



ASSEMBLY — 41ST SESSION

TECHNICAL COMMISSION

Agenda Item 33: Other issues to be considered by the Technical Commission

HOMOLOGATION AND CERTIFICATION OF THE TECHNICAL KNOWLEDGE OF AIR TRAFFIC CONTROLLERS (ATCOs) IN THE SAM REGION

(Presented by Chile with the support of 20 LACAC Member States,²
Guyana and Suriname)

EXECUTIVE SUMMARY

To ensure continued and harmonious progress in the safety and modernization of air navigation systems in the region, strategic, joint and coordinated action must be taken at the international level to standardize knowledge associated with the technical areas of performance of SAM air traffic controllers (ATCOs) so that their competencies correlate closely with services and procedures associated with advances in ATM systems. This will require the incorporation of training and certification practices that are adaptable to new technologies and processes and must be faced by ATCOs operating current and future systems and be in line with competency-based training and assessment (CBTA) which, in addition to harmonizing training, will facilitate the standardization of ATCO licensing worldwide.

The accreditation and certification of SAM ATCOs' knowledge discussed in this working paper will constitute the initial framework for a CBTA approach that will contribute to coordinated, regular and up-to-date training of the region's professionals, in step with the ever-changing ATM system and consistent with strategic plans of the International Civil Aviation Organization.

The fundamental role played by ICAO in promoting cooperation among its Member States and experiential exchanges between Members and other international air transport organizations, and its endeavour to develop a frame of reference for the standardization of training programmes and the fundamentals set out in this document are taken into account.

Action: The Assembly is invited to:

- a) endorse this working paper;
- b) promote experiential exchange among ICAO Member States, training bodies and entities connected with the international air navigation system in order to design, plan, implement and monitor the technical knowledge accreditation and certification programme for SAM Region ATCOs; and
- c) request ICAO Member States to comply with Resolution A40-25 (pp. II-46 and II-47, *Assembly Resolutions in Force (as of 4 October 2019)* (Doc 10140).

¹ Spanish version provided by Chile.

² Argentina, Aruba (Kingdom of the Netherlands), Belize, Bolivia (Plurinational State of), Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela (Bolivarian Republic of).

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objectives: Air Navigation Capacity and Efficiency Safety
<i>Financial implications:</i>	Financial implications are expected for States, air navigation service providers (ANSP) and training institutions
<i>References:</i>	Annex 1 — <i>Personnel Licensing</i> Doc 9868, <i>Procedures for Air Navigation Services — Training</i> (PANS-TRG) Doc 10056, <i>Manual on Air Traffic Controller Competency-based Training</i> Doc 9750, <i>Global Air Navigation Plan</i> Doc 10004, <i>Global Aviation Safety Plan</i> Doc 10140 <i>Assembly Resolutions in Force</i> (as of 4 October 2019) <i>Final Report, Personnel Training and Licensing Panel/2 (PTLP/2)</i> (30 August to 8 September 2021) <i>Declaration of intent for the Regional Collaboration of training</i> (NAM-CAR)

1. INTRODUCTION

1.1 In the air traffic management (ATM) context, constant technological change has been an ally in improving operational procedures and safety, but although the development of new and efficient systems significantly facilitates stakeholder functions, they can, on occasion, become safety hazards if no thought is given to changes in the tasks and functions of the human beings who operate the new risk management structures.

1.2 Accordingly, if it is considered that work performance competencies acquired by ATCOs have evolved and changed in step with the increase in air traffic and the modernization of the national and international air transport system, it would be logical to say that the new forms of providing air traffic service must be accompanied by up-to-date training and certification practices that ensure validity of those competencies.

1.3 Moreover, the lack of worldwide standardization occasionally hinders States' efforts to develop ATCO training and certification and causes differences in the issuance and validation of licences from one State to another; the situation will become even more complicated in future, owing to independent rather than systemic implementation of capabilities by States.

1.4 The foregoing therefore highlights the need to develop and establish collaboration at the international level with a view to the accreditation and certification of the technical knowledge of SAM Region ATCOs in order to launch new training practices conducive to coordinated and continuing up-to-date training of professionals through competency-based training and assessment (CBTA) promoted by ICAO. This will contribute significantly towards achieving and maintaining desirable levels of safety with a view to a seamless national, regional and international ATM system of excellence that will increase the fluidity and dynamism of world aviation by enabling ATCO competencies to adapt to high-speed changes in current and future systems.

2. DISCUSSION

2.1 The increase in traffic and the constant growth of new technologies have changed air navigation service provision dynamics, giving rise to more complex ATC procedures that in turn require ATCOs to internalize additional knowledge associated with ever-changing ATM systems.

2.2 In view of the foregoing, it is necessary to take a stand on the complexity of an interconnected and collaborative ATM system, towards which the region is moving and which highlights the need for competent professionals to ensure harmonious, integrated, collaborative, safe and efficient operations. Therefore, as ATCO–pilot, ATCO–system, pilot–system and system–system interfaces evolve, ATCOs who administer and operate these ever more sophisticated and complex structures must share a common knowledge base in order to guarantee reliable and seamless system operations.

2.3 Admittedly, therefore, the human factor plays a fundamental role in these developments. Consideration of this argument is integral to safety management which is necessary in order to understand, identify and mitigate risks and to optimize contributions to organizational goals. Many ICAO documents attest to the above and show how safety management, linked to risk management, must take account of human factors such as changes to personnel tasks and functions within the system, the training required to ensure competence in the performance of functions, training efficacy and the adaptation of training programmes to meet changing needs.

2.4 Ultimately, process improvements, new systems and technologies reinforce changes that lead to qualitative improvements in outcomes; but such improvement will be achieved only through staff training and by ensuring the necessary integration of persons and hardware with new technological processes and tools. This premise underpins the success of all organizational management and therefore contributes to safety.

3. THE HUMAN FACTOR

3.1 In Lazarus's stress theory,³ cognitive appraisal is an evaluation that determines the reasons for which a specific relationship between an individual and the environment is stressful (Cano Vindel, 1995); in other words, the stress experienced by people is based on a particular relationship between the individual and the environment, the latter being appraised as worsening or exceeding their resources and therefore endangering their well-being. In this definition, the *individual–environment* relationship is regarded as fundamental. When people personally judge that they lack resources or that their competency is not at the requisite level to handle a situation, their emotional, cognitive and behavioural response will be highly reactive. Maintenance by professionals of high competency levels in order to cope with their daily tasks, which will help them to modulate the automatic response to demanding situations, is therefore considered to be a protective factor of mental and physical health.

3.2 It must therefore be considered that lack of knowledge triggers stress and insecurity. Fear of “not knowing” and of making mistakes leads to physical and psychological disorders among ATCOs by limiting personal and professional development, while also affecting the atmosphere in the workplace, reducing organizational results and jeopardising safety. ATCO competency building, by the means outlined

³ Lazarus: United States psychologist, professor in the Department of Psychology, University of California at Berkeley. Acclaimed by “American Psychologist”, a psychology journal, as one of the most influential psychologists in his field. Pioneer in the study of emotion and stress, in regard to cognition, in particular.

in this working paper, will therefore help to improve their quality of life, by enhancing motivation and a taste for the work in hand, while also being a contributory factor of safety risk management.

4. DIAGNOSTIC EVALUATION, AND ACCREDITATION, ASSESSMENT AND CERTIFICATION PROGRAMMES FOR THE SAM REGION ATCO

4.1 In view of the advantages of cooperation and joint use of existing training resources at the world level in order to meet the region's emerging ATM needs, it is suggested that recourse be had to technical-academic collaboration between States and their specialized bodies in those fields, which would permit experiential exchanges on the design, planning, implementation and monitoring of the technical knowledge accreditation and certification programme for SAM Region ATCOs. This will encourage the development of a standardized and harmonized training plan based on new competencies required for the region's ATCOs, which would make it possible to update the regional training platform, while providing an initial reference framework for coordinated, regular and up-to-date training for SAM Region ATCOs.

4.2 In the endeavour to achieve the objective set in this working paper, action that could be taken on the proposed accreditation and certification procedures is described below:

- a) identify relevant knowledge for each of the six ATCO skills listed in Annex 1; N.B.: The relevant knowledge for each skill is provided in Annex 1 and complemented by provisions in Air Navigation Services Procedures — Training (PANS-TRG) (Doc 9868) and the Manual on Competency-based Training and Assessment of Air Traffic Controllers (Doc 10056);
- b) design and conduct a diagnostic evaluation of the above-mentioned knowledge; N.B.: A random evaluation is suggested for a given number of ATCOs who hold each of the licences detailed in Annex 1, for each State in the SAM Region. This will yield a representative sample for determining gaps in the required technical knowledge;
- c) draw up a competency-based training programme in order to achieve accreditation of up-to-date technical knowledge, which is correlated closely with services and procedures associated with ever-changing ATM systems; and
- d) assess and certify knowledge acquired by ATCOs.

5. CONCLUSION

The ATCO's environment is complex and changing quickly. Constant advances in the operational technologies, procedures and techniques that are features of ATCOs' tasks and functions demand continuing education. Specific identification of up-to-date ATM subjects, together with a diagnostic evaluation at the regional level will permit the development of competency-based training and certification, which would contribute to the accreditation of the knowledge of SAM Region ATCOs, leading to improved performance, and understanding of processes and the individual—environment relationship. In this context, international cooperation is vital to the development of a training programme that facilitates training activities required for the updating and accreditation of the technical knowledge of ATCOs at the regional level. The latter point, consistent with ICAO's "No Country Left Behind" strategy, will contribute to the

harmonious regional and international application of ICAO's Standards and Recommended Practices (SARPs) and Global Plans and, consequently, to safety.

5.1 Lastly, the objective set in this working paper will provide to the Region an initial framework for a systemic CBTA approach that will contribute to synchronized, regular and up-to-date training of SAM Region ATCOs, in step with advances in the ATM system.

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