



## **DANGEROUS GOODS PANEL (DGP)**

### **THIRTIETH MEETING**

**Montréal, 6 to 10 October 2025**

#### **Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)**

##### **2.1: Develop proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air***

### **REPORT OF THE ICAO DGP WORKING GROUP ON TRAINING**

(Presented by T. Muller)

#### **SUMMARY**

This information paper provides an update on the activities of the DGP Working Group on Training (DGP-WG/Training) since the twenty-fifth meeting of the working group (DGP-WG/25) and invites the working group to review and comment on the proposed revisions to the ICAO *Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment* (Doc 10147) and associated materials.

## **1. INTRODUCTION**

1.1 Since DGP-WG/25, the DGP-WG/Training has continued its review of Doc 10147 in line with the direction provided by the panel and the outcomes of previous discussions. The group's work has focused on making the guidance more practical and easier to implement, while maintaining the underlying competency-based principles set out in Part 1;4 of the Technical Instructions.

1.2 Feedback from States, operators, and training organizations has indicated that Doc 10147, while comprehensive, can be perceived as overly theoretical and, in some cases, as implying that the competency-based training and assessment methodology described is the only acceptable approach. The working group has therefore sought to clarify that Doc 10147 describes one possible method to achieve the required competence with the training provisions, and that alternative approaches remain acceptable provided they meet the provisions of the Technical Instructions.

1.3 The working group further advanced work on the proposed ANC Job Card on dangerous goods training, which was proposed in Delhi at DGP-WG/25 and accepted by the Panel with minor amendments. This draft Job Card outlines a stated problem - namely, that existing guidance is overly theoretical and difficult to apply in practice - and defines key objectives and deliverables, including revision of Doc 10147, development of more practical guidance, and alignment of related ICAO training

materials. The anticipated deadlines are that the simplified guidance should be delivered by the end of the 2026-2027 biennium, with full effectiveness projected for Q4 2029. The working group is ahead of this schedule, having completed substantial drafting and concept development already. The draft Job Card can be found in Appendix C.

## **2. REVISION OF ICAO DOC 10147**

2.1 Following DGP-WG/25, the DGP-WG/Training began a structured process to review and revise ICAO Doc 10147, in line with the objectives of the draft ANC Job Card and feedback received from working group members. The starting point was the collection of detailed comments from States, operators, training organizations, and individual members, focusing on what could be changed to enhance the implementation of the training provisions in Part 1;4 of the Technical Instructions.

2.2 This feedback was consolidated into an overview list of actions and minutes, documenting each comment, its origin, and a preliminary disposition (accepted, not supported, or requiring further discussion). This list became the central reference for all subsequent work. The working group discussed these comments extensively in several dedicated sessions, with some items requiring multiple rounds of review before consensus was reached. Only proposals marked as accepted in the final list were carried forward for inclusion in the revised document (Appendix B).

2.3 Those accepted items were integrated into a fully editable version of ICAO Doc 10147, producing a new Doc 10147 draft. This draft version is provided in Appendix C. The revisions from the previous version to the new one can be grouped, but though not exclusively, into 5 main categories:

### **1) Clarifying the status and flexibility of Doc 10147**

The Foreword now explicitly states that Doc 10147 presents “an approach among others” to achieving compliance, making clear that while competence is mandatory, the method to achieve it may vary. A note has been added to position Doc 10147 as the practical complement to forthcoming high-level Annex 18 guidance to be developed in the 2026–2027 biennium.

### **2) Enhancing practical guidance**

Chapter 2 has been revised to outline the necessary steps for developing a competency-based training and assessment programme, using the ADDIE model as an example while recognizing that other instructional design models may also be applied. The dangerous goods task list (Chapter 4) and the task/knowledge matrix (Chapter 5) have been reformatted for clarity, with detailed examples relocated to the appendices to improve readability of the main text.

### **3) Simplifying and streamlining content**

Redundant passages have been removed, with definitions consolidated to avoid repetition. The link between CBTA and Safety Management Systems (SMS) has been streamlined, with cross-references to detailed operational guidance in later chapters.

### **4) Alignment and terminology consistency**

Terminology has been harmonized with Annex 6 (e.g. “specific approval” only where

applicable) and across ICAO dangerous goods material. Definitions of “role” and “function” have been refined to emphasize that training requirements attach to the functions performed, regardless of job title.

#### **5) Introducing new guidance on adapted competency models**

A short new Chapter 6 provides concise, practical guidance on developing an “adapted competency model” from the generic ICAO framework, responding to repeated feedback from users requesting clearer tailoring instructions.

### **3. NEXT STEPS**

3.1 Following DGP/30, the revised draft of Doc 10147 will be further refined to incorporate the comments and direction received from the Panel. Once this version is updated, it will undergo internal ICAO consideration to ensure consistency with related training provisions and other ICAO material. Thereafter, the updated draft will be circulated back to the Panel, either through correspondence or in preparation for DGP-WG/26, to allow members to review progress and provide further input. As guidance material does not require ANC approval, the Panel retains flexibility to finalize the text without awaiting a formal regulatory cycle.

3.2 The draft ANC Job Card foresees delivery of simplified guidance only by the end of the 2026–2027 biennium, with full effectiveness projected for Q4 2029. The Working Group is well ahead of this timeline, having already completed substantial drafting and consolidation. This provides a considerable buffer, supporting that any additional refinements or unforeseen issues can be addressed without compromising the deadline in the draft ANC Job Card.

### **4. CONCLUSION**

4.1 The DGP-WG is invited to:

- a) note the detailed list of accepted comments and the finalized actions in Appendix B to this working paper and
- b) review and provide comments on the revised Doc 10147 presented in Appendix A to this working paper.

— — — — —



## APPENDIX A

### DRAFT REVISED VERSION ICAO DOC 10147 (CLEAN)

## FOREWORD

A safe and efficient air transport system is dependent on a competent workforce. ICAO has recognized that this can be achieved through the implementation of a competency-based approach to training and assessment. The *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284, “Technical Instructions”) require that employers ensure personnel are competent to perform any function for which they are responsible prior to performing it. A competency-based approach to training and assessment is an effective way to ensure this requirement is met.

This document provides detailed guidance on an approach for the development and implementation of competency-based training and assessment specifically for the safe transport of dangerous goods by air. It builds upon the more general principles outlined in the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868), which addresses competency-based training concepts based on the KSA approach. While Doc 9868 offers an important methodology, Doc 10147 proposes a way among others to implement those concepts into specific tools, frameworks, and task lists adapted to dangerous goods functions that, if used, must be tailored (see chapter 1.1.2). Doc 10147 provides one possible approach to competency-based training and assessment and is therefore not mandatory; likewise, the ADDIE model is presented only as an example of an instructional design framework that organizations may use, without being obligatory.

In the 2026–2027 biennium, ICAO will develop general guidance material under Annex 18, which will address dangerous goods transport more broadly, including overarching policy and operational elements. That material will serve as high-level guidance, while Doc 10147 will consist in more detailed guidelines by providing an example of method for implementation of competency-based training and assessment related to dangerous goods.

### **BENEFITS OF COMPETENCY-BASED TRAINING AND ASSESSMENT FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR**

The main benefit of a competency-based approach to training and assessment is its potential to encourage and enable personnel to reach their highest level of capability while ensuring a basic level of competence as a minimum standard. It does this by:

- a) targeting specific training needs;
- b) supporting continuous learning and performance improvement;
- c) gearing towards learning rather than simply passing a test;
- d) ensuring the integration of the knowledge, skills and attitudes (KSA) needed to perform effectively; and
- e) establishing sufficient, well-trained and competent instructors.

Ensuring personnel are able to perform their functions competently is critical to any organization. A competent workforce reduces the costs caused by poor performance or miscommunication of job expectations. The consequences of employing an incompetent dangerous goods workforce can be especially damaging, as this could result in costs and delays in shipment, and even more critically, it could result in the introduction of safety risks. As an example, identifying, classifying, packing, marking, labelling and documenting dangerous goods for transport are critical to the safe transport of dangerous goods by air. The operator depends on these functions being performed competently by those preparing and offering a consignment for transport so that the operator in turn will be aware of the hazards posed and can take the necessary steps to mitigate the risk to the aircraft and its occupants. If personnel performing these functions are not trained to perform them competently, unknown risks may be introduced into air transport. Accepting dangerous goods for air transport requires an operator to verify that dangerous goods are properly prepared for transport through the use of a checklist. If personnel accepting dangerous goods are not trained to competently perform this function, they may accept improperly prepared shipments of dangerous goods into air transport thereby putting the aircraft and its occupants at risk. Alternatively, they may unnecessarily reject properly prepared shipments resulting in delays of shipments and increased costs to the shipper and the operator.

A competency-based approach to training and assessment ensures that trainees know what tasks they are expected to perform competently, and evaluators know what performance to assess.

### **FUNCTION-SPECIFIC TRAINING**

The Technical Instructions state that personnel must be trained commensurate with the functions for which they are responsible. These responsibilities are determined by the specific functions the personnel perform and not by their roles or job titles. Concentrating on functions and responsibilities rather than a role, a job title or job description ensures that a person is competent to perform the function in compliance with the Technical Instructions. For example, entities such as ground handling companies and freight forwarders may need personnel to perform some functions that are typically performed by shippers or operators. Ground handling and freight forwarder personnel would need to be trained to perform these functions competently regardless of their role or job title.

In smaller operations, personnel may perform many functions such as accepting dangerous goods and loading and securing dangerous goods on board an aircraft. They would need to be trained to perform all of these functions competently. In larger operations, personnel may perform only a small number of functions. They would need to be trained only to perform those specific functions competently.

The depth of training each person receives should be appropriate to the functions performed. This could range from a familiarization level to an expert level for certain personnel.

Comments concerning this document should be

addressed to: The Secretary General  
International Civil Aviation Organization  
999 Robert-Bourassa Boulevard  
Montréal, Quebec, Canada H3A  
2R2

## **TABLE OF CONTENTS**

	<i>Page</i>
<b>Glossary .....</b>	<b>(ix)</b>
<b>Chapter 1. Introduction .....</b>	<b>1-1</b>
1.1 General .....	1-1
1.2 Competency-based training and assessment concepts.....	1-1
1.3 Roles and responsibilities in a competency-based approach to training.....	
1.4 Relationship between competency-based training and assessment and safety management .....	
<b>Chapter 2. Development and implementation of competency-based dangerous goods training and assessment programmes .....</b>	<b>2-1</b>
2.1 General .....	2-1
2.2 Components of a competency-based training and assessment programme .....	2-1
2.3 Building a competency-based dangerous goods training and assessment programme.....	
<b>Appendix A to Chapter 2. Additional details linked to the ADDIE method</b>	
<b>Chapter 3. Generic competency framework for dangerous goods personnel.....</b>	<b>3-1</b>
<b>Chapter 4. Dangerous goods task list .....</b>	<b>4-1</b>
<b>Appendix A to Chapter 4. Dangerous goods functions — process flowchart.....</b>	<b>4-</b>
<b>App A-1 Chapter 5. Task/knowledge matrix tool</b>	
<b>.....</b>	<b>5-1</b>
<b>Appendix A to Chapter 5. Example adapted task lists for certain well-defined roles .....</b>	<b>5-</b>
<b>App A-1</b>	
<b>Chapter 6. Guidance on developing an adapted competency model</b>	
<b>References</b>	

## ACRONYMS AND ABBREVIATIONS

ADDIE	Analyse, design, develop, implement and evaluate
ANC	Air Navigation Commission
CAA	Civil Aviation Authority
COMAT	Company Material
ISD	Instructional Systems Design
KSA	Knowledge, skills and attitudes
NOTOC	Notification to Captain
SARPs	Standards and Recommended Practices
SMS	Safety Management Systems
SRM	Safety Risk Management
SSP	State safety programme
ULD	Unit load device

## 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.

***Attitude.*** Refer to point 1.2.4.5

***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.

***Function.*** Action or activity proper to a person with expected results (e.g. person responsible for operating the aircraft, Person in charge of loading and unloading, etc.).

***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.

***Knowledge.*** Refer to point 1.2.4.3

***Observable behaviour.*** A single function-related behaviour that can be observed and may or may not be measurable.



**Performance criteria.** Statements used to assess whether the required levels of performance have been achieved for a competency. A performance criterion consists of an observable behaviour, condition(s) and a competency standard.

**Role.** The official position that somebody has or is expected to have in an organization. A person assigned to a role may be entrusted with several functions (e.g. a role “Pilot” with the functions of “operating the aircraft” and “loading and unloading”).

**Skill.** Refer to point 1.2.4.4

**Task.** Refer to point 1.2.4.2

## CHAPTER 1

### INTRODUCTION

#### 1.1 GENERAL

- 1.1.1 This document provides guidance in implementing a dangerous goods competency-based training and assessment programme for personnel involved in the transport of cargo, mail, passengers and baggage by air.
- 1.1.2 Since ICAO regions and member States have differing regulatory, operational, technical and organizational environments, and since Stakeholders have their own specificities and constraints, this document does not prescribe a “one-size-fits-all” training programme. Instead, it provides an approach among others and generic tools to develop dangerous goods training programmes that may or may not be used and, if so, which must be adapted for specific needs. It is based on the more detailed material provided in the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868).

#### 1.2 COMPETENCY-BASED TRAINING AND ASSESSMENT CONCEPTS

##### 1.2.1 Goal

The goal of competency-based training and assessment is to produce a competent workforce by providing focused training. It does so by identifying key competencies that need to be achieved, determining the most effective way of achieving them and establishing valid and reliable assessment tools to evaluate their achievement.

##### 1.2.2 History

Competency-based training is a concept and methodology that was developed during the 1950s and entered the mainstream sometime in the 1980s. Competency-based training has been applied in many different contexts and professions and, therefore, it is understandable that there are many different definitions of “competence” and “competency-based training”. This section elaborates the competency concepts as they are used in this document.

##### 1.2.3 What is a competency?

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

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

#### 1.2.4 Task, knowledge, skills and attitudes

1.2.4.1 Developing the knowledge, skills and attitudes (KSA) required to perform a task is a critical feature of competency-based training and assessment.

1.2.4.2 **Task.** A task is a set of actions that form part of the overall purpose of a job, broken down into their component parts. Each task is linked to a clearly defined high-level objective and can be divided in sub-tasks. It forms part of a sequence of operations necessary for the successful performance of a job. Performing a task requires more than just a single competence, as it requires the acquisition and application of several of them (knowledge, skills and attitudes).

1.2.4.3 **Knowledge.** Knowledge is specific information required to enable a learner to develop and apply the skills and attitudes to recall facts, identify concepts, apply rules or principles, solve problems, and think creatively in the context of work. Knowledge is an outcome of the learning process, whether learning occurs in formal or informal settings. There are different types of knowledge: declarative (e.g. facts and raw data), procedural (e.g. categorized/contextualized and application of conditional if-then rules), strategic (e.g. synthesis, inference to guide resource allocation for decision making, problem solving and behavioural action), and adaptive (e.g. generalization, innovation, and invention).

1.2.4.4 **Skills.** A skill is an ability to perform an activity or action. It is often divided into three types: motor, cognitive and metacognitive skills. A motor skill is an intentional movement, involving a motor or muscular component, that must be learned and voluntarily produced to proficiently perform a goal-oriented task. A cognitive skill is any mental skill used in the process of acquiring knowledge, such as reasoning, perception and intuition. A metacognitive skill relates to the ability of learners to monitor and direct their own learning processes ("thinking about thinking"); for example, planning how to approach a given learning task, monitoring comprehension and evaluating progress toward the completion of a task.

1.2.4.5 **Attitudes.** Attitude is a persistent internal mental state or disposition that influences an individual's choice of personal action toward some object, person or event and that can be learned. Attitudes have affective components, cognitive aspects and behavioural consequences. To demonstrate the "right" attitude, a learner needs to "know how to be" in a given context.

1.2.4.6 Examples of KSA applicable to dangerous goods personnel include:

Knowledge	—	The nine classes of dangerous goods
	—	Information required on the dangerous goods transport document
	—	Components of an acceptance check
Skills	—	How to determine if the substance/material is dangerous goods
	—	How to complete the dangerous goods documentation
	—	How to check a package (e.g. can it be accepted for transport?)
Attitude	—	Being motivated to ensure safety and to comply with applicable regulations
	—	Wanting to adhere to regulations in asking relevant and effective questions
	—	Appreciating feedback from team members (e.g. adapts when faced with a situation where no guidance or procedure exists)

#### 1.2.5 Principles of competency-based training and assessment

A competency-based approach to training and assessment is based on the following principles:

- relevant competencies are clearly defined for a particular role;
- there is an explicit link between competencies and training, required performance on the job, and assessment;
- competencies are formulated in a way that ensures they can be trained for, observed and assessed consistently in a wide variety of work contexts for a given role;

- d) trainees successfully demonstrate competency by meeting the associated competency standard;
- e) each stakeholder in the process including the employer (e.g. shipper, freight forwarder, ground handling agent and operator), instructor, trainee, training organization and regulator has a common understanding of the competency standards;
- f) clear performance criteria are established for assessing competence;
- g) evidence of competent performance is valid and reliable;
- h) instructors' and assessors' judgements are calibrated to achieve a high degree of inter-rater reliability;
- i) assessment of competencies is based on multiple observations across multiple contexts; and
- j) to be considered competent, an individual demonstrates an integrated performance of all the required competencies to a specified standard.

### **1.2.6 ICAO competency framework, adapted competency model and task list**

1.2.6.1 Traditional approaches to training development involve the breakdown of jobs into tasks. For each task there is a related objective, an assessment and associated elements in a training plan. A limitation of this approach is that each task must be taught and assessed. In complex systems, or when jobs evolve rapidly, it may not be possible to teach and assess each task. Moreover, learners may demonstrate the ability to perform tasks in isolation without being competent in their job. Competency-based training and assessment is based on the concept that competencies are transferable. In the design of a competency-based training and assessment programme, the purpose of the training and tasks associated with this purpose are identified and a limited number of competencies are defined. In the design of training and assessments, tasks and activities are incorporated because they are useful for facilitating, developing or assessing a competency or competencies. Typically, a task will involve several competencies, and competencies may apply across a variety of tasks and settings. Specific tasks may be used to develop specific competencies. The lack of specific competencies may be identified as a root cause of failure in the performance of a task. A generic, high-level list of tasks ("task list") typically performed by dangerous goods personnel is provided in Chapter 4 of this document. Employers may use this list as a tool for developing specific training specifications for their personnel. The training and assessment record required by the Technical Instructions should detail the task(s) and sub-task(s) from the task list for which competency has been demonstrated in order to facilitate verification that appropriate training and assessment have been completed.

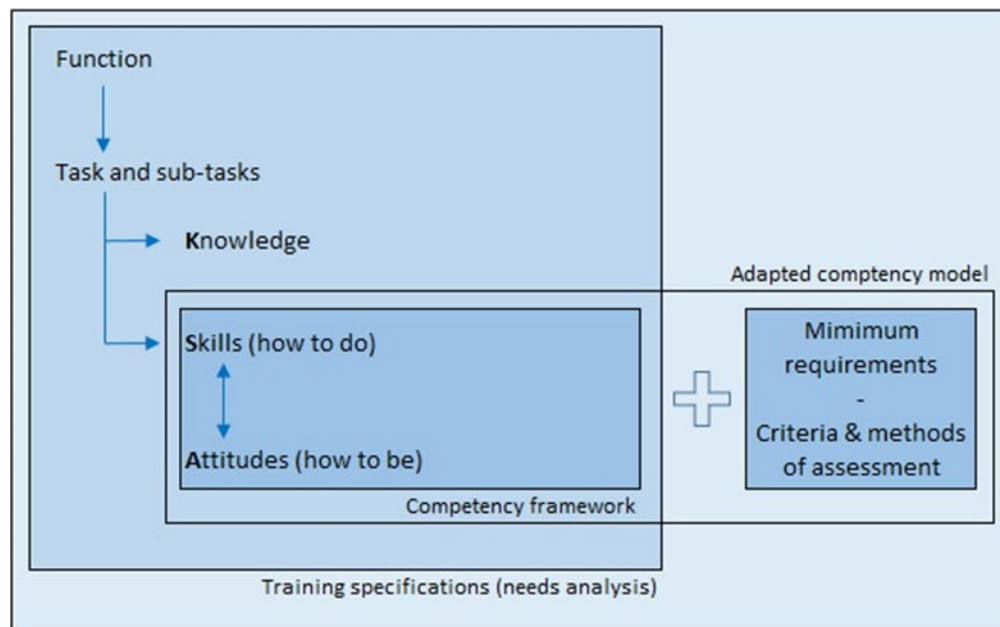
1.2.6.2 Generic, high-level competency frameworks for aviation personnel have been developed by ICAO and included in the PANS-TRG and various ICAO documents. A competency model provides a means of defining competencies by identifying those needed for a given role, describing them, and providing criteria for each. Its use, although optional, can be useful and is described in Chapter 6.

### **1.2.8 Interaction between the different concepts**

A competency-based approach involves many different concepts :

- The notions of task, knowledge, skills and attitudes are defined in chapter 1.2.4 ;
- Their interaction are described in chapter 3, 4 and 5 ;
- The training needs analysis is addressed in chapter 2.2 ;
- The competency framework is detailed in chapter 3 ;
- Guidance on developing an adapted competency model is provided in Chapter 6.

At first the interactions between these concepts may seem difficult to understand. The figure 1-1 summarizes these interactions in a simplified way.



**Figure 1-1. Interactions between CBTA concepts**

### 1.3 ROLES AND RESPONSIBILITIES IN A COMPETENCY-BASED APPROACH TO TRAINING

#### 1.3.1 Employer

1.3.1.1 A training programme includes elements such as design methodology, initial and recurrent training, assessment, instructor qualifications and competencies, training records and evaluation of its effectiveness. Employers need to determine the purpose and objective of the competency-based training programme based on the functions for which their personnel are responsible. Employers should ensure that training is designed and developed to establish clear links among the competencies to be achieved, the learning objectives, assessment methods, and course materials.

1.3.1.2 The employer must study the target population (future trainees) with a view to identifying the KSA that they already possess, to collect information on preferred learning styles, and on the social and linguistic environments of prospective trainees. The target population may be a mixture of experienced and newly recruited personnel, groups

differing in age, etc. All these components could have an impact on the design of the training. Employers must also consider the domestic and international regulatory requirements that apply to their operations.

1.3.1.3 Some employers may utilize third parties for assistance. This approach may be the most suitable for employers who do not have the resources to train their personnel in house. While utilizing third parties may be cost effective, the deciding factor in selecting a third party should be whether or not the training needs are being addressed, and not costs alone. The potential for third parties to cater to the training needs of multiple employers and not address all required competencies of each specific employee needs to be taken into account. Employers remain responsible for ensuring their personnel are competent to perform their functions prior to performing them even if certain aspects of the training programme have been delegated to third parties.

1.3.1.4 Employers should liaise directly with the regulator to ensure that the latter's requirements are taken into account prior to proceeding with the development of competency-based training.

#### 1.3.2 Instructor

In competency-based training, the instructor facilitates the trainee's progression towards the achievement of competencies. Instructors also support continuous improvement by collecting information about the effectiveness of the training materials. Examples of instructor competencies can be found in Part I, Chapter 3 of the PANS-TRG.

#### 1.3.3 Trainee

In competency-based training, trainees are active participants in their learning process and in the achievement of competencies, as opposed to being passive recipients of knowledge. The competency-based training programme provides them with a clear idea of their learning path towards competency through the training programme and beyond. The competency-based training should directly contribute to improving their performance on the job. The trainees' feedback is essential to ensure that competency-based training is effective.

#### 1.3.4 Regulator

1.3.4.1 There are important differences between the ways the regulator would oversee a traditional training programme versus a competency-based training programme. In a traditional training programme, the regulator may assess the course components and final test against knowledge elements and not on the competencies that need to be acquired. The fact that all knowledge components are addressed or appear to be included in a course and that all trainees have passed the required test does not necessarily mean that they can competently perform their assigned functions.

1.3.4.2 Where competency-based training has been implemented, regulators should oversee the training programme to ensure that it actually produces personnel who can perform the functions for which they are responsible in a specific operational setting and in compliance with the national regulatory framework. The Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284SU) provides guidance on overseeing dangerous goods training programmes.

### 1.4 RELATIONSHIP BETWEEN COMPETENCY-BASED TRAINING AND ASSESSMENT AND SAFETY MANAGEMENT

1.4.1 Competency-based training and assessment plays a key role in supporting an organisation's Safety Management System (SMS) by helping ensure that personnel are trained to perform their functions competently, with a clear understanding of safety principles. As outlined in Annex 19 and the ICAO Safety Management Manual (Doc 9859), SMS requires a proactive and systematic approach to identifying and managing operational safety risks. Dangerous goods activities fall under the scope of aviation operations governed by SMS requirements, as per Annex 6.

1.4.2 In this context, CBTA acts as a preventive defence mechanism. The "Swiss-Cheese" model of accident causation highlights how deficiencies in training can be latent conditions that contribute to safety events. A robust CBTA programme helps reduce such risks by identifying and addressing competency gaps before they manifest operationally.

1.4.3 Both CBTA and SMS emphasize continuous improvement. Performance and safety data (e.g., audit findings, incidents, assessment results) should be used to adjust training programmes and address shortcomings. Integrating CBTA with SMS ensures that training remains relevant, risk-informed, and responsive to the operational environment.

1.4.4 Additional operational insights - including the importance of adapting training to operational risks, incorporating behaviour-based observations, and using SMS outputs to inform training needs - are addressed throughout this document (see Chapters 2.2, 2.3.2.13 and 6), and further elaborated in Doc 9859. These insights support practical implementation and demonstrate how training and safety management mutually reinforce each other.

## CHAPTER 2

# DEVELOPMENT AND IMPLEMENTATION OF COMPETENCY-BASED DANGEROUS GOODS TRAINING AND ASSESSMENT PROGRAMMES

### 2.1 GENERAL

This chapter provides a step-by-step guide for organizations intending to establish competency-based training and assessment that is specific to their environment and requirements. It makes use of the ICAO competency framework and the ADDIE (analyse, design, develop, implement and evaluate) instructional design model.

### 2.2 COMPONENTS OF A COMPETENCY-BASED TRAINING AND ASSESSMENT PROGRAMME

2.2.1 The objective of a competency-based training (CBT) in dangerous goods is to ensure that personnel acquire and apply knowledge, skills and attitudes (KSA) to perform their assigned functions safely and efficiently.

The following components, which are illustrated in Figure 2-1, are essential to achieving this goal:

- a) Training specification - developed through a training needs analysis, describing the functions, associated tasks/sub-tasks, and competencies to be achieved;
- b) Assessment plan - defining how competence will be evaluated, including methods, conditions, success criteria, and evidence requirements;
- c) Training plan - describing how training will be delivered, including the syllabus, milestones, delivery methods, and resources;
- d) Training and assessment materials - — tools, manuals, scenarios, and other resources required to implement the assessment and training plans; and
- e) Evaluation of the programme — procedures for measuring the programme's effectiveness and identifying improvements, ideally integrated with the organisation's continuous improvement processes or Safety Management System (SMS).

Note: An adapted competency model is a group of competencies with their associated description and performance criteria adapted from an ICAO competency framework. It provides a means of assessing whether trainees achieve the desired performance. Its use, although optional, can be useful and is described in Chapter 6.

Note: The evaluation of the effectiveness of the overall training program should be integrated with a continuous improvement cycle (e.g. with the SMS when applicable – see chapter 1.4).

2.2.2 The remainder of this chapter focuses on the development of these components.

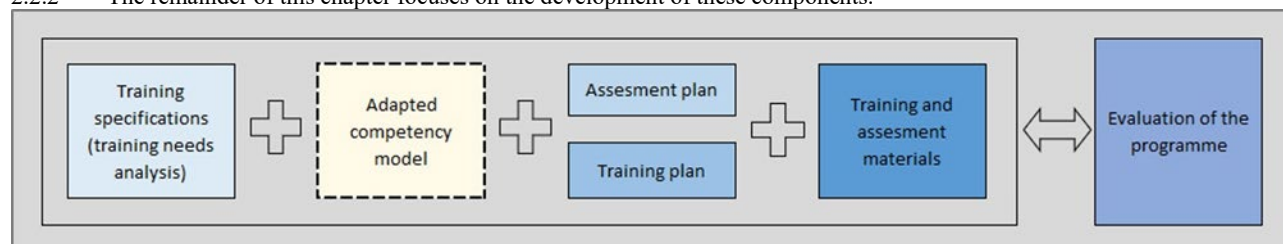


Figure 2-1. Components of a competency-based training and assessment programme

## 2.3 BUILDING A COMPETENCY-BASED DANGEROUS GOODS TRAINING AND ASSESSMENT PROGRAMME

## 2.3.1 General

The different steps that need to be taken to build a competency-based training and assessment programme can be summarised as follows:

## Analysis

- 1) Review applicable regulatory requirements;
- 2) Identify the operational functions and related tasks;
- 3) Map the operational environment and constraints (technical, organizational, contextual);
- 4) Define the required competencies (knowledge, skills, and attitudes) based on tasks and functions;

## Design and Development

- 5) Define assessment conditions and success criteria for each competency;
- 6) Conduct a training needs and gap analysis (from current to target proficiency);
- 7) Develop a detailed training syllabus including structure, sequence, and milestones;
- 8) Design the assessment plan (types, timing);
- 9) Develop training materials and tools (manuals, scenarios, etc.);

## Implementation

- 10) Define logistical and human resource requirements (e.g. instructors, assessors, facilities, tools);
- 11) Establish procedures for certification, monitoring, and recordkeeping;

## Evaluation and improvement

- 12) Implement tools to evaluate program effectiveness and identify deficiencies;
- 13) Plan continuous improvement actions based on evaluation results.

This approach is based on the ADDIE model and represents one CBT compliant method among others (such as Kirkpatrick Model, Dick & Carey Model, 4C/ID, etc.).

## 2.3.2 Detailed steps

Note: Additional details in link with the ADDIE method can be found in the appendix A.

## 2.3.2.1 Review applicable regulatory requirements

This initial step ensures that the training program complies with all relevant legal, regulatory, and industry-specific standards. Regulations may stem from national authorities, international bodies (such as ICAO, regional agencies), or internal company policies. Reviewing them helps establish the framework within which the program must operate and guarantees the recognition and validity of the training and certification process.

## 2.3.2.2 Identify the operational functions and related tasks

This step involves a thorough analysis of the operational roles potentially involved in the (non)transport of dangerous goods that the training program will target. Each role is broken down into its functions and core tasks and responsibilities. By understanding what individuals in these roles actually do on the job, the training can be directly aligned with operational realities. This alignment is crucial for ensuring relevance and improving transfer of learning to the workplace.

A generic list of dangerous goods task is provided in the chapter 4.

The appendix A to chapter 5 provides some examples of functions with tasks and skills that could be associated.

It is important to note that these materials are provided for guidance purposes only and shall be customised according to the organization specificities. For example, additional functions may be defined such as “Operational point of contact for DG”, “Personnel responsible for the preparation of COMAT shipment”, “Personnel in charge of booking and selling”, etc.

## 2.3.2.3 Map the operational environment and constraints (technical, organizational, contextual)

Training must be contextualized. This step maps out the environment in which the trainees will operate, including technical systems (e.g. equipment, tools), organizational structures (e.g. hierarchy, workflows), and contextual factors (e.g. remote locations, cultural influences, shift work). Understanding these constraints and influences allows for realistic training design and helps avoid developing materials or methods that are impractical or misaligned with operational reality.

## 2.3.2.4 Define the required competencies (knowledge, skills, and attitudes) based on tasks and functions

Each task identified must be translated into measurable competencies. Competencies include the technical knowledge (what to know), procedural and manual skills (what to do), and attitudes or behaviours (how to act). This competency framework becomes

the backbone of the training program and is key for both curriculum development and assessment. Competency statements should be precise, observable, and aligned with the desired performance outcomes.

A matrix associating the different tasks with the potential knowledge they entail is provided in chapter 5. The chapter 4 provides a list of tasks, sub-tasks and associated skills.

A list of attitudes and associated observable behaviours is described in the chapter 3.

Performing a dangerous goods task may require different levels of KSA, depending on the complexity of the specific task and the operational environment. Implementing levels of proficiency is an optional means to determine how critical the employee's knowledge, skills or attitudes are for the successful completion of the tasks. If used, the concept of a level of proficiency can be very useful in determining the main areas to focus on during training and assessment. In order to determine the level of proficiency of the employee's knowledge, skill or attitude, the employer should take into account the complexity of the task or sub-task, its criticality and the employee's autonomy in performing it. KSAs may be developed over time and with practice, thus enabling qualified personnel to take on more difficult tasks with greater responsibility.

#### 2.3.2.5 Define assessment conditions and success criteria for each competency

To ensure the validity of assessments, it is essential to define under what conditions each competency will be evaluated (e.g. in a simulator, on-the-job, via oral exam) and what constitutes successful performance. This includes performance standards (e.g. 80% accuracy), timing, and any specific tools or scenarios to be used. Clear success criteria ensure transparency and consistency across assessors and help learners understand expectations.

#### 2.3.2.6 Conduct a training needs and gap analysis (from current to target proficiency)

This diagnostic step compares the current capabilities of the target audience with the required competencies. It helps determine which areas need training and to what extent. The analysis can be conducted using interviews, surveys, competencies assessments, or performance reviews. The results inform the scope, depth, and duration of the training program, and help prioritize content based on importance and impact.

#### 2.3.2.7 Develop a detailed training syllabus including structure, sequence, and milestones

A structured syllabus outlines how the training will unfold over time. It includes the order of modules, estimated durations, delivery methods (e.g. classroom, e-learning, hands-on), and key milestones or checkpoints for learner progression. The sequence should support a logical learning progression—from foundational knowledge to complex skill application—and include opportunities for practice and feedback.

#### 2.3.2.8 Design the assessment plan (types, timing)

Competency-based training requires assessment of the trainees' progress until they are competent to perform their assigned function. A trainee's assessment may be completed using a variety of tools including observation of job performance, tests, or other practical exercises. In order for assessment tools to be effective, they must be valid and reliable both in terms of being an appropriate measure of the competency being assessed and of obtaining consistent results when administered by different raters and ratings.

The primary method for assessing performance is the conduct of practical assessments, because the focus is on an integrated performance of competencies. Practical assessments can be formative, whereby instructors provide feedback to trainees on their progress toward the interim or final competency standard, or summative, whereby trainees demonstrate competence at defined points during the training which may include or be the end of training. It may be necessary to supplement practical assessments with other forms of evaluation such as examinations, oral assessments, projects or simulation. Detailed guidance on typical assessment methods is provided in PANS-TRG, Attachment C to Chapter 2.

The assessment of dangerous goods personnel can be accomplished in a variety of ways. Some common examples of how to accomplish an assessment would be to utilize a written test, online test, oral test, observed practical exercises, online practical exercises and observation of on-the-job performance by fully trained personnel.

An employer of personnel performing dangerous goods functions might choose to utilize one assessment method or a combination of assessment methods, as long as the assessment confirms that the personnel have acquired the necessary competencies to perform the assigned dangerous goods functions. The employer therefore establishes the assessment plan with all the specific details that would need to be accomplished to determine whether competence has been achieved by the trainee.

Employers electing to send personnel to third-party training providers also need to establish an assessment plan for ensuring that competence has been achieved by the trainee. The employer may incorporate the third-party provider's assessment into its established assessment plan. Even if the employer does not deliver any of the training itself, it can still choose to assess the trainees in the workplace to ensure they can perform their assigned tasks competently and incorporate that process into the assessment plan.



#### 2.3.2.9 Develop training materials and tools (manuals, scenarios, etc.)

Once the syllabus and assessment plan are defined, specific training materials must be created or selected. These may include learner manuals, instructor guides, presentation slides, job aids, role-play scenarios, simulation exercises, and digital resources. Materials should be aligned with defined competencies and tailored to the audience's learning preferences. Where possible, incorporate authentic tasks and examples that mirror real job challenges.

#### 2.3.2.10 Define logistical and human resource requirements (e.g. instructors, assessors, facilities, tools)

Effective delivery requires careful planning of resources. This step identifies all logistical needs, including training venues, equipment, software, and materials. It also determines the human resources required—qualified instructors, subject matter experts, and assessors—with associated selection criteria.

#### 2.3.2.11 Establish procedures for certification, monitoring, and recordkeeping

To maintain the integrity and credibility of the training program, formal procedures must be established. Certification processes define how competence is officially recognized. Monitoring includes regular oversight to ensure consistency and adherence to standards. Recordkeeping involves storing documentation such as assessment results, attendance, certificates, and instructor logs, and must comply with data protection and audit requirements.

#### 2.3.2.12 Implement tools to evaluate program effectiveness and identify deficiencies

Evaluation should occur at multiple levels: reaction (learner satisfaction), learning (knowledge/skill acquisition), behaviour (on-the-job performance), and results (operational impact). This step includes the selection or development of evaluation tools—surveys, quizzes, interviews, performance metrics—and a plan for how data will be collected and analysed. Identifying deficiencies or gaps in training is essential for ongoing improvement.

the SMS represents a very important source of information about the effectiveness of the procedures applied and, consequently, the training provided (see chapter 1.4).

#### 2.3.2.13 Plan continuous improvement actions based on evaluation results

Training should not be static. Based on evaluation findings, improvement actions should be planned and implemented. This may involve revising materials, retraining instructors, changing delivery methods, or updating competencies based on operational changes. A continuous improvement cycle ensures the program remains effective, relevant, and responsive to learner and organizational needs.

## Appendix A to Chapter 2

### ADDITIONAL DETAILS LINKED TO THE ADDIE METHOD

#### A. INTRODUCTION

Instructional systems design (ISD) is a systematic process for designing and developing training. Several valid ISD models exist which may be used to design competency-based training and assessment. The analyse, design, develop, implement and evaluate (ADDIE) framework is generic to all ISD models. Chapter 2 provides guidance for designing dangerous goods competency-based training and assessment this appendix provides further information using the ADDIE model.

The ADDIE model is a generic process traditionally used by instructional designers and training developers to build effective training tools. It consists of five phases: analysis, design, development, implementation, and evaluation. PANS-TRG refers to these phases as “workflows” as illustrated in Figure A-1.

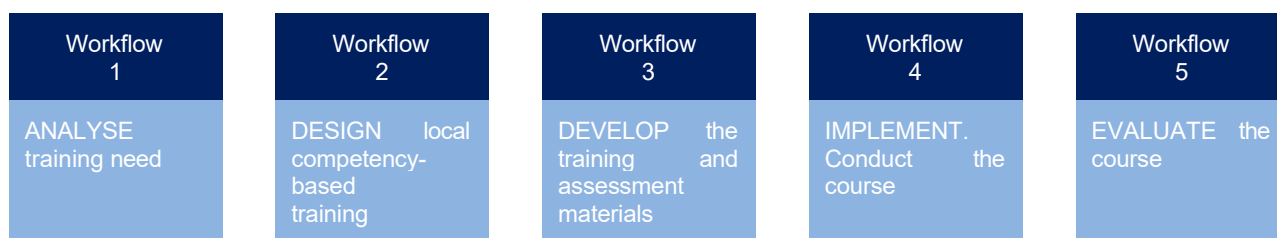


Figure A-1. Competency-based training and assessment workflows

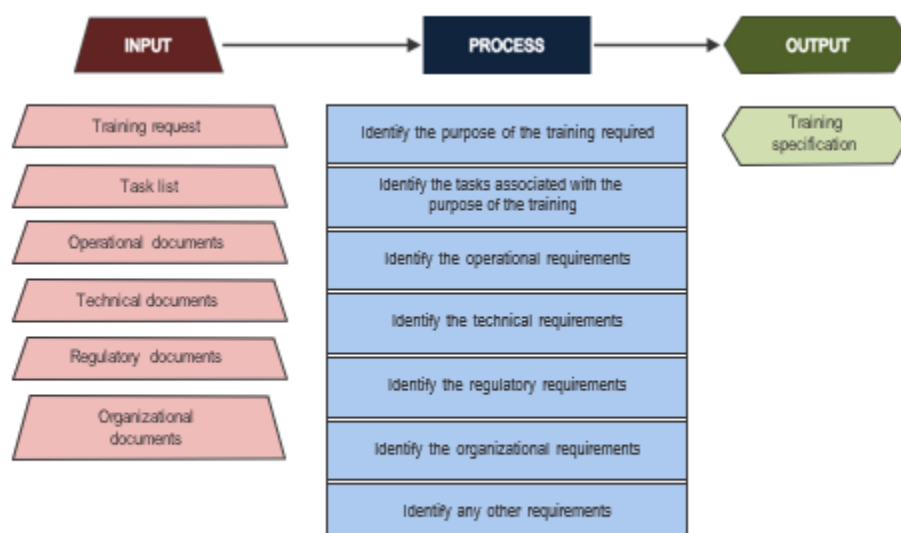
The following chapters provide a generic and summarized overview of the ADDIE workflows and additional elements to the ones provided in chapter 2.3.2. The PANS-TRG (Doc 9868) contains greater detail on the use of the ADDIE model.

#### B. BUILDING A COMPETENCY-BASED TRAINING AND ASSESSMENT PROGRAMME USING THE ADDIE MODEL

##### 1. Workflow 1 — Analyse training need

1.1 The first phase in the development and implementation of a competency-based training programme is to determine what the training needs are specific to the employer’s environment and requirements through a training needs analysis. Figure 2-3 illustrates a detailed overview of this workflow. The output of this workflow is a training specification, which includes the purpose of the training and the detailed operational, technical, regulatory and organizational requirements that need to be fulfilled when designing the training. PANS-TRG lists a number of questions that should be answered to ensure the training specification provides sufficient detail (see PANS-TRG, Chapter 2, Attachment C). Some of these questions are specific to flight training, but most would also apply to dangerous goods training.

1.2 This phase includes the development of a task list. A generic list of tasks and sub-tasks typically performed by personnel performing dangerous goods functions is provided in Chapter 4. A complementary flowchart illustrating the typical processes of performing these tasks is provided in the Appendix to Chapter 4. The employer may need to adapt the task list in Chapter 4 to reflect the specific tasks performed by its personnel

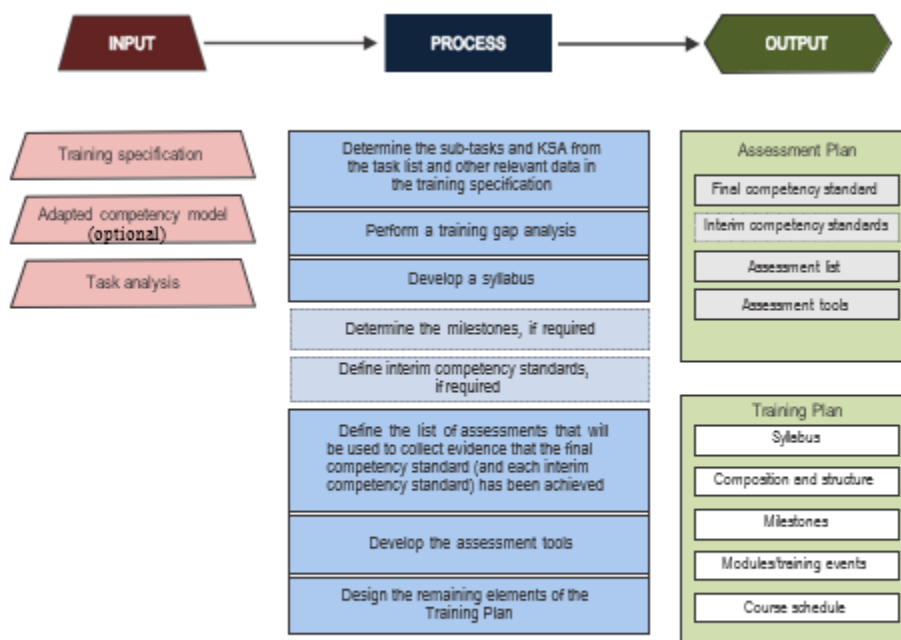


**Figure 1-1. Workflow 1 — Analyse training need**

## **2. Workflow 2 — Design local competency-based training and assessment**

2.1 The second phase in the development and implementation of a local competency-based training and assessment programme is its design. This is done taking into account the training specifications identified in Workflow 1 and will involve:

- a) designing an assessment plan that will be used to assess the competence of trainees (for this purpose an adapted competency model may be used, see chapter 6); and
- b) designing a training plan that will enable the development and delivery of the training course.



**Figure 2-1. Workflow 2 — Design the assessment and training plans**

2.2 Conditions that are specific to the environment in which performance will be demonstrated may need to be considered in relation to the competency standard. These include the nature and complexity of the tasks, conditions relating to tools and systems or equipment, and conditions relating to the level of support or assistance a trainee can expect from the instructor or assessor.

2.3 During the early stages of training, trainees may expect active coaching and teaching from the instructor. However, as the trainee progresses towards the final competency standard and gains more confidence in performing independently, the instructor will take on a more passive role and may only give occasional advice on how to improve efficiency or intervene in instances where safety may be compromised. Consequently, the condition description of the final competency standard might be that the trainee would be expected to be performing independently without assistance from the instructor.

2.4 As part of the progression towards the final competency standard, it may be necessary to establish interim competency standards.

2.5 Designing an assessment plan

2.5.1 The purpose of the assessment plan is to detail how competence is going to be determined. Prior to developing the assessment and training plans, it is important to consider:

The following principles of competency-based assessment:

- Clear performance criteria are used to assess competence (an adapted competency model may be used to establish these performance criteria, see chapter 6).
- An integrated performance of the competencies is observed. The trainee undergoing assessment must demonstrate all competencies and their seamless interaction with each other.
- Multiple observations are undertaken. Multiple observations must be carried out to determine whether or not a trainee has achieved the interim and/or final competency standard.
- Assessments are valid. There must be sufficient evidence to ensure that the trainee meets the competency specified by the interim and/or final competency standard.
- Assessments are reliable. All assessors should reach the same conclusion when performing an assessment. All assessors should be trained and monitored to achieve and maintain an acceptable level of inter-rater reliability.

2.5.2 The assessment plan details:

- the final competency standard associated with the final milestone;
- the interim competency standard associated with each milestone (if required);

- c) the list of assessments (formative and summative assessments, examinations, oral assessments, etc.) required for each of the milestone(s) that has been defined;
- d) when assessments should take place;
- e) the tools to be used to collect evidence during practical assessment;
- f) the pass marks for projects, examinations or oral assessments;
- g) if required, the minimum number of formative assessments to be undertaken prior to starting summative assessments;
- and
- h) the number of observations required to assess performance for the interim and final competency standards.

2.5.3 Additional administrative procedures may be necessary in the implementation of the assessment plan in relation to:

- a) who is authorized to perform a specific task or assessment;
- b) roles and responsibilities of personnel during the conduct of assessments;
- c) assessment procedures (preparation, conduct and post-assessment);
- d) conditions under which assessments are to be undertaken;
- e) record-keeping; and
- f) actions to be taken if a trainee fails a competency assessment.

Normally these procedures are described in a training and procedures manual.

## 2.6 Designing a training plan

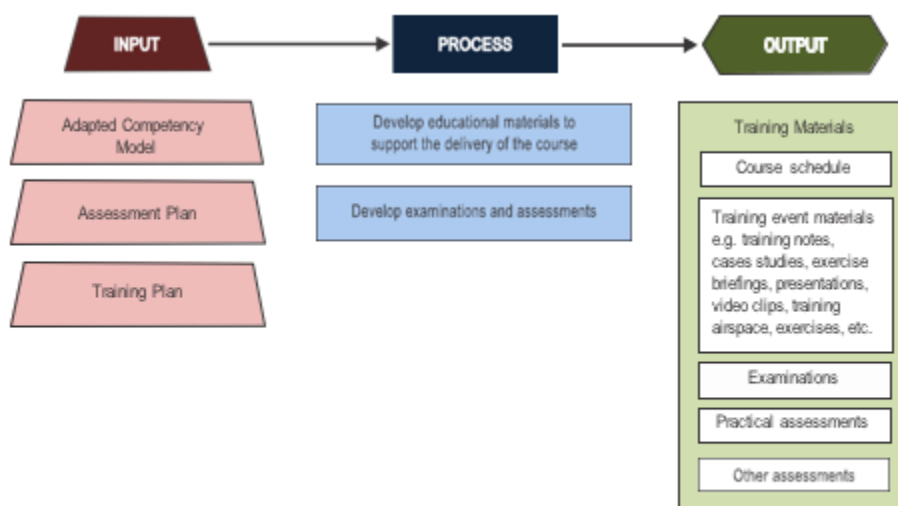
2.6.1 The purpose of the training plan is to detail:

- a) the composition and structure of the course;
- b) the syllabus;
- c) milestones (if required);
- d) modules, training events and their delivery sequence; and
- e) the course schedule.

2.6.2 The training plan will be used by the training designer(s) to create the training and assessment materials.

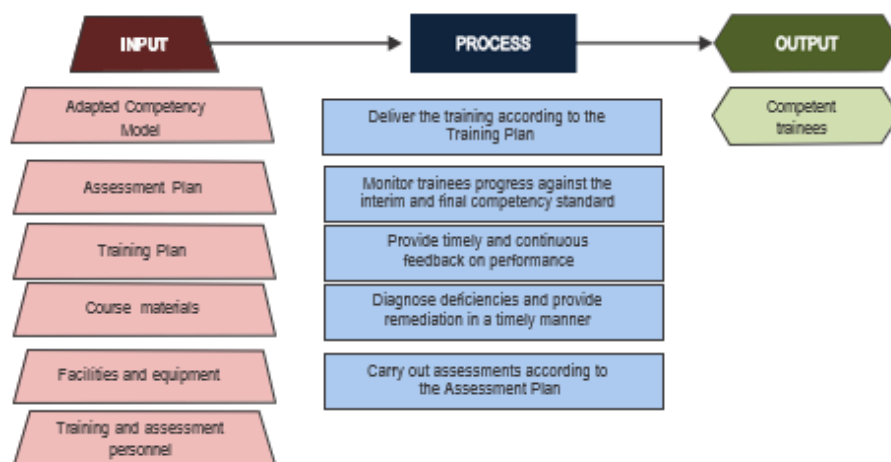
## 3. Workflow 3 — Develop the training and assessment materials

The third phase in the development and implementation of a competency-based training and assessment programme is the development of the training and assessment materials. Development is based the training and assessment plans. Training and assessment materials include but are not limited to training notes, exercise briefings, practical exercises, case studies, presentations, video clips, self-test quizzes, examinations, assessments and assessment tools. Figure 3-1 illustrates a detailed overview of this workflow.



**Figure 3-1. Workflow 3 — Develop the training and assessment materials**

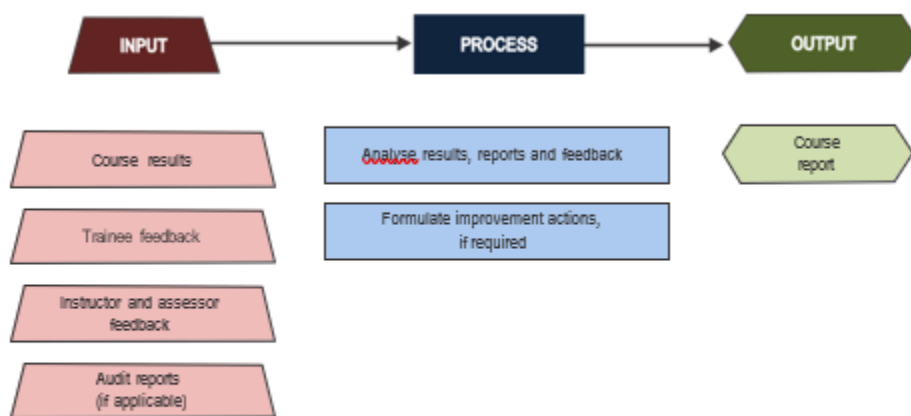
4. **Workflow 4 — Conduct the course in accordance with the training and assessment plans**  
The fourth phase in the development and implementation of a competency-based training and assessment programme is conducting the course in accordance with the training and assessment plans. This involves delivering the training; monitoring the progress of the trainees; providing timely and continuous feedback on their performance; diagnosing deficiencies in the training and addressing them in a timely manner; and carrying out assessments according to the assessment plan. The goal of this phase is a competent employee. Figure 4-1 illustrates a detailed overview of this workflow.



**Figure 4-1. Workflow 4 — Conduct the course in accordance with the training and assessment plans**

5. **Workflow 5 — Evaluate the course including the training and assessment plans**

The employer is responsible for ensuring the effectiveness of the training programme. At the end of a period of training, feedback on performance on the job from trainees, instructors, assessors and employers should be gathered to determine the effectiveness of the training and assessment in supporting the progression of learning towards competence in the workplace. Evaluation of the training should be based on valid and reliable evidence such as course results, trainee feedback, instructor feedback, audit reports, and occurrence reports. This evaluation may lead to changes or improvements being made to the competency-based training and assessment design. Figure 5-1 illustrates a detailed overview of this workflow.



**Figure 5-1. Workflow 5 — Evaluate the course including the training and assessment plans**

## Chapter 3

# GENERIC COMPETENCY FRAMEWORK FOR DANGEROUS GOODS PERSONNEL

This chapter contains a generic ICAO competency framework for dangerous goods personnel as described in Chapter 2.

Table 3-1. Generic ICAO competency framework for dangerous goods personnel

<i>Generic competency</i>	<i>Description</i>	<i>Observable behaviour</i>
Application of procedures and compliance with regulations	Identifies and applies appropriate procedures in accordance with published operating instructions and in compliance with applicable regulations	Identifies where to find procedures and regulations
		Follows relevant procedures in a timely manner
		Complies with applicable regulations
		Applies relevant procedural knowledge
Communication	Communicates through appropriate means in the work environment, in both normal and non- normal situations	Ensures the recipient is ready and able to receive information
		Selects appropriately what, when, how and with whom to communicate
		Conveys messages clearly, accurately and concisely
		Confirms that the recipient correctly understands important information
		Listens actively and demonstrates understanding when receiving information
		Asks relevant and effective questions
		Completes accurate reports as required by operating procedures
		Announces deviations from normal or intended conditions
		Correctly uses and interprets non-verbal communication
Leadership, teamwork and self-management	Demonstrates effective leadership, teamwork and self-management	Encourages team participation and open communication
		Demonstrates initiative and provides direction when required

<i>Generic competency</i>	<i>Description</i>	<i>Observable behaviour</i>
		Engages others in planning
		Considers inputs from others
		Gives and receives feedback constructively
		Addresses and resolves conflicts and disagreements in a constructive manner
		Exercises decisive leadership
		Admits mistakes and takes responsibility for own performance, detecting and resolving own errors
		Carries out instructions when directed and applies effective intervention strategies when necessary
		Confidently intervenes when important for safety
		Self-evaluates the effectiveness of actions
Problem-solving and decision-making	Identifies problem precursors and resolves actual problems using decision-making techniques, in a timely manner	Seeks accurate and adequate information from appropriate sources
		Identifies and verifies what and why things have gone wrong
		Employs proper problem-solving strategies
		Perseveres in working through problems while prioritizing safety
		Uses appropriate and timely decision-making techniques
		Sets priorities appropriately
		Identifies and considers options as appropriate
		Monitors, reviews and adapts decisions as required
		Identifies, assesses and manages risks and threats to safety effectively
		Adapts when faced with situations where no guidance or procedure exists
		When an event conducive to startle is encountered, recognizes and manages the situation



Workload	Maintains available	Exercises self-control in all situations
management	workload capacity by prioritizing and distributing tasks using appropriate resources	Plans, prioritizes and schedules tasks effectively
		Manages time efficiently when carrying out tasks
		Offers and gives assistance, delegates when necessary
		Seeks and accepts assistance, when appropriate
		Monitors, reviews and cross-checks actions conscientiously
		Verifies that tasks are completed to the expected outcome
		Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks

## Chapter 4

### DANGEROUS GOODS TASK LIST

This chapter contains a generic list of tasks typically performed by dangerous goods personnel as described in Chapter 1, 1.2.6. It is an indicative list provided as guidance. More tasks may need to be added or removed depending on the scope of the employer's operations. The employer should therefore adapt this task list to reflect the specific tasks performed by its personnel.

#### Generic dangerous goods task list

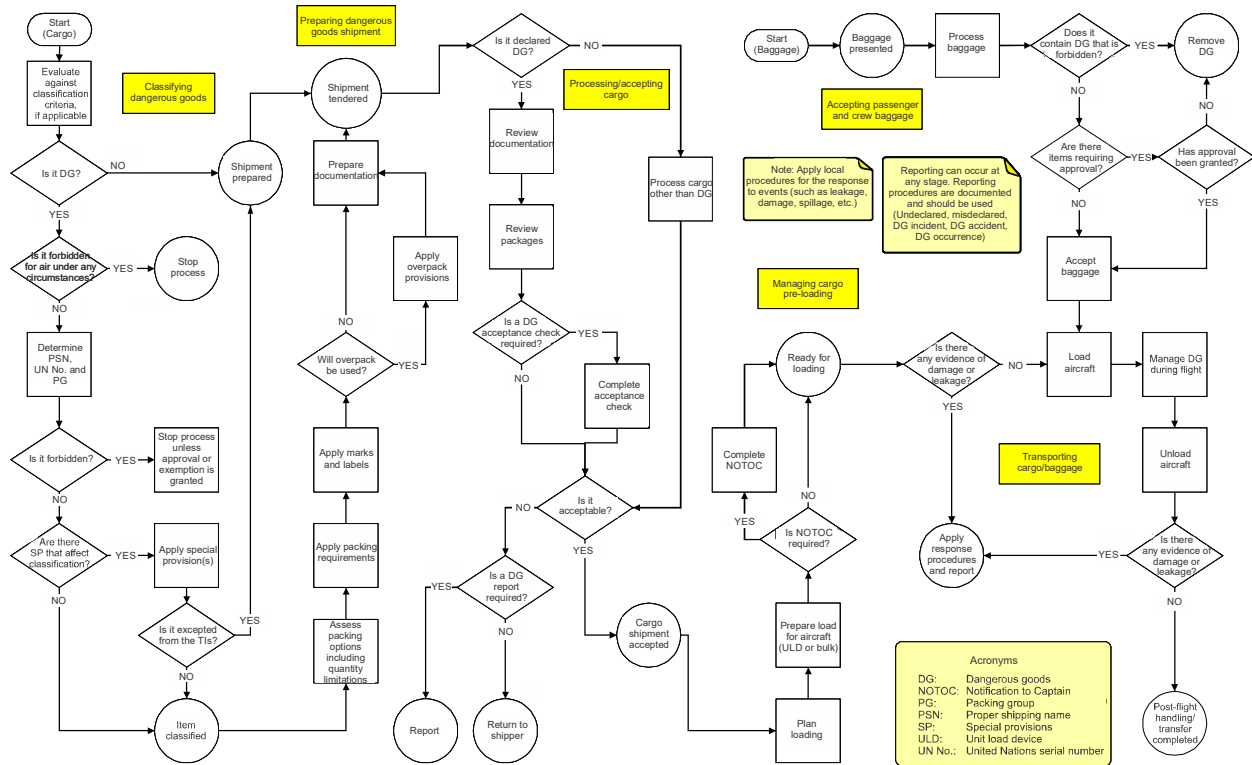
1. Classifying dangerous goods
  - 1.1 Evaluate substance or article against classification criteria
    - 1.1.1 Determine if it is dangerous goods
    - 1.1.2 Determine if it is forbidden under any circumstances
  - 1.2 Determine dangerous goods description
    - 1.2.1 Determine class or division
    - 1.2.2 Determine packing group
    - 1.2.3 Determine proper shipping name and UN number
    - 1.2.4 Determine if it is forbidden unless approval or exemption is granted
  - 1.3 Review special provisions
    - 1.3.1 Assess if special provision(s) is applicable
    - 1.3.2 Apply special provision(s)
2. Preparing dangerous goods shipment
  - 2.1 Assess packing options including quantity limitations
    - 2.1.1 Consider limitations (de minimis quantities, excepted quantities, limited quantities, passenger aircraft, cargo aircraft only, special provisions, dangerous goods in the mail)
    - 2.1.2 Consider State and operator variations
    - 2.1.3 Determine if all-packed-in-one can be used
    - 2.1.4 Select how dangerous goods will be shipped based on limitations and variations
  - 2.2 Apply packing requirements
    - 2.2.1 Consider constraints of packing instructions
    - 2.2.2 Select appropriate packaging materials (absorbent, cushioning, etc.)
    - 2.2.3 Assemble package
    - 2.2.4 Comply with the packaging test report when UN specification packaging is required
  - 4-1
  - 2.3 Apply marks and labels
    - 2.3.1 Determine applicable marks
    - 2.3.2 Apply marks
    - 2.3.3 Determine applicable labels
    - 2.3.4 Apply labels
  - 2.4 Assess use of overpack
    - 2.4.1 Determine if overpack can be used
    - 2.4.2 Apply marks if necessary

- 2.4.3 Apply labels if necessary
- 2.5 Prepare documentation
  - 2.5.1 Complete the dangerous goods transport document
  - 2.5.2 Complete other transport documents (e.g. air waybill)
  - 2.5.3 Include other required documentation (approvals/exemptions, etc.)
  - 2.5.4 Retain copies of documents as required
- 3. Processing/accepting cargo
  - 3.1 Review documentation
    - 3.1.1 Verify dangerous goods transport document
    - 3.1.2 Verify other transport documents (e.g. air waybill)
    - 3.1.3 Verify other documents (exemptions, approvals, etc.)
    - 3.1.4 Verify State/operator variations
  - 3.2 Review package(s)
    - 3.2.1 Verify marks
    - 3.2.2 Verify labels
    - 3.2.3 Verify package type
    - 3.2.4 Verify package conditions
    - 3.2.5 Verify State/operator variations
  - 3.3 Complete acceptance procedures
    - 3.3.1 Complete acceptance checklist
    - 3.3.2 Provide shipment information for load planning
    - 3.3.3 Retain documents as required
  - 3.4 Process/accept cargo other than dangerous goods
    - 3.4.1 Check documentation for indications of undeclared dangerous goods
    - 3.4.2 Check packages for indications of undeclared dangerous goods
- 4. Managing cargo pre-loading
  - 4.1 Plan loading
    - 4.1.1 Determine stowage requirements, e.g., prohibition on carriage within a cabin occupied by passengers or on the flight deck, package orientation, securing to prevent movement, accessibility
    - 4.1.2 Determine segregation, separation, aircraft/compartment limitations
  - 4.2 Prepare load for aircraft
    - 4.2.1 Check packages for indications of undeclared dangerous goods
    - 4.2.2 Check for damage and/or leakage
    - 4.2.3 Apply stowage requirements (e.g. segregation, separation, orientation)
    - 4.2.4 Apply ULD tags when applicable
    - 4.2.5 Transport cargo to aircraft
  - 4.3 Issue NOTOC
    - 4.3.1 Enter required information
    - 4.3.2 Verify conformance with load plan
    - 4.3.3 Transmit to loading personnel
- 5. Accepting passenger and crew baggage

- 5.1 Process baggage
  - 5.1.1 Identify forbidden dangerous goods
  - 5.1.2 Apply approval requirements
- 5.2 Accept baggage
  - 5.2.1 Apply operator requirements
  - 5.2.2 Verify passenger baggage requirements
  - 5.2.3 Advise pilot-in-command
- 6. Transporting cargo/baggage
  - 6.1 Load aircraft
    - 6.1.1 Transport cargo/baggage to aircraft
    - 6.1.2 Check packages for indications of undeclared dangerous goods
    - 6.1.3 Check for damage and/or leakage
    - 6.1.4 Apply stowage requirements (e.g. segregation, separation, orientation, securing and protecting from damage)
    - 6.1.5 Verify that NOTOC reflects against aircraft load
    - 6.1.6 Verify passenger baggage requirements
    - 6.1.7 Inform pilot-in-command and flight operations officer/flight dispatcher
  - 6.2 Manage dangerous goods pre- and during flight
    - 6.2.1 Identify presence of dangerous goods not permitted in baggage
    - 6.2.2 Interpret NOTOC (only applies to an approved operator)
    - 6.2.3 Apply procedures in the event of an emergency
  - 6.3 Unload aircraft
    - 6.3.1 Apply specific unloading considerations
    - 6.3.2 Check packages for indications of undeclared dangerous goods
    - 6.3.3 Check for damage and/or leakage
    - 6.3.4 Transport cargo/baggage to facility/terminal
- 7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents
  - 7.3 Report undeclared/misdeclared dangerous goods
  - 7.4 Report dangerous goods occurrences

## APPENDIX A TO CHAPTER 4

## DANGEROUS GOODS FUNCTIONS – PROCESS FLOWCHART



## Chapter 5

### TASK/KNOWLEDGE MATRIX TOOL

This chapter contains a generic task/knowledge matrix table that can be used as a tool to map out the knowledge that is necessary to perform specific tasks. Tasks corresponding to the task list provided in Chapter 4 are listed across the columns of the table and knowledge elements are listed down the rows. The employer should indicate what knowledge is needed for a particular task within the organization with a checkmark at the point at which the task element and the knowledge element intersect. To facilitate this process, some cells in the table have been shaded. These shaded cells identify knowledge elements that would normally be irrelevant to the corresponding task and for which a checkmark would not normally be necessary.

Template for determining the knowledge that should be possessed by personnel performing specific tasks

Note.— The numbers under “Dangerous goods tasks” refer to tasks and sub-tasks from Chapter 4. The titles of the tasks are replicated in a legend below the following table.

Dangerous goods knowledge			Dangerous goods tasks																							
			1. Classifying dangerous goods			2. Preparing dangerous goods shipment					3. Processing/ accepting cargo				4. Managing cargo pre-loading			5. Accepting passenger and crew baggage		6. Transporting cargo/ baggage			7. Reporting safety data			
			1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4
Scope and applicability																										
Limitation of dangerous goods on aircraft																										
Definitions																										
Training																										
Dangerous goods security																										
General provisions concerning radioactive material																										
Reporting of dangerous goods accidents, incidents and other occurrences																										
Dangerous goods knowledge			Dangerous goods tasks																							
			1. Classifying dangerous goods			2. Preparing dangerous goods shipment					3. Processing/ accepting cargo				4. Managing cargo pre-loading			5. Accepting passenger and crew baggage		6. Transporting cargo/ baggage			7. Reporting safety data			
			1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4

[illegible]

[illegible]



[illegible]

[illegible]

## Tasks

1. Classifying dangerous goods
  - 1.1 Evaluate substance or article against classification criteria
  - 1.2 Determine dangerous goods description
  - 1.3 Review special provisions
2. Preparing dangerous goods shipment
  - 2.1 Assess packing options including quantity limitations
  - 2.2 Apply packing requirements
  - 2.3 Apply marks and labels
  - 2.4 Assess use of overpack
  - 2.5 Prepare documentation
3. Processing/accepting cargo
  - 3.1 Review documentation
  - 3.2 Review package(s)
  - 3.3 Complete acceptance procedures
  - 3.4 Process/accept cargo other than dangerous goods
4. Managing cargo pre-loading
  - 4.1 Plan loading
  - 4.2 Prepare load for aircraft
  - 4.3 Issue NOTOC
5. Accepting passenger and crew baggage
  - 5.1 Process baggage
  - 5.2 Accept baggage
6. Transporting cargo/baggage
  - 6.1 Load aircraft
  - 6.2 Manage dangerous goods pre- and during flight
  - 6.3 Unload aircraft
7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents
  - 7.3 Report undeclared/misdeclared dangerous goods
  - 7.4 Report dangerous goods occurrences

## Appendix A to Chapter 5

### EXAMPLE ADAPTED TASK LISTS FOR CERTAIN WELL-DEFINED FUNCTIONS

#### A. INTRODUCTION

The examples below indicate the tasks from the task list provided in Chapter 4 that personnel responsible for certain well-defined functions would typically perform and for which training and assessment would therefore be required. Personnel would need to have relevant knowledge to competently perform these tasks. The task/knowledge matrix tool provided in Chapter 5 may be used as a guide for determining what knowledge is needed for a given task. The examples in this appendix and the task/knowledge tool provided in Chapter 5 may be used for designing training programmes. However, they should not be considered as mandatory. Additional training and assessment may be required for personnel assigned additional responsibilities, and less training and assessment may be required for personnel assigned fewer responsibilities than those presented in these lists. The employer is responsible for ensuring employees are competent to perform the functions for which they are responsible and must therefore ensure that training programmes are designed to accomplish this. Dangerous goods training programmes are subject to State approval in accordance with national regulations, policies and procedures.

#### B. PERSONNEL RESPONSIBLE FOR PREPARATION OF DANGEROUS GOODS CONSIGNMENTS

Training and assessment for personnel preparing dangerous goods consignments for transport may be tailored to address only those classes, divisions or even UN numbers that they prepare for transport. Training and assessment may also be limited to address only the specific tasks personnel perform. For example, where personnel are only responsible for the packing, marking and labelling of packages and overpacks, training and assessment may be tailored to address just those tasks. Personnel would need to have relevant knowledge to competently perform these functions. The task/knowledge matrix tool provided in Chapter 5 may be used as a guide for determining what knowledge is needed. The following are tasks personnel responsible for preparation of dangerous goods consignments typically perform and for which training and assessment would therefore be required:

1. Classifying dangerous goods
  - 1.1 Evaluate substance or article against classification criteria
    - 1.1.1 Determine if it is dangerous goods
    - 1.1.2 Determine if it is forbidden under any circumstances
  - 1.2 Determine dangerous goods description
    - 1.2.1 Determine class or division
    - 1.2.2 Determine packing group
    - 1.2.3 Determine proper shipping name and UN number
    - 1.2.4 Determine if it is forbidden unless approval or exemption is granted
  - 1.3 Review special provisions
    - 1.3.1 Assess if special provision(s) is applicable
    - 1.3.2 Apply special provision(s)
2. Preparing dangerous goods shipment
  - 2.1 Assess packing options including quantity limitations
    - 2.1.1 Consider limitations (de minimis quantities, excepted quantities, limited quantities, passenger aircraft, cargo aircraft only, special provisions, dangerous goods in the mail)
    - 2.1.2 Consider State and operator variations
    - 2.1.3 Determine if all-packed-in-one can be used
    - 2.1.4 Select how dangerous goods will be shipped based on limitations and variations
  - 2.2 Apply packing requirements

- 2.2.1 Consider constraints of packing instructions
- 2.2.2 Select appropriate packaging materials (absorbent, cushioning, etc.)
- 2.2.3 Assemble package
- 2.2.4 Comply with the packaging test report when UN specification packaging is required
- 2.3 Apply marks and labels
  - 2.3.1 Determine applicable marks
  - 2.3.2 Apply marks
  - 2.3.3 Determine applicable labels
  - 2.3.4 Apply labels
- 2.4 Assess use of overpack
  - 2.4.1 Determine if overpack can be used
  - 2.4.2 Apply marks if necessary
  - 2.4.3 Apply labels if necessary
- 2.5 Prepare documentation
  - 2.5.1 Complete the dangerous goods transport document
  - 2.5.2 Complete other transport documents (e.g. air waybill)
  - 2.5.3 Include other required documentation (approvals/exemptions, etc.)
  - 2.5.4 Retain copies of documents as required
- 7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents
  - 7.3 Report undeclared/misdeclared dangerous goods
  - 7.4 Report dangerous goods occurrences

C. PERSONS RESPONSIBLE FOR PROCESSING OR ACCEPTING GOODS PRESENTED AS GENERAL CARGO

Personnel responsible for processing goods presented as general cargo should be competent to perform tasks aimed at preventing undeclared dangerous goods from being loaded on an aircraft. They may work for freight forwarders, ground handling agents or operators. Personnel would need to have relevant knowledge to competently perform these tasks. The task/knowledge matrix tool provided in Chapter 5 may be used as a guide for determining what knowledge is needed. They may need additional knowledge and be capable of performing at a more advanced skill level depending on the actual responsibilities assigned. The following are tasks aimed at preventing undeclared dangerous goods from being loaded on aircraft that such personnel would typically perform and for which training and assessment may be required.

- 3. Processing/accepting cargo
  - 3.4 Process/accept cargo other than dangerous goods
    - 3.4.1 Check documentation for indications of undeclared dangerous goods
    - 3.4.2 Check packages for indications of undeclared dangerous goods
- 6. Transporting cargo/baggage
  - 6.2 Manage dangerous goods pre- and during flight
    - 6.2.3 Apply procedures in the event of an emergency

- 7. Reporting safety data
- 7.1 Report dangerous goods accidents
- 7.2 Report dangerous goods incidents
- 7.3 Report undeclared/misdeclared dangerous goods
- 7.4 Report dangerous goods occurrences

D. PERSONNEL RESPONSIBLE FOR PROCESSING OR ACCEPTING DANGEROUS GOODS CONSIGNMENTS

The following are tasks personnel responsible for processing or accepting dangerous goods consignments typically perform and for which training and assessment would therefore be required.

- 3. Processing/accepting cargo
  - 3.1 Review documentation
    - 3.1.1 Verify dangerous goods transport document
    - 3.1.2 Verify air waybill
    - 3.1.3 Verify other documents (exemptions, approvals, etc.)
    - 3.1.4 Verify State/operator variations
  - 3.2 Review package(s)
    - 3.2.1 Verify marks
    - 3.2.2 Verify labels
    - 3.2.3 Verify package type
    - 3.2.4 Verify package conditions
    - 3.2.5 Verify State/operator variations
  - 3.3 Complete acceptance procedures
    - 3.3.1 Complete acceptance checklist
    - 3.3.2 Provide shipment information for load planning
    - 3.3.3 Retain documents as required
- 6. Transporting cargo/baggage
  - 6.2 Manage dangerous goods pre- and during flight
  - 6.2.3 Apply procedures in the event of an emergency
- 7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents
  - 7.3 Report undeclared/misdeclared dangerous goods
  - 7.4 Report dangerous goods occurrences

E. PERSONS RESPONSIBLE FOR HANDLING CARGO IN A WAREHOUSE, LOADING AND UNLOADING UNIT LOAD DEVICES AND LOADING AND UNLOADING AIRCRAFT CARGO COMPARTMENTS

The following are tasks personnel responsible for handling cargo in a warehouse, loading and unloading unit load devices, and loading and unloading passenger baggage and aircraft cargo compartments typically perform and for which training and assessment would therefore be required.

- 4. Managing cargo pre-loading
  - 4.2 Prepare load for aircraft
    - 4.2.1 Check packages for indications of undeclared dangerous goods
    - 4.2.2 Check for damage and/or leakage
    - 4.2.3 Apply stowage requirements (e.g. segregation, separation, orientation)
    - 4.2.4 Apply ULD tags when applicable
    - 4.2.5 Transport cargo to aircraft
- 6. Transporting cargo/baggage
  - 6.1 Load aircraft
    - 6.1.1 Transport cargo/baggage to aircraft
    - 6.1.2 Check packages for indications of undeclared dangerous goods
    - 6.1.3 Check for damage and/or leakage
    - 6.1.4 Apply stowage requirements (e.g. segregation, separation, orientation, securing and protecting from damage)
    - 6.1.5 Verify that NOTOC reflects against aircraft load
    - 6.1.6 Verify passenger baggage requirements
    - 6.1.1 Inform pilot-in-command and flight operations officer/flight dispatcher
  - 6. Transporting cargo/baggage
    - 6.2 Manage dangerous goods pre- and during flight
    - 6.2.3 Apply procedures in the event of an emergency
  - 6.3 Unload aircraft
    - 6.3.1 Apply specific unloading considerations
    - 6.3.2 Check packages for indications of undeclared dangerous goods
    - 6.3.3 Check for damage and/or leakage
    - 6.3.4 Transport cargo/baggage to facility/terminal
- 7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents
  - 7.3 Report undeclared/misdeclared dangerous goods
  - 7.4 Report dangerous goods occurrences

#### F. PERSONS RESPONSIBLE FOR ACCEPTING PASSENGER AND CREW BAGGAGE, MANAGING AIRCRAFT BOARDING AREAS AND OTHER TASKS INVOLVING DIRECT PASSENGER CONTACT AT AN AIRPORT

The following are tasks personnel responsible for accepting passenger and crew baggage, managing aircraft boarding areas, and other functions involving direct passenger contact at an airport typically perform and for which training and assessment would therefore be required.

- 5. Accepting passenger and crew baggage
  - 5.1 Process baggage
    - 5.1.1 Identify forbidden dangerous goods
    - 5.1.2 Apply approval requirements

- 5.2 Accept baggage
  - 5.2.1 Apply operator requirements
  - 5.2.2 Verify passenger baggage requirements
  - 5.2.3 Advise pilot-in-command
- 6. Transporting cargo/baggage
  - 6.2 Manage dangerous goods pre- and during flight
  - 6.2.3 Apply procedures in the event of an emergency
- 7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents
  - 7.3 Report undeclared/misdeclared dangerous goods
  - 7.4 Report dangerous goods occurrences

#### G. PERSONNEL RESPONSIBLE FOR THE PLANNING OF AIRCRAFT LOADING

The following are tasks personnel responsible for planning of aircraft loading (passengers, baggage, mail and cargo) would typically perform and for which training and assessment would therefore be required.

- 4. Managing cargo pre-loading
  - 4.1 Plan loading
    - 4.1.1 Determine stowage requirements, e.g., prohibition on carriage within a cabin occupied by passengers or on the flight deck, package orientation, securing to prevent movement, accessibility
    - 4.1.2 Determine segregation, separation, aircraft/compartments limitations
  - 4.3 Issue NOTOC
    - 4.3.1 Enter required information
    - 4.3.2 Verify conformance with load plan
    - 4.3.3 Transmit to loading personnel

#### H. PERSONEL RESPONSIBLE FOR OPERATING THE AIRCRAFT

The following are tasks the flight crew would typically perform and for which training and assessment would therefore be required.

- 6. Transporting cargo/baggage
  - 6.2 Manage dangerous goods pre- and during flight
    - 6.2.1 Identify presence of dangerous goods not permitted in baggage
    - 6.2.2 Interpret NOTOC (only applies to an approved operator)
    - 6.2.3 Apply procedures in the event of an emergency
- 7. Reporting safety data
  - 7.1 Report dangerous goods accidents
  - 7.2 Report dangerous goods incidents

7.3 Report undeclared/misdeclared dangerous goods

7.4 Report dangerous goods occurrences

#### I. PERSONS RESPONSIBLE FOR FLIGHT PREPARATION

The following are tasks flight operations officers and flight dispatchers would typically perform and for which training and assessment would therefore be required.

6. Transporting cargo/baggage

6.2 Manage dangerous goods pre- and during flight

6.2.2 Interpret NOTOC (only applies to an approved operator)

6.2.3 Apply procedures in the event of an emergency

#### J. PERSONEL RESPONSIBLE FOR ATTENDING TO PASSENGERS IN THE AIRCRAFT

The following are tasks the cabin crew would typically perform and for which training and assessment would therefore be required.

5. Accepting passenger and crew baggage

5.2 Accept baggage

5.2.1 Apply operator requirements

5.2.2 Verify passenger baggage requirements

5.2.3 Advise pilot-in-command

6. Transporting cargo/baggage

6.2 Manage dangerous goods pre- and during flight

6.2.1 Identify presence of dangerous goods not permitted in baggage

6.2.3 Apply procedures in the event of an emergency

7. Reporting safety data

7.1 Report dangerous goods accidents

7.2 Report dangerous goods incidents

7.3 Report undeclared/misdeclared dangerous goods

7.4 Report dangerous goods occurrences

#### K. PERSONNEL RESPONSIBLE FOR THE SCREENING OF PASSENGERS AND CREW AND THEIR BAGGAGE, CARGO AND MAIL

The following are tasks that personnel responsible for the screening of passengers and crew and their baggage, cargo and mail would typically perform and for which training and assessment would therefore be required.

3. Processing/accepting cargo

3.4 Process/accept cargo other than dangerous goods



3.4.2 Check packages for indications of undeclared dangerous goods

5. Accepting passenger and crew baggage

5.1 Process baggage

5.1.1 Identify forbidden dangerous goods

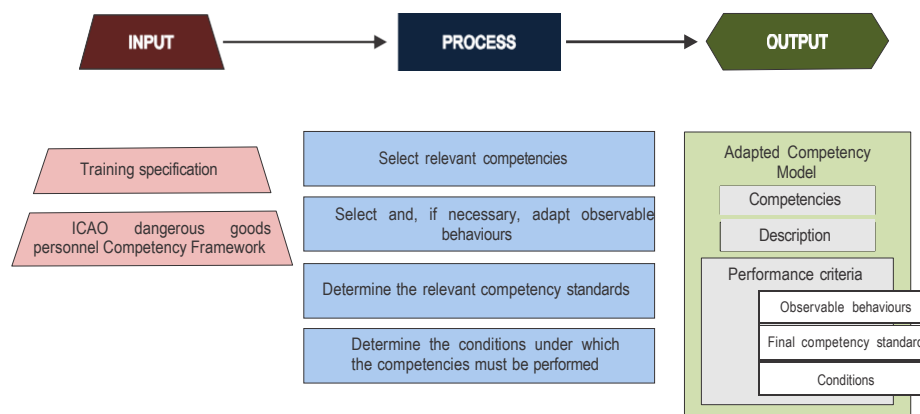
## Chapter 6

# GUIDANCE ON DEVELOPING AN ADAPTED COMPETENCY MODEL

### 6.1 General

An adapted competency model provides a means, among many others, of defining competencies by identifying those needed for a given role, describing them, and providing criteria for each. It provides a set of competencies that are typically needed to perform the dangerous goods tasks identified in the task list provided in Chapter 4. Employers may adapt this framework into competency models that meet the regulatory, operational, technical and organizational environments within which their personnel perform their tasks. This customized model is identified as an adapted competency model, which is then used to develop competency-based training and assessment for a given role.

The following figure deals with the design of the adapted competency model:



### 6.2 Designing the adapted competency model

A dangerous goods competency model can be adapted from the generic ICAO competency framework provided in Chapter 3 to meet the organizational competency requirements using the information contained in the training specification. The adapted model should include the following elements (Table 6-1 may be used as a template for an adapted competency model):

- a) A list of competencies and a description of each. A generic ICAO competency framework provides a set of competencies that would typically be needed to perform the dangerous goods tasks listed in the task list that was developed when analysing the training needs (Part 2.3 - Workflow 1). The vast majority of adapted competency models will contain similar lists of competencies, but there may be a need to add or remove a competency depending on the employers' own operational and organizational environments.
- b) Performance criteria for assessing competency

including:

- 1) Observable behaviours for each competency. The generic ICAO competency framework provides a comprehensive list of observable behaviours associated with each of the competencies. Appropriate observable behaviours may be selected from it, adapted from it, or added to it.
- 2) Competency standards and conditions used to assess competency. Competency standards apply to all observable behaviours and relate to compliance with the standards and procedures and rules and regulations as described in relevant documents (e.g. national rules, the Technical Instructions, local operations manuals). In some instances, there may be specific standards associated with a particular observable behaviour.

**Table 6-1. Template for an adapted competency model**

<i>Adapted competency</i>	<i>Description</i>	<i>Performance criteria</i>		
		<i>Observable behaviour</i>	<i>Competency assessment</i>	
<i>Adapted competency 1</i>	<i>Description 1</i>	OB 1	<b>Final competency standard</b>	<b>Conditions</b>
		OB 2		
		OB n		
<i>Adapted competency 2</i>	<i>Description 2</i>	OB 1	<b>Final competency standard</b>	<b>Conditions</b>
		OB 2		
		OB n		
<i>Adapted competency 3</i>	<i>Description 3</i>	OB 1	<b>Final competency standard</b>	<b>Conditions</b>
		OB 2		
		OB n		

### 6.3 Relationship between the adapted competency model and the assessment and training plans

6.3.1 The training specification developed in Workflow 1 (see 2.3.2) serves as the common basis for the development of the adapted competency model and the training and assessment plans. The task list is generally used to aid the selection of the observable behaviours from the generic competency framework provided in Chapter 3. The operational, technical, regulatory and organizational requirements aid the development of the conditions and standards that will apply to the competencies and observable behaviours.

6.3.2 The same task list and requirements are used to develop the training plan. The training plan is used to prepare the trainees to undertake assessment to determine if they are competent in accordance with the adapted competency model. The adapted competency model and the training plan are used to develop the assessment plan.

6.3.3 The syllabus in the training plan is composed of training objectives derived from tasks and sub-tasks as well as the underlying KSA necessary to perform them. The KSA are determined on the basis of the task list in conjunction with operational, technical, regulatory and organizational requirements.

Chapter 5 provides a generic task/knowledge matrix table that can be used as a tool to map out the knowledge necessary to perform specific tasks. Tasks corresponding to the list provided in Chapter 3 are listed across the columns of the table and subject matter (knowledge) is listed down the rows. The employer should indicate what knowledge is needed for a particular task within the organization with a check mark at the point at which the task element and the knowledge element intersect. To facilitate this process, some knowledge components have been blacked out if they are considered to be completely irrelevant to specific tasks. The level of knowledge and/or skills necessary will differ depending on the task. For example, the person accepting dangerous goods will not require the same level of knowledge and/or skills related to classification as someone who is classifying dangerous goods.

6.3.4 When assessing whether competence has been achieved, the adapted competency model, not the syllabus, is referenced. Consequently, the performance criteria are used to assess if competence has been achieved, and the tasks/sub-tasks that are carried out by the trainee are the “vehicle” for enabling the assessment to be conducted. Figure 2- 6 illustrates the relationship between Workflows 1 and 2.

## REFERENCES

1. Annex 18 — The Safe Transport of Dangerous Goods by Air
2. Annex 19 — Safety Management
3. Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868)
4. Safety Management Manual (SMM), Doc 9859, 4th Edition, 2018.
5. Technical Instructions for the Safe Transport of Dangerous Goods by Air (Technical Instructions) (Doc 9284)

— — — — —



## APPENDIX B

### LIST OF ACTIONS

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.1.1</b> – Doc 10147 Reference H;6.2.1	To consider whether the term “identify” would be a more appropriate term to use, instead of <i>detect</i> .	Complete Finalized	Proposal is accepted	Appendix A to Chapter 5 – H;6.2.1.
<b>Comment 1.1.2</b> – Doc 10147 Reference H;6.2.2 and H;6.2.4	To consider whether it should be clarified that the task to interpret the NOTOC primarily applies to operators who are approved to carry dangerous goods.	Complete Finalized	<p>It is highlighted that Doc 10147 is guidance material and therefore indicative.</p> <p>It is proposed to include within Appendix A to Chapter 5 - 6.2.2 “only applies to an approved operator” within brackets .</p> <p>A proposal was made to restructure/modify the introduction of the Appendix A to chapter 5, as the necessity of customisation is already addressed but not clear for everyone. Martial will come up with a proposal.</p>	Appendix A to Chapter 5 – H;6.2.2

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.1.3</b> – Doc 10147 Reference H;6.2.5	To consider whether the responsibility for flight crew to notify emergency services of dangerous goods on board of the aircraft should be deleted.	Complete Finalized	Following the different discussions, it was proposed to remove activities 6.2.4 and 6.2.5 from the general dangerous goods task list. It is considered that these activities are currently covered via 6.2.3. Therefore, 6.2.4 and 6.2.5 will be deleted from the Chapter 4 but also from all the well defined roles in the Appendix A to Chapter 5.	Appendix A to Chapter 5 – H;6.2.3
<b>Comment 1.1.4</b> – Doc 10147 Reference H;7	To consider whether the text on <i>Collecting safety data</i> should be rephrased.	Complete Finalized	Some participants agreed that the text of task <i>collecting safety data</i> could be rephrased, others believe that the proposal could cause unnecessary confusion. No agreement reached. It is proposed to include “Reporting safety data”.	Appendix A to Chapter 5 – H;7.
<b>Comment 1.1.5</b> – Doc 10147 Reference J;5	To consider whether cabin crew do not “typically” accept baggage.	Not supported	Working group considered that while cabin crew might not typically accept baggage, they do monitor it.	-

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.1.6</b> – Doc 10147 Reference J ; 6.2.1	To consider whether “identify” would be the appropriate term, instead of <i>to detect</i> .	Complete  Finalized	Agreed.	Appendix A to Chapter 5 – J;6.2.1
<b>Comment 1.1.7</b> – Doc 10147 Reference J;6.2.2, J;6.2.4 and J;6.2.5	To consider the deletion of these activities for cabin crew.	Complete  Finalized	Agreed	Appendix A to Chapter 5 – J;6.2.1 and J;6.2.3.
<b>Comment 1.1.8</b> – Doc 10147 Reference H;7	To consider whether activities H;7.1 and H;7.2 (collecting safety data) are inappropriate for flight crew – needs to be checked	Not supported	Working group emphasized the importance of collecting safety data for everyone in the supply chain. Second, it is considered that the activity requires a specific person to do so, and the activity itself cannot be performed by the operator.	-
<b>Comment 1.2.1</b> - The comment raised concerns about the inadequacy of information in the record of training for auditing and transferability.	To provide proposed amendments to TI’s Part 1;4.	Not supported	Proposal is delivered by Eric and will be discussed at a later stage.  After DGP-WG/25, it is decided by the Panel that the WG/Training will focus on the proposed amendments to ICAO Doc 10147.	-

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.2.2 –</b> The comment	To consider whether the text of paragraph 2.2.1 under Doc 10147	<b>Not supported</b>	Participants agreed that the text of paragraph	-
expresses concerns that the components mentioned in 2.2.1. of Doc 10147, which are deemed <i>essential</i> in providing a competent workforce for the safe and efficient transport of dangerous goods by air, might not be incorporated by States into their national regulation and approval process as they are considered Guidance material. Therefore, it is requested to transform paragraph 2.2.1 into a Standard.	should be transformed into a Standard.		2.2.1. should not be transformed into a Standard, given the limited time for the WG to carry this out and the link with the PANS-TRG (Doc.9868).	
<b>Comment 1.2.2 –</b> It is highlighted that the text of paragraph 2.2.1 needs to be simplified.	To provide a proposal for a simplified text for comment 2.2.1 of Doc 10147.	<b>Complete Finalized</b>	Proposal is delivered by Martial and will be discussed at a later stage.	Chapter 1.2.1.



Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.2.3</b> – The comments suggests to transform the evaluation of the effectiveness of the training program at the end of each two-year period into a Standard. The value of such reviews in enhancing the safety over time is widely agreed by participants.	To consider whether the comment should be placed within the TI's or Annex 18.	Not supported	Participants highlight that the evaluation is already part of the training program, and refer to the note in Annex 18, Chapter 9.1 Note 1. It is concluded that there is not a need now for additional Standards or requirements.	-
<b>Comment 1.2.4.</b> – The comment	To rewrite the text of Doc 10147 4.1.1.	Complete	Eric and Tom will cooperate on this	Chapter 4.1.1 and 4.1.2.
questions the differentiation between 4.1.1. and 4.1.2., both seemingly representing the same task.		Finalized	matter and come with a proposal.	
<b>Comment 1.2.5</b> – The comment highlights that the current paragraph 6.2.3 on Emergency procedures is not assigned to the example adapted task lists for certain well-defined roles.	To consider the comment and determine whether 'Emergency Procedures' should be included in the basic training for all personnel.	Complete Finalized	Proposal is delivered.	Appendix A to Chapter 5 – C;6.2.3, D;6.2.3, E;6.2.3, F;6.2.3.

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.2.6</b> - The comment emphasizes the need to create Guidance material on adapted competency models and final competency standards for well-defined roles and their associated tasks/sub-tasks.	To propose new Guidance material on adapted competency models and final competency standards for well-defined roles	Complete Finalized	Guidance on developing an adapted competency model is in Chapter 6.	Chapter 6.
<b>Comment 1.2.7</b> – The comment suggest that the content of the knowledge table needs to be reviewed, as in some instances it is very specific, whereas other critical knowledge areas are omitted.	To update the knowledge table.	Complete	Eric and Tom will cooperate on drafting a proposal. It was decided by the WG to adhere to the current and more general Chapter 5.	Chapter 5.
<b>Comment 1.2.8</b> – The comment highlights that - Regarding State personnel - there is a task list in the Supplement, but no adapted	To propose an example of an adapted competency model a.o. for State personnel. Update Task list Supplement.	Complete Finalized	Guidance on developing an adapted competency model is provided in Chapter 6.	Chapter 6.
competency model, associated knowledge, or final competency standards.				

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.2.9</b> – The comment questions whether necessary practical motor skills should be included within the dangerous goods training programme.	To propose how the practical use of tools (practical motor skills) can be integrated within the dangerous goods training programme.	Not supported	The working group lays emphasis on the function of the guidance material being indicative rather than prescriptive.	-
<b>Comment 1.2.10</b> – The Comment advocates to transit the legacy requirements for the training programmes of designated postal operators and security personnel to the CBTA approach.	To propose how the CBTA approach can be integrated into the training programmes of designated postal operators.	Complete	It is highlighted that in the past, there was a discussion about the CBTA approach for designated postal operators. At that time, it was concluded that ‘imposing the CBTA approach to designated postal operators’ was not as simple as it looks.	-
<b>Comments 1.3.1 and 1.3.2</b> – The comments highlight the importance of information sharing on States’ best practices.	To facilitate the online sharing of best practices via the ICAO website.	In process	Teun will contact Lynn on this matter.	-

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.3.3</b> – The comment suggest that a summary/overview of the interactions between the new nations introduced by the CBTA approach is valuable.	To write a proposal which includes a summary of the interactions.	Complete Finalized	The proposal will be discussed at a later stage.	Chapter 1.2.8.
<b>Comment 1.3.4</b> – The comment highlights the need for a simplified descriptions of workflows.	To write a proposal which includes a simplified description of workflows.	Complete Finalized	The proposal will be discussed at a later stage.	Appendix A to Chapter 2.
<b>Comment 1.3.5.</b> – The comment necessitates the need for development of the levels of proficiency.	To propose a further developed description of the levels of proficiency.	Complete	The proposal will be discussed at a later stage.  It was finally decided by the WG that the clarification of the levels of proficiency create more ambiguity than clarity.	-
<b>Comments 1.3.6 and 1.3.7</b> – The comments emphasizes the necessity of an adapted competency model and claim that the difference between the roles and functions are difficult to understand and need further clarification.	To update paragraph 2.2.1 of Doc 10147, specifically the well-defined roles listed in the Appendix A.	Complete Finalized	The proposal will be discussed at a later stage.	Appendix A to Chapter 5.

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comments 1.5.1, 1.5.2 and 1.5.3</b> – The comments highlight that the well-defined roles and terminology should be improved within the TI's 1;4, 1;4.1 and 1;4.1.	To improve the existing text regarding the well-defined roles and terminology used throughout ICAO TI's 1;4, 1;4.1 and 1;4.1.1.	Complete Finalized	The proposal will be discussed at a later stage.	Appendix A to Chapter 5.
<b>Comment 1.5.4.</b> – The comment suggests to revise the text of 4.1.2 of the TI's.	Proposal is provided and accepted by the WG.	Complete Finalized	The proposal will be discussed at a later stage.	-
<b>Comment 1.5.6</b> – The comment suggest to revise the Dangerous Goods Task List from ICAO Doc 10147 Chapter 4.	Proposal is provided and accepted.	Complete Finalized	The proposal will be discussed at a later stage.	Chapter 4.
<b>Comment 1.5.7</b> – The comment notes that the	To propose a revised Appendix A, including Task 7.	Complete Finalized	The proposal will be discussed at a later stage.	Appendix A to Chapter 5.
Appendix A from ICAO Doc 10147 does not include task 7.				

Comments	Action points	Deadline	Discussion	Location in Doc 10147
<b>Comment 1.5.8</b> – The comment suggests that the text in the introduction of ICAO Doc 10147 Appendix A to Chapter 5 should be modified to encompass all types of operators.	To propose a clarifying note for ICAO Doc 10147 Appendix A to Chapter 5.	Complete Finalized	The proposal will be discussed at a later stage.	Appendix A to Chapter 5.

-----

**APPENDIX C**  
**PROPOSED ANC JOB CARD**

<b>DGP.00X.01</b>	<b>Dangerous goods training</b>
<b>Source</b>	DGP/30, Recommendation XX
<b>Problem Statement</b>	Existing guidance material to support implementation of dangerous goods training provisions is overly complicated and challenging to understand, as it is considered to theoretical.
<b>Specific Details</b>	<p>New training provisions in the Technical Instructions became mandatory in 2023 after a two—year transition period. The revised provisions support a competency-based approach to dangerous goods training and assessment as a methodology that can be used to ensure personnel are competent to perform functions for which they are responsible. They are not intended to exclude other methodologies that would achieve the same intent. Supporting guidance is contained in <i>Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment</i> (Doc 10147). Industry members implementing competency-based training and assessment for dangerous goods and State regulators overseeing dangerous goods training programmes indicate that the material is overly theoretical and challenging to understand, thereby complicating practical implementation. A study conducted by the DGP Working Group on Training based on this feedback identified the need to simplify the guidance with the aim of facilitating a practical implementation of the training provisions in the Technical Instructions. It also identified a potential need for improvement of the training provisions in the Technical Instructions to promote a more consistent implementation of the provisions, provided this would only be considered to address a clear problem that could only be addressed through regulation.</p> <p>There are concerns that the guidance material being perceived by States and industry as the only way of implementing the training provisions in the Technical Instructions, which is not the intent. Efforts need to be taken to eliminate this incorrect perception and not to add to it. The DGP Working Group on Training should ensure that other DG training materials and relevant ICAO documents will be aligned to maintain consistency and coherence across all related training guidance.</p>
<b>GANP/GASP Link</b>	GASP 3.3: Operational safety risks
<b>Expected Benefits</b>	Improved safety as a result of a more competent and consistent dangerous goods workforce globally
<b>Reference Documents</b>	DGP-WG/24 Report (paragraph 4.2.2) DGP/30 Report, Recommendation xx
<b>Primary Expert Group:</b>	Dangerous Goods Panel (DGP)

	WP E No.	Document Affected Actions Needed or	Description of Amendment proposal or Action	Supportin g Expert Group	Status	Expected dates:		
						Delivery	Effectiv e	Applicab ility
✓		Actions	Review training provisions in Doc 9284 and supporting guidance in Doc 10147 to identify inconsistencies or gaps that result in inadequately trained personnel	FLTOPSP - SCGSWG		Q4 2027	Q4 2027	Q4 2029
✓		Doc 10147	Simplify guidance to support dangerous goods training allowing for practical implementation	FLTOPSP		Q4 2027	Q4 2027	Q4 2029
✓		Doc 9284	If necessary, amend to eliminate any identified gaps while avoiding the addition of prescriptive provisions	FLTOPSP		Q4 2027	Q4 2027	Q4 2029
Status:			Priority:	Initial Issue Date:	Date Approved by ANC:	Session / Meeting:		
RATIONALE								

— END —