



ASSEMBLY — 39TH SESSION

TECHNICAL COMMISSION

Agenda Item 36: Aviation safety and air navigation implementation support

TRAINING PROGRAMME FOR TECHNICIANS SPECIALISED IN AIRCRAFT  
MAINTENANCE

(Presented by El Salvador supported by the Member States of the Latin  
American Civil Aviation Commission (LACAC)<sup>2</sup>)

EXECUTIVE SUMMARY

The intent of this working paper is to present the initiative which the Central American Institute of Aviation Training (ICCAE), as an agency of the Central American Corporation for Air Navigation Services (COCESNA), is currently promoting within the curriculum development framework for its academic programmes in line with the technological progress of the aviation industry, specifically the employment-oriented professional training of Technicians Specialised in Aircraft Maintenance, under the competency approach, based on the analysis of current conditions and the opportunities related to the demand for specialized technical training in the area of commercial aviation; using as reference information from the Next Generation of Aviation Professionals (NGAP), the ICAO training policy, the TRAINAIR PLUS Programme, as well as, *inter alia*, civil aviation trends and projections up to 2030.

This initiative seeks to contribute to raising the levels of safety in the field of aircraft maintenance and repair, to generate a qualified, adequate and timely workforce as required by the sector's businesses; as well as promote professional development, addressing vocational interests, and facilitate the freedom of labour movement for aviation personnel in the Central American Region. Given the similarities observed in this area in the different countries that constitute the CAR/SAM Region, the applicability of this new curriculum could be extended to the rest of Latin America, as well as to other ICAO regions.

**Action:** The Assembly is invited to:

- a) take note of the content of this working paper;
- b) review and approve the conclusion proposal presented in paragraph 5; and
- c) consider any other action that is deemed necessary for the implementation of this Working Paper.

<i>Strategic Objectives:</i>	This Working Paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	No additional resources are required since this initiative will be funded through its own resources.

<sup>1</sup> Spanish version provided by El Salvador.

<sup>2</sup> Argentina, Aruba, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.

<i>References:</i>	<ul style="list-style-type: none"><li>• Annex 1 – Personnel Licensing</li><li>• ICAO TRAINAIR PLUS Training Development Guide (Doc 9941). Methodology for competency-based training</li><li>• Next Generation of Aviation Professionals (NGAP)</li><li>• TRAINAIR <i>PLUS</i> Programme</li><li>• Master Civil Aviation Regulations (MRAC)-Aviation Technical Personnel Licensing (LPTA) 66 Aircraft Maintenance Technician Licenses (TMAs)</li></ul>
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## 1. INTRODUCTION

1.1 The Central American Institute of Aviation Training (ICCAE), as an integral part of the Central American Corporation for Air Navigation Services (COCESNA), has been promoting under a regional perspective innovative initiatives with a high growth potential, which include the development of a new training programme for professionals responsible for carrying out commercial aircraft inspections and repair, entitled Technicians Specialised in Aircraft Maintenance (TMAEs). This proposal stems from the limitations that result from the absence of a relevant and flexible curriculum for comprehensive training in this field, which addresses both the needs of commercial aircraft maintenance organizations, as well as the vocational interests of applicants for Aircraft Maintenance Technician (TMA) licenses. This is based on the implementation of the competency approach and the adequacy of the requirements established in the MRAC LPTA 66, as core regulations, which are the master or community regulations at the level of Central American States, adopted by the COCESNA Board of Directors.

1.2 Currently, the Master Civil Aviation Regulations on Aviation Technical Personnel Licensing 66 (MRAC LPTA 66) identify the training requirements for obtaining the Aircraft Maintenance Technician (TMA) license. They are based on the classical academic model, on prominently cognitive objectives and contents, as well as on the development of certain skills focused on general aviation services, without addressing training programme continuity that makes it possible to generate the competencies required to provide commercial aircraft maintenance or that are focused on specialties and degrees of depth in further training in order to promote the development of knowledge, skills and attitudes to help raise the level of professionalism of technicians and enable them to obtain ratings in their TMA licenses.

1.3 Innovating the current general-type training scheme to a TMAE training programme, oriented towards employment-focused professional training is consistent with the respective competency catalogue and makes it possible to standardize and systemize the process with the appropriate alignment – from the TMA Technician profile to that of specialist in five areas: avionics, systems, engines, structures and interiors.

1.4 The TMAE curricular training programme is designed to be in line with the competency-based approach and complies with internationally-recognized standards in order to consolidate a comprehensive system for specialized professional training in aircraft maintenance, capable of gradually satisfying national and regional training needs, generating a workforce that is qualified, adequate and timely, which contributes to raising safety levels.

## 2. REFERENCES

2.1 The new TMAE training programme has been developed using a reference framework that includes contributions from various initiatives, such as: the Next Generation of Aviation

Professionals (NGAP), the TRAINAIR PLUS Programme and the training needs analysis in the area of aircraft maintenance, in order to satisfy the foreseen demand for this type of aviation professionals, based on ICAO projections up to 2030.

2.2 Within the framework of the 117th Ordinary Meeting of the Technical Committee, an authority composed of Civil Aviation Directors from COCESNA Member States, it was agreed, under a regional perspective, that as far as the granting and renewal of licenses to personnel are concerned, the specialization area in which aircraft maintenance technicians are qualified would be specified.

### 3. **DIAGNOSTICS**

3.1 As part of the diagnostics carried out by ICCAE/COCESNA, it was determined that the current MRAC LPTA 66: Aircraft Maintenance Technician (TMA) License, as the core regulations for personnel training in this area, are based on objectives and do not include a modular structure that encompasses general knowledge or the development of certain basic skills aimed at maintaining general aviation aircraft up to a maximum weight of 5700 lbs. Once the corresponding studies are successfully completed, and in the case of individuals who do not possess formal education, the recognition of practical on-the-job experience, candidates undergo theoretical examinations as part of the the TMA licencing procedure before the appropriate aviation authority.

3.2 Within the process for entry into the workforce, one can observe a range of limitations that influence the impact of training and the optimal performance of new personnel, since the latter do not possess the essential competencies to provide maintenance to commercial aircraft, which are more complex in terms of their aerodynamics, avionics, systems and engines, etc., compared to general aviation aircraft. This leads to the need to allocate an average period from three to five years to ensure that TMA's are recognized as personnel qualified in a specific function; since in many cases there is no clear link between vocational interests and skills, given the general nature of their training.

3.3 Since the current MRAC LPTA 66 addresses the granting of the TMA license only, without defining the area of specialization (rating), it maintains the general scheme for training required by aircraft type; i.e. that personnel who hold a TMA license continue their training in all the speciality areas for a specific model of aircraft.

### 4. **GENERAL DESCRIPTION**

4.1 The structure of the curriculum for competency-based training was validated for the following five areas of training which address professional development through different specialties in commercial aircraft maintenance: Systems, Avionics, Engines, Structures and Interiors.

4.2 To date, ICCAE/COCESNA is leading the process for identifying the labour competencies for TMAEs in order to approve the requirements for admission to the specialization programme and the standardization of competency levels for the corresponding TMAE ratings. The consultation meetings with experts and the DACUM (Designing a Curriculum) sessions will make it possible to complete the competency profile by specialization area in order to subsequently build the curricula for each of the specialties with their respective outbound profiles.

4.3 Training for the specialized maintenance of commercial aircraft includes aspects related to the assessment, repair and alteration of damage to metal and composite materials, the implementation

of scheduled maintenance to turbine engines, the performance of activities for locating, removing, installing and adjusting components, aircraft fluid lines and fittings, as well as the diagnostics and repair of identified failures in avionics components, inter alia.

4.4 The TMAE curriculum scheme addresses philosophical, educational, technical-scientific and methodological principles, which simplifies its integration into higher education curricula in order to obtain a university degree since the curriculum includes module descriptors and a performance-based assessment. Emphasis is placed on the comprehensive vision for the development of human talent through training programmes geared towards resolving work performance issues, the achievement of high levels of efficiency and productivity; as well as the optimization of resources.

4.5 During the first phase of consultations with experts, it was determined preliminarily that the academic duration of the specialized training programmes could range between six to twelve months, based on the degree of complexity. Additionally, the estimated time for practical on-the-job training (IPPT), as a prerequisite for obtaining the rating in the corresponding specialty, would range between three to six months. Comparing these figures with the current situation, the months of training would virtually be reduced to half since the educational modules would be oriented towards the achievement of the specific objectives required by the respective job positions.

4.6 The training programme design includes an innovative educational model given its emphasis on specialties, the adoption of the competency approach, the integration of new skill-development technology, and the dual approach to training, the latter based on collaborative socialization, actual performance in simulated environments (use of specialized laboratories in training centres), and practical training within businesses.

## 5. CONCLUSION

5.1 Within the framework of the new training programme for TMAEs which offers a consistent, comprehensive and methodical approach for the training and development of the specialized technical competencies of commercial aircraft maintenance professionals, which, in turn, are consistent with NGAP objectives, and given the similarity of CAR/SAM Region countries, its applicability to the rest of Latin America, as well as to other ICAO regions, the following conclusions are proposed:

- a) To assess the need and benefit of standardizing the TMAE training programme at the regional level;
- b) To examine and propose the mechanism that will make it possible for all stakeholders to participate in the implementation of this initiative on a regional platform;
- c) To identify the possibility of forming strategic partnerships with organizations related to aviation subsystems responsible for the manufacturing and maintenance of commercial aircraft; as well as with international partners.