



DANGEROUS GOODS PANEL (DGP)

TWENTY-SIXTH MEETING

Montréal, 16 to 27 October 2017

Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2019-2020 Edition

GUIDANCE MATERIAL FOR DANGEROUS GOODS TRAINING DEVELOPED BY THE DGP WORKING GROUP ON TRAINING

(Presented by the Chairman of the DGP Working Group on Training)

SUMMARY

This working paper presents guidance material for dangerous goods training developed by the DGP Working Group on Training. It supports the new training provisions in Part 1;4 that are provided in DGP/26-WP/39. The guidance material has been modified from the material contained in Chapters 2 to 5 of Attachment 4 to the 2017-2018 Edition of the Technical Instructions to address issues identified at DGP-WG/17 through feedback provided by States, international organizations and industry on the proposed training provisions (see paragraph 3.2.1.5 of the DGP-WG/17 Report (DGP/26-WP/3)). The guidance material has also been modified to align with the competency-based training and assessment provisions contained in Amendment 5 to the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868).

The DGP Working Group on Training recommends including this material in a new ICAO circular and that an electronic version of it be made freely available on the ICAO public website.

Action by the DGP: The DGP is invited to review the guidance material provided in the appendix to this working paper and to recommend that ICAO publish the material in a new circular.

APPENDIX

GUIDANCE ON A COMPETENCY-BASED APPROACH TO DANGEROUS GOODS TRAINING AND ASSESSMENT

GUIDANCE ON A COMPETENCY-BASED APPROACH TO DANGEROUS GOODS TRAINING AND ASSESSMENT

Chapter 1

GENERAL

1.1 INTRODUCTION

1.1.1 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 them. A competency-based approach to training and assessment is an effective way to ensure this requirement is met.

1.1.2 This document provides guidance in implementing a competency-based approach to dangerous goods training and assessment for personnel involved in the transport of cargo, mail, passengers and baggage by air. The *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868) contains greater detail on competency-based training and assessment.

1.2 COMPETENCY-BASED TRAINING AND ASSESSMENT

1.2.1 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 A competency is defined by the PANS-TRG as 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. A competency framework with associated performance criteria provides a means of assessing whether trainees achieve the desired performance. A competency framework and associated task list for dangerous goods personnel is described in paragraph 1.7.

1.2.3 A critical feature of competency-based training is assessment to ensure training is efficient and effective in developing the skills, knowledge and attitudes required to perform the function competently.

Note.— Competency-based training and assessment is described in more detail in the PANS-TRG, Part I, Chapter 2.

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

1.3.1 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 knowledge, skills and attitudes needed to perform effectively; and
- e) establishing sufficient, well-trained and competent instructors.

1.3.2 Ensuring personnel are able to perform their functions competently is critical to any organization. A competent workforce reduces cost caused by poor performance or miscommunication of job expectations. An incompetent dangerous goods workforce could result in costs and delays in shipment. 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 they are aware of the hazards posed and the required measures to mitigate them. If personnel performing these functions are not trained to competently perform them, unknown risks may be introduced into air transport. As another example, accepting dangerous goods for air transport requires an operator to verify that dangerous goods are properly prepared for transport through use of a checklist. If personnel accepting dangerous goods are not trained to competently perform this function, they may unnecessarily reject properly prepared shipments thereby delaying shipments and increasing costs to the shipper and the operator. Alternatively, personnel not trained to competently perform this function may accept improperly prepared shipments of dangerous goods into air transport thereby introducing risks to the aircraft and its occupants.

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

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

1.4.1 Safety is ICAO's guiding and most fundamental strategic objective. Annex 19 to the Convention on International Civil Aviation — *Safety Management* contains Standards and Recommended Practices (SARPs) intended to assist States in managing aviation safety risks. The foundation of safety management is the implementation of a State safety programme (SSP) by States and safety management systems (SMS) by service providers. An operator's SMS addresses the aviation activities that are related to the safe operation of the aircraft in accordance with Annex 6, Part I or Part III. These aviation activities include the carriage of dangerous goods. Other entities in the dangerous goods transport chain should be encouraged to implement a similar safety system.

1.4.2 Implementing SMS requires that all personnel understand the safety philosophy and embrace a disciplined and standardized approach for SMS. Personnel need to know their roles and responsibilities with respect to dangerous goods and have the requisite competencies to perform their functions within the SMS. To ensure that personnel have the knowledge, skills and abilities to support SMS, training activities should follow the competency-based approach.

1.4.3 The "Swiss-Cheese" Model of accident causation proposes that complex aviation systems are extremely well defended by layers of defences making single-point failures rarely consequential in such systems (see paragraph 2.2 of the *Safety Management Manual (SMM)* (Doc 9859)). The model illustrates that accidents involve successive breaches of multiple system defences and that all accidents include a combination of both active conditions (actions or inactions that have an immediate adverse effect) and latent conditions (conditions that exist in the aviation system well before a damaging outcome is experienced). Doc 9859 identifies training as one of the three main groups of defences in aviation and identifies deficiencies in training as a latent condition.

1.5 FUNCTION-SPECIFIC TRAINING

1.5.1 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 personnel perform and not by their job titles. Concentrating on functions and responsibilities rather than a job title or 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. The ground handling and freight forwarder personnel would need to be trained to perform these functions competently regardless of their job title.

1.5.2 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 only perform a small number of functions. They would only need to be trained to perform those specific functions competently.

1.5.3 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.

1.6 ROLES AND RESPONSIBILITIES IN A COMPETENCY-BASED APPROACH TO TRAINING

1.6.1 Employer

1.6.1.1 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, learning objectives, assessment methods, and course materials.

1.6.1.5 The employer must study the target population (future trainees) with a view to identifying the knowledge, skills and attitudes 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.

1.6.1.6 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, whether or not the training needs are being addressed needs to be the deciding factor in selecting a third party and not costs alone. The potential for third parties to cater to the training needs of multiple employers and not address all required competencies needs to be taken into account. Employers remain responsible for ensuring its 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.

1.6.1.7 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,

1.6.2 Instructor

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

1.6.3 Trainee

1.6.3.1 In competency-based training, trainees are active participants in their learning process and the achievement of competencies as opposed to 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. Trainees' feedback is essential in ensuring that competency-based training is effective.

1.6.4 Regulator

1.6.4.1 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 authority 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 all trainees have passed the required test does not necessarily mean that they can competently perform their assigned functions.

1.6.4.2 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.

1.7 DEVELOPING COMPETENCY-BASED TRAINING FOR DANGEROUS GOODS

1.7.1 Adapted competency model

1.7.1.1 In order to focus training and assessment on how personnel are expected to competently perform on the job, a description of this performance in the particular operational and environmental context is needed. An adapted competency model is an effective tool for defining successful job performance. The model with associated performance criteria provides a means of assessing whether trainees achieve the desired performance. A generic ICAO competency framework for dangerous goods personnel is provided in Chapter 2, Table 2-1. It consists of competencies and their associated descriptions and

observable behaviours and forms the basis from which an adapted competency model is derived. Employers implementing competency-based training and assessment should adapt this framework to reflect their specific requirements. The adapted competency model will include the final competency standards and conditions that need to be assessed in addition to the adapted competencies and their associated descriptions and observable behaviours. A template for an adapted competency model is provided in Chapter 2, Table 2-2.

1.7.2 Relationship between competencies and tasks

1.7.2.1 Traditional approaches to training development involve the decomposition 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.

1.7.2.2 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, a limited number of competencies are defined. Typically, an activity will involve several competencies and competencies may apply across a variety of activities and contexts. In the design of training and assessments, tasks and activities are incorporated because they are good candidates for facilitating, developing or assessing a competency or competencies. Specific tasks may be used to develop specific competencies. Lack of specific competencies may be identified as root causes for the failure of a task.

1.7.2.3 A generic list of tasks typically performed by dangerous goods personnel is provided in Chapter 3. It consists of dangerous goods tasks and sub-tasks. A complementary flowchart is provided in Chapter 4. It illustrates the typical processes of performing these tasks. The employer should adapt this task list to reflect the specific tasks performed by its personnel.

1.7.3 Development and implementation of competency-based training and assessment programmes

1.7.3.1 Phase 1 — Training needs analysis

1.7.3.1.1 The first phase in the development and implementation of a competency-based training programme specific to an employer's environment and requirements is to conduct a training needs analysis. An employer conducts a training needs analysis to determine the results that the training needs to achieve and what resources exist to achieve these results. This critical step will ensure that the training fits the employer's purpose and is effective. A training specification is developed during this phase of development that details the requirements that need to be fulfilled when designing the training. This should include the purpose of the training along with its requirements, including operational, technical, regulatory and organizational. This phase also involves the development of the task list (see paragraph 1.7.2).

1.7.3.2 Phase 2 — Design local competency based training and assessment

The second phase in the development and implementation of a competency-based training and assessment programme is its design. This is done taking into account the training specifications identified in Phase 1 (see paragraph 1.7.3.1) and will involve:

- a) designing an adapted competency model that addresses the training specification identified in Phase 1 (see 1.7.3.1);
- b) designing an assessment plan that will be used to assess the competence of trainees;
- b) designing a training plan that will enable the development and delivery of the training course.

1.7.3.2.1 Designing the adapted competency model

The competency model for dangerous goods should be adapted from the generic ICAO competency framework provided in Chapter 2. This generic framework provides a set of competencies that are typically needed to perform the dangerous goods tasks identified in the generic task list provided in Chapter 3. 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. The generic framework also provides a comprehensive list of observable behaviours associated with each of the competencies. The appropriate observable behaviours should be selected from it and, if necessary, adapted.

1.7.3.2.2 Designing an assessment plan

1.7.3.2.2.1 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 tested and of obtaining consistent results when administered by different instructors.

1.7.3.2.2.2 The assessment of personnel can be accomplished in a variety of ways. Some common examples 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 might choose to utilize one assessment method or a combination of multiple assessment methods, as long as the assessment confirms that personnel have acquired the necessary competencies to perform the assigned functions. The employer therefore establishes the assessment list with all the tests to conduct.

1.7.3.2.2.3 The tests allow an assessment of the trainee by comparing the trainee's performance with interim or final competency standards.

1.7.3.2.2.4 Employers electing to send personnel to third-party training providers should establish a process for ensuring that there is an assessment of the personnel in the workplace to verify that they are able to perform their assigned tasks competently.

1.7.3.2.3 Designing a training plan

1.7.3.5.1 The training plan details the:

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

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

1.7.3.2.4 Relationship between the adapted competency model and the assessment and training plans

1.7.3.6.1 The training specification developed in Phase 1 (see paragraph 1.7.3.1) 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 2. The operational, technical, regulatory and organizational requirements aid the development of the conditions and standards that will apply to the competencies and observable behaviours.

1.7.3.6.2 The same task list and requirements are used to develop the training plan. The training plan is used to prepare the trainee 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.

1.7.3.6.3 The syllabus in the training plan is composed of training objectives derived from tasks and sub-tasks as well as the underlying knowledge, skills and attitudes necessary to perform them. The knowledge, skills and attitudes 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 tool that can be used as a tool to map out the knowledge that is 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.

1.7.3.6.4 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.

1.7.3.3 Phase 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 on the adapted competency model and 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.

1.7.3.4 Phase 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.

1.7.3.5 Phase 5 — Evaluate the course including the training and assessment plans

1.7.3.5.1 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.

2.7.3 Guidance on using the generic competency framework, task list and task/knowledge matrix tool

2.7.3.2 Adapting the generic competency framework provided in Chapter 2, the task list provided in Chapter 3 and the task/knowledge matrix tool provided in Chapter 5 is not an obligation but is recommended in order to achieve the best performance in dangerous goods training. Adapted task lists for certain well-defined roles are also provided in Chapter 6. It is important to understand that these lists are purely guidance. The employer is responsible for ensuring its personnel are competent to perform the functions for which they are responsible and must therefore ensure that training programmes are designed to accomplish this.

Chapter 2

**GENERIC COMPETENCY FRAMEWORK FOR DANGEROUS GOODS PERSONNEL
AND TEMPLATE FOR ADAPTED COMPETENCY MODEL**

This chapter contains a generic ICAO competency framework for dangerous goods personnel (Table 2-1) and a template for an adapted competency model (Table 2-2). These are described in Chapter 1, paragraph 1.7. Employers implementing competency-based training and assessment should adapt the framework in Table 2-1 into a competency model based on their specific requirements. The adapted competency model should include the elements shown in Table 2-2.

Table 2-1. 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, team working and self-management	Encourages team participation and open communication
		Demonstrates initiative and provides direction when required
		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		

<i>Generic competency</i>	<i>Description</i>	<i>Observable behaviour</i>
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
		Employ(s) 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 Management	Maintain available workload capacity by prioritizing and distributing tasks using appropriate resources	Exercises self-control in all situations
		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

Table 2-2. 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>	Description 1	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		
<i>Adapted competency 2</i>	Description 2	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		
<i>Adapted competency 3</i>	Description 3	OB 1	Final competency standard	Conditions
		OB 2		
		OB n		

Chapter 3

DANGEROUS GOODS TASK LIST

This chapter contains a generic list of tasks typically performed by dangerous goods personnel (Table 3-1) as described in Chapter 1, paragraph 1.7. The employer should adapt this task list to reflect the specific tasks performed by its personnel.

Table 3-1. Generic dangerous goods task list

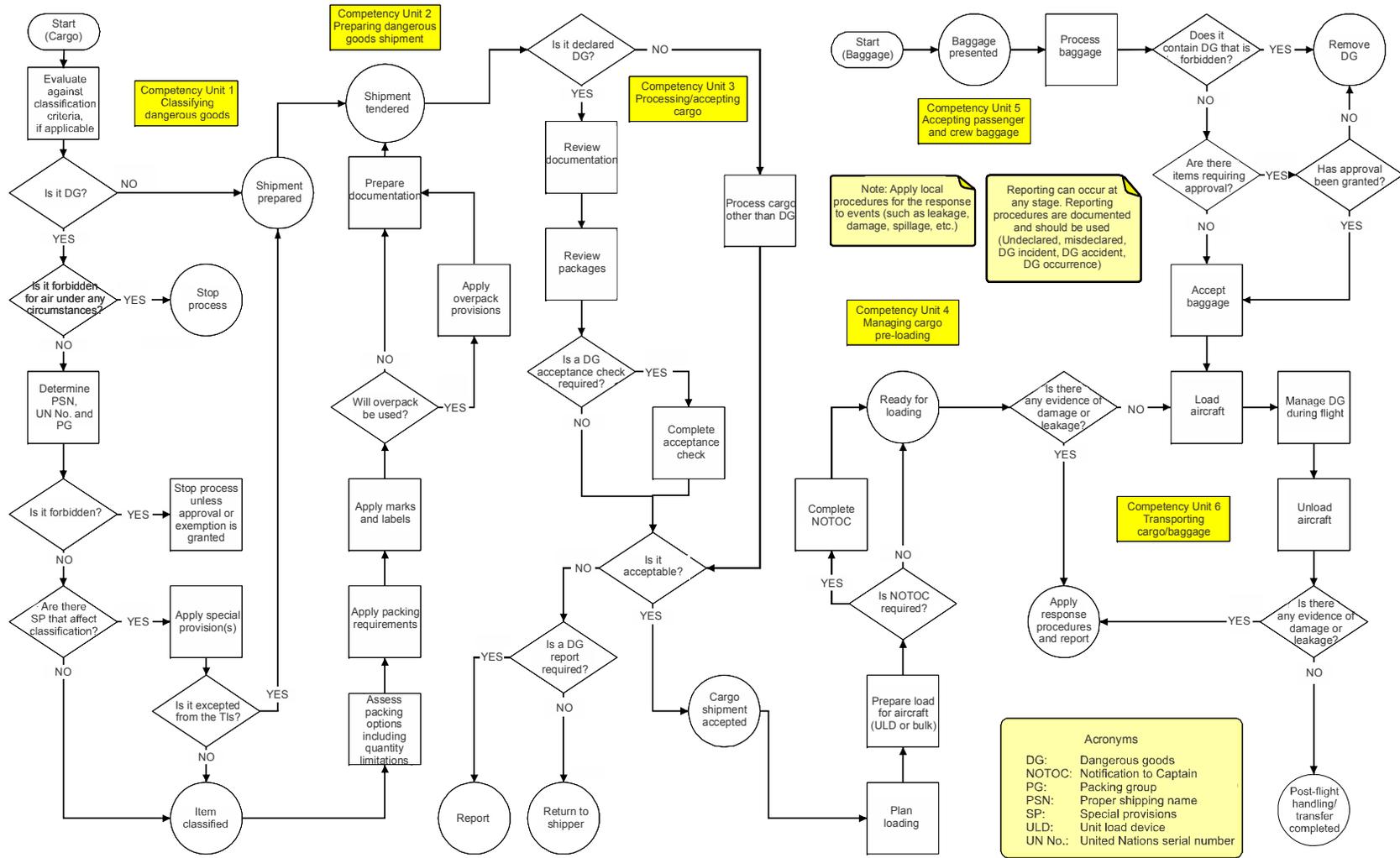
1	Classifying dangerous goods			
	1.1	Evaluate substance or article against classification criteria		
		1.1.1	Determine if it is dangerous goods	
		1.1.2	Determine if it is forbidden under any circumstances	
	1.2	Determine dangerous goods description		
		1.2.1	Determine class or division	
		1.2.2	Determine 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	
2.3		Apply marks and labels		
		2.3.1	Determine applicable marks	
		2.3.2	Apply marks	
		2.3.3	Determine applicable labels	
2.4		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
	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	Detect presence of dangerous goods not permitted in baggage
		6.2.2	Interpret NOTOC
		6.2.3	Apply procedures in the event of an emergency
		6.2.4	Inform flight operations officer/flight dispatcher/air traffic control 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	Collecting 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	

Chapter 4

DANGEROUS GOODS FUNCTIONS — PROCESS FLOWCHART



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. Collecting 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
Provision of information																								
Provisions concerning passengers and crew																								
Provisions to aid recognition of undeclared dangerous goods																								
Helicopter operations																								
Provisions for dangerous goods carried by passengers or crew																								

Tasks

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|---|--|
| <ol style="list-style-type: none"> 1. Classifying dangerous goods <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 3.1 — Review documentation 3.2 — Review package(s) 3.3 — Complete acceptance procedures 3.4 — Process/accept cargo other than dangerous goods | <ol style="list-style-type: none"> 4. Managing cargo pre-loading <ol style="list-style-type: none"> 4.1 — Plan loading 4.2 — Prepare load for aircraft 4.3 — Issue NOTOC 5. Accepting passenger and crew baggage <ol style="list-style-type: none"> 5.1 — Process baggage 5.2 — Accept baggage 6. Transporting cargo/baggage <ol style="list-style-type: none"> 6.1 — Load aircraft 6.2 — Manage dangerous goods pre and during flight 6.3 — Unload aircraft 7. Collecting safety data <ol style="list-style-type: none"> 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 |
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Chapter 6

ADAPTED TASK LISTS FOR CERTAIN WELL-DEFINED ROLES

A. INTRODUCTION

The examples below indicate the tasks from the task list provided in Chapter 3 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 chapter 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 less responsibilities to 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 Collecting 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/must] 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 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

7 Collecting 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 air waybill
 - 3.1.2 Verify dangerous goods transport document
 - 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

7 Collecting 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
 - 6.1.7 Inform pilot-in-command and flight operations officer/flight dispatcher
- 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

7 Collecting 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

7 Collecting 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
 - 4.1.2 Determine segregation, separation, aircraft/compartment 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. FLIGHT CREW

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 Detect presence of dangerous goods not permitted in baggage
 - 6.2.2 Interpret NOTOC
 - 6.2.3 Apply procedures in the event of an emergency
 - 6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
 - 6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency

7 Collecting 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. FLIGHT OPERATIONS OFFICERS AND FLIGHT DISPATCHERS

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 during and flight
 - 6.2.1 Detect presence of dangerous goods not permitted in baggage
 - 6.2.2 Interpret NOTOC
 - 6.2.3 Apply procedures in the event of an emergency
 - 6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
 - 6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency

J. CABIN CREW

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 flight
 - 6.2.1 Detect presence of dangerous goods not permitted in baggage
 - 6.2.2 Interpret NOTOC
 - 6.2.3 Apply procedures in the event of an emergency
 - 6.2.4 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
 - 6.2.5 Inform emergency services of the dangerous goods on board in the event of an emergency

7 Collecting 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 PASSENGERS AND CREW AND THEIR BAGGAGE, CARGO AND MAIL

The following are tasks that personnel responsible for the screening 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
