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Amendment No. 5
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AMENDMENT NO. 5
TO THE
PROCEDURES
FOR
AIR NAVIGATION SERVICES

TRAINING

SECOND EDITION — 2016

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Checklist of Amendments
to the PANS-TRG (Doc 9868), Second Edition

Date of applicability

Amendment No. 5

(Approved by the President of the Council of ICAO
on behalf of the Council on 13 July 2017)

Replacement pages (v), (ix) to (xiv), I-(iii), I-1-1 to I-1-7, I-2-1 to I-2-4
I-2-A-1 and I-2-A-2; I-2-B-1; I-2-C-1 to I-2-C-20; and III-1-A-3

5 November 2020



Transmittal note

Amendment No. 5
to the
Procedures for Air Navigation Services
TRAINING
(Doc 9868)

1. The following replacement pages in the PANS-TRG (Second Edition) incorporate Amendment No. 5 which will become applicable on 5 November 2020.

- | | |
|------------------------------|-------------------------------------|
| a) Page (v) | — Table of Contents |
| b) Pages (ix) to (xiv) | — Foreword |
| c) Page I-(iii) | — Part I, General Procedures |
| d) Pages I-1-1 to I-1-7 | — Part I, Chapter 1 |
| e) Pages I-2-1 to I-2-4 | — Part I, Chapter 2 |
| f) Pages I-2-A-1 and I-2-A-2 | — Part I, Chapter 2, Attachment A |
| g) Page I-2-B-1 | — Part I, Chapter 2, Attachment B |
| h) Pages I-2-C-1 to I-2-C-20 | — Part I, Chapter 2, Attachment C |
| i) Page III-1-A-3 | — Part III, Chapter 1, Attachment A |

2. Remove existing Chapter 2 and Attachment to Chapter 2 *in toto*.

3. These pages should be retained separately from the PANS-TRG proper until the applicability date is reached, at which time they should be incorporated into the PANS.

4. Record the entry of this amendment on page (iii).

5/11/20

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FOREWORD

1. HISTORICAL BACKGROUND

1.1 The *Procedures for Air Navigation Services — Training* (PANS-TRG) are the result of the evolution of the work initiated by the Flight Crew Licensing and Training Panel (FCLTP) on the implementation of the training required for the pilot licences and ratings found in Annex 1 — *Personnel Licensing*, including the multi-crew pilot licence (MPL).

1.2 The FCLTP, at its first meeting (Montréal, 8 to 19 December 2003), identified a clear need for licensing and training material that, although too detailed to take the form of Standards, was of sufficient importance to provide universal benefit to States. The need called for material that had to be harmonized and subjected to a formal consultation and approval process and that called for a higher level of adherence on the part of States than that required of guidance material. The FCLTP determined that the establishment of the PANS-TRG would be the appropriate document for use by all States.

1.3 The first amendment to the PANS-TRG was issued in 2011, following the work undertaken by the IATA Training and Qualifications Initiative on the development of a competency-based approach to the training and assessment of aircraft maintenance mechanics/technicians/engineers (AMMTes), including those personnel with licensed or authorized privileges.

1.4 There is industry-wide consensus that, in order to reduce aircraft hull loss and fatal accident rates, a strategic review of recurrent training for airline pilots is necessary. Consequently, procedures for evidence-based training (EBT), developed by the IATA Training and Qualifications Initiative, were introduced in Amendment 2 to the PANS-TRG issued in 2013 and are intended as a means of assessing and training key areas of flight crew performance in a recurrent training system. In addition, qualifications of the instructor were expanded.

1.5 Between 2006 and 2010, aeroplane accidents resulting from a loss of control in flight (LOC-I) event were the leading cause of fatalities in commercial aviation. Recognizing the need to identify and effectively implement mitigating strategies, the prevention of aeroplane upsets quickly became an ICAO priority. Following extensive studies of the LOC-I phenomena, in collaboration with civil aviation authorities (CAAs), aviation accident investigative bodies, LOC-I focus groups, industry associations, original equipment manufacturers and subject matter experts from around the world, it became readily apparent that deficiencies in current training practices were contributing factors in most aeroplane upset-related accidents. Consequently, Amendment 3 to the PANS-TRG improved the existing ICAO Standards and Recommended Practices (SARPs) and supporting guidance material by introducing aeroplane upset prevention and recovery training (UPRT) requirements.

1.6 In 2015, the Next Generation of Aviation Professionals Task Force developed competency frameworks for air traffic controllers (ATCOs) and air traffic safety electronics personnel (ATSEP) to support the progressive implementation of competency-based training practices for air traffic management (ATM) personnel. This second edition of the PANS-TRG has been restructured and divided into different parts dealing with each category of personnel.

1.7 Amendment 5 was initially developed by the ICAO Competencies Task Force which was established in 2014 to review and clarify the existing competency-related definitions and concepts in ICAO provisions and organize them in a conceptual framework that would illustrate the relationships between the concepts.

2. SCOPE AND PURPOSE

2.1 The PANS-TRG is complementary to the SARPs. The PANS-TRG generally addresses competency-based training and assessment programmes that stakeholders may choose to implement.

2.2 The PANS-TRG specifies, in greater detail than in the SARPs, the actual procedures to be applied by training organizations when providing training for aeronautical personnel. This edition contains procedures for the development and implementation of various competency-based training programmes designed to meet the Annex 1 requirements for the MPL and the AMMTE licence, as well as those flight crew training programmes developed under the EBT concept, which provides an alternative means of satisfying the recurrent training requirements of Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes*. It also details the methodologies to successfully introduce aeroplane UPRT training at the commercial pilot (aeroplane) and MPL levels, as well as providing UPRT in a flight simulation training device at the commercial air transport pilot and type rating level to support the UPRT provisions promulgated in Annex 1 and Annex 6, Part I. The PANS-TRG also specifies procedures for the harmonized implementation of training procedures for ATM personnel.

3. STATUS

3.1 The Procedures for Air Navigation Services (PANS) do not have the same status as SARPs. While the latter are *adopted* by Council in pursuance of Article 37 of the Convention on International Civil Aviation and subject to the full procedure of Article 90, the PANS are *approved* by the Council and recommended to Contracting States for worldwide application.

3.2 While the PANS may contain material that may eventually become SARPs when they have reached the maturity and stability necessary for adoption as such, they may also comprise material prepared as an amplification of the basic principles in the corresponding SARPs and designed particularly to assist the user in the application of those SARPs.

4. IMPLEMENTATION

The implementation of PANS-TRG procedures is the responsibility of Contracting States; they are applied in the actual training only after, and in so far as, States have enforced them. However, with a view to facilitating their processing towards implementation by States, they have been prepared in language that will permit direct use by the personnel of approved training organizations (ATOs) and others associated with the development and implementation of a training programme for the MPL, flight crew recurrent training, aeroplane UPRT, the AMMTE licence and ATM personnel.

5. PUBLICATION OF DIFFERENCES

5.1 The PANS do not carry the status afforded to Standards adopted by the Council as Annexes to the Convention and, therefore, do not fall under the obligation imposed by Article 38 of the Convention to notify differences in the event of non-implementation. Attention of States is drawn, however, to the provision in Annex 15 related to the publication, in their Aeronautical Information Publications, of lists of significant differences between their procedures and the related ICAO procedures.

5.2 The ICAO course development methodology is based on the instructional systems design (ISD) model used for much of the competency-based training material in this document. It is, however, acknowledged that there are a variety of ISD models that may be equally appropriate and that States may wish to apply in the development of competency-based training. It may also be the case that no single methodology has all the elements needed and that a number of methodologies will have to be drawn upon for the design of a particular course. In addition, methodological prescriptions are counter-productive, as all training methodologies should display the flexibility and adaptability

needed to accommodate changes in training circumstances, goals and technology. For this reason, differences in the systems approach methodologies and models used for the design of competency-based training need not be published, so long as the methodologies contain the ISD elements that govern the three basic procedural steps of a needs analysis, design and production, and evaluation.

6. CONTENTS OF THE DOCUMENT

Part I — General procedures

6.1 Chapter 1 — Definitions and acronyms

This chapter contains a list of terms and their technical meanings as used in this document. In some cases, the terms are defined in other ICAO documents.

6.2 Chapter 2 — General provisions for competency-based training and assessment

6.2.1 Developments in the late 1950s and 1960s in the application of systems engineering methodologies, such as ISD and the systems approach to training (SAT), to the design of training curricula resulted in the implementation of structured, performance-based training programmes. Competency-based training also evolved from later developments in mastery learning and criterion-referenced testing, whereby knowledge and skills had to be demonstrated at levels that met the entry-level occupational requirements, and assessments had to be based on observable behaviours or outcomes. The 1970s saw the widespread use of competency-based principles in both vocational and technical education and training in the United States which, by the 1980s and 1990s, had spread to Europe and to other parts of the world.

6.2.2 This chapter outlines the general principles and procedures to be followed in the design and implementation of a competency-based approach to training and assessment. Attachment A provides general considerations that should be taken into account when implementing competency-based training and assessment programmes including the relationship between competencies and tasks. Attachment B describes knowledge, skills and attitudes. Attachment C provides a generic methodology to design competency based training and assessment based on the “analyse, design, develop, implement and evaluate (ADDIE)” principles.

6.3 Chapter 3 — Qualifications of course developers and instructors

Annex 1 contains Standards for the issuance of the flight instructor rating and for granting authorizations to flight instructors and flight simulation training device instructors. This chapter and its attachment contain the qualifications to be held, and the competencies to be demonstrated by instructors and course developers employed in a competency-based training programme. In competency-based programmes, instructor competencies are made explicit, and instructors have to demonstrate these competencies throughout the training process and in their knowledge of the subject matter and training course content.

Part II — Training and assessment for aircraft operational personnel

6.4 Section 1 — Flight crew training and assessment

6.4.1 Chapter 1 — Competency-based training and licensing for the multi-crew pilot licence (MPL)

This chapter outlines the principles and procedures that are applicable to the development and implementation of an MPL course and to be followed in addition to those outlined in Part I, Chapter 2. This chapter also contains the

competency units, competency elements and performance criteria developed for the MPL. The attachments to this chapter contain guidance material on: the design and development of an MPL training programme; examples of training objectives; threat and error management; and the competencies of MPL examiners and inspectors.

6.4.2 Chapter 2 — Evidence-based training (EBT)

This chapter is intended to provide guidance to CAAs, operators and ATOs in the recurrent training of pilots to develop and evaluate crew performance according to a set of competencies and the related knowledge, skills and attitudes.

6.4.3 Chapter 3 — Upset prevention and recovery training (UPRT)

This chapter is intended to provide procedures to CAAs, operators and ATOs related to the delivery of UPRT for aeroplane pilots. This training is required for the MPL, the type-rating and the training of commercial air transport pilots, and is highly recommended for the CPL(A).

6.4.4 Chapter 4 — Other flight crew members

[Reserved]

6.4.5 Chapter 5 — Flight validation pilots

[Reserved]

6.5 Section 2 — Cabin crew

[Reserved]

6.6 Section 3 — Flight dispatchers/flight operations officers

[Reserved]

Part III — Training and assessment for aircraft maintenance personnel

6.7 Chapter 1 — Competency-based training and assessment for aircraft maintenance personnel

This chapter outlines the principles and procedures that are applicable to the development and implementation of an AMMTE course and to be followed in addition to those outlined in Part I, Chapter 2. This chapter also contains the competency units, competency elements and performance criteria developed for the AMMTE licence. Attachment A contains guidance material on the design and development of an AMMTE training programme; Attachment B contains examples of training objectives. Implementation of competency-based training programmes for AMMTE is optional. Annex 1, Appendix 2, 3.1 enables the use of such competency-based training programmes as an alternative means of compliance with the Annex 1 experience requirements.

Part IV — Training and assessment for air traffic management personnel

6.8 Chapter 1 — General provisions for competency-based training and assessment for air traffic management (ATM) personnel

This chapter outlines the general principles and procedures to be followed in the design and implementation of competency-based training and assessment for ATM personnel. It outlines key features of the competency-based approach and describes how it is to be used by course developers, instructors and examiners for ATM personnel. Implementation of competency-based training programmes for ATM personnel is optional.

6.9 Chapter 2 — Competency-based training and assessment for air traffic controllers (ATCOs)

This chapter outlines the principles and procedures that are applicable to the development and implementation of ATCO competency-based training and to be followed in addition to those outlined in Chapter 1 by training organizations or air navigation services providers (ANSPs) opting for a competency-based approach. This chapter also contains the competency units, competency elements and performance criteria developed for the ATCO. The *Manual on Competency-based Training of Air Traffic Controllers* (Doc 10056) contains guidance material on the design and development of an ATCO training programme as well as examples of training objectives.

6.10 Chapter 3 — Competency-based training and assessment for air traffic safety electronics personnel (ATSEP)

This chapter outlines the principles and procedures that are applicable to the development and implementation of ATSEP competency-based training and to be followed in addition to those outlined in Chapter 1 by training organizations or ANSPs opting for a competency-based approach. This chapter also contains the competency units, competency elements and performance criteria developed for the ATSEP. The *Manual on Competency-based Training of Air Traffic Safety Electronics Personnel* (Doc 10057) contains guidance material on the design and development of an ATSEP training programme as well as examples of training objectives.

Part V — Training and assessment for aerodrome personnel

[Reserved]

Part VI — Training and assessment for other aviation personnel

[Reserved]

Table A. Amendments to the PANS-TRG

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject(s)</i>	<i>Approved Applicable</i>
1st Edition (2006)	Flight Crew Licensing and Training Panel (2005)	<i>Procedures for Air Navigation Services — Training</i> (PANS-TRG)	19 July 2006 23 November 2006
1	Secretariat with the assistance of the Next Generation of Aviation Professionals (NGAP) Task Force and the International Air Transport Association (IATA) Training and Qualifications Initiative (ITQI)	New Chapter 4, supported by additional definitions, containing procedures to facilitate the implementation of competency- based training and assessment for aircraft maintenance personnel.	13 May 2011 25 August 2011
2	Secretariat with the assistance of the Next Generation of Aviation Professionals (NGAP) Task Force and the International Air Transport Association (IATA) Training and Qualifications Initiative (ITQI)	New Chapter 5 containing procedures supporting the implementation of the concept of evidence-based training (EBT), consisting of: a) the applicability, background and philosophy of EBT; and b) reference to guidance material providing the detailed means of implementation. The amendment also expands the qualifications of instructors in the current Chapter 5.	4 January 2013 2 May 2013
3	Secretariat	Amendment concerning the introduction of provisions regarding upset prevention and recovery training (UPRT) for aeroplane pilots.	23 April 2014 13 November 2014
2nd Edition (2016)	Secretariat; Next Generation of Aviation Professionals (NGAP) Air Traffic Management (ATM) Group	Amendment concerning restructuring and inclusion of competencies for air traffic controllers (ATCOs) and air traffic safety electronics personnel (ATSEP).	14 August 2015 10 November 2016
4			
5	ICAO Competencies Task Force	Revised definitions for terms related to competencies, a description of how competency-related concepts are interlinked and a generic methodology to design competency-based training and assessment.	13 July 2017 5 November 2020

Part I

GENERAL PROCEDURES

This part contains three chapters:

Chapter 1 contains the definitions and acronyms and their technical meanings as used in this document. In some cases, the terms are defined in other ICAO documents.

Chapter 2 outlines the general provisions for competency-based training and outlines the general principles and procedures to be followed in the design and implementation of a competency-based approach to training and assessment. Attachment A provides general considerations that should be taken into account when implementing competency-based training and assessment programmes including the relationship between competencies and tasks. Attachment B describes knowledge, skills and attitudes. Attachment C provides a generic methodology to design competency-based training and assessment based on the ADDIE principles.

Chapter 3 and its attachment contain the qualifications to be held and the competencies to be demonstrated by course developers and instructors employed in a competency-based training programme.

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Chapter 1

DEFINITIONS AND ACRONYMS

1.1 DEFINITIONS

When the following terms are used in this document, they have the following meanings:

Adapted competency model. A group of competencies with their associated description and performance criteria adapted from an ICAO competency framework that an organization uses to develop competency-based training and assessment for a given role.

Air operator certificate (AOC). A certificate authorizing an operator to carry out specified commercial air transport operations.

Aircraft operating manual. A manual, acceptable to the State of the Operator, containing normal, abnormal and emergency procedures, checklists, limitations, performance information, details of the aircraft systems and other material relevant to the operation of the aircraft.

Note.— The aircraft operating manual is part of the operations manual.

Approved maintenance training organization (AMTO). An approved training organization performing training for aircraft maintenance technicians/engineers/mechanics.

Assessment (evidence) guide. A guide that provides detailed information (e.g. tolerances) in the form of evidence that an instructor or an evaluator can use to determine whether a candidate meets the requirements of the competency standard.

ATA chapters. A common industry referencing standard for aircraft technical documentation.

Note.— The competency frameworks of Part III, Chapter 1 use references to the ATA chapters numbering, due to its widespread use in civil aviation.

Certify as airworthy (to). To certify that an aircraft or parts thereof comply with current airworthiness requirements after maintenance has been performed on the aircraft or parts thereof.

Competency. A dimension of human performance that is used to reliably predict successful performance on the job. A competency is manifested and observed through behaviours that mobilize the relevant knowledge, skills and attitudes to carry out activities or tasks under specified conditions.

Competency-based training and assessment. Training and assessment that are characterized by a performance orientation, emphasis on standards of performance and their measurement, and the development of training to the specified performance standards.

Competency standard. A level of performance that is defined as acceptable when assessing whether or not competency has been achieved.

Conditions. Anything that may qualify a specific environment in which performance will be demonstrated.

Configuration deviation list (CDL). A list established by the organization responsible for the type design with the approval of the State of Design which identifies any external parts of an aircraft type which may be missing at the commencement of a flight, and which contains, where necessary, any information on associated operating limitations and performance correction.

Criterion-referenced test. A test, the measurement of which is compared with an objective standard (and not against another measurement).

Dispatch deviation procedures guide (DDPG). Manual to identify any procedure to dispatch an aircraft with allowable systems/components inoperative or missing.

Note.— Large aircraft manufacturers may choose to produce operating and maintenance procedures in documents such as dispatch deviation procedure guides, for use by operators.

Error. An action or inaction by an operational person that leads to deviations from organizational or the operational person's intentions or expectations.

Note — See Chapter 1 of Annex 19 — Safety Management for a description of operational personnel.

Error management. The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors and mitigate the probability of further errors or undesired states.

Note.— See Attachment C to Part II, Section 1, Chapter 1 and Circular 314 — Threat and Error Management (TEM) in Air Traffic Control for a description of undesired states.

Event. A combination of a task or a sub-task and the conditions under which the task or sub-task is to be performed.

Facilitation technique. An active training method, which uses effective questioning, listening and a non-judgemental approach and is particularly effective in developing skills and attitudes, assisting trainees to develop insight and their own solutions and resulting in better understanding, retention and commitment.

Generic standard shop practices manual. Manual that has been developed by an operator or by an approved maintenance organization that provides guidance and direction to shop personnel with respect to all aspects of in-house procedures as applied to the various maintenance and maintenance support activities that has been accepted or approved by the regulator for the scope of activities for that organization.

Generic standard storage practices manual. Manual that has been developed by an operator or by an approved maintenance organization that provides guidance and direction to maintenance support personnel engaged in the storage and preservation of aircraft parts, components and other materials used in aircraft maintenance activities. The scope of the manual forms part of the organization's accepted or approved maintenance programme as indicated by the regulator.

Human factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Human performance. Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

ICAO competency framework. A competency framework, developed by ICAO, is a selected group of competencies for a given aviation discipline. Each competency has an associated description and observable behaviours.