Shared Horizons

US - India Aviation Cooperation Program

A Biannual Publication of the US-India Aviation Cooperation Program

Inside

Special Issue - India Aviation 2014

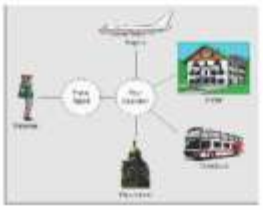
C.D. AVIATION

EASTERN AND NORTH-EASTERN INDIA'S LEADING GENERAL AVIATION COMPANY

Our Services:

One-Stop Portal for General Aviation in India

Provision of Intra-Regional Air Connectivity



Online Connection of Travel Agents and Charter Operators

Co-ordination of Medical Evacuation and Air Rescue

Development of Regional Low Cost Airports

Training of Aviation Professionals

DELHI OFFICE:

Capt. Aakarsh Sokhey
AVP Operations
+91-8130177008
aakarsh@cdaviation.com

CORPORATE OFFICE:

Ricky Surie
Managing Director
20 Park Road
Jamshedpur– 831001
rickysurie@cdaviation.com

REGISTERED OFFICE:

21, Old Court Street,
4th Floor,
Kolkata- 700001
West Bengal

www.cdaviation.com

CJ Collins
ACP Co-chair (Government) &
FAA Senior Representative
to South Asia

Yash Kansal
ACP Co-chair (Industry) &
Country Manager–India/SAARC
Oshkosh Corporation (India)

PUBLICATION DATA

Editor & Published by
Ajay Kumar
Program Director on behalf
of US–India Aviation
Cooperation Program (ACP)
PHD House, Room No.403,
4/2 Siri institutional Area,
August Kranti Marg,
New Delhi– 110016
Mobile : +91 9818095425
ajay.kumar@us-indiaacp.com
Web: www.us-indiaacp.com

Coordinator
Nidhish Jain
Program Assistant
US–India Aviation
Cooperation Program (ACP)
PHD House, Room No.403,
4/2 Siri institutional Area,
August Kranti Marg,
New Delhi– 110016
Tel: +91-11-26602302 (D)
Mobile : +91 9868483500
nidhish.jain@us-indiaacp.com
Web: www.us-indiaacp.com

Printed by
MULTIPLEXUS (INDIA)
C-440, DSIIDC,
Narela Industrial Park,
Narela, Delhi-110040, INDIA
Tel.: 91 9971598974 / 75 / 76
multiplexusindia@gmail.com

Designed by
AZTRAK SOLUTIONS
aztrak@gmail.com

Message from the Co-Chairs

We are pleased to present to you the July 2013 – March 2014 issue of "Shared Horizons." This was a very busy and productive period for ACP as we executed our flagship event "US-India Aviation Summit" in Washington DC, staffed the ACP Secretariat, partnered with trade chambers on joint aviation events, and renewed our overall commitment to India's aviation market.

The fourth U.S. – India Aviation Summit was held in October 2013 in Washington DC, and succeeded in strengthening cooperation between India's aviation leaders and U.S. technology providers to the benefit of both of our countries. The Summit featured participation of high-level aviation officials from the U.S. and India including USTDA Director Lee Zak, U.S. Secretary of Transportation Anthony Foxx, India's Minister of Civil Aviation Ajit Singh and India's Secretary of the Ministry of Civil Aviation KN Shrivastava. The Summit built upon the results of previous biennial conferences, and we are happy to report that the event was very successful and fully met the objectives of the ACP.

We are also pleased to report the hiring of the new ACP Program Director Ajay Kumar. Ajay joins the ACP after more than 20 years of extensive work experience with the US Government. We welcome Ajay and look forward to the growth of ACP under his direction.

ACP also supported events such as the Civil Aviation Development Summit (CADS) and the US-India Resurgence Summit to advance the bilateral civil aviation relationship.

ACP bid adieu to outgoing Secretary Shrivastava, Director General of Civil Aviation Arun Mishra and Airports Authority of India Chairman VP Agarwal. ACP, wishes them the best in their future endeavours and looks forward to working with the new leadership at the Ministry of Civil Aviation.

With the U.S. as the Partner Country at India Aviation 2014, we are excited to continue the growth momentum and our relationship building at this important event.

In 2014, the ACP will continue to propose and deliver projects that provide training and technical expertise in close cooperation with MOCA, DGCA, AAI and BCAS.

As the ACP Co-chairs, we look to the ACP's future with enthusiastic anticipation. The ACP membership has built a solid foundation from which to measure objectives and goals. The Shared Horizons ahead looks promising and limitless.

ACP Milestones

2005
- ACP Announced by Secretary Mineta and Minister Patel

2006
- Groundwork Meeting

2007
- MoU between: US Department of Transportation, US Trade & Development Agency, and Ministry of Civil Aviation
- US-India ACP Inaugural Session: ACP Formed
- US – India Aviation Partnership Summit: New Delhi

2008
- FAA conducts Air Traffic Management Training Program
- ATCO Manpower Assessment study
- Air Traffic Flow Management Seminar

2009
- Grant agreements signed for DGCA officers' training (Phase-I) and Aviation Standard Technical Training
- US – India Aviation Partnership Summit: Washington D.C.

2010
- Grant agreement signed for Helicopter Safety Technical Assistance
- Automatic Dependent Surveillance – Broadcast (ADS-B) Seminar
- Ground Based Augmentation System (GBAS) Seminar

2011
- Grant agreement signed for launching GBAS in Chennai
- US – India Aviation Summit: New Delhi

2012
- Grant agreement signed for Aerospace capacity software simulation project

2013
- Grant agreements signed for PBN, DGCA officers' training and Airport GIS
- US – India Aviation Security Seminar
- US – India Aviation Summit: Washington D.C.

ACP Mission, Objective, Focus Area

Misson

The U.S-India Aviation Cooperation Program (ACP) was established in 2007 as a public-private partnership between the U.S. Federal Aviation Administration (FAA), the U.S. Trade and Development Agency (USTDA), other US Government agencies and U.S. Companies.

The ACP supports the growth of the Indian civil aerospace sector by working directly with the Government of India (GOI) to identify and execute projects that encourage collaborations between US and Indian stakeholders, in the area of aerospace technology and best practices.

Objective

- Promote greater engagement between US and Indian Government agencies and industry to enhance civil aviation in India.
- Undertake projects that advance Cooperation in domains such as aviation safety, security, regulatory oversight and management.
- Provide training and technical assistance to accelerate excellence in aviation operations.
- Within India, increase awareness of, and facilitate access to, US expertise, technology and best practices to assist India's aviation growth.

Focus Areas

- NextGen/Future Air Navigation System
- Air Traffic Management Modernization
  - Satellite-based Navigation System
  - Ground –based Navigation System
  - Automatic Dependence Surveillance Broadcast
  - Radar Integration
- Airspace and Airport analysis, Development and Planning – Using software simulation toolkits and GIS

  Aviation support Industry Development
- Aviation Human Resources – Foster partnership between U.S. and Indian training organizations
- Aviation Safety – Promoting Global Harmonization and sharing of U.S. Best practices
- Aviation Security – Enhance capacity to facilitate early adoptions of cutting edge technologies
- Collaboration on development of Regional Transport Aircraft

In partnership with

- Ministry of Civil Aviation
- Directorate General of Civil Aviation
- Airports Authority of India
- Bureau of Civil Aviation Security

Completed Projects

- Air Traffic Management Training Program
- Air Traffic Flow Management Seminar
- Automatic Dependent Surveillance – Broadcast (ADS-B) Seminar
- Ground Based Augmentation System (GBAS) Seminar
- Airport Regulatory and Financing Best Practices Seminar
- Helicopter Aviation Safety Technical Assistance
- AAI ATCO Manpower Assessment
- Technical, Management, and Operational Development Training (TMODT) Program – Phase-I
- Aviation Standard Technical Training

Ongoing Projects

- Technical, Management, and Operational Development Training (TMODT) – Phase-II
- GBAS Pilot Project: Chennai
- Performance Based Navigation (RNP-AR) at 3 airports
- Overall capacity assessment of the airports using software simulation

FY - 2014 Projects

- Geographical Information System (GIS) for Indian airports

Cessna receives FAA certification, begins deliveries of new Citation Sovereign+

Cessna Aircraft Company, a Textron Inc. (NYSE:TXT) company, began deliveries of the newly certified Citation Sovereign+ midsize business jet on December 23.

The new Citation Sovereign+, whose name now includes a "+" to more clearly differentiate it from its predecessor, brings increased range, updated technologies and enhanced performance to the company's established Citation Sovereign business jet.

Brad Thress, Cessna senior vice president of Business Jets, says: "The Citation Sovereign+ makes a great airplane even better. We started with an aircraft popular for having one of the most comfortable cabins in its class, not to mention superb performance and reliability. We increased the full fuel payload, added winglets, cutting-edge Garmin G5000 avionics, auto throttles and outstanding performance for hundreds of dollars less per hour than any aircraft in its category. Our customers are looking forward to seeing the aircraft with winglets, giving it a distinct appearance as well as an aerodynamic boost that means 150 additional nautical miles of range."

Cessna achieved Federal Aviation Administration certification on the new Sovereign+, clearing the way for deliveries to order holders from around the world.

Featuring winglets and the new Pratt & Whitney Canada PW306D engines providing 5,852 pounds of thrust, the Citation Sovereign+ has a range of 3,000 nautical miles (3,452 statute miles), a top speed of 458 knots (527 miles per hour) and a direct climb to 45,000 feet.

The new cockpit is designed around the Cessna Intrinzic Flight Deck powered by Garmin G5000 avionics. An integrated, workload-reducing auto throttle system streamlines the pilots' tasks. New cabin amenities include the integrated Cessna Clarity™ cabin management system with user-friendly touch-screen controllers and all new, larger and more comfortable seats.

Cessna is offering the Sovereign+ with a unique Sovereign Shield program covering all scheduled maintenance and parts costs for the aircraft's first five years or 1,500 flight hours, practically eliminating maintenance-related direct operating costs and allowing owners to operate the Citation Sovereign+ for far less than other business jets in the midsize category.

In service since 2004, the Citation Sovereign has reached a fleet of 349 aircraft worldwide and amassed more than 802,000 flight hours. Cessna announced plans for the new Sovereign+ at NBAA in October 2012. The first production aircraft rolled off the assembly line in Wichita in early March followed by first flight of the unit in April.

For more information about the Citation Sovereign, visit Cessna.com, call +91.98.4518.9245, or email sdeshpande@cessna.textron.com.

US – India Aviation Summit,

ACP Co-chair (Industry) Yash Kansal delivering remarks at Summit

FAA Sr. Representative CJ Collins with Dr. Shefali Juneja

FAA Administrator Michael Huerta presenting Distingwish service award to Ajay Kumar

October 2013, Washington, DC

Minister of Civil Aviation Ajit Singh delivering key note remarks

Joint Secretary Dr. Prabhat Kumar with Director Lee Zak

AAI Board of Directors Sudhir Raheja and Somasundaram with Executive Director A.K. Sangal

The Honorable Lee Zak delivering key note remarks

AIA President Marion Blakey with
Director General Arun Mishra

FAA Administrator Michael Huerta

CRPF Inspector General Sahay with
TDA County Manager Katherine Michaud

FAA's Director for Airport Compliance
Randy Fiertz with Director Lee Zak

V. Somasundaram, Board of Director
(Air Navigation Service), Airports Authority of India

Boeing India President Prat Kumar with MoCA Official Bimal Kumar

Secretary K.N. Shrivastava addressing the Summit

Raytheon Sr. Executive & Country Director Nik Khanna with Business Aviation VP Karan Khanna

DIAL's CEO I.P. Rao addressing session on Airport Infrastructure Development

Hi-Tec Systems President Trib Singh recalling ACP's early days with ACP's founding Co-chair Randy Fiertz

BCAS additional Commissioner Dhoke delivering remarks in General Session on Aviation Security

ACP Co-chairs – Yash Kansal & CJ Collins

FICCI's Ranjana Khanna with AERA Chairman Yashwant Bhave

USTDA's South and South East Asia Team – Jammie, Henry, Katherine & Mehnaz

ACP Members signing up for 1-1 meetings

Former Was Program Manager & Raytheon Sr. Executive Dan Hanlon delivering remarks on the Session on "Airspace Safety, Efficiency and ATM Improvement"

Air India's Harpreet De Singh with CVO B.K. Maurya

Honeywell India Team –
Ashwini Channan with Sasi Kancharla

Cochin International Airport Jose Thomas

AVM Sridharan with Bell Helicopter MD Singh Deo

GVK Vice Chairman Sanjay Reddy

Executive Director A. K. Sangal with ACP Co-chair Yash Kansal
and Hi-Tec Inc. President Trib Singh

Director Lee Zak with Secretary K.N. Shrivastava

Oshkosh Corporation Leadership Desmond Soh and Yash Kansal with Boeing's Bryan Lopp

DGCA's Deputy Director General Lalit Gupta with GAMA's Ed Smith

GE's Regional Marketing Director Sohinder Singh with TDA Country Rep Mehnaz Ansari

Rapiscan Systems' Sanjeev Mehta at Q&A Session

Hi-Tec VP Dr. Kalpana Jain with TSA Rep. Quang Nguyen

GAMA Sr. VP ED Smith addressing Session on General Aviation – Policy and Training

Eminent aviation Attorney Lalit Bhasin moderating session on Aviation Security

Link Legal's Managing Partner Atul Sharma with Bell's MD Singh Deo

Landrum & Brown's Debayan Sen

Universal Weather's Lex Herder with CISF Inspector General Sahay

Ted Farid and John Williams promoting Beechcraft in India

TDA Country Rep. Mehnaz Ansari with MoCA's Bimal Kumar

Honeywell's Chris Benich delivering remarks at Summit

Harris' Mike Vine delivering remarks at Summit

India delegation at Chicago Department of Aviation

WHEN THE WORST CASE SCENARIO CAN BE A DAILY EXPECTATION, YOU'RE EXPECTED TO LEAD.

FOLLOW NO ONE.

An extreme world demands extreme performance. The completely redesigned Striker ® helps you take control of the most volatile Aircraft Rescue and Fire Fighting threats, equipping you with all-new standards in fire suppression technology, chassis performance, visibility and overall safety.

OSHKOSH

www.oshkoshcorp.com

Oshkosh Corporation India Office
Unit 1 and 3, Grand Plaza, The Grand Hotel
Nelson Mandela Road, Vasant Kunj Phase II,
New Delhi 1100070
Tel: +91-11-42890400
Email: ykansal@oshkoshcorp.com

Performance Based Navigation – making our skies more efficient

India's aviation sector is one of the fastest growing aviation markets in the world. In the last decade, domestic air traffic has more than quadrupled from 13 million to 60 million while international traffic more than tripled to over 40 million. On the flip side, India is already experiencing the effects of increased air traffic, including congestion, extra fuel burn, noise levels around airports and flight delays.

Aviation stakeholders in India have been working to alleviate air traffic congestion through their Future Air Navigation System (FANS) master plan to "modernize the skies" – part of which is the use of Performance-based Navigation (PBN) technologies that will allow aircraft to fly more accurate, yet flexible, flight paths.

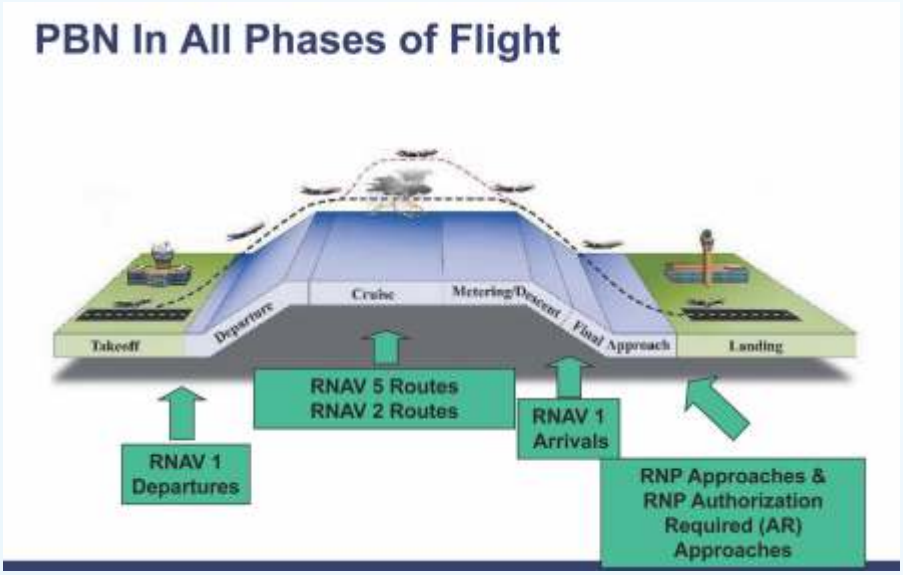
As the cornerstone to airspace modernization efforts, PBN has the ability to bring efficiency, predictability and increased capacity to airspace. These flight paths, which utilize satellite-based navigation technology, have the ability to solve a number of operational issues including improved airport access, reduction in flight time and fuel burn, and simplification of pilot/controller workload.

Improving Performance

A fundamental aspect of the modernisation of airspace is a move toward PBN; a broad term used to describe a number of technologies (with varying levels of benefit) that allow aircraft to fly more flexible and accurate three-dimensional flight paths. By making greater use of equipment on-board large commercial aircraft, most notably the Flight Management System (FMS), PBN technologies free aircraft from their reliance on fixed, ground-based radio-navigation aids.

For example, one form of PBN is Area Navigation (RNAV). On-board equipment calculates direct navigation paths between points without the aircraft having to overfly intermediate, ground-based navigation aids. While RNAV paths are typically limited to straight lines, they represent an improvement over conventional, ground-based navigation.

Another form of PBN is Required Navigation Performance (RNP) in which the aircraft's on-board navigation system provides performance monitoring and alerting, allowing the aircraft to fly precise, three-dimensional trajectories. There are different types of RNP and one of the simplest (known as RNP APCH) provides instrument approaches to runways that do not currently have



adequate groundbased navigation facilities. Or they can be used to back up existing ground-based navigation procedures.

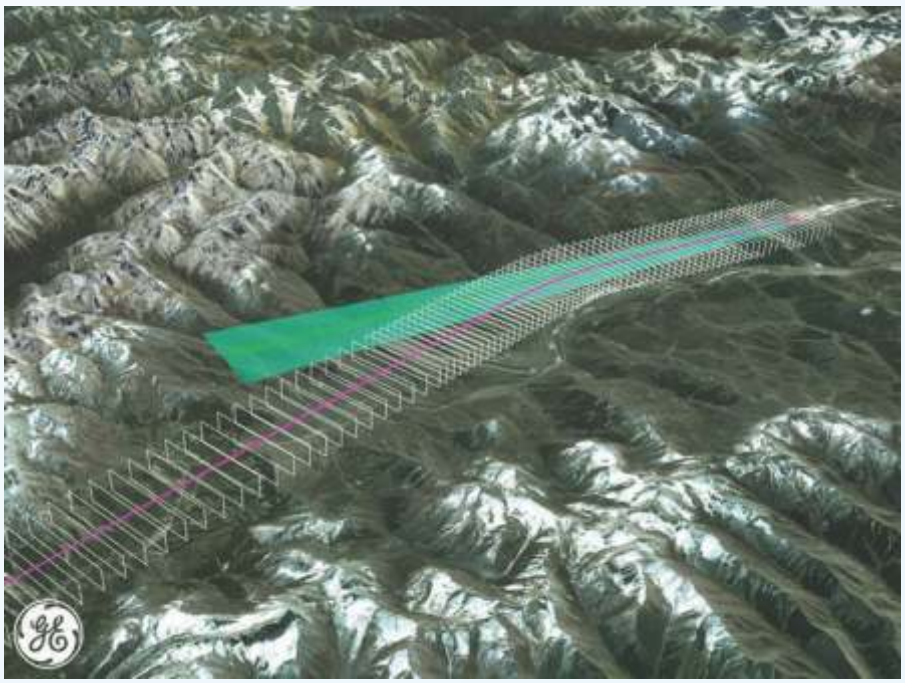
The highest performing type of PBN is the RNP AR (also known as RNP SAAAR, which stands for Special Aircraft and Aircrew Authorization Required). An RNP AR path is typically crafted to reduce track miles, conserve fuel, preserve the environment, and increase airspace capacity. RNP procedures, are superior to conventional procedures because they are more flexible, require less airspace and can be engineered with aircraft performance in mind. Unlike conventional procedures which utilize a series of straight legs, RNP offers curved flight paths. These curved legs allow it to go around terrain or obstacles that the straight-in localizer of an ILS just can't do. Less space is required for obstacle clearance due to superior track-keeping capability. Finally, paths can be designed to take into account the flight characteristics of a single or group of aircraft performing various maneuvers. RNP procedures can be made to accommodate the profile of a continuous descent approach or the climb gradient of an aircraft with one engine inoperative.

RNP AR procedures require specific aircraft functionality and pilot crew training in order to be used. They are extremely accurate though. For example, in a trial in Brisbane Australia, aircraft flying optimized RNP AR paths demonstrated that they can adhere to a lateral path of plus or minus 70 feet; i.e. less than the wingspan of most aircraft.

This kind of navigation accuracy and performance will, ultimately, allow air traffic controllers to safely reduce spacing between aircraft and will help reduce air traffic congestion and delays. In addition, because RNP delivers precise, yet flexible guidance to a runway, independent of ground-based navigation systems (such as ILS) operation airport operation becomes almost "all weather".

GE Aviation has worked with airlines, regulators, air navigation service providers (ANSP) and airport authorities to deploy RNP programs across the world.

During the U.S.-India Strategic Dialogue in New Delhi last year, USTDA Director Leocadia I. Zak announced the Agency's support for a Performance Based Navigation Project to assist the Airports Authority of India (AAI) in adopting technologies to increase aviation airspace capacity and energy efficiency. This grant was later signed in New Delhi by John McCaslin, Minister Counselor for Commercial Affairs at the U.S. Embassy in New Delhi, and V. Somasundaram, Member, Air Navigation Services, AAI. This project will be undertaken by Naverus, a GE subsidiary. The technical assistance will demonstrate how PBN procedures can be developed, certified and implemented at three key airports in India.



GE is designing RNP paths at 15 Malaysian airports: the paths at Penang can save participating airlines up to 8 track miles per flight vs. conventional procedures

MOOG

Moog is a global designer, manufacturer and integrator of precision motion control products and systems. Moog has had a local presence in India for more than two decades. Moog's India Technology Center (MITC) in Bangalore includes a staff of nearly 300 people providing engineering, design, test and certification for mission critical aerospace and defense systems.

Moog Bangalore Technology Center

Moog Provides Flight Control Computer and Software for 747-8

In 2007, Boeing selected Moog to provide the lateral control electronics (LCE) for the Boeing 747-8. The Boeing 747-8 Intercontinental and the 747-8 Freighter are the new high-capacity 747s, which recently entered revenue operations.

As part of the program, Moog designed, manufactured, qualified and provided certification support for the LCE. The function of the LCE is the control of fly-by-wire aileron and spoiler actuators.

The system leverages Moog's proprietary dual redundant, triplex dissimilar architecture and builds upon expertise gained designing and certifying flight control systems on other civil programs.

As part of this multi-year development program, the Bangalore engineering team played a key role in system analysis, software Independent Verification & Validation (IV&V) and detailed documentation to support the overall system certification.

747-8 software testing in lab at Bangalore facility

Moog Supplying Primary Flight Control Actuation and Trailing Edge Actuation Systems for Airbus A350 XWB

In 2007, Airbus selected Moog to provide design, integration and certification support for the Primary Flight Control Actuation on the A350 XWB. The A350 XWB is a family of medium capacity, long-range wide-body aircraft scheduled to enter revenue service in 2014.

Moog is providing 29 discrete actuators and associated control electronics on this program. This system includes a mix of electrohydraulic (EH) and highly integrated electrohydrostatic (EHA) actuators to control the primary flight surfaces. Each actuator includes on-board electronics for loop closure and diagnostics. Moog was subsequently selected to supply the Trailing Edge High Lift Actuation System.

Moog's Bangalore engineering team provided system analysis, software IV&V, hardware-software integration testing, detailed documentation, and Safety of Flight, Endurance and Environmental Qualification Testing to support the overall system certification.

A350XWB actuator testing in Bangalore hydraulics lab.

Moog Bangalore Contacts:

David Ranson
Moog, Inc., Aircraft Group

V. Nagaraja
Moog Inc., Aircraft Group,

Next-Generation GE90 Engine Takes Shape with GE9X

When the Boeing Company selected GE Aviation to design and manufacture engines for its new nextgeneration 777 aircraft, it was the continuation of many years of collaboration between the two companies that dates back to 1999 with the GE90-powered 777 family. Today, more than 2,000 GE90 engine have been sold to date, including 1,500 GE90-115Bs on order for customers of the Boeing 777-300ER, 200LR and 777 Freighters. The GE90-115B-powered Boeing 777 aircraft is considered to be one of the most popular aircraft combinations in service. The GE90 is a key program for GE and its revenue sharing participants Snecma of France, Avio Aero of Italy and IHI Corporation of Japan.

GE90 becomes GE9X

The latest model in the highly successful GE90 engine family is the GE9X. GE Aviation has been hard at work for several years developing new technologies.

The advanced technologies in the 100,000 lbs. thrust class GE9X engine will provide a 10 percent improvement in fuel burn over today's GE90-115B. Key features include a 133" diameter composite fan case and 4th generation composite fan blades; next-generation 27:1 pressure ratio high pressure compressor (HPC); a 3rdgeneration TAPS (twin annular pre-swirl) combustor for greater efficiency and low emissions; and ceramic matrix composite (CMC) material in the combustor and turbine.

Let's take a closer look at some of these advanced technologies.

Taking fan technologies to the next level

The GE9X fan module incorporates several unique features. The front fan of the new engine will be the largest of any GE engine at 132 inches in diameter and include a durable, light-weight composite fan case similar to the fan case on the GEnx. The fan case will lower the weight by 350 lbs. per engine compared to a metal fan case.

"The GE9X fan blade will feature new high strength carbon fiber material and a steel alloy leading edge," said Millhaem. "This new material along with a higher fan tip speed will improve the efficiency of the low pressure turbine and deliver improvement in fuel efficiency compared to the GE90-115B engine."

The fan blades in the GE9X engine will be fourth generation composite fan blades. GE Aviation developed the first composite fan blade for its GE90-94B engine in 1995. Composite fan blades are also featured in the Ge90- 115B and GEnx engines. GE has accumulated more than 30 million flight hours with composite blades and anticipates more than 100 million flight hours of experience when the GE9X enters service later this decade.

Current plans call for the GE9X engine to feature 16 fan blades, which are two fewer blades than the GEnx and six blades less than the GE90-115B. This fan blade reduction is possible with advancements in three dimensional (3D) design capabilities that enable engineers to create a more swept design and larger fan chord.

Record setting compressor

The GE9x engine features an 11-stage HPC with new aerodynamic technology and a 4th generation powered alloy material that will produce a 27-to-1 pressure ratio, which will be the highest pressure ratio of any commercial engine in service. The new HPC design will significantly increase thermal efficiency and contribute to the 10 percent improvement in the engine's fuel burn.

GE Aviation assembled a 90 percent scale rig of the full size HPC, and the rig test will be conducted at a GE Oil & Gas facility in Massa, Italy in August. The HPC rig will include more than 1,000 pieces of instrumentation.

Among the test cell upgrades are: an enhanced ventilation system capable of the cooling and heating required by the HPC module, a unique exhaust frame and water quenching system and new instrumentation and data acquisition systems.

TAPS: Lean burn at its finest

Lowering exhaust emissions in jet engines, especially oxides of nitrogen (NOx), continues to be a worldwide requirement. GE has proven to be at the forefront with its unique Twin Annular, Pre-mixing Swirler (TAPS) combustor.

The technology has been proven on the GEnx engine, which powers the Boeing 787 Dreamliner and 747-8 aircraft. For the GE9X engine, GE has evolved the technology to its third generation.

The combustor is the section of an engine where fuel is burned. The key to the TAPS combustor is how air and fuel are pre-mixed before they are burned in the combustor. Air from the high-pressure compressor is directed into the combustor through two high-energy swirlers adjacent to the fuel nozzles. This swirl creates a more homogeneous and leaner mix of fuel and air, which burns at lower temperatures than in previous jet engine designs.

The vast majority of NOx is formed by the reaction of oxygen and nitrogen at high temperatures. NOx levels increase the longer the burning fuel/air mixture stays at high temperatures. The lower temperatures generated in the TAPS combustor results in significantly lower NOx levels.

In addition to lowering ozone-depleting NOx emissions, the TAPS combustor will produce low levels of carbon monoxide, and unburned hydrocarbons. TAPS also has the potential to significantly reduce soot and related exhaust particulates. Also, because the TAPS combustor burns at lower temperatures, it will improve the life of components further downstream in the engine.

For the GE9X, the combustor will have to operate at the highest inlet pressures and temperatures ever and the engineers have redesigned the TAPS combustor to handle these higher temperatures while producing lower NOx emissions by incorporating ceramic matrix composite (CMC) inner and outer liners and next-generation mixer.

To test the combustor at full inlet pressure and temperature conditions, GE is building a special purpose facility to accommodate the rig. The full annular rig test is scheduled for late 2014 or early 2015.

Break-through in materials with CMCs

GE has been developing and testing ceramic matrix composite (CMC) material for several decades. The GE9X engine is among the first GE engines to incorporate this new material into the combustor and high pressure turbine modules.

CMCs weigh about one third of their comparable metal parts with twice the strength advantage and greater thermal capabilities. This allows for more flexibility in the engine design by taking weight out for the components as well as in the supporting structures.

Besides the combustor liner, the GE9X is evaluating using CMC in the stage 2 high pressure turbine blade. The engine benefits from the lower weight of the blades, smaller and lighter rotating structure, and finally, as it is a non-cooled part, more of the air will stay in the primary flow path where it will benefit fuel burn.

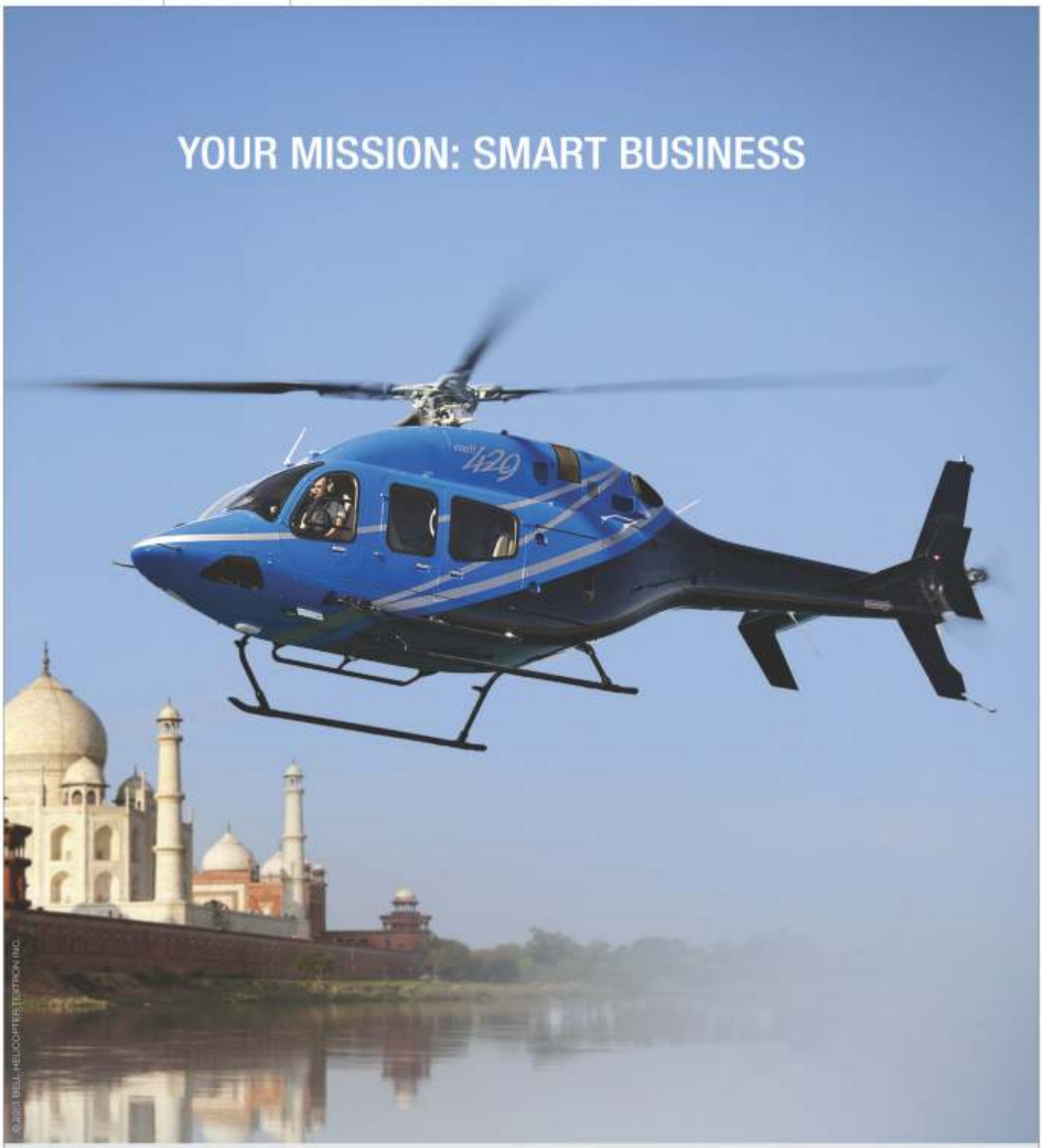
Engine development program on track

"The GE90 engine has developed a strong reputation in the aviation industry and we are building on this reputation with the GE9X," said Millhaem. "While we've been working on the technology for the GE9X for several years, we look forward to building the first full scale engine and running it for the first time. There is nothing like that moment and we are just a few years away from this milestone in the program."

The first engine to test is scheduled to happen in 2016. This milestone will be followed by flight testing on Ge's flying testbed in 2017 and engine certification from the Federal Aviation Administration is anticipated in 2018.

"The program is in good shape, and customers have responded enthusiastically to the new technologies we are offering," added Millhaem. "We look forward to designing, testing and delivering the GE9X engine to our customers by the end of the decade."

COMMERCIAL | MILITARY | CUSTOMER SUPPORT & SERVICES



You didn't get to where you are by compromising. Neither did Bell Helicopter, which is why there are no compromises in a Bell 429. With impressive range and speed, plus an astonishingly smooth and quiet ride, the Bell 429 gets you where you need to go in comfort and style. Spacious and adaptable, it was designed precisely for your fast-paced, high-stakes world.

Bell Helicopter®
A Textron Company

BELLHELICOPTER.COM | BDeo@bh.com | +91-11-49343100

On a Mission.

India Airports GIS to deliver enhanced safety and efficiency

Chad Snoke, PS; Dr. Kalpana Jain, Country Manager For India, Hi-Tec Systems

Airports Authority of India (AAI) has been very proactive in addressing the challenges and the demands posed by the rapid growth of Air Traffic in India. With over 120 airports in India and many more planned over the coming decades, there will be increasing capacity demands throughout the AAI airspace that must be satisfied in a safe, efficient, and environmentally responsible way. The development ofAirports Geographic Information System (AGIS) prototype is one of the many initiatives by AAI to satisfy this demand. AGIS in India, as the single authoritative database of aeronautical data, is one of the key components to India's efforts to modernize their infrastructure for the rapidly growing aviation industry.The implementation of an AGIS can be leveraged to meet the ever-changing needs of AAI and facilitate implementation of Next-Gen technologies such as GAGAN, GBAS etc. Hi-Tec Systems, Inc. in support of the Airports Authority of India (AAI) under the auspices of the U.S.-India Aviation Cooperation Program (ACP) and sponsorship of US Trade Development Agency (USTDA) has undertaken the task of development and implementation of AGIS prototype in India.

Benefits of Proven Technology:

The Airports Authority of India's AGIS prototype will be similar to the Federal Aviation Authority's (FAA) Airports-GIS program, which began development in 2006. The FAA's system was designed to meet thesimilar geospatial data challenges faced by airports and the AAI, namely the efficient and standardized collection, submission, and management of critical data. The FAA AGIS program provides a central repository to meet these challenges and implements the data collection through three Advisory Circulars that establish guidance for collection and submission of aeronautical data to communicate important changes to the FAA directly. The FAA Advisory Circulars also provide criteria for the quality review and acceptance of data deliverables to ensure consistent and reliable data.

The FAA has realized multiple benefits through usage of to the AGIS as decision-making tool and has implemented several data collection modules to enable airports to submit data for a wide variety of purposes. The centralized GIS is a interactive, comprehensive repository and allows all stakeholders to instantly access all the airport's latest data online, in a geographic representation that can be searched and edited.

Similar to the FAA, AAIwill streamline the collection of aeronautical data across multiple lines of business through the implementation of their AGIS. The AAI system will facilitate the capture, management, and analysis of all forms of geographically referenced information.

The progressive implementation of a modern aviation system will result in improved safety and increased capacity for India's airspace, airports, and airlines. The system will support the data needs of Next-Gen technologies such as RNP/RNAV that will enable direct point-to-point flights, dramatically improving airspace efficiency, saving time and fuel. This will enable Indiato accommodate the continued high traffic growth rates. The power of the AAI AGIS is to allow the users to understand, interpret and visualize data in many ways that reveal relationships, patterns and trends in the form of maps, reports and charts.

Goals of the AAI AGIS Prototype:

During the initial phase of the AGIS development, Hi-Tec will conduct an aeronautical GIS survey of the Calicut

Airport to collect the data necessary to demonstrate the capabilities of the AGIS prototype. The ground based survey will document many of the critical airfield features and attributes, including runways, taxiways, buildings, as well obstructions impacting airfield. The AAI AGIS prototype will form the framework for the future processes of collecting and maintaining accurate aviation data to be input into the full implementation GIS system. The accurate geospatial datacan then be used in conjunction with many Next-Gen technologies to achieve many benefits to AAI and its customers, including:

- Improved Planning Capabilities: This project will result in the improved long-term planning and analysis for airport and airspace development as the most efficient use of resources will be identified using the collected data. The needs for expansion and better land use management will be achieved as well as better use of land surrounding the airport.
- Greater Safety: The implementation of Next-Gen data into AGIS will allow airports to identify areas of concern on the airfield by providing the data necessary to evaluate operational trends, incidents, and compile safety reports.
- High Accuracy Obstacle Data: The improved standards for data management will result in improved flight safety as they will enable the implementation multiple Next-Gen technologies. Over time, a comprehensive record of obstacles in the Indian airspace will be collected, improving air travel safety throughout the country.
- Improved Situational Awareness (SA): The AGIS provides airport surface map data which combined with Next-Gentechnologies can support real-time positioningof vehicles equipped with GPS transponders for more precise tracking and information sharing. Airfield facilities and vehicle movements can be tracked and stored, along long term analysis of incursions and safety incidents, to determine problematic "hot-spots" on the airfield. This information can then be input for spatial analysis and assist collaborative decision-making to help stakeholders and improve airfield operations.
- Efficiency: The system will support the data needs of Next-Gen technologies such as RNP/RNAV that will enable direct point-to-point flights, dramatically improving airspace efficiency, saving time and fuel.
- Capacity: The progressive implementation of a modern aviation system will result in improved safety and increased capacity for India's airspace, airports, and airlines. This will accommodate the continued high traffic growth rates. As a result, India will realize greater inter-region and intra-region economic activity that will generate requirements for even more efficient air transport. This, in turn, will stimulate additional business activity and commerce, and the creation of new jobs.
- Cost Savings: Numerous cost savings can be achieved as a result of AGIS implementation as the abundance of information improves many aspects of day to day operations. A single authoritative data set will eliminate duplicate data collection efforts, reduce data search times, and ensure that the most comprehensive and complete data is available to all stakeholders.

The benefits and flexibility of the AGISimplementation are far reaching, as the integration of GIS technology into the aviation community is completed, many additional benefits and capabilities will be realized. GIS has enormous potential to provide for optimal Next-Gen airport planning, reporting, and decision making. The combination of centralized storage and ease of access, with standardized collection and data formatting, ensure high quality data is available to AAI, airports, and other stakeholders to make optimal decisions for the future of India's aviation community.

A Next Step towards Human Capacity Building

Dr. Kalpana Jain, Country Manager for India and
VP Education and Training, Hi-Tec Systems, Inc.

Even after the recent economic slow-down and various challenges that loom over the Indian aviation sky, the forecast for the aviation sector in India remains upbeat. The growth in air traffic in India is expected to outperform the global average until 2025. In military aviation, India is expected to spend about $35 billion over the next 20 years as it replaces its existing fleet. The Indian MRO segment has been growing at 11% and has not been affected significantly by the slow down. The market is expected to grow at an average of 10 % and reach $2.6 billion by 2020.

The Indian Government recognizes the need for massive investment to meet these growing needs and the challenges that this unprecedented growth presents. Indian Government understands the role of industry and private investors in meeting the needs and demands of the aviation sector, as a result has taken several policy initiatives over the recent past years including significant policy changes related to Foreign Direct Investment in all areas of aviation sector. These new policy initiatives will open up new avenues in aviation sector. However, there are several regulatory, technological and human resources challenges that need to be addressed urgently to enable the smooth growth of sector.

The Indian Government is clear in its vision for this sector and there is an appreciation of the fact that this vision cannot be translated into reality unless there is synergy between global and Indian large, medium and small-sized players.

It is important to take a prudent, concerted and collaborative approach in addressing the various regulatory, technological, financial and human resources challenges faced by the Indian aviation industry which can result in a favorable aviation landscape in India and create a sustainable and safer aviation ecosystem for all the global stakeholders.

"Harmonization is the key". US-India Aviation Cooperation Program (ACP) aims to address the harmonization of standards, practices and processes by means of providing technical cooperation and assistance to Indian Government and aviation industries; with an ultimate goal of safer skies for all globally.

Over the past several years, US and Indian Government have been working together with the US Industry under the auspices of the ACP to address the technological, regulatory, infrastructure and human capacity development challenges and issues in India. A number of activities have been sponsored by the US Trade Development Agency under the auspices of the ACP to assist Indian Government in addressing the urgent needs related to the aviation sector.

One of the daunting issues which has been looming over the Indian Government and Indian aviation Industry is the human capacity building to adequately face the various challenges posed by the growth in the Industry. The shortage of skill-based workforce and a lack of policy, industry, and training ecosystem is a major issue across the regulatory agencies and industry alike.

Hi-Tec Systems has been assisting Govt. of India in addressing this major issue for past four years and has completed successfully two such activities under the auspices of US-India ACP and sponsorship of USTDA with the support of various ACP Industry members. These activities were specifically directed at addressing human capacity

building across the aviation regulatory agency and aviation industry.

- Technical, Management and Operational Developmental Training (TMODT) Program was developed to provide regulatory officers with hands-on experience in the regulatory oversight practices and standards utilized by the FAA and Industry to enable them to harmonize their regulatory framework, standards and practices with International standards and practices. The program trained 45 Directorate General of Civil Aviation (DGCA) officers for 984 hours over 123 days.

- Aviation Standards and Processes Technical Training Program (ASP-TTP) objective was to develop a comprehensive and highly specialized US standards technical training program targeted at DGCA, Indian officers and local aviation manufacturing companies in India. The program tasks included program management, training needs assessment and demand and capacity assessment and analysis; program curriculum development, course development, logistics coordination, marketing and training evaluation and post-training assessment. Eighteen courses were developed and offered in the are as of FAA compliance –FAR Part 21 and FAR Part 145, manufacturing quality, metallurgy, composite materials/processes electro-mechanics, and other topics. The training was delivered to 264 industry/DGCA personnel for 320hours over 40 days.

As a result of the success of these two training programs and the critical importance of the human capacity building across the regulatory agency and industry in India, USTDA has continued to provide sponsorship for the Phase II of TMODT program under the leadership of Hi-Tec Systems, Inc.

The Technical, Management and Operational Development Training Phase II (TMODT II) Program is targeted at building the foundation of a structured regulatory and technical training program for the new DGCA aviation safety inspectors. This program will provide 60 newly hired DGCA officials with necessary training on regulatory oversight practices and standards as prescribed by the International Civil Aviation Organization (ICAO).

The Program willinclude development of a training profile matrix and a comprehensive training curriculum based on the DGCA officers' and inspectors' job functions, responsibilities and levels.

Also it will include development of an ICAO compliant introductory training (indoc) curriculum for newly inducted officers in the Aviation Safety Directorate (ASD) and the Aircraft Engineering Directorate (AED)

Additionally, as part of the training program, three industry workshops will be organized with focus on on-the-job training (OJT)with support of the ACP members Pratt and Whitney and Universal Weather and Aviation Inc.

This program aims to enable Govt. of India to set the foundation of a structured regulatory and technical training system in India. It is a significant next step towards human capacity building for ensuring safer skies in India.

ADS-B IS COMING.

WE COULDN'T WAIT.

L-3 transponders were the first Mode S systems certified and available for airliners to meet the global mandates for Automatic Dependent Surveillance-Broadcast (ADS-B), with installations already completed on hundreds of aircraft. Our new NXT-800™ and NXT-600™ transponders are DO-260B and DO-181E compliant to meet the global ADS-B Out mandates that begin this year and are optimized for flight in the NextGen and SESAR air traffic environments. When coupled with SafeRoute® ADS-B In solutions, they help reduce flight times and fuel consumption, while increasing airspace capacity and providing higher-quality air traffic surveillance. Now is the time to update your fleet ahead of the global mandates.

Call us at +1-623-445-6900 or go to L-3com.com/AviationProducts.

Aviation Products

L-3com.com

Advanced Personnel Screening Technology at the 21st Century Checkpoint

Checkpoints need fast, safe, image-free and compact screening systems that detect an ever-expanding list of threats of any type of material – both metallic and non-metallic.

L-3 Security & Detection System's ProVision® 2 addresses these current aviation security requirements with a software-based architecture that is upgradeable to address future and emerging threats while meeting high-volume operational demands.

The passenger's experience with the ProVision® 2 is convenient, straightforward and efficient, requiring only a single position during a 1.5-second scan.

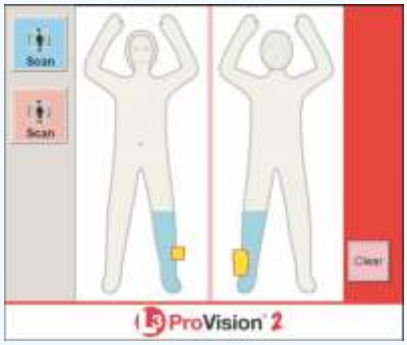
The passenger experience with the ProVision 2 is convenient, straight forward and efficient, requiring only a single, stationary position during a 1.5-second scan. The system does all the work for the customer and requires no special movements or motions, and areas of potential threats are indicated on a generic mannequin image. By highlighting the specific locations, the system enables security personnel to conduct a localized investigation that improves the customer experience and enables a high rate of throughput. The ProVision 2 has a low false alarm rate. The system screens 200 to 300 people per hour, depending on the application and supporting security protocols. Surveys find that the traveling public and security staff greatly prefer security scanners to the alternative invasive pat-downs.

The systems low height and narrow width make it accessible to smaller checkpoint venues. Thanks to the streamlined design, the outside conserves space while the inside area remains virtually identical to earlier ProVision models. The ProVision 2 offers the same proven, image-free checkpoint detection and throughput as the widely-deployed ProVision ATD system (ATD = Automatic Target Detection), which has been extensively evaluated by regulators worldwide and found to be completely safe.

ProVision 2 quickly screen passengers to automatically detect concealed objects made of a broad set of metallic and non-metallic materials – including liquids, gels, rubber, wire, powder, plastics, ceramics, thin and bulk explosives. Advanced software automatically processes digital scans and determines if the individual can be cleared through the checkpoint.

Its millimeter wave (MMW) technology uses safe radio waves that are free of health and safety risks. Radio waves pass through all types of clothing, but reflect off of the body and are captured by the system's sensors. The ProVision

2 does not use ionizing radiation, such as X-rays, and is tens of thousands of times less powerful than other commercial radio frequency devices such as cell phones, wireless handsets and other standard household devices.



Concealed items are highlighted on a generic mannequin image.

The ProVision 2 software analyzes data without human intervention to determine if any threats are present. No need for analysts or images to review. Potential areas of concern are mapped onto a generic mannequin, which is identical for everyone, and presented to the security operator. Security personnel can then assess the situation. If nothing is detected, a green screen with an "OK" appears and security personnel can clear the individual.

An "OK" message on a green background automatically clears most passengers.

Privacy

The initial introduction of security scanners enhanced airport security, but also suffered from some public acceptance related to privacy concerns which slowed down wide scale deployment. The first generation of systems produced a type of image of the passenger which would be viewed by security staff in order to detect any potential threats.

The only innovation that has successfully addressed all the privacy concerns is the implementation of Automatic Target Recognition/ Detection (ATR/ATD) with the introduction of the ProVision ATD, and now continuing with the ProVision 2. With ATR/ATD a computer runs complex target detection algorithms and displays the result on a generic mannequin.

Health & Safety

Current ATR/security scanners use either active millimeter wave or ionizing radiation (X-rays). L-3 SDS ProVision scanners use active millimeter wave.

Systems that use ionizing radiation have been perceived by the traveling public as having the potential to cause health issues. Several studies have been conducted providing evidence to conclude that these systems were operating within guidelines considered safe. However, as exposure to radiation is cumulative the general public has a fear of any unnecessary exposure to ionizing radiation. This fear is particularly relevant for frequent travelers as well as airline and airport staff who are frequent users of security systems.

To counter any potential health issues, many countries have banned the use of ionizing radiation systems. The European regulation even states that members may only use "security scanners which do not use ionizing radiation".

Regulators have shown that use of millimeter wave technology in the ProVision eliminates any potential health concerns.

Throughput

The ProVision 2 system meets the high throughput requirements of the modern aviation checkpoint. Passenger scan time is less than 1.5 seconds, followed by an analysis time of less than 4.5 seconds for a total processing time of under 6 seconds between the pressing of the scan button (scan initiation) and results display.

Airport deployments of ProVision 2 have reported an effective throughput ranging from 200 to 300 passengers per hour depending on a range of factors that include the experience level of the passenger and operators

(with output increasing over time) and the supporting security protocols for alarm resolution. The ProVision 2 has a low false alarm rate that has been proven in the field.

Operational Model

Stance: L-3's automatic detection algorithms require that the subject stands still for less than 1.5 seconds.

Divestiture: To optimize detection and minimize the number of false alarms, it is critical to have passengers remove personal objects (such as keys, wallets, etc) that could be flagged as an alarm.

Customer Defined Security Protocols: When an alarm does occur, security officers need specific protocols to follow. For example, a set of guidelines need to be defined that would specify when pat-downs would be applied and whether they would be directed or full-body. Staffing levels need to be sufficient so that members of the same gender will be available to conduct the procedure. Finally, in the event that a target item is discovered during the process, clear instructions must be developed by the governing security authority.

Checkpoint Design: When used as a primary screening system, the ProVision 2 is often used as a direct replacement for the walk-through metal detector.

Consideration needs to be made to the configuration/layout of the systems. The "H" type configuration is a common setup at aviation checkpoints. One ProVision 2 advanced personnel screening system is shared between two hand-carry baggage x-ray machines. Given the practical throughput of each X-ray system at between 100 and 150 passengers per hour, the ProVision's capability of 200 - 300 passengers per hour integrates well into existing checkpoints. This gives a good balance between equipment cost, floor space, and staffing.

Staffing Levels: ProVision staffing levels for primary screening are the same as those for a metal detector. To resolve alarms, at least one security agent of each gender is required. Unlike metal detectors, the ProVision displays the exact alarm location on the generic mannequin, allowing the security staff to perform a quick directed search as opposed to a full pat down. A pragmatic approach can be taken to resolving multiple alarms to both increase speed and minimize security staff fatigue.

During the initial rollout phase, an additional agent can often be helpful to assist an unfamiliar public to ensure that the divestiture protocols are followed and correct pose is assumed during the scan.

Conclusion

L-3's second generation of security scanners represented by the ProVision 2 have Automatic Target Detection and use safe millimeter wave technology. Public acceptance is high, giving the reassurance of additional security without any privacy or health concerns. Both the public and security staff much prefers using security scanners to the alternative of invasive hand searching.

The new, compact ProVision 2 uses the same field proven technology as the ProVision ATD. Over 1,000 ProVision ATD and ProVision 2 systems are deployed in 250 airports and other facilities (government and commercial) around the world.

With mandates and changing operational requirements for avionics, it's time to call L-3. Our NextGen avionics are shaping the future of air traffic management – increasing safety, dependability and efficiency, while decreasing fuel consumption, MRO costs and time aloft. And they're available today to meet the demands of the future. Join the growing list of operators taking advantage of L-3 Aviation Products' wide range of highly capable systems designed to enhance situational awareness and decrease operating costs – in the air and on the ground.

Visit us online at L-3com.com/AviationProducts.

Aviation Products

L-3com.com

Helping India realise the Possibilities of Flight

For 100 years, Honeywell Aerospace has been a pioneer in the advancement of aviation. As we celebrate our centenary, we continue to innovate and integrate thousands of products and services to advance and deliver safe, efficient, productive and comfortable experiences worldwide.

Today, India remains key to Honeywell's global growth strategy, with all four of its strategic business groups present in India generating more than $1Bn in India Revenues and exports. The organization has grown from 1,000 people in 2002 to more than 13,000 in over 50 locations across India.

Honeywell's commitment to India, and specifically to its aviation and defense industry, is demonstrated by the fact that every day, aircraft with our high performance technologies fly across the skies of India. From commercial airliners, business jets, and general aviation aircraft to military transports, fighters and helicopters, Honeywell products, systems and services continue to fulfil our commitment to realising the Possibilities of Flight.

Most recently, Honeywell's SmartPath® – the world's first FAA-certified Ground-Based Augmentation System (GBAS) – was selected by the Airports Authority of India for Chennai International Airport, India's third busiest airport. Once implemented, Chennai would become Southeast Asia's first airport with a satellite-based aircraft approach and landing system, reducing delays and journey times for passengers, lowering fuel cost for airlines, and increasing traffic throughput at the airport.

Our contributions to Indian engineering and technology development capabilities continue to increase as we support the growing demands of India's aviation and defence industries. Honeywell technologists across India develop innovative solutions for our aviation and defense customers worldwide.

Our products reach beyond everyday travellers. India's borders are secured by fighters containing our high-technology products. Today, Honeywell engine technology is ready to support the Indian Air Force, with the F125IN engine offered for the Jaguar fighter.

We remain committed to continuing to advance India's indigenous technology, from development through production. More than 40 years ago, we began a partnership with Hindustan Aeronautics Limited (HAL) to manufacture and support high-technology products in India. We continue to build on this partnership with additional products and capabilities in HAL and other Indian companies.

For more information about Honeywell and Honeywell aviation and defense capabilities in India, please visit honeywell.com/country/in.

celebrating 100 years

On June 18th, 1914, Lawrence Sperry and his mechanic stood on the wings of a Curtiss C-2 biplane demonstrating the world's first autopilot. Today's Honeywell Aerospace can trace its heritage back to that historic day in Paris. For a century, Honeywell and its legacy companies have been at the forefront of flight, bringing a countless number of inventions to the aerospace industry. Thousands of Honeywell products and services are found on virtually every commercial, defense and space aircraft in the world. We look forward to providing innovative aviation solutions over the next 100 years, and continuing to integrate technology that makes the possibilities of flight even safer, more efficient, comfortable, higher performing and productive.

Honeywell

1914 - 2014 CELEBRATING 100 YEARS IN AVIATION
100

To learn more about Honeywell's 100 year celebration
visit **aerospace.honeywell.com**

Outlook for Civil Aviation in Jharkhand Swings into High Gear

Ricky Surie, President of C.D. Aviation USA, Inc.

With the arrival of Mr. Ram Sewak Sharma, I.A.S., the erstwhile Director General of UIDAI (Unique Identification Authority of India) – issuer of Unique "Aadhar" numbers to all 1.2 billion Indian citizens, 600 million of who have already been enrolled in the program – as the Chief Secretary, the Government of Jharkhand's support for the development of Civil Aviation in Jharkhand has taken a quantum leap in priority.

State Capital Ranchi and the Jamshedpur editions of "The Telegraph" newspaper carried the following report datelined January 2nd, 2014:

"The state government is planning to set up a civil aviation society, replacing the existing authority, to aid and advise the department on various issues like training of commercial pilots, purchase of new helicopters etc.The civil society, in due course, will function as a corporation for overall development of the sector in the state. The proposal was mooted by Chief Secretary R.S. Sharma during a review of the civil aviation department today. According to the plan, the society will have four-five members, including the chief secretary, finance secretary, home secretary and the civil aviation secretary.Currently, the civil aviation authority headed by the department secretary takes most of the key decisions.Sources said once the new society came up, the department might consider setting up a training institute for commercial pilots. Now, the state has to depend on private agencies for the training purpose".

The implications of this bold step being taken by the Government of Jharkhand is that coordination between the various departments that need to work together to develop Civil Aviation in the state i.e. build aviation infrastructure, acquire aircraft and train aviation professionals will be dramatically simplified so that the development of Civil Aviation in Jharkhand will move forward rapidly.

This initiative is welcome because a lot of activity must commence in Jharkhand to develop airports, acquire aircraft and train aviation professionals as detailed below:

a. Airports: Besides the entry gateway at Ranchi, there are functioning airstrips in Bokaro, Deogarh, Dumka, Giridih, Hazaribagh, Jamshedpur, Palamu and Noamundi. In addition, there are over 100 helipads in Jharkhand, but their exact locations, condition and state of operational readiness is unknown. Additional airstrips are required at Chatra, Garhwa, Godda, Jamtara, Koderma, Khunti, Latehar, Lohardaga, Pakur, Sahebganj, Saraikela and Simdega. World War 2 vintage airports in Chakulia and Dhalbhumgarhthat were used by the U.S. Airforcewill need to be re-operationalized. Airstrips and Helipads will need to be metalled and install night-landing lights and navigation facilities.

b. Aircraft: About 19 aircraft are currently available within Jharkhand as under:

i. Civil Aviation Department, Ranchi: 3-Zlin 143L; Beech Baron B-55; Dhruv

ii. Aryan Aviation Pvt. Ltd., Ranchi: 2-Agusta AW 209

iii. Coal India Limited, Ranchi: Beech Super King B-200 &Chetak SA316B

iv. Tata Steel, Jamshedpur: Beech King Air B-200GT; Beech King Air C90A; 2-Pilatus PC-12NG; MD 500N; MD 902

v. Alchemist Aviation Pvt. Ltd.: 3-Cessna 152; 1-Cessna 172; Piper Seneca III

Of these, eight aircraft belonging to private companies are captive and unlikely to be available for non-scheduled services. Hence additional Non-Scheduled Operators will have to attracted to provide services within Jharkhand as the volume of tourist traffic begins to build.

c. Aviation professionals: The sharp increase in number of airports and aircraft in Jharkhand will require inducting a large number of professionals as below:

I Pilots

ii. Flying School Instructors

iii. Aircraft Maintenance Engineers

iv. Airstrip and Helipad Managers

v. Air Traffic Controllers

vi. Electrical and Mechanical Equipment Technicians

vii. Facility Security Officers

viii. Fire Safety Personnel

While initially some of this expertise may have to be sourced from out-of-state, it would be beneficial to set up training institutes for each of the above areas in order to provide the maximum number of job opportunities to local youth, while also minimizing the cost of operations by not having to compete with other states to attract such trained personnel.

With the establishment of Indian Headquarters by C.D. Aviation USA, Inc., a member of the U.S. India Aviation Cooperation Program, in Jamshedpur, Jharkhand, and the excellent relationship it has forged with the Government of Jharkhand over the past year, there is excellent scope for ACP member companies – and other U.S. companies – to contribute to the development of the Civil Aviation in Jharkhand. USTDA funding of feasibility projects to revive low-cost airports and helipads, acquire aircraft and train aviation professionals in Jharkhand could pay quick and rich dividends for the U.S. Civil Aviation industry.

(The author, Ricky Surie, President of C.D. Aviation USA, Inc. and Managing Director of its Indian affiliate, C.D. Aviation (India) Pvt. Ltd. is based in New York City and Jamshedpur and spends a considerable amount of time in New Delhi shuttling to and from the U.S.)


ONE PARTNERSHIP.
ENDLESS POSSIBILITIES.
60 years ago, India chose to take to the skies with Boeing as its partner. Today this partnership has only grown stronger. Whether it's to deliver a modern fleet to our partner airlines, or offer them solutions from fleet utilization to maintenance and training, the result is greater efficiency and comfort for flyers. As this partnership soars, the possibilities of what it will achieve are, indeed, endless.
boeing.co.in
BOEING

US-INDIA
AVIATION COOPERATION PROGRAM

Public Members

Corporate Members

SUPER AWOS

Reduced Operating Costs + Aircraft Availability + Reliability = Our Mission

L-3 Aviation Products is a global provider of Aftermarket Solutions to the commercial aerospace and defense sector. Our services include Avionics MRO, Integrated Logistics Support (ILS), Technical Services, Supply Chain Management, and Full-Service MRO and Modernization for a wide range of Ground Support Equipment (GSE).

For more information, visit L-3com.com/AviationProducts.

Scan here to download our mobile app.

Aviation Products

L-3com.com

geaviation.com/newengine

Meet our latest game-changer.

The GE9X wasn't built in a day. In fact, it's still being built. Maturated. Perfected. Everything we've learned from more than a century of aviation experience is helping us push boundaries and extend beyond the expected. And it's allowing us to create an engine worthy of powering the new Boeing 777X airplane.

This isn't a culmination of our past. It's a sign of where we're going.

Imagination at work.