ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 45: Next Generation of Aviation Professionals

NEXT GENERATION OF AVIATION PROFESSIONALS - TRAINING AND QUALIFICATIONS OF AVIATION PERSONNEL

(Presented by Belgium on behalf of the European Union and its Member States[1]
and by the other States Members of the European Civil Aviation Conference[2],
and by EUROCONTROL)

EXECUTIVE SUMMARY

The past decades have seen significant developments of new technologies in aircraft design and manufacturing, and in their operational use, leading to a completely new generation of aircraft. As recognised at the ICAO "Next Generation of Aviation Professionals" Conference in March 2010, this makes it necessary to adapt the current training methods to the new operational environment, with particular priority given to pilot training, but with attention also paid to that of air traffic controllers and staff involved in aircraft maintenance certification.

Action: The Assembly is invited to, when amending Resolution A36-13 "on the consolidated statement of continuing ICAO policies and associated practices related specifically to air navigation", to include reference to:

a)   further implementation of new training methods, such as Competence Based Training (CBT) and Evidence Based Training (EBT), and their inclusion in ICAO Annex 1 and its associated documentation, with particular priority given to the training of pilots but also encompassing air traffic controllers and certifying staff involved in aircraft maintenance;

b)   a requirement for the holder of an aircraft type-certificate to provide the minimum content of the type-training for pilots and aircraft maintenance certifying staff, as part of Operational Suitability Data (OSD) based on a Training Task Analysis (TNA), as well as the results of an operational evaluation; and

c)   the need to continue the development of competence schemes, to be published in appropriate ICAO documents, for newly emerging safety-related professional tasks.

Strategic Objectives:	This working paper relates to Strategic Objective A: Safety – *Enhance global civil aviation safety*, as it proposes a more systematic approach to ICAO provisions related to training for all aviation personnel.

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[1] Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

[2] Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Iceland, Monaco, Montenegro, Norway, Republic of Moldova, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, and Ukraine.

Financial implications:	Neutral
References:	Annex 1 – *Personnel Licensing* Doc 9683, *Human Factors Training Manual* Doc 9841, *Manual on the Approval of Flight Crew Training Organizations* Doc 9868, *Procedures for Air Navigation Services - Training* Doc 7192, *Training Manual for ATS Safety Electronic Personnel*

1.   **INTRODUCTION**

1.1   New technologies in aircraft design, manufacturing and operations developed over the past decades have led to a completely new generation of aircraft, highly automated and leaving little opportunity for manual flying in normal operations. The training requirements for aviation personnel, although amended on a continuing basis, need to be further adapted to enable aviation professionals to meet this new technological challenge.

1.2   It is proposed that current training standards be further adapted, so that they better address the changing aviation environment. The first priority in this respect should be a careful evaluation of how the new training methods can be more widely implemented, in order to enable aviation personnel meet the demands of new and increasingly complex procedures and technologies.

1.3   Aviation is also becoming more dependent on real-time digital technologies. This trend is expected to be accelerated with the deployment of future air traffic management systems such as NextGen and SESAR, which will also introduce new safety requirements. Although such requirements will be outside the scope of Annex 1, ICAO is best placed to take the lead to develop global provisions to secure the competence of staff involved in the operation of such new ATM systems.

2.   **OPERATIONAL SUITABILITY DATA (OSD)**

2.1   Both for pilots and aircraft maintenance certifying staff, the content of type training courses should be standardised and adapted to each existing type, as well as to future types as they enter the market. The manufacturer, as the holder of an aircraft type certificate, should provide the minimum content of the type-training for pilots and aircraft maintenance certifying staff. This information should be part of the Operational Suitability Data (OSD). A Training Needs Analysis (TNA), the results of an operational evaluation and the information from the OSD will then be used to develop the specific type training course. In addition to covering new types of aircraft, a catch-up process for existing aircraft should also be performed.

3.   **NEW TRAINING METHODS**

3.1   The International Air Transport Association (IATA) Training Qualification Initiative, supported by ICAO's New Generation of Aviation Professional Task Force, promotes the definition of competencies that a pilot needs in order to operate an aircraft safely.

3.2		Competency based training (CBT) is presently in place in respect of training undertaken for a specific commercial pilot licence. It is a training method which, rather than being framed in terms of a fixed number of flying hours, relies on a "job task analysis", under which observable performance criteria have to be achieved by the student pilot. The competency development process is continuously assessed during the training.

3.3		Evidence based training (EBT) means the process of introducing CBT principles into the additional type rating training. It stands for the shift from prescriptive training tasks to fleet- and operation-specific training tasks, which are based on a data-driven analysis of fleet- and operation-specific risks.

## 4.		IMPLICATION OF NEW TRAINING METHODS

4.1		New methods have to be taken into account not only in respect of the training itself but also in relation to the selection of candidates, the checking of the outcome of initial training, and recurrent checking.

4.2		The challenge today is to adapt training requirements in ways which respond to the strong demand for pilots, while maintaining or improving the level of safety. The new generation of professional pilots will need to be trained in a different way, and to have some specific new capabilities and aptitudes. The airline's selection process will therefore assume great importance, and will need to involve some testing of human factors, using standardised methods, prior to the beginning of training. This is addition to an evaluation of the trainee's technical and (where applicable) operational background.

4.3		In order to facilitate the implementation of competency- and evidence-based training for pilots, existing instructors and examiners will themselves have to undergo special re-training and to gain sufficient understanding and experience of the new training methodologies.

4.4		A proper balance between training and checking will need to be established, within increasing emphasis placed on training, specifically in the field of Threat and Error Management.

## 5.		NEW COMPETENCE SCHEMES

5.1		New emerging aviation professional tasks in the field of Air Traffic Management (ATM) and Air Navigation Services (ANS) may also require the modernisation of training and competence provisions. These professions do not necessarily need to be included in Annex 1, but nevertheless proper competence schemes for them should be developed and published by ICAO.

5.2		These competence schemes will in general be under the responsibility of the respective employers. This presents a need for high level provisions for the operators and service providers, to ensure that their personnel are suitable and qualified for the tasks in question and that procedures are established in respect of their training, present and continuing competence.

5.3		Finally, human factors considerations will need to be addressed as part of the safety assessment of the introduction of new operational concepts, in order to guarantee the safe implementation of the new ATM systems.

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