International Civil Aviation Organization
South American Regional Office
Fifth Meeting of Air Navigation and Flight Safety Directors of the SAM Region (ANFS/5)
(Lima, Peru, 20 to 22 August 2018)

Agenda Item 3: Preparatory steps for the ICAO Thirteenth Air Navigation Conference (AN/Conf-13)

WORKING PAPERS ON AIR NAVIGATION PROPOSED BY THE SAM REGION FOR AN-CONF/13

(Presented by the Secretariat)

SUMMARY

This working paper (WP) presents information on the working papers proposed by the SAM Region for the AN-Conf/13 on the topic of air navigation.

References

- AN-Conf/12
- State letter ST 14/1-17/120: Invitation to attend the Thirteenth Air Navigation Conference, Montreal (Canada) on 9-19 October 2018
- State letter LT 1/5.4.2 – SA164: Invitation to participate in the teleconference to coordinate the development of working papers for AN-Conf/13

ICAO strategic objectives:	*B – Capacity and efficiency*

1. Introduction

1.1 Through State letter ST 14/1-17/120, dated 15 December 2017, the ICAO Secretary General invited States and organisations to attend the Thirteenth Air Navigation Conference to be held in Montreal (Canada) on 9-19 October 2018.

1.2 The topic of the Conference will be "***From development to implementation"***. The agenda of the conference will include a broad range of topics related to flight safety and air navigation capacity and efficiency of interest to Directors General of civil aviation, as well as to air navigation service providers and all airspace users.

1.3 The Conference will give member States and aviation stakeholders the opportunity to work towards ever-evolving global strategies for the planning, development, and implementation of safety and air navigation. Accordingly, the Region will work on the development and presentation of working papers on each agenda item.

1.4 In order to ensure that each agenda item is properly analysed, a structure based on two committees was deemed appropriate. The air navigation committee (Committee A) will address items 1, 2, 3, 4 and 5 of the agenda, and the aviation safety committee (Committee B) will address items 6, 7 and 8.

2. Agenda items to be addressed by the Air navigation committee (Committee A)

The agenda items to be addressed by the Air navigation committee (Committee A) are shown in **Appendix A** to this working paper.

3. **Working papers on air navigation proposed by the SAM Region for AN-Conf/13**

In order to allow SAM States to present their vision concerning the current and future development of air navigation in our Region, with a global projection, the Secretariat has sent State letter SL LT 1/5.4.2 – SA164, inviting States to designate focal points for coordinating the drafting of working papers for the Thirteenth Air Navigation Conference.

In this regard, three teleconferences have been held, one on ATM, one on AIS/AIM, and the other on MET. Likewise, a working paper was presented at the SAM/AIM/10 meeting to review the working papers that could be submitted to AN/Conf-13 in this area:

3.1 Indicators to measure aviation system performance at national, regional and global level

- This working paper, presented by Colombia with the support of the SAM Region, submits to the consideration of the conference a set of indicators to further the consolidation of a common indicator framework at national, regional, and global level, to visualise the progress made in GANP implementation.

- The Conference will be invited to:

  a) take note of the information presented in this working paper; and

  b) agree on a common indicator framework so that States may report operational gains and, based on these measurements, follow-up on GANP implementation at regional and global level.

3.2 Objective measurement of operational benefits of the aviation system provided by air navigation service providers and aerodrome operators

- This working paper presents a tool that will contribute to answer several questions related to maintenance management by air navigation service providers (ANSPs) and aerodrome operators (AOs), in terms of organisation, personnel competencies, technical documentation, facilities, tools and records. This working paper will be presented by Colombia.

- The Conference will be invited to:

  a) take note of the information contained in this working paper; and

  b) support the following draft recommendation:

     i. Standardise, through SARPs and/or PANS, the requirement for air navigation service providers (ATM, AIM, MET, SAR, CNS) and aerodrome operators (ICAO Doc 9137, Airport Services) to maintain the services under their responsibility, including at least the following elements: organisation, personnel competencies, technical documentation, facilities, tools and records. This would standardise the

calculation of KPA indicators in order to determine the level of service offered; and

ii. This would serve as the basis for building a common framework of consistent and comparable indicators to measure the expected benefits, with minimum attainable goals that will allow management as needed at State level, contributing to the achievement at regional level of international civil aviation objectives set by ICAO in the GANP.

3.3 Strengthening of the search and rescue (SAR) service through coordination of State capabilities

- This working paper presents the most efficient way to meet the expectations of the community concerning the provision of the SAR service, under the conditions established in Annex 12, that is, through cooperation among the States of the Region. Regional cooperation and coordination allow for the rationalisation of resources in accordance with the technical and operational capacity of each State.

- The Conference is invited to:

  a) take note of this working paper; and

  b) support the implementation of GASOS as a feasible solution for safety improvement at global level.

3.4 Cost analysis – benefits, implementation, maintenance, and updating of aeronautical meteorological information quality management systems

- This working paper presents the Conference with a framework for analysing costs and benefits related to investments and costs incurred by aeronautical meteorological services as required by amendment 75 to Annex 3 on the establishment and application of a duly organised quality system for meteorological information to be provided to users. This framework serves as the basis for improving the meteorological information to be provided, also contemplated within the aviation system block upgrade (ASBU) framework. The aforementioned implementation underlines the need to obtain funding in addition to that contemplated prior to the aforementioned amendment, to be used in the recovery of implementation costs but also of maintenance and updating costs. This working paper will be presented by Argentina.

- The Conference will be invited to:

  a) urge States and air navigation service providers (ANSPs) to take into account the proposed analysis;

  b) encourage States and ANSPs to use the investment project budget for maintaining and updating aeronautical information quality management systems of MET providers to support the improvements described in the ASBU framework; and

  c) request ICAO to support this initiative.

3.5 AIM for proper planning of drone operations

- This working paper will make an introduction to AIM for proper planning of drone operations. The working paper is being prepared for presentation by a SAM State.

- The Conference will be invited to:
  a) urge SAM States to prepare standard regional procedures for the provision of aeronautical information for drone operations and low-height flights; and

  b) urge ICAO to prepare guiding documents and to examine the need to develop standards and recommended practices for the provision of aeronautical information for drone operations and low-height flights.

3.6 Review of AIM implementation in the South American Region

- This working paper presents the level of implementation of AIM at AIS units in each SAM State. The WP is being drafted and will be presented by a SAM State.

- The Conference will be invited to:

  a) urge SAM States to endorse the Roadmap for the transition from AIS to AIM, through the provision of funds and tools for aeronautical information and data management in an electronic environment; and

  b) urge States to work in close collaboration within the Region on training and the review of the profile of the AIM technician, in addition to aeronautical information management, in order to achieve system interoperability and harmonisation of procedures among members in the Region, with global projection.

4. **Suggested action**

4.1 The Meeting is invited to:

a) take note of the information presented herein; and

b) support the presentation of WPs prepared by SAM States at the AN-Conf/13.

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APPENDIX A

AGENDA ITEMS TO BE TREATED BY THE AIR NAVIGATION COMMITTEE (COMMITTEE A)

1. Agenda Item 1: Air navigation global strategy

1.1: Vision and overview of the sixth edition of the GANP
1.2: Air navigation performance improvement and measurement through the aviation system block upgrades (ASBUs) and basic building blocks (BBBs) framework
1.3: Air navigation roadmaps
1.4: Air navigation business cases

The Global Air Navigation Plan (GANP) is the strategy that guides States and stakeholders towards interoperability of systems and harmonization of procedures. As part of the development of the sixth edition of the GANP, the aviation system block upgrades (ASBUs) framework outlines elements and enablers that allow the achievement of operational improvements and also provides necessary guidance and tools to determine optimized solutions for local and regional requirements.

The basic building blocks (BBBs) form a framework that outlines the backbone of any robust air navigation system. They define the basic services to be provided for international civil aviation according to ICAO Standards and Recommended Practices (SARPs). In addition, the BBBs framework identifies the end users of these services as well as the assets necessary to provide them (CNS infrastructure).

Also key is performance monitoring through an established measurement strategy. This strategy should provide a set of performance indicators and performance metrics which would allow all stakeholders to verify the performance of the system and identify areas where improvements are necessary to attend the expectations of the aviation community. Particularly regarding the safety key performance area, a link to targets established in the GASP is necessary as well as a link to the process in use by the PIRGs to monitor performance enhancement resulting from implementation of operational improvements

The Conference will be invited to put forward recommendations on:

a) the vision, performance ambitions and overview proposed for the sixth edition of the GANP;
b) the latest developments of the ASBUs framework;
c) the BBBs framework; and
d) the air navigation roadmaps and the methodology for development of business cases.

2. Agenda Item 2: Enabling the global air navigation system

2.1: Aerodrome operations and capacity
2.2: Integrated CNS and spectrum strategy
2.3: Future provision of aeronautical meteorological service

The global air navigation system must evolve to cope with the demands, expectations and issues faced by the aviation community in key performance areas. In this regard, the ASBUs framework provides technical and conceptual roadmaps for upgrades to infrastructure and services. These roadmaps are needed by all stakeholders to effectively operate in their environments. Also associated with the operational

improvements described in the ASBUs framework, there are several enablers that must be in place to allow evolution of the system as a whole. The Conference will discuss strategies to put in place the necessary technical infrastructure and operational services in a cost-effective way to enable improvement in all key performance areas.

The Conference will be invited to put forward recommendations on:

a) how to improve aerodrome operations and reinforce its relationship with the ATM environment, and a future strategy to increase aerodrome capacity enabling the enhancement of the whole system capacity through optimized airport planning and design and total airport management;
b) an integrated CNS and spectrum strategy — the evolution and rationalization of the global CNS infrastructure, taking into account its impact on the air navigation system as a whole and increasing pressures on aeronautical frequency spectrum; and
c) how MET services will be provided in the future.

3. Agenda Item 3: Enhancing the global air navigation system

3.1: System-wide information management (SWIM)
3.2: Flight and flow information for a collaborative environment (FF-ICE) and trajectory-based operations (TBO)
3.3: Air traffic flow management (ATFM)
3.4: Civil/military cooperation
3.5: Other ATM issues

The global air navigation system must evolve to cope with the varying needs of different stakeholders. This can be achieved through a better management of available data and information to support air traffic management by trajectory instead of ad hoc clearances. Rather than a revolution, the air navigation system needs a gradual evolution towards new procedures and concepts of operations that recognize different regional and national needs. In this context, there will be a gradual enhancement of the air navigation system with due consideration being given to specific operational needs and scenarios. In this regard, the Conference will debate the process for enhancing performance of the air navigation system to meet the current and future expectations of States and all other stakeholders.

The Conference will be invited to put forward recommendations on:

a) a system to exchange data and information on a global basis which can support the evolution of the air navigation system towards trajectory-based operations;
b) how ATFM can improve and evolve aiming a future trajectory-based operations;
c) how to improve civil-military cooperation and collaboration for the benefit of both airspace users and to attend specific mission requirements; and
d) other ATM issues that are necessary to enhance the performance of the air navigation system as a whole.

4. Agenda Item 4: Implementing the global air navigation system and the role of planning and implementation regional groups (PIRGs)

4.1: The economic benefits brought by aviation
4.2: Implementing BBBs and minimum service Standards
4.3: Implementing ASBUs for performance improvement
4.4: Implementing search and rescue (SAR) processes and procedure

Members of the aviation community make differing performance demands of the air navigation system with either explicit or implicit expectations for economic opportunity, efficiency and predictability, as well as in other key performance areas. For optimum system performance, each of these sometimes competing expectations will need to be balanced. Regions and States are adopting a performance-based approach to air navigation planning and implementation to cope with the necessary evolution of the air navigation system based on their specific operational scenarios and requirements. The PIRGs are the regional bodies that enable convergence of regional developments. They provide direction to national plans while at the same time contributing to the achievement of global performance ambitions.

The Conference will be invited to put forward recommendations on:

a) how aviation can better contribute to a State's economic development;
b) how PIRGs can improve contribution to regional development;
c) facilitating implementation of BBBs services and ASBUs elements; and
d) improving implementation of SAR processes and procedures.

5. Agenda Item 5: Emerging issues

5.1: Operations above Flight Level 600
5.2: Operations below 1000 feet
5.3: Remotely piloted aircraft system (RPAS)
5.4 Cyber resilience
5.5: Other emerging issues impacting the global air navigation system including unmanned aircraft systems (drones), and supersonic and commercial space operations

With a diversifying operational environment in terms of new aircraft types such as drones, operations and airspace users, the global air navigation system is being impacted and may face safety and efficiency challenges not seen before and due to the increased use of connected systems in support of air operations, consideration should be given to cyber hazards that may impact its resilience. The development of remotely piloted aircraft systems (RPAS), the increase in new types of operations above FL600, and airspace users flying close to the ground, sometimes below 1000ft, requires that the air navigation system evolve to continue meeting the needs and expectations of all stakeholders while supporting access and equity in the use of airspace and available infrastructure and services notwithstanding the current delineation and management of controlled airspace.

The Conference will be invited to put forward recommendations on:

a) the process and procedures to improve the management of operations above FL600 and below 1000ft;
b) the regulatory framework to enable the integration of RPAS in non-segregated airspace;
c) cyber strategies to reduce system vulnerabilities; and
d) any other emerging issues that may impact safety and regularity of the air navigation system.

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