging market to have a particularly significant synergy with Embraer’s quality products.”

Embraer and the Indian Government signed a comprehensive deal for three EMB 145 AEW&C (Airborne Early Warning & Control) jets, in July 2008, that includes training, technical support, spare parts, and ground support equipment. These aircraft will receive the advanced electronic systems currently under development by India’s Defence Research & Development Organization (DRDO). The first delivery is scheduled for 2011, joining four Legacy 600 jets in operation by the Indian Air Force (IAF), which are used to transport Indian VIPs and foreign dignitaries. A fifth Legacy 600 belongs to the Border Security Force (BSF), under India’s Home Ministry.

The EMB 145 AEW&C is part of the Intelligence, Surveillance and Reconnaissance (ISR) family, which also includes the EMB 145 RS/AGS (Remote Sensing/Air-to-Ground Surveillance) and the EMB 145 MP (Maritime Patrol).



EMB 145 AEW&C

Both the ISR family and the Legacy 600 are based on the proven and versatile ERJ 145 jet platform. With more than 1,000 units delivered worldwide, including commercial, executive and military derivatives, this platform has surpassed 14 million flight hours. In the Defense and Government segment, the ERJ 145 platform has demonstrated that it is appropriate for a wide range of missions, such as transporting government officials, medical evacuation (MEDEVAC), border patrol, air/ground/sea surveillance, rescue, and others.

As it completes the 40th year from its founding, Embraer has a strong presence in the Indian market, dealing

with both the national government and private companies. Besides the Indian government, the Company has other important customers in the country. Among them are Aviators India Pvt. Ltd., which is the first Phenom executive jet customer in the region and bought two Phenom 100 jets, and Invision Projects Pvt. Ltd., which holds the largest order for Phenom 100 and Phenom 300 jets in India. To support the operations of the growing number of Phenom and Legacy 600 customers in the country, the Company recently chose Indamer Company Pvt. Ltd. to be an authorized service center. In the commercial aviation segment, Embraer provides airplanes to Paramount Airways, the launch customer of the E-Jets in the country, and to Star Aviation, which soon will receive its first E-Jet out of a firm order of seven EMBRAER 170s. The E-Jets family consists of four aircraft with capacities from 70 to 122 seats, and has more than 500 airplanes in operation, worldwide. •

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AERO INDIA 2009
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HALL A



AgustaWestland Sees Growing Maritime Helicopter Market

AgustaWestland is promoting its wide range of maritime helicopters at Aero India 2009. Having recently signed contracts with the Malaysian Maritime Enforcement Agency and the Republic of Korea Coast Guard for AW139 helicopter, the company sees growing potential for the AW139 and its other maritime helicopters, not only in India but elsewhere in the region, due to an increasing focus on maritime surveillance and security.

With the widest range of maritime helicopters of any manufacture, AgustaWestland has products for all maritime helicopter requirements. The AW109 Power, a three-tonne light twin engine helicopter, has already proven to be a popular platform for coast guard and port security missions. The AW109 Power is an all-weather, multi-role maritime helicopter, equipped with the latest navigation, communication and avionics equipment. For interdiction purposes, the AW109 Power can be equipped with a machine gun and a sniper rifle with a laser sight. Other equipment includes a Forward-looking Infra Red (FLIR) system for night operations, along with a night-vision compatible cockpit.

Moving up to the weight scale, AgustaWestland has the 5.3 tonne Super Lynx 300 shipborne naval helicopter that has found success in the region with sales to the navies of Thailand and Malaysia. The Super Lynx 300 and its earlier variants have earned the reputation as the best small ship helicopter, due to its ability to operate from small ships in adverse



the outset as a Sea King replacement and for shipborne operations the AW101 is the most advanced naval helicopter available today. •

weather conditions.

For maritime surveillance and coast guard missions, the best-selling 6.4 tonne AW139 is becoming the helicopter of choice in many countries. The AW139 has the performance, range, cabin space and equipment package to perform a wide range of maritime tasks including coastal surveillance, anti-piracy, armed interdiction, search and rescue, port security and economic zone patrol.

In the 10-12 tonne weight class is the NH90 naval helicopter, developed by the European consortium NH Industries in which AgustaWestland has a 32 per cent share. The NH90 is a new generation naval helicopter capable of performing autonomous shipborne ASW and ASuW missions as well as maritime patrol.

At the top of the weight range is the 16-tonne AW101, designed for long-range maritime missions and for shipborne operations from frigate-sized ships. The AW101 is operated by the British Royal Navy and Italian Navy where it has replaced Sea Kings in the ASW and ASuW roles. Additionally, the Japanese Maritime Self Defense Force is now operating the AW101, built under licence by Kawasaki, for Antarctic Support and Airborne Mine Countermeasures missions. Designed from

Rolls-Royce: A powerful force in India

Rolls-Royce has a long and proud history of partnership with India. In 1932 the company supplied Gipsy engines to power Dragon Rapide DH-89 aircraft operated by Tata Airlines, the forerunner to Air India, and began a relationship with India that has continued to grow ever since.

Today, there are over 1,300 Rolls-Royce engines in service in India, mainly as a result of long-term defence programmes. However, all four of the company's global market sectors – civil aerospace, defence aerospace, marine and energy – are well represented.

In the defence sector, Rolls-Royce celebrated the 75th anniversary of its partnership with the Indian Air Force in 2008, a milestone that coincided with the introduction of the latest Rolls-Royce engine into the fleet, the Adour Mk871 which powers the new Hawk Advanced Jet Trainer (AJT). This engine features some of the latest technologies from both the military and civil sectors and will be used in the training of the next



MARTIN FAUSSET – MANAGING DIRECTOR, ROLLS-ROYCE DEFENCE AEROSPACE

generation of Indian pilots. They will be following the illustrious footsteps of the pioneers who first fired up their Bristol Jupiter engines as the first IAF aircraft took to the skies.

Today the Indian Air Force operates over 100 Jaguar aircraft and these are powered by Adour engines that have been manufactured under licence at Hindustan Aeronautics Limited

In the tactical sector the Indian Air Force has been flying the EMB-135J Legacy corporate jet, powered by the Rolls-Royce AE 3007 engine, since 2005 when it replaced the venerable HS748 as the air force's communications aircraft. The support is covered under an innovative mission care contract. The Air Force has also ordered the Lockheed Martin C-130J transport aircraft. This is powered by the AE 2100 which although a turboprop, enjoys around 80 per cent commonality with the AE 3007.

Future opportunities exist in India in the air-to-air refuelling sector for which the Trent 700 powered Airbus A330 is ideally suited.

In the helicopter market, the market-leading RTM322 helicopter engine has been selected to power over 85 per cent of NH90 customers and approximately 60 per cent of the EH101 helicopter operators. There are strong opportunities for the RTM322 in the Indian market for maritime surveillance and military tactical transport requirements.

Rolls-Royce has played a key role in the development of India's indigenous aerospace industry and self reliance objectives largely through our partnership with Hindustan Aeronautics Limited (HAL) in Bangalore, which is now in its 53rd year. HAL is a strategically important supplier to Rolls-Royce – as a component manufacturer for the world's most successful large turbofan engine, the Trent.

HAL has been manufacturing the Adour Mk811 for the Indian Air Force Jaguar since 1981 and is also undertaking licensed manufacture of the Adour Mk871 for the new Hawk (AJT).

This is demonstrated by the Adour Mk821 engine which, through a combination of experience and advanced technology, offers the Indian Air Force Jaguar fleet the best solution for the improved performance levels it requires at the lowest risk.

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V.V.R. Sastry

Chief Managing Director, BEL



SP Guide Publications (SP's): What is BEL's strategy for growth?

V.V.R. Sastry (Sastry): BEL is discussing with reputed foreign / Indian players for forming Joint Venture Companies in India, in the areas of Defence Electronics, namely Electro Optics, Airborne Electronic Warfare, Missile Electronics & Guidance Systems, Microwave Super Components, etc. Some of these proposals are in the advanced stage of discussions.

BEL has signed a contract and appointed the global consultancy firm, KPMG, to help identify future market opportunities for growth.

SP's: How are your offset plans progressing?

Sastry: BEL has been selected by Northrop Grumman Corporation to manufacture components of the F-16 APG-68(V)9 fire control radar. BEL has also signed an MoU with Boeing to jointly develop an analysis and experimentation centre in India.

BEL has signed MoUs with major aerospace and defence companies to take advantage of the mandatory offset clause in the RFPs for Indian defence procurement. •

Sagem

Sagem is a high-tech company in the SAFRAN Group. It is a world or European leader in solutions and services in optronics, avionics, electronics and critical software for the civilian and military markets. Sagem is the European No. 1 and worldwide No.3 in INSS for aeronautic, naval and land applications. It is also the worldwide No.1 in helicopter flight controls and the European No.1 in optronic and tactical UAV systems.

Sagem Optronics and Defense

The Optronics and Defense division has the best technologies in the world in terms of optronics systems and equipment for armed and security forces. These are used in airborne, naval and land applications: imagers and infrared and light-intensifying cameras, sights, periscopes, gyro-stabilized pods, etc. It also offers military advanced solutions in air-land battle space digitization: soldier modernization, vehicle digitization (vetronics), cryptology, UAV systems, etc.

Sagem Avionics

The Avionics division's know-how in inertial navigation and civilian and military avionics is renowned worldwide. Its navigation, guidance and pointing systems are used in numerous countries' airplanes, surface ships, submarines, missiles, armored vehicles and land weapon systems. Its avionics equipment and systems – onboard information and piloting systems, cockpit displays, multifunction screens, etc – are in use in the largest airplane and helicopter programs. Lastly, its information and mission preparation systems are used by numerous armed forces.

Safran Electronics Division

The Safran Electronics division groups some 1,500 electronics and safety-critical software specialists from the SAFRAN Group, not only for aircraft, but also land and naval platforms. Working for Group companies, this new division develops, produces or buys, and supports printed circuit boards and processing units. Its products are used in a number of systems, including landing gear, avionics, navigation, optronics, etc. They are featured on some of today's most prestigious programs, including the Boeing 787 and Airbus A380 commercial jets, Barracuda submarine, Rafale fighter, NH90 helicopter, A400M military transport, and more. •

SNIPPETS

Boeing to buy products worth \$600 mn from seven Indian companies

Boeing will buy aerospace structures and aviation electronics products worth at least \$600 million (Rs 2,941 crore) from seven firms in India as part of the offsets against winning a \$2.1 billion contract early in January to supply eight P-8I reconnaissance planes to the Indian Navy.

The offset contracts are being placed with Larsen and Toubro Ltd (L&T), Bharat Electronics Ltd (BEL), Wipro Ltd, HCL Technologies Ltd, Hindustan Aeronautics Ltd (HAL), Dynamatic Technologies Ltd and Macmet Technologies Ltd, a unit of Canada's aerospace simulator maker CAE Inc.

DRDO eyes EADS role in Tejas

The DRDO and HAL are reportedly eyeing a prominent role for EADS in the development of the indigenous Tejas light combat aircraft (LCA). The organisation's Aeronautical Development Agency (ADA) has considered offering the company \$20 million to help increase the aircraft's flight envelope and attack vector.

Duke Aviation launches India's first independent MRO Facility in Nagpur

Duke Aviation Engineering Pvt Ltd, India's first independent MRO facility provider, has launched its MRO facility in MIHAN-SEZ, Nagpur. It is the first company in India to launch an independent state of the art MRO facility and will offer end-to-end services to aircraft operators. While its first facility will be functional by early 2010, the remaining facilities will be fully functional in coming 24-36 months. Duke Aviation has been allotted 36.5 acres of land for the project by Maharashtra Airport Development Company (MADC) and will invest close to USD 145.840 million (Rs 725 crores). The facility is expected to create more than 400 jobs by 2012.

EADS Defence plans new industrial base in India

EADS' defence unit is set to announce a new operation in India, possibly via an acquisition, as it targets further expansion overseas. "We are preparing to set up an industrial base in India" said defence and security chief Stefan Zoller. "The most booming market for defence that has not already been captured is India ... also there are many skilled engineers in India," he said.

ISRO to launch four foreign satellites this year

Indian Space Research Organisation will launch four foreign satellites this year as it seeks to make further inroads into the international satellite-building and launch services market in 2009.

Managing Director of Antrix Corporation Ltd, the commercial arm of Bangalore-headquartered ISRO, K R Sridhara Murthy, said the Indian space agency is gearing up to launch four satellites of Singapore, the Netherlands, Italy and Algeria. (These contracts were bagged by ISRO independently and not in partnership with EADS-Astrium).

Japan Airlines 747 Makes First Ever Flight on Camelina Biofuel

A Japan Airlines Boeing 747-300 flew with an engine powered by a biofuel made primarily from camelina, making JAL the first airline to test fly the fuel. The relatively low cost to convert it into fuel could make it competitive with gasoline and diesel with fewer harmful emissions.

Toward a Network Centric Air Force

By the end of the year (2009) the Indian Air Force (IAF) plans to introduce an integrated command and control capability, extending network-enabled situational awareness capability through datalink connectivity, to the airborne air defense and strike fighters. The first phase of the network will link terrestrial and airborne assets. It will be further enhanced with the deployment of IAF dedicated satellite, scheduled for 2010.

Part of the fighters, namely the Su-30MKI are already equipped with datalinks sharing information with Airborne Early Warning assets; their effectiveness will be further increased with the new network. •

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Ambassador Hartwick

Chief Executive, Lockheed Martin India Operations



SP Guide Publications (SP's): How is Lockheed Martin following up on its offer of the F-16 Fighting Falcon fighter jets to meet India's 126 MMRCA programme?

Ambassador Hartwick, Lockheed Martin (Hartwick): We are pleased at the pace and thoroughness that the Indian Air Force has demonstrated in the MMRCA evaluation. We have completed two rounds of technical ques-

tions and now await the field trials. These should begin in the near future. We are confident that the F-16IN offers India an outstanding package of fighter aircraft capabilities and long-term industrial participation benefits. The F-16IN is the most advanced version of the F-16 that Lockheed Martin has ever designed. We believe India's ability to defend itself from the air will be significantly enhanced if the F-16IN is selected as the MMRCA.

SP's: What efforts are being made by Lockheed Martin to make the F-16 (latest block) as the choice of selectors for India's MMRCA programme?

Hartwick: We have examined closely the IAF's requirements and tailored a unique version of the F-16 called the F-16IN to meet those requirements. This will be the most advanced F-16 version that we will have built and we believe it will be highly competitive from both a performance and price standpoint. It is ideally suited to India's needs going forward.

SP's: How do you plan to leverage the single-engine configuration of F-16 to your advantage, especially against the twin-engine competitors in India's MMRCA programme?

Hartwick: The proven performance of the F-16 over more than 25 years of service to many air forces around the world is a testimony of the reliability of this world class aircraft from a safety and performance standpoint. In the F-16IN India stands to receive the benefits of decades of upgrades and improvements that come together to make this extremely reliable aircraft even more dependable and capable of defeating its adversaries in a wide range of conditions and environments. The upgraded single engine F-16IN will be without question the greatest value among our competition from the perspective of overall programme cost, particularly from a life cycle standpoint. It will require lower investments in engine repair, it will consume considerably less fuel over the life of the aircraft, and its safety and reliability are on a par with its twin engine competitors.

SP's: In the event of F-16 being selected and in view of the changing security scenario, is there a possibility of accelerated induction of aircraft into the Indian Air Force? If yes, how do you propose to achieve it?

Hartwick: This issue is one that is complex and would require the direct involvement of both governments, India and the United States. I would not want to speculate on how the conditions might change that would require faster induction. With the F-16, India would be joining an elite group of countries, including the US that might be in a position to assist India if accelerated deliveries were desirable. Lockheed Martin would stand ready to



F-16 IN FLIGHT

assist the IAF were such an eventuality become a high priority.

SP's: Is there a possibility of speedier induction of C-130J aircraft into the IAF to meet the Special Forces requirements, especially in view of the prevailing terror scenario in the Indian sub-continent?

Hartwick: Under the terms of the bilateral Letter of Agreement between the US and India, Lockheed Martin is currently constructing India's six C-130J special operations aircraft. Induction is currently planned for 2011 and Lockheed Martin is on schedule to deliver these aircraft as promised. Should the US and Indian governments determine that an accelerated delivery schedule is in their mutual security interests, we would, of course, work with both governments to meet any new requirements they might establish.

SP's: What are your views on India's 'Defence Procurement Policy' and 'Offset' clauses in defence deals?

Hartwick: Each country designs its own offset policy and DPP 2008 describes India's requirements. Lockheed Martin has met offset obligations of over Rs 1,80,000 crore over the past three decades in dozens of countries and thus has a lot of experience in shaping a programme that meets the host country's needs. We will do so with India when the time comes. We hope to have that opportunity soon!

SP's: Have you taken steps to make use of the 'Offset Banking' provisions for your potential business deals with India? Please elaborate.

Hartwick: No, we have not yet come across an opportunity to make use of the banking facility. But, if there is an attractive prospect, Lockheed Martin will consider it closely and we appreciate that the banking facility exists. This offers companies like ours much-needed flexibility in this area.

SP's: Will the global economic meltdown have an adverse effect on Lockheed Martin's businesses in India? Your comments.

Hartwick: Defence and security markets are usually driven by long-term decisions and time frames. They are less susceptible to economic fluctuations. Security remains an important priority during economic slowdowns. Consequently, we are confident that our business prospects and long-term partnership with India will be able to weather the global slowdown. •

Embraer's Lineage 1000 & Phenom 300 in India



PHENOM 300 LIGHT JET

Embraer showcased for the first time in India, the cabin cross-section of the ultra-large Lineage 1000 executive jet from January 19 to 23, at the Grand Hyatt Hotel, in Mumbai. It also exhibited a fullscale mock-up of the Phenom 300 light jet. India's Invision Projects Pvt. Ltd. has an order for 18 Phenom 100 and two Phenom 300 jets. Another Phenom customer in the country is Aviators India Pvt. Ltd., which provides executive aviation services and has purchased two Phenom 100s. Embraer is also participating in Aero India 2009 where it will promote its wide-range of executive jets consisting of Phenom 100 and Phenom 300 jets (entry level and light categories), the new Legacy 450 and Legacy 500 (midlight and midsize, respectively), the popular Legacy 600 (super midsize), and the luxurious Lineage 1000 (ultra-large). All of the jets are best-in-class, offering superior comfort, excellent performance, and low operating costs. •



Bill Guyan Vice President, Business Development, DRS Tactical Systems

SP Guide Publications (SP's): The Indian Army is working towards BMS for the Corps level. What contribution would your company like to make?

Bill Guyan (Guyan): We would like to be the preferred supplier of ultra-rugged computing and display solutions for the BMS programme. We believe that the breadth of our product line and our

peerless credentials from the US and UK Army BMS systems, combined with our proud reputation for best-of-breed quality and customer-focus, make us an attractive partner for the Indian industry, and ultimately the Indian Army. We have proven solutions that are cost-effective.

SP's: DRS Tactical Systems are used by the US and allied forces in the on-going conflicts in Iraq and Afghanistan. What are these products and what has been the feedback on their performance?

Guyan: We have provided more than 60,000 FBCB2 Computing and Display Systems to the US Army and more than 13,000 BOWMAN Computer

systems to the UK Army. The feedback on both systems has been very positive. Our systems have performed so well and proven themselves so reliable that our largest customer, the US Army, no longer purchases warranty for our systems.

SP's: The Indian Army is planning to acquire network-centric enabled capability. Do you have any plans to be part of these programmes?

Guyan: The potential size of the Indian Army's requirements makes every new programme interesting. Certainly, we are especially interested in soldier, vehicle and command post requirements for rugged computing and display systems.

SP's: How do you propose to tackle the problem of technology transfer?

Guyan: Actually, in most cases, the US State Department process for ITAR-controlled items can be followed without impact to our customers. We have found that early identification of opportunities and an early start of the licensing process can result in timely approvals that don't interfere with customer programme timelines. We have already begun necessary activity for the Indian BMS programme. •

ATOS: Airborne Tactical Observation & Surveillance system



ATOS is the world leading solution provided by Selex Galileo to the growing demand for border control, wide area surveillance, targeted surveillance (overt or covert), environmental and disaster control, integrating a wide number of sensors and subsystems in a highly modular design.

It typically includes the following sensors:

- Surveillance radar
- Multisensor turret
- Data Link
- Direction finder
- SLAR
- ESM
- IR-UV Scanner
- Laser warning receiver
- Missile warning system
- Countermeasures dispensing system
- Defensive aids system controller
- Directional infra-red countermeasures (optional)
- Radio Frequency countermeasures (optional)
- Electronic warfare operational support facilities •

HIDAS: Helicopter Integrated Defensive Aids System

Components of HIDAS include:

- Radar warning receiver

Dassault Falcon



Falcon 7X #4

The Falcon 7X #4 will be on display at AERO INDIA. At the end of 2008 we had a backlog of more than 240 Falcon 7Xs (More than half a dozen coming from Indian customers). To date 30 a/c have been delivered worldwide. It has been a smooth entry into service without any major technical issue. The comments that we got from the pilots are all very positive. Our customers have flown a great number of long range flights and the feedback has been very consistent. The cabin is spacious, quiet and bright.

The environment and pressurization are setting new standards. And the airplane stability is exceptional. The digital flight control system provides exceptional control and response, and is particularly appreciated by the pilots. More than 250 have been trained to date.

The a/c has been certified for steep approach last year and has made a very successful campaign in London City last quarter in order to be approved by the local authorities (final approval is expected in the next coming days). The 7X will not only be the biggest business jet approved for London city operation but by far the one presenting the best performances and range.

We're coming to the show on the back of a very good year despite the

downturn which has started to affect our sales last quarter. Until October our company continued to witness an impressive rate of growth in Europe, Russia, the Middle East, India and Brazil. At the end of last year we had a total backlog of more than 500 a/c. In order to anticipate the consequences of the current market trend we've decided to slow down the pace of entry into the production cycle for green aircraft. These changes will only affect deliveries beginning in 2011. Dassault will still be completing a higher number of aircraft from the Completion Centers in 2009 and 2010 to meet order book requirements. The company is also taking measures to be able to react swiftly, should the market recover. The completion rate should exceed 100 by end of 2009. 4 Falcons will be delivered in India in the next two months.

Falcon 2000LX

The Falcon 2000LX is expected to enter into service in the second quarter. It is our second best selling aircraft much appreciated for its low costs of operation and its fuel efficiency. The Falcon 900 series have also renewed with great success since the launch of the new LX version last May at EBACE. We'll plan to deliver 4 more Falcons in India in the next two months.

Falcon aircraft are very optimized in terms of structure, aerodynamics, weight, they always have been lighter, more compact and basically more efficient than their competitors. We could credit that to our Fighters and military heritage as well as our advanced technology. Our airplanes are featuring an average of 40% less fuel consumption levels in the category of large cabin airplanes. It means also the lowest emissions. No doubts this is probably one of our best asset at this time. The new 900LX will make one of the most popular Falcon series much more capable, economical and environmentally responsible to operate – an issue that means more today than ever before. •



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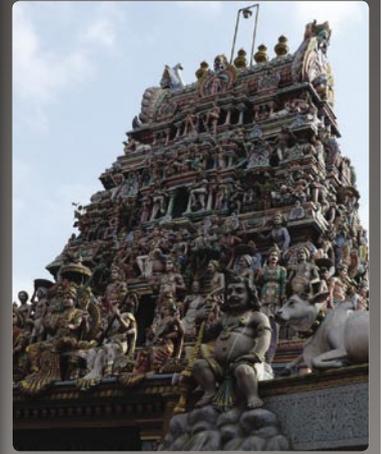
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Bangalore Shopping

Bangalore has become a shopper's paradise. With popular shopping areas like MG Road, Brigade Road, Commercial Street, Majestic area and Jayanagar Shopping Complex, as well as little shops (tucked away behind the big malls) stocking up trendy stuff. From the air-conditioned ambience of Shopper's Stop and Kemp Fort to the bustling bylanes of Chickpet, Bangalore has something to offer every kind of shopper. You could find some of the biggest brands in the world while strolling down Brigade Road, or exquisite silk sari somewhere in the City Market. Be it Kancheepuram Silk or Swarovski crystal, chances are you will find it in Bangalore. This city offers sandalwood, silk and handwoven materials. The Karnataka Handloom Development Corporation's 'Priyadharshini' Handloom House is located at various places. 'Kalakruti' on Kasturba Road is a good place to buy specialties, like fine Mysore Silk and sandalwood and sandalwood items. The inlay work from Karnataka in brass, rosewood are any collectors hunt. Ivory artifacts and the Lambani Jewellery make good decorative as well as gift items.

Tourists attractions in Bangalore

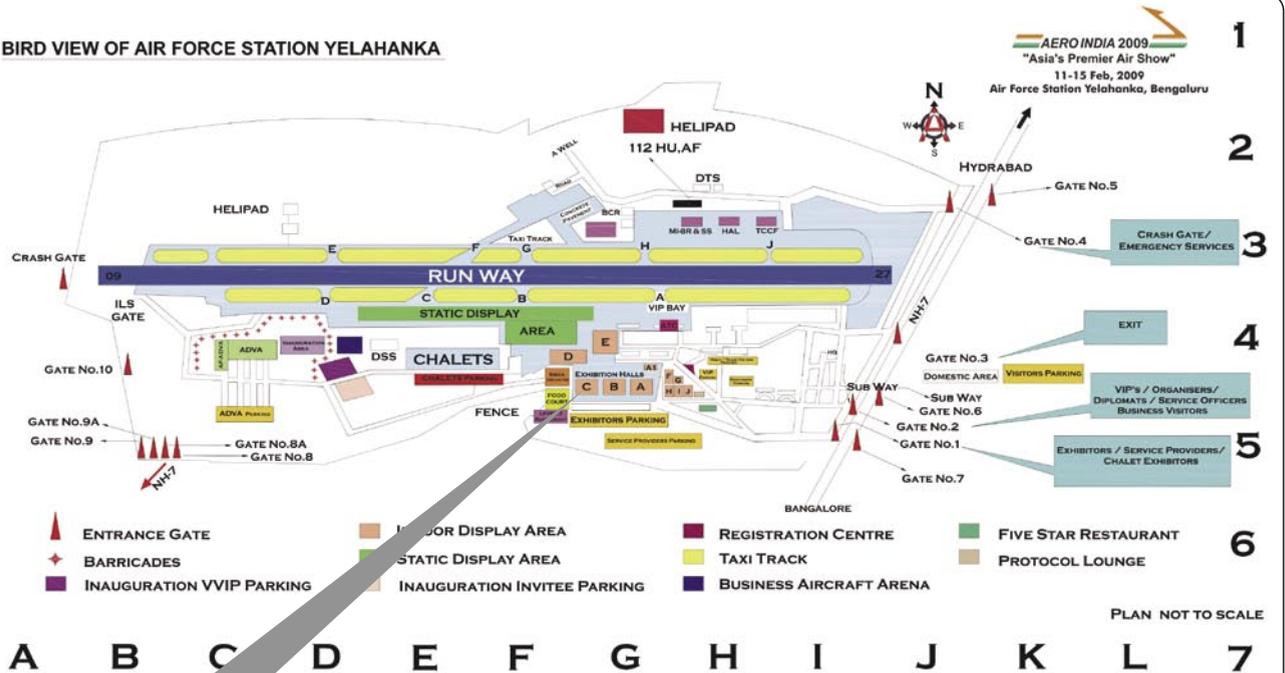
Bangalore city has historical sites and other places of interest. The Vidhan Soudha or the State Secretariat, built in 1954, is the main attraction of this city. It is a marvel of modern architecture and is a fine amalgamation of traditional Dravidian and modern styles. Cubbon Park, located near the Vidhan Soudha, has a number of neo-classical styled government buildings. The Lal Bagh Botanical Gardens, which holds a number of flower shows, especially during the Republic Day, is located on the southern fringes of the city. The 18th century Tipu Sultan's Fort and Palace are other important places of interest. The Venkataramanaswamy Temple, the Gavi Gangadharaeswara cave temple, and the Someshwara Temple are other important temple of this city. The Ulsoor Lake on the northeastern edge of the city is an important picnic spot. Bannerghatta National Park, 21 km from the city, is an important place to visit. Devarayandurga, 70 km from Bangalore, is famous for its hilltop shrines. Whitefield Ashram, the summer abode of the Shri Sathya Sai Baba, 20 km east of Bangalore, and the ISKCON Temple Complex are worth paying a visit. The historic city of Mysore, 139 km from Bangalore, has a number of monuments belonging to Hyder Ali and Tipu Sultan. It also has ancient Hindu temples and a few monuments built by the British.



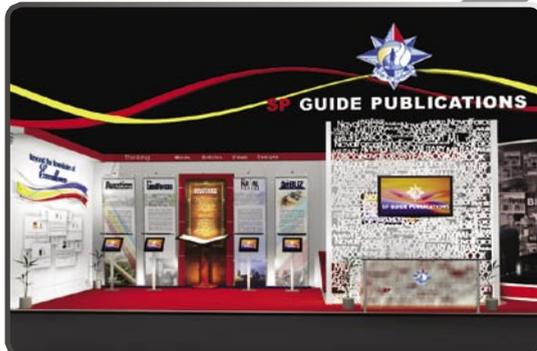
SP's at Aero India 2009



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