


# ICAO JOURNAL

NEWS AND DEVELOPMENTS FROM THE INTERNATIONAL CIVIL AVIATION ORGANIZATION – VOL.72 – NO.2



## REGIONAL SAFETY COOPERATION

**ICAO/EASA SWAZILAND EVENT ENDORSES  
NEW PROPOSAL FOR GLOBAL AVIATION  
SAFETY OVERSIGHT SYSTEM**

### **ALSO IN THIS ISSUE:**

HIGH-LEVEL CONFERENCE ON SEARCH AND RESCUE

TECHNOLOGY SOLUTIONS FOR TRACKING AIRCRAFT

INTERVIEW WITH NEW ANC PRESIDENT HAJIME YOSHIMURA

TRAINING SYMPOSIUM ADDRESSES CAPACITY GAPS



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Dr. Olumuyiwa Bernard Aliu

# TAKING REGIONAL SAFETY COOPERATION TO THE NEXT LEVEL

✈ The key objective of the ICAO/EASA Global Forum on Regional Safety Oversight Organizations (RSOOs), graciously hosted by the Kingdom of Swaziland earlier this year in Ezulwini, was to address the sustainability and effectiveness of these crucial mechanisms for regional State cooperation and long-term safety progress in civil aviation.

Our shared success there, in conjunction with the European Aviation Safety Agency (EASA) and the many States present, represented a major milestone in the evolution of Regional Safety Oversight Organizations for civil aviation safety. A special African Ministerial event, held in conjunction with the Forum, also led to the adoption of a Declaration on how African States will now work to refine their collaborative efforts and improve aviation safety oversight continent-wide.

The RSOO model is time tested, and also an important means by which many States which cannot afford to provide effective aviation safety oversight can pool their resources and avoid duplication of efforts.

This model for international cooperation brings very important and cost-effective capabilities to many areas of the world, and when we consider that just one major aircraft accident investigation can incur costs upwards of \$100 million in some cases, the rationales for determining cost-effective collaborative approaches in the interest of continuous aviation safety improvement make very clear sense.

Through the diverse deliberations at this event, we were able to identify the joint capabilities, services and functions that RSOOs can provide to their Member States and aviation stakeholders. We also clarified the relationships between States and RSOOs, and the effect these have on State oversight, the delegation of functions, accountability and sovereignty, and lastly we considered various proposals on how to facilitate the sustainable financing of RSOO activities and operations.

A key outcome which arose from these very engaging discussions was the agreement on a global strategy and action plan for the overall improvement and strengthening of RSOO relevance, effectiveness, efficiency, sustainability and adaptability.

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**“This model for international cooperation brings very important and cost-effective capabilities to many areas of the world...”**

The second key development was the agreement to explore the feasibility of a new Global Aviation Safety Oversight System (GASOS).

ICAO's cooperation with States with respect to the first outcome will likely encompass future evaluations of all current obstacles to ensuring a sustainable RSOO funding framework. This in turn will permit us to jointly establish proposals for innovative and practical collaborative budgeting solutions.

It will also involve proposals to classify RSOO functions so as to better empower them to provide support and services to their Member States at the consultative and coordination level, the operational assistance level, and the certifying agency level.

A further goal concerns the establishment of an RSOO Cooperative Platform to improve how these agencies coordinate and share best practices and expert resources with each other and ICAO.

With respect to the GASOS framework, an initial feasibility study will be undertaken on its establishment, including with respect to the classification of State oversight providers and their mandated tasks, functions, and levels of empowerment.

This type of global framework will help ICAO to assess and provide recognition to RSOOs and safety oversight providers for their operations and achievements and to evolve the existing conventional mechanisms toward a more progressive, comprehensive, flexible, and effective global system for providing safety oversight.

This global strategy and action plan provided the basis for the subsequent discussions undertaken at the follow-on Ministerial portion of the event, which focused more intently on a specific and nearer-term roadmap for supporting and strengthening RSOOs in the Africa and Indian Ocean (AFI) Region.

Africa is one of the fastest growing air transport markets in the world today, and its expanding aviation connectivity is delivering very positive impacts on local tourism and trade, and acting as a catalyst for sustainable social, economic and human development.

This is clearly evident in the seven million jobs it provides today to skilled African employees, and the 34.5 billion dollars aviation generates in terms of overall African GDP, and highlights the importance of the Ministerial Declaration which emerged from the Ezulwini meetings.

Current and future aviation growth will strongly support the realization of the African Union's Agenda 2063, and especially its goal to drive inclusive growth, sustainable development, and the accelerated integration of African economies.

We must of course recognize and appreciate the contributions to these very positive global RSOO outcomes by EASA, other RSOOs, and all the speakers who shared their knowledge, experience and expertise to enable this forward-looking end result.

Undoubtedly, our work ahead together will be of significant benefit to States and RSOOs themselves, but also the air transport industry, its millions of passengers, and all of the businesses it helps to connect to the global marketplace.

It is because of these aviation benefits, and the contributions they make to sustainable development across the full socio-economic spectrum for States and Regions, that we work so hard to cooperate together and achieve this type of consensus-based progress in global civil aviation. ■

**Dr. Olumuyiwa Bernard Aliu**  
President of the ICAO Council

## ICAO Council Information accurate at time of printing

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**Second Vice-President:** Mr. Ismael Pacheco Serrano **Secretary:** Mr. Stephen Creamer

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## ICAO's Global Presence





# RSOO FORUM AGREES ON GLOBAL STRATEGY & ACTION PLAN

## Global Forum on Regional Safety Oversight Organizations

Ezulwini, Swaziland, 22 to 24 March 2017

### ORGANIZERS

ICAO and the European Aviation Safety Agency (EASA)

### HOST

Kingdom of Swaziland

### PARTICIPANTS

200 participants from 48 States and 32 International Organizations

### KEY OUTCOMES

- Endorsement of a proposal for a new Global Aviation Safety Oversight System (GASOS).
- Significant progress on key objectives to improve the cooperation and efficiency of Regional Safety Oversight Organizations (RSOOs) – both globally and in ICAO's Africa and Indian Ocean (AFI) Region.
- Signing of a formal declaration on how African States will work to refine their collaborative efforts and improve aviation safety oversight continent-wide.

✈ Participants from 48 States and 32 International Organizations agreed on a global strategy and action plan for the strengthening of Regional Safety Oversight Organizations (RSOOs), including the establishment of a Global Aviation Safety Oversight System (GASOS), at a forum held in late March in the southern African nation of Swaziland. Dr. Olumuyiwa Benard Aliu, President of the ICAO Council, said the deliberations at the event will “better empower [RSOOs] at the consultative and coordination level, the operational assistance level, and the certifying agency level, and establish an RSOO Cooperative Platform to improve how these agencies coordinate and share best practices and expert resources with each other and ICAO.”

Dr. Aliu noted the new GASOS framework will help ICAO “to assess and provide recognition to RSOOs for their operations and achievements,” while more technical certifying functions would fall under ICAO's established Universal Safety Oversight Audit Programme (USOAP).

Some States have difficulties resolving safety deficiencies due to limited financial, technical and/or qualified human resources. Therefore, ICAO initiated the development of regional cooperation and assistance to improve States' safety oversight capabilities and resolve safety-related deficiencies (ICAO Assembly Resolutions A35-7 and A37-8 superseded by A38-5).

Benefits of regional cooperation include harmonization, including uniformity of oversight legislation, policy and procedures, setting of measurable targets to address safety-related deficiencies, and increased effectiveness and efficiency by sharing experience and resources.

Here are some highlights of the RSOO Global Forum discussions.

### SETTING THE STAGE

Mr. Stephen Creamer, Director of ICAO's Air Navigation Bureau, highlighted that several States have yet to establish satisfactory national safety oversight systems and that some of the States have Significant Safety Concerns (SSCs). ICAO has developed a Policy and Framework on Regional Cooperation that is committed to providing States assistance, in technical and policy matters, by promoting regional cooperation through close partnerships with regional organizations and regional civil aviation bodies. RSOOs have great potential to assist States to comply with their obligations under the Chicago Convention. He explained that RSOOs can play two roles: they carry out safety oversight tasks and functions on behalf of their Member States and, in accordance with the *Global Aviation Safety Plan (GASP)*, they are actively involved, along with States and Regional Aviation Safety Groups (RASGs), in harmonizing activities undertaken to address aviation safety issues at the regional level.

"Nevertheless, effective safety oversight is not necessarily guaranteed by the establishment of an RSOO," Mr. Creamer stated. "The majority of RSOOs face a number of challenges, among them to obtain sustainable funding and, as a consequence, recruit suitably qualified technical staff. In addition, some of the RSOOs face challenges with respect to the failure of their Member States to make adequate use of their RSOO."

Mr. Patrick Ky, Executive Director of the European Aviation Safety Agency (EASA), said meeting safety oversight

responsibilities remains a constant challenge. EASA, at the centre of the regional aviation safety system in Europe, is interested to discuss how to further strengthen regional initiatives for the benefit of global aviation safety, and to continue the process of integrating RSOOs into the global regulatory framework.

Mr. Joachim Luecking, Head of Unit for Aviation Safety in the Directorate General for Mobility and Transport of the European Commission (EC), emphasized that regionalization can enhance aviation safety. The concept of RSOOs is already embedded in Annex 19 and ICAO's Safety Oversight Manual. ICAO is evolving from a State framework and acknowledging regional arrangements. RSOOs can bring multiple benefits: the uniform application of safety regulations and tools, response to safety recommendations or inspector pooling; economic market access; and response to the challenges of the future growth of the aviation system.

### GLOBAL UPDATES

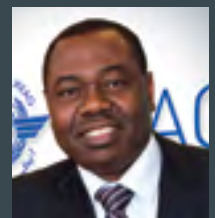
Mr. Catalin Radu, Deputy Director Aviation Safety in the Air Navigation Bureau of ICAO, reported on ICAO's actions and achievements since the 2011 RSOO symposium and the High-Level Safety Conference 2015. He presented an overview of ICAO initiatives on regional aviation safety mechanisms and outlined recent RSOO developments, on the transitions from Cooperative Development of Operational Safety and Continuing Airworthiness Programmes (COSCAPs) to RSOO and the establishment of new RSOOs.

Mr. Mam Sait Jallow, Regional Director for the Western and Central Africa Region of ICAO (WACAF), highlighted the challenges of long transitions and low levels of financial support. The region now accommodates four RSOOs and one Regional Accident and Incident Investigation Organization (RAIO). Mr. Prosper Zo'o Minto'o, Deputy Regional Director for WACAF, presented the COSCAP-SADC transition to SADC Aviation Safety Organization (SASO).

Dr. Salmi Alsrisari, General Manager Safety and Risk in the General Authority of Civil Aviation (GACA), Saudi Arabia, presented the newly established Middle East and North Africa (MENA) RSOO which will be hosted by Saudi Arabia.

Before establishing the RSOO, a study showed the need and willingness of the States within the region. Mr. Saud Hashem,

The deliberations will "better empower [RSOOs] at the consultative and coordination level, the operational assistance level, and the certifying agency level, and establish an RSOO Cooperative Platform..."



– Dr. Olumuyiwa Benard Aliu,  
ICAO Council President



Representative of Saudi Arabia on the ICAO Council informed that the Kingdom of Saudi Arabia will contribute USD 1.5 million to the RSOO for its establishment and initial two years of operation.

#### RSOO UPDATES

Mr. Franklin Hoyer, Regional Director of the ICAO South America (SAM) Region, presented the activities of the regional safety oversight cooperation system (SRVSOP), whose mission is to provide assistance to States to overcome challenges in safety oversight. The 12 participating States have achieved 80 per cent effective implementation of ICAO Standards and Recommended Practices (SARPS) and have a direct benefit of approximately USD 35 million. SRVSOP provides for harmonized regulations, technical publications (e.g. advisory circulars, guidance procedures, inspector manuals and checklists), training, technical assistance and multinational certification.

Mr. Nari Williams-Singh, Chairman of the Board of Directors, presented the history of the Caribbean Aviation Safety and Security Oversight System (CASSOS), which facilitates the sharing of expertise, resources and deployment of inspectors across its Member States, and harmonizes standards and training. CASSOS signed an agreement with another RSOO to benefit from each other's experience and has also concluded cooperation agreements with some States outside its region. A recent initiative is the establishment of a RAIO.

Mr. Wilson Sagati, Chairman of the Council of the Pacific Aviation Safety Office (PASO), explained that the RSOO was created with the aim of increasing the level of effective implementation of SARPS of 10 Pacific Island States, and to provide guidance and technical advice to these States for certification and oversight. The New Zealand regulatory system serves as a basis. The biggest challenge is the shift to a risk-based approach for which the PASO States are not yet prepared. PASO established a pool of inspectors and obtained funding from the World Bank and New Zealand.

Mr. Robert Mwesigwa Nviiri, Executive Director, explained that the East African Community Civil Aviation Safety and Security Oversight Agency (CASSOA), an autonomous and accountable organization as part of East African Community (EAC), has been harmonizing the regulations and guidance material in the

## MINISTERIAL AFI REGION RSOO FORUM ENDORSES GASOS

The final day of the Global Forum on Regional Safety Oversight Organizations was dedicated to the AFI Region. It was attended by 13 ministers responsible for civil aviation from Congo, DRC, Equatorial Guinea, Ghana, Lesotho, Mauritania, Nigeria, Sao Tome and Principe, South Africa, Swaziland, Togo, Zambia and Zimbabwe. The regional Forum was chaired by Senator Pastor Lindiwe Dlamini, Honourable Minister of Public Works and Transport, Kingdom of Swaziland. The forum was addressed by Mr. Patrick Ky, Executive Director, EASA; Ms. Iyabo Sosina, Secretary General, AFCAC; and Dr. Olumuyiwa Benard Aliu, President of the ICAO Council.

The regional Forum was informed with presentations on the AFI Plan, outcomes of the Global Forum, and a proposed roadmap for supporting and strengthening RSOOs in the AFI Region. The Ministers endorsed the newly proposed Global Aviation Safety Oversight System (GASOS), an action plan to improve the effectiveness and sustainability of RSOOs, and a new cooperative platform to facilitate the agreed evolution in regional collaboration.

areas of safety and security, facilitated the sharing of technical resources to address deficiencies in safety oversight, prepared States for ICAO audits and developed harmonized corrective action plans after ICAO audits. CASSOA is cooperating with other RSOOs and ICAO to build capacity.

Mr. Emmanuel Akatue, Executive Director of Banjul Accord Group Aviation Safety Oversight Organization (BAGASOO), explained the transition from a COSCAP to an RSOO. BAGASOO concentrates on capacity building and provides, for example, training, on-demand assistance to its States, information, safety tools and activity coordination with sponsors. BAGASOO has established an inspector training and activity tracking tool as well as a ramp inspection programme. Funding remains a major issue with contributions of less than



57 per cent from Member States. Additional contributions were secured from the African Development Bank, the US DOT Safe Skies for Africa Programme, the FAA, as well as the European Union through EASA.

### REGIONAL MECHANISMS

Mr. Donald McPhail, Director General of ECCAA (Eastern Caribbean Civil Aviation Authority), indicated that challenges include the lack of political will to transfer authority and to adopt a collective approach and single legal framework and approval of regulations and the collection of fees. The advantages he highlighted include economies of scale, harmonized rules, more affordable costs for operators, fair enforcement, and independent inspectors.

Mr. Jean Mokoumbou, Technical Director of Agence de Supervision de la Sécurité Aérienne en Afrique Centrale (ASSA-AC), highlighted that RSOOs provide the most benefit in harmonizing regulations and procedures, and promote a common approach to certification and inspections. The benefit lies in having common training programmes, carrying out certification, and conducting monitoring tasks on behalf of States. This would ultimately lead to establishing a regional safety programme.

Mr. Caj Frostell, Commissioner of Banjul Accord Group Accident Investigation Agency (BAGAA), presented the Regional Accident and Incident Investigation Organization. The RAIO provides assistance to States, conducts investigations on the request of a State, develops common guidance material, investigator handbooks, manuals and checklists, and provides training courses.

Captain Giancarlo Buono, Director Safety and Flight Operations for Europe of the International Air Transport Association (IATA), outlined that EASA is key to improving safety and industry growth in Europe. The single type certificate is a success story and he asked if this could be a model for a common Air Operator Certificate (AOC) in the future. Essential for this success are common standards, a single pilot licence, the mutual acceptance of all certificates across Member States, and common flight and duty time limitations. All of these elements make it easier for airlines to interchange crew members. Challenges are States holding on to their sovereignty and tasks which lead to duplication.

Ms. Shelia Helton-Ingram, Regional Manager – Africa, Europe, and Middle East, Safe Skies for Africa Program, Department

of Transport, United States, said the U.S. has been an early supporter of RSOOs in Africa and assisted several African COSCAPs to transition to RSOO, providing training and technical assistance, including model laws and regulations and standardized inspector training.

The ECCAA explained that they are financed by applying a user-pay principle. The benefit of the ECCAA compared to an individual State oversight system lies in the fact that ECCAA has a sufficient number of competent inspectors. If each individual State were required to have these inspectors it would be much more expensive. These inspectors also work on the basis of common regulations which facilitates oversight.

### FINANCING & SUSTAINABILITY

Mr. Fredrik Kampfe, Manager Agreements and External Representation of EASA, and Mr. Joachim Luecking, Head of Unit for Aviation Safety in the Directorate-General for Mobility and Transport of the European Commission, explained the funding mechanism of EASA, which consists of fees and charges from the industry, a subsidy part from the budget of the European Union and earmarked funds from the European Union (EU) or other institutions to support research, international cooperation projects and providing assistance to the EC. EASA's expenditure is managed according to EU financial regulations and subject to regular audits. EASA's mandate is currently reviewed with a view to extend it to address new challenges such as drones, cybersecurity, big data, etc.

Ms. Irene Gnassour Seka, Director of Air Transport/Regional Project Coordinator of COSCAP-UEMOA, presented one of its funding mechanisms. It consists of the establishment fund, yearly contributions from the West African Economic and Monetary Union (UEMOA) Commission, a passenger tax, income on activities carried out by the RSOO, contributions from partners such as the African Development Bank, the European Union, the French cooperation network, Boeing and Airbus, and other sources.

Mr. Ambrose Akandonde, Board Member of the East African Community Civil Aviation Safety and Security Oversight Agency (CASSOA), explained that the U.S. Federal Aviation Administration (FAA) donated USD 3.5 million and ICAO supplied technical expertise to get the RSOO started. The Member States supplied legal, technical, financial and human resource experts to establish common rules. Today, CASSOA is financed by contributions from its States, resources



mobilized through its Secretariat, grants and loans from regional and international bodies, revenues from the activities of the Agency and other sources. Various other funding methods have been explored and a passenger tax was found to be the most viable one. However, this meets resistance, in particular from the industry.

Ms. Tanja Grobtek, Regional Director – Safety and Flight Operations Africa of IATA, underlined that safety oversight is the responsibility of States. Therefore, industry expects that it is paid by States. In addition, IATA supports the user-pay principle. In general, IATA views RSOOs positively but expects that they bring added value, avoid duplication and act effectively and efficiently. IATA itself can contribute with training activities, provide assistance on State Safety Programmes and on managing oversight, in particular in the airworthiness domain, and by providing acceptable means of compliance (i.e. in the form of IATA Operational Safety Audit – IOSA - standards).

Mr. Chamsou D. Andjorin, Boeing's Director for Africa and Middle East, explained that RSOOs are imperative wherever there is low activity and limited resources. Efficient RSOOs require adequate staff, training and budget. They should as well be able to comply with ICAO safety requirements (USOAP). There should be a strict complementarity between civil aviation authorities and RSOOs, codified in Memoranda of Understanding.

Haydar Yalcin, Deputy Director General of Turkey's Directorate General of Civil Aviation, explained Turkey's situation as a former European Joint Aviation Authorities (JAA) member now in accession talks with the EU and EASA. It is therefore an example of a non-member receiving safety oversight support services from an RSOO. RSOOs are important as they can provide substantial contribution within the *No Country Left Behind* initiative of ICAO.

### INSTITUTIONAL ASPECTS

Dr. Vahid Motevalli, Associate Dean of Engineering for Research and Innovation and Professor of Mechanical Engineering at the Tennessee Technological University, stated that all regional cooperation mechanisms must have, as a minimum, an established organization, and be effective and sustainable. Developing an RSOO requires political commitment at the highest level, a foundation in law, and initial and ongoing resources, leadership. It may benefit from existing economic or political structures and treaties.

Mr. Simon Allotey, Director-General of the Ghana Civil Aviation Authority, presented on how Ghana benefitted from the BAGASOO training programmes to improve oversight capabilities. He estimated that BAGASOO brought cost savings for the Ghana CAA of approximately USD 1 million. Other benefits of being a member of this RSOO are the support to various audit and technical missions, access to technical support, work towards harmonized regulations, common oversight tools, easier access to technical support from partners, networking and sharing of experiences.

Mr. Sadou Marafa, Executive Secretary of African and Malagasy Civil Aviation Authorities (AAMAC), declared a Memorandum of Cooperation with other RSOOs was signed in 2015 to avoid overlap of functions and duplication, in particular in the area of air navigation services (ANS). The objective is to establish an acceptable regional level of safety to assist States in meeting their ICAO obligations, the harmonization of regulations and procedures and environmental protection.

### RELATIONSHIP BETWEEN RSOOS AND ICAO

Mr. Nari Williams-Singh, Chairman, Board of Directors of CASSOS, outlined how RSOOs could improve by applying a project management approach and being result-oriented, conducting regular performance reviews, working on the effective implementation rate of States and providing assistance on ICAO's critical elements, supporting Member States in their oversight tasks, developing and maintaining common regulations, guidance and procedures, supporting safety initiatives and providing training. In addition, new areas could be explored such as security, facilitation and air navigation. Compliance with ICAO should always be the overarching framework. For improvements to be effective, an RSOO's performance must be assessed based on elements such as relevance, effectiveness, efficiency, sustainability and adaptability.

Mr. Catalin Radu, Deputy Director Aviation Safety of the ICAO Air Navigation Bureau, presented the challenges to the present oversight system and proposed to address some of the identified deficiencies by exploring alternative oversight models. Suitably empowered and strengthened RSOOs and other safety oversight providers would constitute building blocks of such an alternative global aviation safety oversight system (GASOS). The RSOOs and service providers would be assessed in relation to their competence and qualify as an

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“Developing an RSOO requires political commitment at the highest level, a foundation in law, initial and ongoing resources, leadership.”

– Dr. Vahid Motevalli,  
Tennessee Technological University





## ACRONYMS

<b>AAMAC</b>	African and Malagasy Civil Aviation Authorities
<b>ACSAC</b>	Agence communautaire de supervision de la sécurité et de la sûreté de l'aviation civile
<b>ASSA-AC</b>	Agence de Supervision de la Sécurité Aérienne en Afrique Centrale
<b>BAGASOO</b>	Banjul Accord Group Aviation Safety Oversight Organisation
<b>CASSOS</b>	Caribbean Aviation Safety and Security Oversight System
<b>COSCAPs</b>	Cooperative Development of Operational Safety and Continuing Airworthiness Programmes
<b>GASOS</b>	Global Aviation Safety Oversight System (proposed)
<b>RAIO</b>	Regional Accident and Incident Investigation Organization
<b>RSOOS</b>	Regional Safety Oversight Organizations
<b>RASGs</b>	Regional Aviation Safety Groups
<b>SRVSOP</b>	Sistema Regional de Cooperación para la Vigilancia de la Seguridad Operacional
<b>USOAP</b>	Universal Safety Oversight Audit Programme

ICAO-recognized safety oversight provider. These providers could be States assisting other States, RSOOs, and other existing safety oversight support service providers. Provider's tasks and functions would be classified in accordance with the level of empowerment, and each task and function would be mapped to a USOAP CMA Protocol Question. Such a system would empower and strengthen RSOOs: they would be fully integrated within the safety oversight and management programmes and activities of their States, they would be aligned with ICAO's global and regional programmes, and efficiencies would be realized, avoiding duplications.

Such a system would also benefit States by providing alternatives for ensuring safety oversight, providing flexibility to choose and combine different tasks, functions and providers as required by the State, promoting the sharing of best practices, enhancing compliance and effective implementation rates, as well as avoiding duplication. Industry might receive economic benefits by being exposed to more streamlined processes. ■

*The presentations and resulting Global Strategy and Action Plan and Ministerial Declaration are available at [www.icao.int/ESAF/EASA-ICAO-RS00-2017/Pages/default.aspx](http://www.icao.int/ESAF/EASA-ICAO-RS00-2017/Pages/default.aspx)*







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## High-Level Conference on the Improvement of Search and Rescue (SAR) Services

Lome, Togo, 10-12 April, 2017

### ORGANIZERS

The African Civil Aviation Commission (AFCAC) under the aegis of the African Union Commission (AUC) and in cooperation with the International Civil Aviation Organization (ICAO).

### HOST

The Government of the Republic of Togo

### PARTICIPANTS

More than 200 participants from 34 States, including many Ministers of African States, Directors-General of Civil Aviation Authorities, and CEOs of State institutions and international organizations.

### KEY OUTCOMES

Declaration on the Improvement of Search and Rescue (SAR) Services in Africa

Enhanced awareness among States of:

- SAR requirements
- The need to update SAR national plans to ensure operational effectiveness
- The need to allocate adequate resources for effective SAR operations
- The formalization and operational follow-ups with respect to bilateral and multilateral SAR agreements
- The development of sub-regional SAR plans and conduct of SAR exercises
- Overall, increased SAR collaboration and cooperation



# HIGH-LEVEL CONFERENCE DRIVES SAR IMPROVEMENTS FOR AFRICAN STATES



Search and Rescue (SAR) has a simple, straightforward purpose: to save lives by rescuing those in distress, as well as recovering key data from accidents for analysis to benefit future improvements in aircraft and procedures. The challenges of organizing cooperation, communication and coordination within a SAR network are myriad and often daunting under the severe duress of an emergency. No single State SAR agency can act alone; none has sufficient resources.

SAR is an essential element of air navigation services mandated by the Chicago Convention and a legal obligation of all States contracted to it. The Convention requires cross-border cooperation among the States in its provision: "States are required to permit the owners of distressed aircraft, or authorities of the State in which the aircraft is registered, to assist the State in whose area an accident occurs" (Article 25; Convention on International Civil Aviation).

The main objective of the High-Level Conference on the Improvement of Search and Rescue (SAR) Services was to sensitize decision-makers in African States on the need to establish or maintain effective SAR services, and provide an opportunity for the coordination of SAR Memorandum of Understanding (MOU), Letters of Agreement (LoAs) and other Multilateral Agreements. The Conference raised awareness at the highest levels and the commitment of States to implement the Standards and Recommended Practices (SARPs) of Annex 12 of the Chicago Convention. In addition, the Conference supported the SAR Organization project of the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan).

President of the ICAO Council, Dr. Olumuyiwa Bernard Aliu, stated: "The provision of effective SAR services entails the mobilization of essential State assets, and requires substantial financial commitments by your governments. Additionally,

assets of neighbouring States and other international organizations are most likely to be involved in SAR missions, requiring the approval of high-level authorities."

Dr. Aliu remarked, "The ICAO *No Country Left Behind* initiative is specifically aimed at ensuring that international standards are implemented in a harmonious manner in all member States, so that they all have equal access to the socio-economic benefits of aviation. We are here to help you with these challenges, and our Regional Offices stand ready to consult with you on the most practical means forward to the required assistance and capacity building."

The Council President underscored the crucial role SAR services play in ensuring the safety of civil aviation operations. He appealed to States for greater cooperation to enhance compliance with ICAO's current and incoming SARPs for SAR services.



During the High-Level Conference on the Improvement of Search and Rescue (SAR) services in Africa, held in Lome, Togo, the President of the ICAO Council, Dr. Olumuyiwa Benard Aliu (left), held several bilateral meetings to discuss regional leadership on the development of international air connectivity and ICAO compliance, including with the President of Togo, Mr. H. E. Faure Gnassingbé.

Mr. Gnassingbé enthusiastically agreed to champion regional progress on SAR issues, consistent with the significant commitment and regional leadership the State has already demonstrated in terms of aviation infrastructure development and ICAO compliance.

To commemorate the country's related progress and achievements under the ICAO Universal Safety Oversight Audit Programme (USOAP), Dr. Aliu presented Togo's Prime Minister, Mr. Komi Sélom Klassou, with an ICAO Council President Certificate of Recognition.

Dr. Aliu also met with Togo's Minister of Transport and Infrastructure, Mr. Ninsao Gnofam, and various other Ministers as well as Directors-General of Civil Aviation in attendance at the Conference. He also visited the newly completed passenger terminal at Gnassingbé Eyadema International Airport.





"Your participation and valuable contributions towards the outcome of this event provide us with an important statement, on behalf of both States and air transport stakeholders, that things will now be done differently to ensure more effective aircraft accident search and rescue preparedness," he stated in his closing remarks. "It is my fervent appeal that you will take the lead on these efforts and ensure that they are implemented in full. Indeed, a more determined focus and commitment on implementation is what we now require at all levels and across

all areas of the African aviation industry. I am confident that under your leadership, and demonstrated political commitments, appropriate Action Plans will now be developed and implemented in ICAO's Africa - Indian Ocean Region, including a performance management system and continuous monitoring framework."

For ICAO's part, through its Comprehensive Regional Implementation Plan for Aviation Safety in Africa and similar

“I am confident that under your leadership, and demonstrated political commitments, appropriate Action Plans will now be developed and implemented in ICAO’s AFI Region.”

– Dr. Olumuyiwa Bernard Aliu, ICAO Council President



initiatives, Dr. Aliu pledged to “continue to provide leadership on SAR provision at the global level, as well as the needed assistance nationally and regionally to ensure concrete results.”

“The partnership which has been exemplified here by the African Union Commission, AFCAC, and ICAO, is a solid testimony to what we can achieve if we continue to work towards our shared SAR objectives,” he concluded.

The ICAO Council President was accompanied at the Togo conference by Captain Musa Shuaibu Nuhu, Representative of Nigeria on the ICAO Council, Mr. Halidou Moussa, ICAO Air Navigation Commissioner, and Mr. Mam Sait Jallow, ICAO’s Regional Director for Western and Central Africa. ■

## ICAO 38<sup>th</sup> ASSEMBLY RESOLUTION A38-12, APPENDIX H (PROVISION OF SEARCH AND RESCUE SERVICES)

- States shall ensure the closest practicable cooperation between maritime and aeronautical search and rescue services where they serve the same area and, where practical, establish joint rescue coordination centres to coordinate aeronautical and maritime search and rescue operation;
- Member States should, in cooperation with other States and ICAO, seek the most efficient delineation of search and rescue regions and consider, as necessary, pooling available resources or establishing jointly a single search and rescue organization to be responsible for the provision of search and rescue services within areas extending over the territories of two or more States or over the high seas;
- The Council should encourage States whose air coverage of the search and rescue regions for which they are responsible cannot be ensured because of a lack of adequate facilities, to request assistance from other States to remedy the situation and to negotiate agreements with appropriate States regarding the assistance to be provided during search and rescue operations.

## GLOBAL AERONAUTICAL DISTRESS AND SAFETY SYSTEM (GADSS)

Recent tragedies, such as Air France flight AF447 and the disappearance of Malaysia flight MH370 have highlighted serious deficiencies in the systems supporting SAR, hampered timely identification and determination of the position of the aircraft in distress, and prevented an effective conduct of search and rescue and recovery operations.

The Global Aeronautical Distress and Safety System (GADSS) concept of operations was initiated by ICAO and endorsed by the High Level Safety Conference 2015. The implementation of this concept will have implications for the provision of services such as air traffic control, SAR and accident investigation.

The implementation of GADSS will contribute to:


- enhancing the capacity of SAR services;
- timely determination that an aircraft is in distress;
- locate the aircraft and rescue survivors;
- ensure that flight data can be recovered efficiently.

GADSS will introduce at a global level real improvements to the management of aircraft in abnormal and in distress situations.

– Halidou Moussa,  
ICAO Air Navigation Commissioner



# NEW AIR NAVIGATION SAFETY TOOLS AND TECHNICAL ASSISTANCE

 The ICAO Air Navigation Bureau (ANB) has undertaken a number of initiatives to streamline ICAO assistance activities to ensure that States are effectively supported in the implementation of Standards and Recommended Practices (SARPs) – including development of tools, guidance materials, training courses and the delivery of workshops to assist States and industry.

In order to support the *No Country Left Behind* (NCLB) initiative, ANB launched iMPLEMENT – a data-driven decision-making product that includes automated Regional, State and Aerodrome Safety Briefings to facilitate access to safety-critical information, and a Solution Centre application, which links the audit results of every State with a database of proposed solutions available such as Global Aviation Training (GAT) packages, as well as industry and State best practices, tools and programmes to address implementation issues identified through the Universal Safety Oversight Audit Programme (USOAP). Tools like CAA-HR, which identify the ideal number of safety inspectors in a civil aviation authority based on the aviation profile of the State, and iPAINT, which identifies the infrastructure gaps based on Aviation System Block Upgrade (ASBU) implementation, are also available under iMPLEMENT.

Technical assistance is a major component of the NCLB initiative, which focuses on assisting all States on prioritized needs to improve implementation support under all ICAO Strategic Objectives. Building partnerships and pooling resources among States, international organizations, development institutions and industry are essential for collaboration on and contribution to technical assistance and cooperation for effective implementation of SARPs and policies by States with sustainable results.

In 2016, technical assistance projects through the Safety Fund (SAFE) started in Comoros, Democratic Republic of the Congo,

Gabon, Guyana, Jordan, Lebanon, and Nepal; were completed in Cambodia, Madagascar, Niger, and Paraguay; and continued in Uruguay. Technical assistance projects funded by SAFE enabled the resolution of Significant Safety Concerns in Kazakhstan and Uruguay and resulted in a significant increase (more than 15 per cent) in USOAP effective implementation (EI) by many States. These were recognized with the award of a Council President Certificate. In 2016, ICAO received voluntary contributions of funds to SAFE from Chile, China, Japan, Kenya, Republic of Korea, Saudi Arabia, Switzerland, World Bank, Airbus and the Aviation Working Group.

ICAO established the Aviation Safety Implementation Assistance Partnership (ASIAP). As the platform for ICAO and its safety partners to coordinate efforts for the provision of assistance to States, ASIAP has these objectives: information sharing; prioritization of States and assistance needs; and coordination, cooperation and collaboration on assistance activities between partners. Members include Canada, China, France, Japan, Malaysia, Republic of Korea, Singapore, United Kingdom, United States, Airports Council International (ACI), Airbus, Boeing, the Civil Air Navigation Services Organisation (CANSO), the European Aviation Safety Agency (EASA), the International Air Transport Association (IATA), and the World Bank. ASIAP has developed a methodology for prioritizing States for receiving technical assistance and maintains a list of priority States selected for assistance. As a result of ASIAP, partners are collaborating on assistance delivered in Cambodia, Guyana, Nepal, Thailand and United Republic of Tanzania. Contributions for ASIAP priority State projects were made by China, Japan, and Boeing. ■

**Michiel Vreedenburgh**  
Chief Implementation Planning & Support  
Air Navigation Bureau, ICAO





# ICAO COUNCIL ECUADOR VISIT SHOWCASES ENVIRONMENT



Aviation and the environment was the dominant theme of recent meetings in Ecuador by Representatives of ICAO's 36-State Governing Council, during its first-ever visit to the South American (SAM) region. A highlight of the event was a trip to the Galapagos Islands, a fragile world heritage site with tremendous biodiversity. On the island, using state-of-the-art technologies and practices, Ecuador has built the world's first "Ecological Airport", where the Council participants unveiled a commemorative and congratulatory plaque.

"The Council State Visit to Ecuador impressed upon ICAO's leadership the importance of our positions on aviation environmental protection, not only in terms of objectives like carbon-neutral growth, but also in terms of the protection of the world's geographic heritage," explained Mr. Ivan Fernando Arellano Lascano, Ecuador's Representative on the ICAO Council. "This visit also provided a platform for the highest authorities in aviation to undertake important political and technical discussions regarding the environment, and it has proven to be a historic moment for Ecuador."

Sustainability issues specific to each of Ecuador's three distinct continental regions – coastal, Sierra, and rainforest – were presented.

In Quito, Ecuador's capital city, the construction of the new high-altitude Mariscal Sucre International Airport posed technical challenges in terms of air navigation services and environmental impact, as well as cultural heritage challenges when significant archaeological treasures were uncovered during its construction. Ecuador's experience in managing these challenges will be invaluable to future international guidance regarding such situations.

Mr. Hajime Yoshimura, president of the Air Navigation Commission (ANC) and Japanese delegate to the ICAO Council, said, "This airport is one of the best I have ever seen. The construction and facilities are well in compliance with ICAO regulations. That is why this airport already has ICAO Certification."

At the Jose Joaquin de Olmedo International Airport in Guayaquil, a facility which serves the country's largest urban area and which has received numerous awards for its outstanding airport service quality, Ecuador highlighted its social inclusiveness via a programme that actively encourages the employment of disabled people at the airport.





ICAO's Council President, Dr. Olumuyiwa Benard Aliu, recognized and highlighted the significance of Ecuador's efforts, praising the leadership and encouraging the region's ambitions as a whole. "Quiport sees its role in Ecuador not just as a commercial operator but as part of an international system. It is gratifying to see that the collaboration we are promoting at a global level is happening also at the national level here."

He noted pointed significant improvements Ecuador has demonstrated through ICAO's Universal Safety Oversight Audit Programme (USOAP), and the fact that the safety targets indicated through the region's Bogotá Declaration are more ambitious than those set forth under ICAO's *Global Aviation Safety Plan (GASP)*.

The 2017 Council Visit programme included presentations given by ICAO's Secretary General Dr. Fang Liu and members of the ICAO Secretariat, Council Representatives, International Organizations such as Airports Council International (ACI), International Air Transport Association (IATA), the Latin American and Caribbean Air Transport Association (ALTA) and Industry represented by Google, Corporación América S.A., Corporación Quiport S.A., Terminal Aeroportuaria de Guayaquil S.A. (TAGSA), Galapagos Ecological Airport "Ecoga,l" and LATAM Airlines, among others.

The Air Transport Action Group (ATAG) offset the full travel CO<sub>2</sub> footprint of the ICAO Council trip using carbon credits from the LifeStraw Project. The number had been determined using the ICAO Carbon Calculator. ■

The visit  
"impressed upon  
ICAO's leadership  
the importance  
of our positions  
on aviation  
environmental  
protection..."

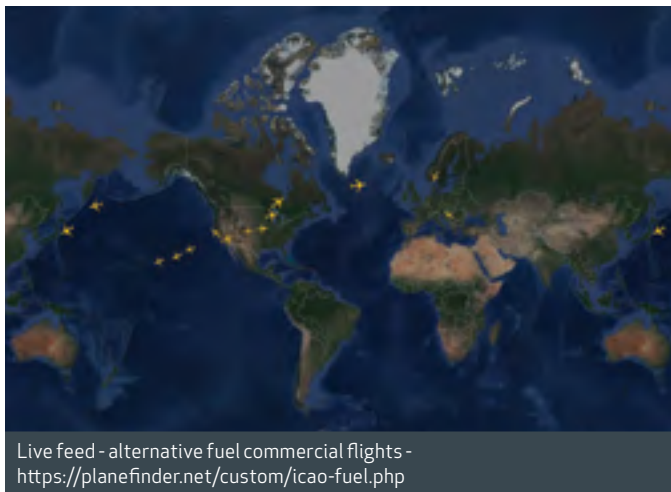
– Mr. Ivan Fernando Arellano Lascano,  
Ecuador Representative, ICAO Council.

Galapagos Ecological Airport - "Ecoga,l" - is unique for the measures it has implemented to preserve the islands' ecosystems and biodiversity.



# SUSTAINABLE FUELS? BELIEVE IT.

**✈** If there were any doubts that aircraft can fly using alternative fuels derived from sustainable oil crops such as jatropha, camelina and algae or from wood and waste biomass, follow the live feed of commercial flights operated by airlines that have signed alternative fuel purchase agreements with airport operators. The feed is on the ICAO Global Framework for Aviation Alternative Fuels (GFAAF) web portal – <https://planefinder.net/custom/icao-fuel.php>.



In 2009, recognizing that sustainable alternative fuels are an important element of the ICAO Basket of Measures to reduce emissions from international aviation, ICAO organized the First Conference on Aviation and Alternative Fuels (CAAF1) in Rio de Janeiro, Brazil. The Conference endorsed the use of sustainable alternative fuels for aviation as an important means of reducing aviation emissions and established the ICAO Global Framework for Aviation Alternative Fuels (GFAAF). The GFAAF is an online

database that collects information related to the use of alternative fuels in aviation. Since its creation in 2009, the database has been expanded to include more than 500 news announcements dating to 2005, details of 35 past and ongoing initiatives, two maps that provide a visual representation of where various alternative fuels activities have occurred, over 30 scientific and technical publications available to download, answers to frequently asked questions, and links to additional relevant sources.

 Global Framework for Aviation Alternative Fuels		
500 News Announcements	20 Ongoing Initiatives	2 Interactive Maps
30 Publications Available to Download	Answers to 7 FAQs	8 Links to Additional Sources

The aviation industry has undergone a green revolution since 2009. When the First ICAO CAAF was held, aviation alternative fuels for commercial aircraft were still in a very early stage. Now in 2017, there are five pathways certified for the production of aviation alternative fuel, three airports distributing this fuel, and 25 airlines that have flown commercial flights using alternative fuel. IATA estimates that, by the end of 2016, 5,500 flights had been flown using alternative fuels.

5

Certified pathways  
to produce drop-in  
jet fuels

3

Airports distributing  
alternative fuels to  
regular flights

2,500+

Commercial flights  
flown on sustainable  
alternative fuels



## 2<sup>nd</sup> ICAO CONFERENCE ON AVIATION AND ALTERNATIVE FUELS (CAAF2) - 11-13 October 2017

**For more information about the First ICAO Conference on Aviation and Alternative Fuels (CAAF1):** [www.icao.int/meetings/caaf2009/Pages/default.aspx](http://www.icao.int/meetings/caaf2009/Pages/default.aspx)

**To view the ICAO Global Framework for Aviation Alternative Fuels:** [www.icao.int/environmental-protection/GFAAF/Pages/default.aspx](http://www.icao.int/environmental-protection/GFAAF/Pages/default.aspx)

**For more information about the ICAO Seminar on Alternative Fuels:** [www.icao.int/Meetings/altfuels17/Pages/default.aspx](http://www.icao.int/Meetings/altfuels17/Pages/default.aspx)

**For more information about the Second ICAO Conference on Aviation and Alternative Fuels (CAAF2):** [www.icao.int/Meetings/CAAF2](http://www.icao.int/Meetings/CAAF2)

To highlight this progress, the GFAAF has been updated to include a live-feed of commercial flights operated by airlines that have signed alternative fuel purchase agreements. This includes flights operated by: Lufthansa, SAS, and KLM/KLC flights departing from Oslo Gardermoen Airport (OSL), Norway; United Airlines and KLM flights departing from Los Angeles International Airport (LAX), United States; and SAS, KLM, and BRA flights departing from Stockholm Arlanda Airport (ARN), Sweden. Aviation alternative fuel is also available for purchase at Stockholm Bromma Airport (BMA), Sweden and Åre Östersund Airport (OSD), Sweden. The website also includes details of research initiatives - for example, Air Canada's plan to operate flights on alternative fuels in support of environmental research on contrails and emissions.

Example of a recent development in aviation alternative fuels, as available on the GFAAF:

### **Air Canada to Operate Biofuel Flights in Support of Environmental Research on Contrails and Emissions**

Air Canada announced their participation in the Civil Aviation Alternate Fuel Contrail and Emissions Research project (CAAF CER), led by the National Research Council of Canada (NRC). This project aims to measure the impacts of biofuels on contrail formation. To support the research, Air Canada will conduct five biofuel-powered flights between Montreal and Toronto from the end of April 2017 to the beginning of May 2017. The biofuels' impact on contrails will be tested by a trailing aircraft. The flights will be fuelled with a blend of used cooking oil produced by AltAir Fuels and supplied by SkyNRG.

In order to keep abreast of the latest developments in aviation alternative fuels and acting in its capacity to provide a forum for the exchange of information, ICAO hosted the ICAO Alternative Fuels Seminar in Montreal, Canada from 8 to 9 February 2017. This event drew 238 Participants, including 48 Member States, and 8 International Organizations. This Seminar reviewed the state of worldwide activities on the use of alternative fuels in aviation, life-cycle analysis methodologies and sustainability criteria, financing and assistance programmes, and the legal

and regulatory frameworks that support the development and deployment of these fuels in aviation. The information shared throughout this event will serve as a basis for the convening of the upcoming Second ICAO Conference on Aviation and Alternative Fuels (CAAF2), in October 2017.

While the Seminar focused on the many successes that have been achieved so far by the aviation industry, there was also a lot of discussion surrounding the various ways in which the industry can continue to progress in the future. States and stakeholders were encouraged not to lose momentum, but to use this Seminar and the upcoming Conference to further strengthen their ties and to progress discussions on the future of sustainable alternative fuels in aviation.

As a part of the Seminar, each presenter provided their top three recommendations to facilitate the development and deployment of alternative fuels. At the end of the Seminar, the ICAO Secretariat presented a summary of these responses to the Participants. The results of the summaries created will feed directly into the upcoming Conference. CAAF2 will focus on:

1. Developments in research and certification of aviation alternative fuels;
2. Financing and assistance programmes for aviation alternative fuels;
3. Challenges and policy making, and
4. Defining the ICAO vision on aviation alternative fuels and future objectives.

States and International Organizations will be invited to submit Working Papers that correspond to each of these points. Then, the information shared through these Working Papers and the information collected from the Seminar will help the conference define the ICAO Vision of Aviation Alternative Fuels. This vision will encourage States to take action at national and international levels to further develop and deploy sustainable alternative fuels for aviation. ■





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Incendie (ERSI) ●

**ETHIOPIA**  
Ethiopian Aviation Academy  
(EAA) ●

Ethiopian Civil Aviation Training  
Centre (ECATC) ●

**KENYA**  
East African School of Aviation  
(EASA) ●

**MAURITIUS**  
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Aviation Training Centre ●

**MOROCCO**  
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Mohamed VI de l'Aviation Civile  
(AIAC) ●

Loumed Cabin Crew Training  
Center (LCCTC) ●

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et de l'Aviation Civile (EAMAC) ●

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**SENEGAL**  
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Studies (GCAS) ●

**YEMEN**  
Civil Aviation and Meteorology  
Institute (CAMI) ●

### ASIA/PACIFIC (24)

**AUSTRALIA**  
ASSET Aviation International ●

**BANGLADESH**  
Civil Aviation Training Centre  
(CATC) ●

**CHINA**  
Capital Airports Holding  
Management Co., Ltd. (CAHM) ●  
  
Civil Aviation University of China  
(CAUC) ●

**INDIA**  
Airports Authority Rescue and  
Fire Fighting Services Training  
Centre ●

Civil Aviation Training College  
Allahabad ●

Fire Service Training Center  
(FSTC) ●

GMR Aviation Academy ●

Indian Aviation Academy (IAA) ●

**INDONESIA**  
Air Transportation Human  
Resources Development Centre  
(ATHRDC) ●

Indonesia Civil Aviation Institute  
Sekolah Tinggi Penerbangan Indonesia  
●

**JAPAN**  
Aeronautical Safety College  
(ASC) ●

**MALAYSIA**  
Malaysia Aviation Academy (MAA) ●

**MONGOLIA**  
Training Centre of the Mongolia  
Civil Aviation Authority  
(TCMAA) ●

**NEPAL**  
Civil Aviation Academy of  
Nepal (CAAN) ●

**NEW ZEALAND**  
Airways New Zealand  
Training Centre ●

**PAKISTAN**  
Civil Aviation Training  
Institute (CATI) ●

**PHILIPPINES**  
Civil Aviation Training Center  
Civil Aviation Authority ●

**REPUBLIC OF KOREA**  
Civil Aviation Training Centre of  
Korea Airports Corporation (KAC) ●

Incheon Airport Aviation  
Academy (IAAA) ●

**SINGAPORE**  
Singapore Aviation Academy (SAA) ●

**SRI LANKA**  
Civil Aviation Training Centre (CATC) ●

Sri Lankan Aviation College ●

**THAILAND**  
Civil Aviation Training Centre (CATC) ●



# DRONE ENABLE

## ICAO's Unmanned Aircraft Systems (UAS) Industry Symposium

The International Civil Aviation Organization will be hosting DRONE ENABLE, ICAO's Unmanned Aircraft Systems (UAS) Industry Symposium, this 22–23 September at our Montréal Headquarters.

This event will provide States, international organizations, industry, academia and other stakeholders with an invaluable opportunity to share their ideas for new innovations in unmanned aircraft system traffic management systems (UTM).

Key supporting functions of UTM, including a registration system, the ability to remotely identify and track unmanned aircraft, as well as communications and geofencing-like systems, will among the topics addressed.

DRONE ENABLE will be the first opportunity for companies and governments to network and share their visions of a safe and globally-harmonized future in this dynamic new field. For more information, please visit our website at:

[www.icao.int/meetings/UAS2017](http://www.icao.int/meetings/UAS2017)




ICAO

SAFETY



Dr. Fang Liu, ICAO Secretary General (centre) celebrates with the Regional Office staff the founding of ICAO's North American, Central America and Caribbean (NACC) RO 60 years ago.

# NACC SETS HIGH EI GOALS

 The North American, Central American and Caribbean (NACC) Region hosts very diverse cultures and ethnicities and government systems (parliamentarian, republic, etc.). Economic and aviation sectors range from the most complex and developed systems like the United States to extremely challenged States like Haiti and others in the Eastern Caribbean. The Region has two main regional safety and security oversight mechanisms: CASSOS and COCESNA/ACSA.

The NACC Region has a goal of having at least 90 per cent of all its Member States at or above 80 per cent of effective levels of implementation (EI) by the end of 2018. This may seem daunting considering the total contribution from Member States for NACC Assistance Project averages less than US\$15,000 per State. This requires a transformation approach and strategy and the full implementation of the NACC No Country Left Behind (NCLB) Strategy.

We have gone from two-thirds of countries below 80 per cent EI to 52 per cent below, with a requirement to be at 38 per cent by the end of 2017, and a final goal that no more than 10 per cent of our Member States are below the 80 per cent EI threshold by the end of 2018. This is the challenge for the NACC Office: to institute a transformational approach and strategy to meet our goal of ensuring that each Member State can achieve a transport system which is safe, secure, environmentally sound and sustainable.

Due to the holistic nature of the NACC NCLB Strategy, each area is addressed through a comprehensive action plan which encompasses the totality of the system and resolution of any noted deficiencies (as identified through the various ICAO audit/mechanisms). This approach has allowed us to achieve the metrics/goals that we have imposed upon ourselves together with the support, political will and commitment of our Member States and other organizations. These goals and commitments are all clearly defined in the Regional Operational Plan and specifics within each Member State's tailored Action Plan. The NACC Office has been able to obtain support from various Headquarters bureaus in these endeavours, which has been critical to meeting such far-reaching goals.

This includes temporary Headquarters personnel assignment to NACC Office, sharing of personnel for training/workshops, timely interventions with Member States, and subject matter experts. ■

- Mr. Melvin Cintron, Regional Director, NACC

## NACC MARKS 60<sup>th</sup> ANNIVERSARY

ICAO's North, Central American and Caribbean (NACC) Regional Office is celebrating 60 years. A special anniversary ceremony marking the milestone was attended by Dr. Fang Liu, ICAO's Secretary General, Ms. Yuriria Mascott Pérez, Mexico's Permanent Representative to ICAO, the Mexican Ministry of Communications and Transportation's Subsecretary of Transportation, Mr. Roberto Kobeh González, Lifetime Goodwill Ambassador of ICAO, Lic. Alfonso Sarabia de la Garza, Director of Aeropuertos y Servicios Auxiliares, Mr. Melvin Cintron, Director of the ICAO NACC Regional Office, Mr. Dionisio Méndez Mayora, and Ministers, Ambassadors, and Directors General of Civil Aviation representing many of the 21 States and 19 Territories to which the NACC Regional Office is accredited.

"It is my firm belief that by giving more responsibility and accountability to Regional Offices for engaging and coordinating directly with States, ICAO can ensure seamless organizational coordination at the global and regional level, which in turn enhances the capabilities of States to reflect their needs and address their specific issues in a regional context," Dr. Liu noted. "The NACC Office has undertaken significant efforts to enhance its service delivery under this new framework, and to improve cooperation among the many partners it is accredited to here. The Office will make crucial contributions to the successful implementation of ICAO's Global Plans for Aviation Safety and Air Navigation, our upcoming Global Aviation Security Plan, and the recently adopted Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)."





## The 4<sup>th</sup> ICAO Global Aviation Training (GAT) and TRAINAIR PLUS Symposium

Addis Ababa, Ethiopia, 11-13 April 2017

### ORGANIZERS

Ethiopian Airlines Aviation Academy and ICAO GAT

### HOST

The government of the Ethiopia

### PARTICIPANTS

Keynote speakers were the Secretary General of ICAO, Dr. Fang Liu, and the CEO of Ethiopian Airlines, Mr. Tewelde Gebremaria. Panelists were from the ICAO Global Aviation Training Office and Air Navigation Bureau, Airports Council International - World (ACI), Civil Air Navigation Services Organisation (CANSO), International Air Transport Association (IATA), Brazilian National Civil Aviation Agency (ANAC), Airways New Zealand, the U.S. Federal Aviation Administration (FAA) Flight Standards Training Division and FAA Academy, JAA Training Organisation, the University of Southern Queensland Australia, Ecole Nationale de l'Aviation Civile (ENAC), Embry-Riddle Aeronautical University (ERAU) - Asia, Concordia University, East African School of Aviation, European Aviation Institute, Young African Aviation Professional Association, Singapore Aviation Academy, Civil Aviation Authority of Sri Lanka, Ethiopian Aviation Academy, Corporacion Educativa Indoamericana, East African School of Aviation (EASA), Civil Aviation Training Center of Mongolia, Washington Consulting Group, Jamaica Civil Aviation Authority Training Institute (CAATI), and Nigerian College of Aviation Technology (NCAT).

### KEY OUTCOMES

ICAO Secretary General Dr. Fang Liu applauded Africa's initiative in establishing the Association of African Aviation Training Organizations (AATO).

The SG recognized training organizations from 14 States which have attained TRAINAIR PLUS Programme milestones.

The Nigerian College of Aviation Technology (NCAT) received ICAO's Global Aviation Training 2016 award.



# ICAO TRAINING SYMPOSIUM ADDRESSES CAPACITY GAPS



The Fourth ICAO Global Aviation Training (GAT) and TRAINAIR PLUS Symposium in Addis Ababa, Ethiopia in April was the first on the African continent, as the Organization continues its efforts to bolster worldwide aviation training capacity. The TRAINAIR PLUS Programme (TPP), managed by the GAT Office, is a cooperative global training network that includes 92 training organizations from nearly 70 ICAO Member States.

The Symposium presents a unique opportunity for ICAO Member States and training organizations to come together and explore new collaboration and partnership opportunities, and to increase their awareness on key near- and long-term aviation training capacity priorities.

“We must address our persisting training capacity gaps sooner than later.”

– Dr. Fang Liu,  
ICAO Secretary General



The Nigerian College of Aviation Technology (NCAT) received ICAO's Global Aviation Training 2016 award.

ICAO Secretary General Dr. Fang Liu pointed to the robust growth trends in the global air transport network and the expected doubling of flight and passenger volumes: “Over the next 20 years, this projected growth will require many new skilled personnel such as pilots, maintenance engineers and air traffic controllers. These pressing needs for aviation personnel, especially in light of competition for their skills from other high-tech sectors, make clear for us that we must address our persisting training capacity gaps sooner than later, ultimately ensuring a sustainable skilled workforce for the future of civil aviation.”

The Secretary General stressed the need for training organizations to “engage in collaborative projects,” applauding Africa’s initiative in establishing the Association of African Aviation Training Organizations (AATO). The AATO is addressing important issues such as the standardization of course curricula, the harmonization of instructor training, and the recognition of certificates. Dr. Liu encouraged other Regions to follow this example.

Mr. Meshesha Belayneh, Deputy Director of the ICAO Technical Cooperation Bureau (TCB) and Acting Chief of the GAT Office, stated: “In some regions of the world, training capacity is lower than the expected demand for skilled and technical personnel, given the various projections of traffic growth. States will have no other choice than to train regionally or globally.”

Mr. Belayneh said the challenges training organizations face include:

- Social, political and cultural environments that hinder training development and delivery
- Lack of human, financial and material resources
- Redundancy of similar training in the region
- Lack of communication or coordination of available training
- Lack of flexibility and adaptability with independent processes and methodologies
- Non-recognition of certificates



ICAO Secretary General Dr. Fang Liu (centre left) and ICAO's Technical Co-operation Bureau Deputy Director Mr. Meshesha Belayneh (centre right), pose with Members of the ICAO TRAINAIR Plus programme during the Fourth ICAO Global Aviation Training and TRAINAIR PLUS Symposium in Addis Ababa, Ethiopia.



Mr. Tewelde Gebremaria, CEO of Ethiopian Airlines Group (left) with Mr. Meshesha Belayneh, Deputy Director of the ICAO Technical Cooperation Bureau (TCB) and Acting Chief of the GAT Office.

“We believe it is fundamental that training organizations within the same geographical region join forces to establish a regional training association,” he said. By sharing resources, expertise and costs, training organizations in a Region can work together to identify and implement training solutions. “Training organizations that take part in a regional training association would benefit from networking and new business opportunities by transferring knowledge.” Collaboration would increase training capacities since more instructors, experts and courses would become available.

At the opening of the Symposium, Mr. Tewelde Gebremaria, CEO of Ethiopian Airlines Group, which hosted the event, said the airline has achieved almost all of its 2025 vision a decade ahead of schedule. “As part of our Vision 2025, we set a vision in 2010 to generate around \$10 billion annual turnover, which at that time was almost unthinkable. But with the right planning and with the right execution, today we have surpassed all the plans we have set. The main success factor has been long-term planning.”

The Secretary General recognized training organizations from 14 States which have attained various TRAINAIR PLUS Programme milestones, including China, Egypt, Ethiopia, India, Japan, the Republic of Korea, Mongolia, New Zealand, Paraguay, Russia, Saudi Arabia, Singapore, Tunisia and Venezuela.

The Nigerian College of Aviation Technology (NCAT) received ICAO’s Global Aviation Training 2016 award as the institution with the highest number of trained instructors and highest number of delivered ICAO courses. The Deputy Rector of the college, Mr. D. B. Yahya, was elected to the ICAO TRAINAIR

“We have surpassed all the plans we have set. The main success factor has been long-term planning.”

– Mr. Tewelde Gebremaria,  
CEO of Ethiopian Airlines Group

PLUS Steering Committee in recognition of the college’s commitment to training activities in line with global standards.

The Rector/Chief Executive of NCAT, Captain Abdulsalami Mohammed, thanked ICAO for the honour and recognition, assuring NCAT would work toward sustaining the tempo. He urged the federal government to give the college needed budgetary allocations so that it could boost its training activities.

Guided tours featured the Ethiopian Airlines facilities, including their full-flight simulator, catering, MRO, cargo and the Ethiopian Aviation Academy. ■


The ICAO TRAINAIR PLUS Programme is open to all training organizations and operators, provided they are recognized or approved by their respective governments. The network consists of four categories of membership:

- **Associate Members:** training organizations that successfully pass an on-site assessment
- **Full Members:** TRAINAIR PLUS Members that develop Standardized Training Packages (STPs)
- **Regional Training Centres of Excellence (RTCEs):** regional TRAINAIR PLUS-leading Full Members that can develop ICAO courses using ICAO provisions (Annexes and guidance material)
- **Corporate Members:** aviation institutions and industry organizations that participate in the various TRAINAIR PLUS Programme activities and have access to Members of the network.

To find out more information about the ICAO Global Aviation Training programme and TRAINAIR PLUS, visit the GAT web page: [www.icao.int/training/Pages/default.aspx](http://www.icao.int/training/Pages/default.aspx)



# DR. LIU NAMED ATN LEADER OF THE YEAR

 ICAO Secretary General Dr. Fang Liu stressed the need for continued progress on the sustainability of international aviation as she accepted the 2017 Air Transport News (ATN) Leader of the Year Award during a special ceremony in Ekali, Greece.

"I am deeply honoured to be named ATN's Leader of the Year, an accolade which I proudly accept in recognition of the great leadership role that the International Civil Aviation Organization has continued to uphold," Dr. Liu declared. "I also accept it on behalf of the many officials of the Member States and international and regional organizations with whom I have the great privilege to collaborate as ICAO Secretary General, and also the many industry leaders and experts who play such an important part in our work."

"This is an important moment in the history of our sector, with many challenges now confronting ICAO and the entire air transport community," the Secretary General continued. "It is critical, therefore, that as we confront the prospects of dramatic air transport growth, our global community also continues on pace to refine aviation's objectives for safety, security, efficiency, economic development and environmental performance." ■



Dr Kostas Iatrou, Managing Director of ATN (left), presents Dr. Liu with the Leader of the Year Award.

**"It is critical (that) our global community continues on pace to refine aviation's objectives for safety, security, efficiency, economic development and environmental performance."**

– Dr. Fang Liu, ICAO Secretary General

## GREEK OFFICIALS EXPRESS PUBLIC KEY DIRECTORY INTEREST

During her mission to Greece, Dr. Liu conducted bilateral meetings with the country's Alternate Minister of Foreign Affairs, Prof. George Katrougalos, and the Governor of the Hellenic Civil Aviation Authority, Mr. Konstantinos Lintzerakos. Topics discussed included priorities of common interest in the fields of safety, security, environment protection, capacity building and training, and the socio-economic benefits which can follow when States ensure compliance with ICAO's global norms.

The Greek officials expressed interest in becoming new members of ICAO's Public Key Directory, a crucial tool in the UN agency's global travel document security framework. They also recognized the value in enhancing their State's implementation of the latest Performance-Based Navigation (PBN) procedures, which realize fuel efficiency, capacity enhancement, and emissions reduction benefits.



Dr. Fang Liu, ICAO Secretary General (left) meeting with the Governor of the Hellenic Civil Aviation Authority, Mr. Konstantinos Lintzerakos.

# --- ON

“This is going to be the first time air traffic controllers can see the entire world.”


– Vincent Capezzuto,  
Chief Technology Officer, Aireon





# TRACK

By Rick Adams, Editor, *ICAO Journal*

 The challenge of ICAO's two-phase Standard for tracking commercial aircraft has stimulated multiple creative technology solutions which claim to meet the 2018 15-minute tracking requirement now as well as emerging initiatives which address one-minute aircraft-in-distress requirements by 2021.

## THE AIRCRAFT TRACKING CHALLENGE

Three years ago, in March 2014, when Malaysian Airlines Flight MH370 disappeared from air traffic controller screens while over the Andaman Sea and was lost, apparently forever, the world gasped. Losing track of a large commercial aircraft seemed unthinkable in this era of ubiquitous mobile phone coverage, in-flight WiFi, and multiple means of aircraft communication with ground operations.

Following the disappearance of MH370, a special multidisciplinary meeting regarding global flight tracking was held at ICAO Headquarters in May 2014. ICAO forged consensus among its Member States and the international air transport industry sector on the near-term priority to track airline flights, no matter their global location or destination. The meeting also established a framework for future medium- and long-term tracking efforts. The special meeting was attended by more than 200 aviation industry stakeholders, including representatives from ICAO, Member States in Africa, Asia, Europe, the Middle East,

North America, Oceania, and South America, regulators, aircraft manufacturers, air traffic controller groups, pilot groups, the International Telecommunications Union (ITU), and other international organizations.

"We take the loss of every single aircraft and every single life seriously," commented ICAO Council President Dr. Olumuyiwa Benard Aliu. "Malaysia Airlines Flight MH370 has been an unprecedented event for aviation and we have responded here in a similarly unprecedented manner."

The meeting participants concluded that global tracking of airline flights should be pursued as a matter of priority to provide early notice of, and response to, abnormal flight behaviour. It also concluded that a draft concept of operations (CONOPS) on flight tracking be developed with a clear definition of the objectives of flight tracking, ensuring that information is provided in a timely fashion to the right people to support search and rescue, recovery and accident investigation activities, and it should also include the roles and responsibilities of all stakeholders.

To develop the CONOPS as the guiding document for the efforts, the President of the ICAO Air Navigation Commission (ANC) and Director of the Air Navigation Bureau (ANB) established an ad hoc working group.



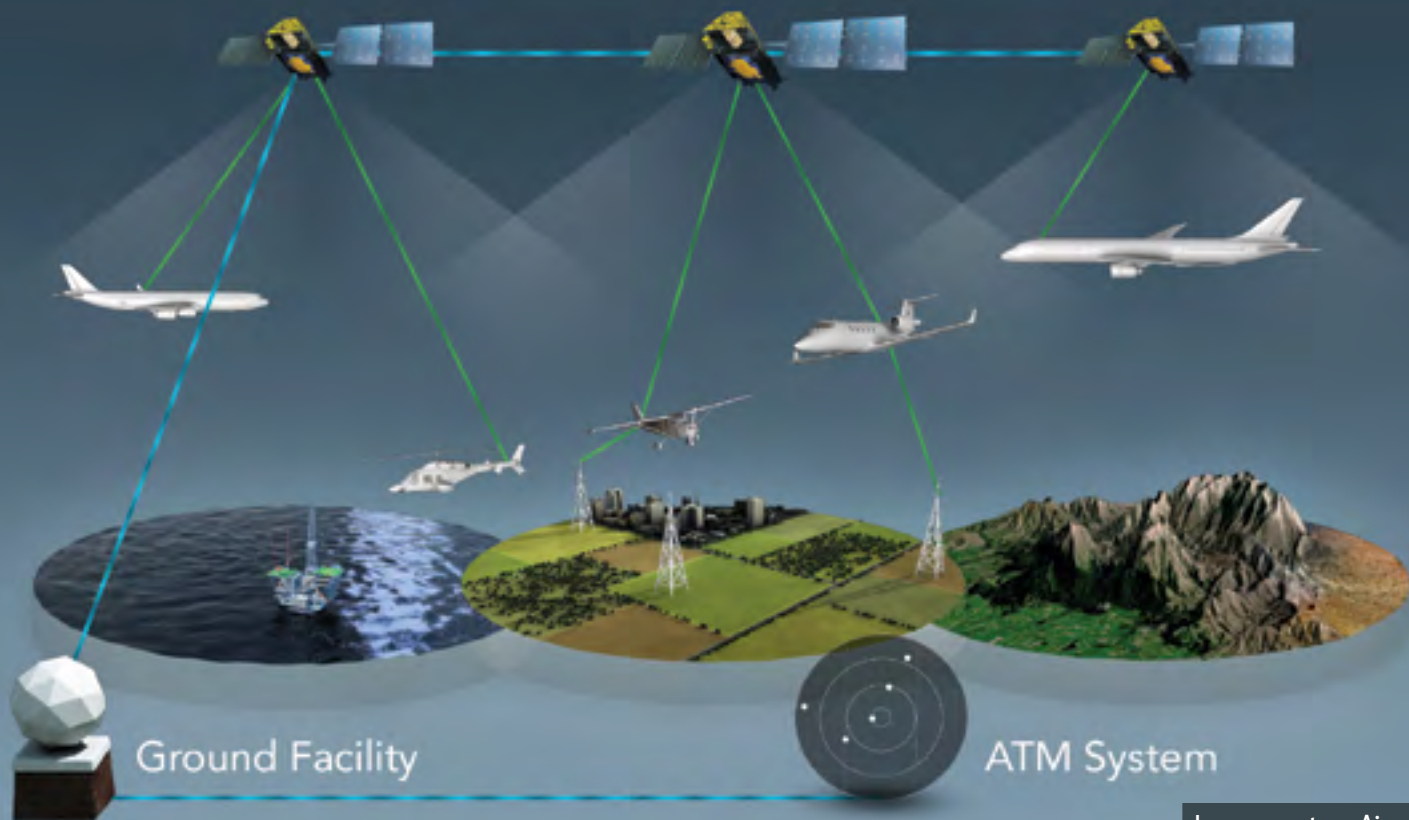


Image courtesy Aireon

## GLOBAL AERONAUTICAL DISTRESS SAFETY SYSTEM (GADSS)

### Normal Aircraft Tracking Implementation Initiative (NATII)

*Implementation: 8 November 2018*

Each commercial aircraft is located while in flight at 15-minute intervals during normal operations

### Autonomous Distress Tracking (ADT)

*Implementation: 1 January 2021*

One-minute continuous position reporting for aircraft that are “in distress.” The ICAO Air Navigation Commission (ANC) defines distress condition as a state that, if the aircraft behaviour event is left uncorrected, it can result in an accident.

Separately, to identify potential solutions for routine flight tracking using existing technologies, the Aircraft Tracking Task Force (ATTF) was established, led by the International Air Transport Association (IATA). The 20-member Aircraft Tracking Task Force was comprised of experts from airlines, aircraft manufacturers, flight safety organizations, air navigation service providers, pilots, air traffic management, and flight tracking equipment and service providers, including IATA, ICAO, Airlines for America (A4A), Association of Asia Pacific Airlines (AAPA), Civil Air Navigation Services Organisation (CANSO), Flight Safety Foundation, International Federation of Air Line Pilots Associations (IFALPA), International Coordinating Council of the Aerospace Industries Associations (ICCAIA), aircraft manufacturers Boeing, Airbus, Embraer, and Bombardier, and the MITRE Corporation Center for Advanced Aviation System Development.

The Task Force examined available options for tracking commercial airplanes, considering implementation, investment, time, complexity, and cost-efficiency to achieve the desired coverage.

### TECHNICAL CHALLENGE

One aspect of the tracking challenge is that, despite sophisticated ground stations and ongoing implementation of Automatic Dependent Surveillance - Broadcast (ADS-B) technologies for navigation and landing, there are gaps in the positional monitoring of aircraft around the world. Land-based radar, ADS-B and other tracking mechanisms do not extend to open-ocean areas, the polar regions, and remote land areas where ground stations are sparse. With current technology applications, it may take up to 45 minutes to confirm that an aircraft is missing and another 45 minutes to verify that it is not responding appropriately and may be in distress – or nearly 90 minutes total.

Radar, for example, measures an aircraft’s location by sending out “pings” of radio waves and measuring how long it takes for the signals to bounce back from the aircraft. It only works if the aircraft is in line-of-sight of the radar tower, not blocked by mountains, and it does not work over long distances (airport surveillance radars typically have an effective range of 40-60 nautical miles).

ADS-B, which began to be used by some aircraft more than a decade ago, uses the global positioning system (GPS) to track aircraft, but ground-based ADS-B receivers are also line-of-sight with a range of about 250 nm. If the aircraft is within 250 nm of an ADS-B ground station, air navigation service providers (ANSPs) can determine the positional accuracy of an aircraft (at normal cruising altitudes) within a rate of 1.5 to 8 seconds.

ADS-B “Out” avionics systems installed in most modern aircraft broadcast dozens of parameters (aircraft registration, serial number, flight number, origin and destination airports, vertical and horizontal speeds, heading, track, and estimated time of arrival) every half-second in 1090 ES MHz frequency signals referred to as “extended squitters.”

Over the ocean, air traffic controllers project where the aircraft should be, based on the flight plan or pilot report. Deviations are not uncommon.

### THE ESSENCE OF GADSS

The Task Force developed its recommendations for a new ICAO Global Aeronautical Distress and Safety System (GADSS) based in part on an analysis of 42 tracking-related aircraft accidents. The analysis showed that if an aircraft reported its position no more than one minute before it crashed, the location of the crash site was within a radius of 6nm of the aircraft’s last-known position – with 95 per cent accuracy in most cases.

GADSS incorporates a wide range of functions, including communications, search and rescue organizations and practices, routine aircraft tracking, and aircraft location reporting in emergencies (including equipment such as emergency locator transmitters (ELTs) or automatic deployable flight recorders - ADFR). “A very accurate distress location on the ground or water has the ability to take the ‘search’ out of search and rescue and allow Rescue Coordination Centres to concentrate efforts more towards the rescue response,” stated a working paper prepared by the ICAO Secretariat.

### Normal Aircraft Tracking

On 10 November 2015, the ICAO Council adopted Amendment 39 to Annex 6 - Operation of Aircraft, Part I - International Commercial Air Transport - Aeroplanes which included the normal aircraft tracking Standards and Recommended Practices (SARPs) and which will be applicable on 8 November 2018.

The normal aircraft tracking SARPs establish the air operator’s responsibility to track its aircraft throughout its area of operations. It establishes an aircraft-tracking time interval of 15 minutes whenever air traffic services obtain an aircraft’s position information at greater than 15-minute intervals for aeroplanes with a seating capacity greater than 19. This aircraft-tracking time interval further applies as a recommendation to all operations of aircraft with a take-off mass of 27,000 kg and as a requirement to all operations of aircraft with a take-off mass of 45,500 kg when flying over oceanic areas.

### Autonomous Distress Tracking

On 2 March 2016, the ICAO Council adopted Amendment 40 to Annex 6, Part I which included, among other elements, SARPs relating to the location of an aeroplane in distress. These SARPs address the GADSS autonomous distress tracking (ADT) concept. The SARPs will be applicable on 1 January 2021.

The SARPs relating to the location of an aeroplane in distress establish the requirement for an aeroplane to autonomously transmit information from which a position can be determined at least once every minute when in a distress condition. An aircraft is in a distress condition when it is in a state that, if the aircraft behaviour event is left uncorrected, could result in an accident. The SARPs are applicable to new aeroplanes with take-off mass greater than 27,000 kg. The requirement also recommends that it applies to new aeroplanes with take-off mass greater than 5,700 kg.

### 2018 15-MINUTE SOLUTIONS

A common technology approach to addressing ICAO’s 2018 15-minute objective is combining several sets of positional data into unified positional signals. These data sets might include ADS-B, 1090 ES signals received via ground stations, Future Air Navigation System (FANS) / ADS-C (Contract) signals, high-frequency data link (HFDL) performance data, global positioning system (GPS) data, and internal navigation system data.

Among the industry solutions using such amalgamated data sets are Panasonic Avionics’ Airmap, Rockwell Collins’ MultiLink, and SITA Flight Tracker.

Panasonic Director of Engineering and Business Development, Jeffrey Rex, said, “There are a lot of systems that can be turned on in an aircraft where you are just turning on an application and adding a small system upgrade, instead of waiting for a whole new system to come out. You probably get 95 per cent of the end intent just by putting out something you have today.”

Their eXConnect Ku-band satellite network (developed primarily for inflight entertainment) claims to provide a 99.6 per cent global air route coverage, the only gaps at the North and South Poles.

“One of the hurdles,” Rex noted, “is that the baseline systems that do this are not on every airplane, and it takes awhile to modify aircraft. There’s a huge backlog for some of the systems that have to be in place.”

The Rockwell Collins ARINC MultiLink flight tracking service uses HFDL performance data, ADS-C, ADS-B, US Aircraft Situation Display to Industry (ASDI) radar data, Eurocontrol position information, and Aircraft Communications Addressing and Reporting System (ACARS) reports. The MultiLink service was launched in 2015 with AeroMexico.

“GADSS incorporates a wide range of functions, including communications, search and rescue organizations and practices, routine aircraft tracking, and aircraft location reporting in emergencies (including equipment such as emergency locator transmitters (ELTs) or automatic deployable flight recorders - ADFR).”

Yun Chong, Vice President of Commercial Aviation Services for Rockwell Collins, said a unique element of HFDL is that “it provides a polar route. When an aircraft has to fly over the North Pole, most satellites won’t be able to provide that position data, but with the HFDL we can.”

“If an aircraft has three of the six sources we’re using, the reporting can be brought down from 15-minute to five-minute intervals, in theory,” he added.

The SITA OnAir Flight Tracker, available since January 2015, is installed with more than 100 air carriers globally and incorporates data from ACARS, ADS-B, ADS-C, and FANS, pooled with air traffic control radar data, territorial and satellite feeds, and the aircraft’s flight plan.

SITA is also now in partnership with Aireon and FlightAware to incorporate Aireon’s space-based ADS-B data to resolve any coverage gaps. Paul Gibson, SITA OnAir Portfolio Director, indicated the capability can be automated in response to abnormal conditions to deliver one-minute position reports for tracking.

## 2021 ONE-MINUTE SOLUTIONS

Placing ADS-B receivers on satellites removes the line-of-sight limitations of ground-based ADS-B. The International Telecommunications Union (ITU) in November 2015 adopted a resolution to allocate radio frequency spectrum band 1087.7 to 1092.3 MHz to the aeronautical earth-to-space mobile satellite service for ADS-B emissions from aircraft emitters.

In January 2017, Space Exploration Technologies (SpaceX) launched the first 10 of 66 planned Iridium next-generation satellites which will be able to continuously track an aircraft’s position, speed, and altitude around the entire globe. The Iridium satellite incorporates a specialized 1090 MHz payload receiver for Aireon LLC, a joint venture of Iridium and air navigation service providers in Canada, Denmark and Ireland, and which has contracts with ANSPs in Iceland, Singapore, South Africa, and the UK, plus many others evaluating the system.

“It satisfies components of GADSS, although it depends on what the automatic distress requirements will turn out to be for each airline,” said Vincent Capezutto, Chief Technology Officer and Vice President of Engineering for Aireon (not to be confused with the supersonic business aircraft company, Aerion). He noted, “It will enable one-minute reporting, all the time, so airlines don’t have to worry about changing it to a different update internally for distress reporting.”

The Iridium LEO satellite constellation orbits 485 miles above earth and sends signals to Aireon’s ground station network. They are in the process of connecting customers to the network for receiving and testing of data (which takes about 2 seconds to go from the aircraft to the satellite to the ground station). In March, utilizing the FAA’s specially equipped “flying laboratory” Bombardier jet with three Aireon payloads available to receive data, a total of 2,462 ADS-B messages were received and decoded providing comparable data to that of terrestrial ADS-B stations.

With only about 15 per cent of the total network airborne, the data being received represents partial coverage. The plan is to launch another 10 satellites in June and 10 more every two months thereafter in order to have the full constellation in place and operational in 2018.

Capezutto said, “For the first time, we’re seeing a complete picture of the polar traffic when the satellites pass. We’ve seen them in the oceanic regions. We can see tracks from Europe into North Africa. Every day we’re seeing more and we want to make sure the end product is 100 per cent surveillance. This will be the first time air traffic controllers can see the entire world.”

Aireon and FlightAware are marketing their satellite-based ADS-B coverage as Global Beacon, and Qatar Airways is the airline launch customer. Qatar Airways Group CEO, Akbar Al Baker, said, “Global Beacon will seamlessly integrate with our existing ICAO 2018-compliant flight technology (called Total Operations System) and further enhance our fleet management by providing updates every minute. We will be the first airline in the world to have the capability to use worldwide satellite air surveillance to support our airline operations and to achieve the highest level of flight tracking standards ahead of the ICAO 2021 mandate.”

Thomson Aerospace has developed a solution using Iridium satellites and a cell phone-like radio device. CEO Mark Thompson said, “This gathers all the data all the time, and if any data is out of tolerance, we send an alert.” The system is very low power, using only three watts, and can also send messages via the ACARS network.

Thomson said the 2018 Standard for 15-minute tracking “is fairly simple and almost every widebody aircraft in service today can meet the requirement.” However, he noted, the 2021 standard for one-minute reporting “is going to require you to get data off the aircraft at all times.”



According to Thomson, their satcom solution can stream 88 data parameters once every seven seconds. However, it only does so when there's an aircraft event, thus saving bandwidth.

Airbus Defence and Space, together with FlightRadar24 and Gom Space, is exploring low-earth-orbit (LOE) "nanosatellites" as well as robotic sea craft to expand ADS-B coverage into ocean areas. Called N-Tracking, the Airbus system could be used "to interrogate the aircraft in distress every minute if it wanted to," said Shawn Mechelke, Vice President of N-Software Services for business unit NavBlue.

The Galileo satellite constellation search and rescue service went active in April 2017. Galileo SAR is Europe's contribution to the COSPAS-SARSAT medium earth orbit (MEO) network, a distress alert detection and information distribution system best known for detecting and locating emergency beacons activated by aircraft, ships and hikers. The International COSPAS-SARSAT programme was established in 1979 by Canada, France, the U.S., and the former Soviet Union; 43 countries and organizations participate in its management.

The search and rescue transponder on Galileo satellites picks up signals emitted from distress beacons in the 406 - 406.1 MHz band, broadcasting this information to dedicated ground stations in the L6 band. With Galileo, the time to identify the location of a beacon signal is reduced from several hours to a few minutes.

Galileo is claimed to fulfill ICAO requirements for implementing the GADSS 2021 Standard.

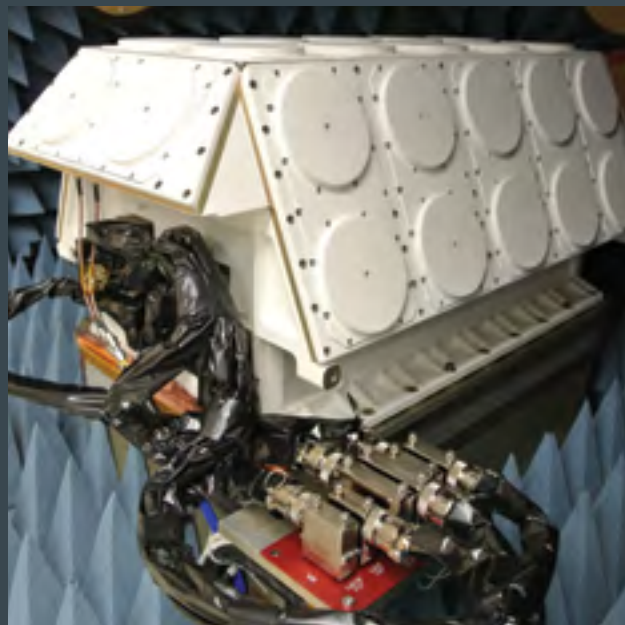
### BENEFITS BEYOND

Satellite-based tracking, of course, has benefits other than position location in the event of distress. With satellite-based tracking, aircraft can take more direct routes from Point A to Point B instead of being routed where radar and other ground equipment can provide navigational aid.

Better precision and reliability will also allow aircraft to fly closer together. Instead of the 80nm separation which is typical over the ocean, aircraft equipped with ADS-B could reduce this to 15nm, enabling more planes to fly on the most efficient routes – cutting flight time, fuel, and emissions. For example, Purdue University aerospace engineer Karan Marais estimates that, by 2025, space-based ADS-B tracking could reduce the amount of fuel that passenger aircraft burn crossing the North Atlantic by 284 million pounds a year.

"This is much broader than flight tracking safety and surveillance data over oceans and remote areas of Africa and the Poles," said Aireon's Capezutto. "It has strong ties to *No Country Left Behind*, efficiency gains, environmental impact. This is one of those game-changing events we don't see very often. The introduction of radar was probably the last of this magnitude." ■

## THE FREE ALERT SERVICE FOR AIRCRAFT IN DISTRESS



ICAO is partnering with Aireon and the Irish Aviation Authority (IAA) to promote registration in the new Aircraft Locating and Emergency Response Tracking (ALERT) system for monitoring aircraft in distress.

The ALERT system will be made available on request, free of charge, to airlines, air traffic control providers, and search and rescue agencies. They may request the location and last-recorded flight track of any aircraft in distress which is equipped with ADS-B.

The service will be managed from the IAA North Atlantic Communications Centre in Ballygirren on the west coast of Ireland.

"Aireon ALERT will offer precisely the kind of service being sought by ICAO, IATA, airlines and other aviation bodies to help locate missing aircraft as fast as possible," said Mr. Peter Kearney, IAA Director, ATM Operations Strategy.

Toward the end of 2016, the IAA (Ireland's air navigation services provider) completed service delivery point site acceptance testing capable of receiving and processing space-based ADS-B data as soon as satellites are in orbit.

Over the next several years, as more commercial aircraft are equipped with ADS-B transponders, the IAA plans to increase use of space-based ADS-B in its automation system. Correspondingly, redundant ground sensors will be decommissioned, providing savings off current costs as much as 50 per cent.

# THE THIRD ANNUAL ICAO WORLD AVIATION FORUM

A NO COUNTRY LEFT BEHIND INITIATIVE

ABUJA, NIGERIA | 20-22 NOVEMBER 2017

## FINANCING THE DEVELOPMENT OF AVIATION INFRASTRUCTURE

The third **ICAO World Aviation Forum** will explore how development of aviation infrastructure plays a key role in the achievement of the visionary United Nation's **Agenda 2030** and African Union **Agenda 2063** prosperity objectives, with a special focus on funding and financing of airport, air navigation, and other aviation infrastructure projects. Stressing the importance of aligning policies and planning for air transport with the

national development planning, this high-level event directly supports the **ICAO No Country Left Behind** initiative, and will be of key interest to Ministers and other senior government officials responsible for civil aviation, transport, infrastructure, finance, and tourism, as well as key industry and financial partners.

Event email: [IWAF@icao.int](mailto:IWAF@icao.int)

URL: [www.icao.int/meetings/IWAF2017](http://www.icao.int/meetings/IWAF2017)



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# INTERVIEW: NEW ANC PRESIDENT HAJIME YOSHIMURA



**✈ Mr. Hajime Yoshimura is the new President of the ICAO Air Navigation Commission (ANC), effective in January for a one-year term. Nominated by Japan, he has served as a Commissioner of the ANC since 2013 and was appointed First Vice-President in 2016. He has been Chairman of the ANC Working Group of the Whole on Air Navigation Work Programmes Deliverables Production and a member of the ANC Planning Team.**

Prior to his role on the ANC, Mr. Yoshimura contributed to the first Aircraft CO<sub>2</sub> Emissions Standard Metric System through his membership on ICAO's Committee on Aviation Environment Protection (CAEP) and development of standards for the Ground-Based Augmentation System (GBAS) through the ICAO Navigation Systems Panel.

Mr. Yoshimura dedicated nearly 20 years of his career to the Civil Aviation Bureau of Japan (JCAB), sharing his expertise in the fields of air navigation, airworthiness and air transport safety operation. In his position as Deputy Director of JCAB's Airworthiness Division, he oversaw development of national airworthiness and environmental standards and served as co-project manager of the certification of the first Japanese regional jet.

*ICAO Journal* asked Mr. Yoshimura to comment on his aviation career and on the ANC's near-term priorities.

## HOW DID YOU BECOME INTERESTED IN AVIATION?

My father influenced me to become interested in international civil aviation. He was a system engineer in one of the aviation industries in Japan, and when I was a child he often took me to local air shows and invited visitors from foreign aircraft manufacturers to our home. These experiences made me hope to someday work in international civil aviation, so it's because of him that I joined the Civil Aviation Bureau of Japan (JCAB).

I started my career as a communications, navigation and surveillance (CNS) engineer, and my first assignment was to implement a satellite navigation and communication system in accordance with an ICAO FANS (Future Air Navigation System) Concept endorsed by the Tenth Air Navigation Conference, AN-Conf/10. Later, I got the opportunity to study in an MBA programme in the United States, and also to acquire a private

pilot licence. Through all of this, I became interested in the certification of airworthiness and flight operation areas.

The Air Navigation Commission (ANC) deals with many different subjects, and my expertise can certainly contribute to some of them, but it's thanks to the fact that the ANC is comprised of 19 members from different States and Regions, with different expertise (pilot, controller, engineer, etc), that we can address the sum total of air navigation matters.

## WHAT ARE PRIORITIES OF THE ANC FOR THE COMING YEAR?

**Global Air Navigation Plan** - Last fall, the 39<sup>th</sup> ICAO Assembly endorsed the fifth edition of the *Global Air Navigation Plan* (GANP). Considering steady implementation of the GANP in all States and Regions, the fifth edition has not been changed dramatically. However, a constant growth of global air traffic urges ICAO to further mature concepts for each module and to identify the associated work programmes for each block. ICAO established a study group last March to consider the global performance ambitions and build a conceptual roadmap.

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“ICAO will present draft key components of the *GANP* for industry feedback during the Global Air Navigation Industry Symposium (GANIS) in December 2017.”





ICAO will present draft key components of the *GANP* for industry feedback during the Global Air Navigation Industry Symposium (GANIS) in December 2017, and it will be further discussed at the Thirteenth Air Navigation Conference (AN-Conf/13) in October 2018. The ANC will recommend the 6<sup>th</sup> edition of the *GANP* for approval to the Council through the State Letter consultation process, and it will be proposed for endorsement by the 40<sup>th</sup> ICAO Assembly in 2019.

**Global Aviation Safety Plan** - The *Global Aviation Safety Plan (GASP)* 2017-2019 was also endorsed by the 39<sup>th</sup> ICAO Assembly. The *GASP* has significantly changed since its introduction in 1997, and has evolved through continuous consultation and review. The 2017-2019 edition updates the *GASP* to include a global safety roadmap developed to support an integrated approach to implementation for States and Regions. However, feedback from various stakeholders identified a lack of top management support and understanding about the purpose of the *GASP*, a lack of technical expertise in States, little visibility of the *GASP* in some regions, and an overall lack of performance measurement.

ICAO therefore established a study group to restructure the *GASP*, integrate safety initiatives, and make the global aviation safety roadmap more salient. The ANC will recommend the 2020-2022 *GASP* for approval to the Council through the State Letter consultation process, and it will be proposed for endorsement by the 40<sup>th</sup> ICAO Assembly in 2019.

**Implementation** - Implementation is another priority for the ANC, to support the ICAO *No Country Left Behind (NCLB)* initiative. A commitment to developing high-quality Standards and Recommended Practices (SARPs) goes without saying, but the ANC needs to make sure that appropriate guidance materials are also provided to support the implementation of the SARPs. Furthermore, close collaboration with regional groups is needed to facilitate and roll out this implementation. To this effect, the ANC and the Air Navigation Bureau (ANB) have just developed the Air Navigation Work Programme Database, which has been in use since January 2017. The database not only includes tasks for the development of ICAO SARPs but also tasks for the development of guidance materials and training materials. Additional work is underway to ensure that relevant elements,

“ICAO established a study group to restructure the *GASP*, integrate safety initiatives, and make the global aviation safety roadmap more salient.”

via the State Letter process before the Conference. Therefore, the Conference will be a great opportunity to discuss, build consensus, obtain commitments and formulate decisions necessary for effective and efficient progress of important air navigation initiatives by ICAO and States. The proposed revisions of these global plans should correspond to the expected operational changes and emerging technologies of international civil aviation such as unmanned aircraft vehicles (RPAS, drones), cybersafety, and other current priorities.

**Integration of drones in the airspace** - The Remotely Piloted Aircraft Systems (RPAS) Panel was established in late 2014. Since then, panel meetings have been held three times per year, and actively discussed and coordinated with other relevant panels to develop SARPs for RPAS. The ANC conducted a preliminary review at its 204<sup>th</sup> Session of a proposed amendment to Annex 1, regarding licensing requirements for RPAS pilots. Annex 6 for RPAS operations and Annex 8 for airworthiness will be reviewed in the near future by the ANC, and will be followed by the State Letter consultation process. Regarding drones, many States and international organizations requested at the 39<sup>th</sup> Assembly that ICAO develop specific provisions. The Commission understands that the operation of drones generally takes place within domestic airspace; however, if it is operated in the vicinity of airports, it could be a threat to international commercial aircraft due to collision risks. Recognizing the limited budgets and resources within the ICAO Secretariat and the RPAS Panel, the Commission and the ANB are seeking to leverage outside resources from industry to address this issue. The Commission will make sure that proposed ICAO provisions properly address the risk to civil aviation and serve as a benchmark for States and international organizations.

**Cybersecurity** - The role of the Commission is to develop ICAO provisions that enable to identify, assess and mitigate risks caused by cyberattacks, and to facilitate information-sharing among stakeholders in order to maintain the safety and efficiency of existing and future civil aviation systems. Since cybersecurity relates to various areas (Airworthiness, Operations, etc), a multidisciplinary approach is considered appropriate to identify problem statements and necessary work programmes which will be tasked to various ANC Panels. A study group is planned to be established in the near future, and the outcome will be presented to GANIS this December. ■

Mr Hajime Yoshimura  
President  
ICAO Air Navigation Commission (ANC)

such as work programmes in each region, are incorporated into this database, to enable a consolidated approach to monitor and support the implementation of SARPs in all States and Regions. This database is also accessible to Council and ANC Panel members, increasing its visibility and facilitating coordination.

#### 13<sup>th</sup> Air Navigation Conference in 2018 -

The 13<sup>th</sup> Air Navigation Conference in 2018 (AN-Conf/13) will be a forum for detailed technical discussions leading to agreement on a set of high-level recommendations. These will be submitted for approval to the ICAO Council which will subsequently invite endorsement thereon by the 40<sup>th</sup> ICAO Assembly. The ANC will conduct a preliminary review of proposed revisions of *GANP* and *GASP* and ask for comments from States and international organizations

# SOUTH AMERICAN REGION DEVELOPING “SAM PLAN”



In 2013, the ICAO South American (SAM) Region established the “Bogota Declaration” with goals for both Safety and Air Navigation/Capacity. The Declaration led to huge success, driving States to improve in areas such as overall Effective Implementation (EI) of SARPs, aerodrome certification, accident reduction, Performance-Based Navigation (PBN) and Air Traffic Flow Management (ATFM) implementation, and emissions reduction, among others. Now the Regional Office, in conjunction with Member States, is developing the “SAM Plan,” considering four axes of development: Connectivity, Safety, Institutional Strength and Environment, in line with ICAO Strategic Objectives.



We believe that air connectivity is one of the main engines for regional development. For the people to take advantage of this development, it must be undertaken within a safe and SARPs-compliant environment. That will only occur with strong institutions and with respect to environmental initiatives.

To date, one of the more important initiatives is the development of the Latin American Aviation Regulations (LAR) project under the SRVSOP (Sistema Regional de Cooperación para la Vigilancia de la Seguridad Operacional). The implementation level of this initiative is close to 80 per cent and after 15 years of hard work is leading to a very effective strategy, placing the SAM Region as a world leader in ICAO USOAP results with an average effective implementation of 76 per cent and soon reaching 80 per cent. On the same page, the AIG Regional Cooperation Mechanism (ARCM) has established goals of passing from the current EI of 68.92 per cent to above 85 per cent by December 2018.

On the Capacity and Efficiency side, SAM Region has taken big steps toward an integrated and interoperable communications network through the South American Digital Network (REDDIG). This network, operating since 2003, offers a high-availability, cost-effective regional network to support the voice and data communications among ATS units, and with the capability of implementing new services. Satellite-based operations are now available on a practical basis in all South American States, and local airlines are taking full advantage of them. ■

- Mr. Franklin Hoyer,  
Regional Director in the ICAO South America Region

## EUR/NAT: FROM NORTH AFRICA TO THE NORTH POLE

The European and North Atlantic (EUR/NAT) Regional Office of ICAO covers a vast area from North Africa (Algeria, Morocco and Tunisia) to the North Pole (14 time zones) and is accredited to 56 States. Five of six United Nations official languages are used (Arabic, English, French, Spanish and Russian). The Regional Office coordinates with the United States and Canada on North Atlantic issues and with numerous international and regional organizations. The existence of various regional organizations creates a constant challenge and requires a high degree of cooperation and multilateral coordination to support States and avoid duplication.

Some recent initiatives and accomplishments of the EUR/NAT Office:

- Reduction of Significant Safety Concerns;
- Development / implementation of various *No Country Left Behind* (NCLB)-related projects;
- Implementation of new routes and route segments leading to

the more efficient use of airspace and resulting in reduction of the consumption of CO<sub>2</sub> emissions and noise;

- Response and coordination to volcanic ash events through the newly approved EUR/NAT Volcanic Ash Contingency Plan;


New challenges and goals include:

- Further developing and implementing the EUR/NAT NCLB Regional Capacity Building Programme, assisting States to resolve SSCs, improving the Effective Implementation (EI) ratio of the ICAO SARPs above the global average, and building oversight capacity through Technical Assistance Projects.
- Supporting States in the implementation of new ATM concepts, such as cross-border free route airspace operations, advanced airspace management and the integration of Remotely Piloted Aircraft Systems (RPAS) into non-segregated airspace and remote tower operations.

- Mr. Luis Fonseca de Almeida, Regional Director, EUR/NAT



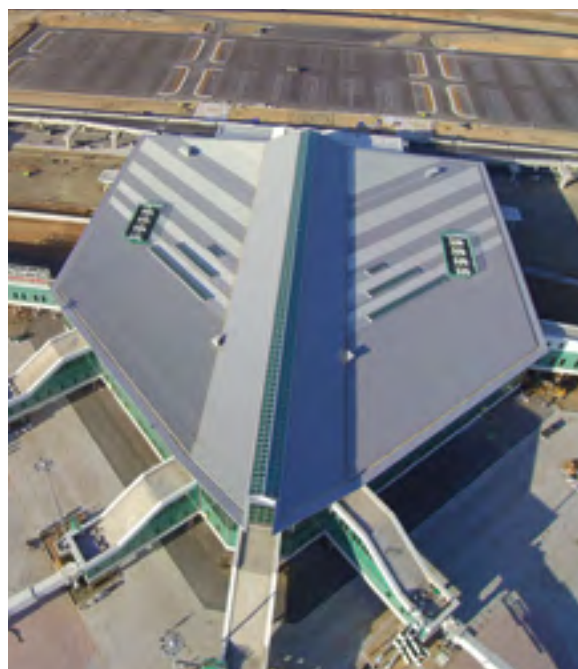
# NEW AERONAUTICAL COMMS NETWORK FOR APAC

 The Asia Pacific Common Regional Virtual Private Network (APAC CRV) is the future Asia-Pacific aeronautical network. It is a wholly dependable and reliable communications infrastructure for aeronautical communications in Asia Pacific and with other ICAO regions, facilitating the Global Air Navigation Plan (GANP 4th Edition) B0-FICE, B0-NOPS, VoIP and B1-SWIM modules. The network will be a regionwide Internet Protocol (IP) communication network, which is an upgrade from the current point-to-point communication infrastructure. The network will utilize a private commercial network from a single communication service provider.

The network will initially carry Air Traffic Service Message Handling System (AMHS) data and potentially other types of data such as voice over IP. The network will be a fundamental foundation for the reliable and secured support of current and future ATM information services such as inter-centre communications, sharing of surveillance data, exchange of Air Traffic Flow Management data, System Wide Information Management (SWIM), etc. After three years of intense collaboration between 18 APAC States, a common service contract for the CRV for APAC and MID regions was awarded.

The next steps will consist of engineering the network, validating the design and starting operations. The procurement process is completed and a pilot project with four States (USA, Australia, New Zealand, Fiji) has started; implementation expected for 2017 will serve as a proof of concept." ■

- Mr. Arun Mishra,  
Regional Director, APAC



**NEW ULAANBAATAR INTERNATIONAL AIRPORT (NUBIA)** in Mongolia is expected to be operational in the middle of 2017. The Civil Aviation Authority of Mongolia (CAA Mongolia) is working on plans to publish conventional and Performance-Based Navigation (PBN) flight procedures for the new airport. The ICAO APAC Regional Sub Office in Beijing, China is supporting Mongolia in the implementation of PBN and a phased approach to Enroute PBN.



## RPAS 2017

2nd Global Remotely Piloted Aircraft  
Systems Symposium

19-21 September 2017  
Montréal, Canada

## DRONE ENABLE

ICAO's Unmanned Aircraft Systems  
(UAS) Industry Symposium

22-23 September 2017  
Montréal, Canada

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