



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-THIRD MEETING

Montréal, 11 to 21 October 2011

Agenda Item 5: Resolution, where possible, of the non-recurrent work items identified by the Air Navigation Commission or the panel:

5.4: Development of performance standards for State employees

COMPETENCY FRAMEWORK FOR STATE EMPLOYEES

(Presented by the Secretary)

SUMMARY

This working paper proposes an amendment to the Technical Instructions incorporating a reference to competency-based training and an amendment to the Supplement to the Technical Instructions incorporating guidance on competency based training along with a competency framework for State employees.

Action by the DGP: The DGP is invited to agree to:

- a) add a new paragraph 4.4 to Part 1, Chapter 4 of the Technical Instructions as presented in the appendix to this working paper;
- b) agree to the competency framework for State employees as presented in Appendix B to this working paper to be incorporated as a new Chapter 4 in Part S-1 of *the Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU); and
- c) add “competency frameworks” as a work item for the next biennium.

1. INTRODUCTION

1.1 At the DGP Working Group of the Whole Meeting in Atlantic City (DGP-WG/11, 4 to 8 April 2011), information was provided on the results of the DGP training working group; a draft competency framework for State employees involved in the regulation and oversight of air transport of dangerous goods was provided (Appendix B to this working paper). It was also noted that competency

frameworks for other dangerous goods personnel would be developed (DGP/23-WP/3, paragraph 3.5.6 refers).

1.2 Recognizing that the Next Generation of Aviation Professionals (NGAP) Task Force has yet to complete its work on the core competencies to be included in such frameworks, it is suggested as an interim measure that competency frameworks for all personnel involved in the air transport of dangerous goods should be included in the Supplement. Further discussion on the optimum location for this material should be held when complete frameworks together with guidance material have been developed.

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APPENDIX A

PROPOSED AMENDMENTS TO THE TECHNICAL INSTRUCTIONS

Part 1

GENERAL

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Chapter 4

TRAINING

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4.4 COMPETENCY-BASED TRAINING AND ASSESSMENT

Competency-based training and assessment should be used in accordance with the general provisions contained in Chapter 2 of the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868).

APPENDIX B

PROPOSED AMENDMENT TO THE SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS

Part S-1

GENERAL

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Insert the following new text:

Chapter 4

COMPETENCY FRAMEWORK FOR STATE EMPLOYEES INVOLVED IN THE REGULATION AND OVERSIGHT OF TRANSPORT OF DANGEROUS GOODS BY AIR

1.1 INTRODUCTION

1.1.1 The objective of this chapter is to provide guidance to States in implementing competency-based training and assessment for personnel engaged in policies, regulation, inspection and supervision of work related to the transport of dangerous goods by air. It includes a competency framework for the uniform implementation of training and assessment required for State employees who must ensure compliance with their State's obligations and with Annex 18 — *The Safe Transport of Dangerous Goods by Air*.

1.1.2 It is noted that States use a variety of systems to exercise safety oversight in the transport of dangerous goods by air. ICAO's safety oversight audits have identified discrepancies among States in their inspectors' performance standards and in the implementation of their respective civil aviation dangerous goods programmes. For example, one State may have a clearly-defined process for the approval of dangerous goods training programmes while another may not. Applying a common competency framework would result in harmonized performance standards of State employees.

1.1.3 A generic competency framework for State employees is at Attachment I to this chapter. This competency framework reflects safety-critical tasks and, when applied, will have a positive impact on specific dangerous goods functions and the ability of individuals to perform their jobs successfully and to the required standards. Each State must provide specific training for these functions to each of its employees involved in policy making, regulation and oversight of compliance of dangerous goods transported by air.

1.2 TERMINOLOGY

For the purpose of this chapter, the following terminology applies:

Air operator certificate. A certificate authorizing an operator to carry out specified civil air transport operations.

Competency. A combination of skills, knowledge and attitudes required to perform a task to the prescribed standard.

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 element. An action that constitutes a task that has a triggering event and a terminating event that clearly defines its limits, and an observable outcome.

Competency unit. A discrete function consisting of a number of competency elements.

Dangerous goods. Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions.

Inspection method. Techniques that are used during the course of evaluating compliance with relevant regulations. The inspection methods include:

- a) observation: visually observing the performance of regulatory requirements for compliance with relevant regulations;
- b) interview: a technique by which questions or discussions with persons performing transportation functions are used to gather information concerning the transportation of dangerous goods;
- c) document review: reviewing paper or electronic records to determine whether required documents are properly prepared, contain accurate information, and maintained as required by the regulations;
- d) verification: using third party information to independently confirm whether regulatory requirements are being met; and
- e) procedure evaluation: ensuring appropriate written procedures, addressing all regulated activities undertaken, are in place.

Operations manual. A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

Operator. A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Performance criteria. Simple, evaluative statements on the required outcome of the competency element and a description of the criteria used to judge whether the required level of performance has been achieved.

Shipper. A person, organization or enterprise undertaking any of the shipper's responsibilities of Part 5 of the Technical Instructions.

ATTACHMENT I TO CHAPTER 4

COMPETENCY FRAMEWORK FOR STATE EMPLOYEES

1. SCOPE OF THE COMPETENCY FRAMEWORK

The scope of the competency framework concerns State employees involved in the regulation and oversight of the transport of dangerous goods by air based on obligations of States according to the Convention on International Civil Aviation:

- a) the State is responsible for implementing a system for determining compliance with Annex 18;
- b) the application of the basic principles of a competency-based approach determines the performance level for State employees in carrying out their function to meet the State's obligations as defined by the Annex 18;

The competency framework has taken into account the "ICAO Safety Oversight Transport of Dangerous Goods Audit Checklist", itemizing the separate civil aviation dangerous goods programme activities required by a State:

- a) conduct initial review and approval of an operation manual and training programme on dangerous goods within the approval procedures for the AOC;
- b) conduct initial inspection of new operator or operator that intends to commence carriage of dangerous goods;
- c) conduct periodic inspection of the operator;
- d) conduct an ad-hoc inspection on dangerous shipping and handling procedures
- e) conduct an investigation on dangerous goods incidents and dangerous goods occurrences resulting from violations of the dangerous goods regulations;
- f) conduct a review of a revised operation manual on dangerous goods within the approval procedures for the AOC;
- g) conduct a review of a revised training programme for approval;
- h) conduct periodic inspection of shippers; and
- i) ensure that technical equipment required for inspection is being maintained and/or calibrated.

These activities have been included in the competency framework.

The details of the competency framework are based on common practices as applied by a number of States on training, operational procedures for inspection, surveillance and enforcement.

2. STRUCTURE OF THE DOCUMENT

Distinction is made between competencies of a "general nature" which are applicable to all State employees and competencies related to the actual "technical performance" of a State employee in relation to their specific tasks.

For task-related competencies, the basic competency framework is structured according to three levels defined in the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868): competency units, competency elements, and performance criteria. Further detailing at these three levels is derived from job and task analyses of common practices in some States.

Regarding the responsibilities of State employees and the principles applicable to the definition of the competency framework, distinction has been made between different functional levels: strategic, managerial and operational.

Taking into account the above, the competency framework for State employees is based on:

- a) Core competencies applicable to all State employees:
 - core competencies and personal attributes; and
 - general awareness, knowledge and skills;

- b) Competency units related to specific activities of State employees:
- establishing and maintaining dangerous goods oversight programmes;
 - conducting inspections for the certification/approval of an operator;
 - conducting inspections of operators;
 - conducting Inspections of dangerous goods shipper; and
 - conduct investigations,

3. CORE COMPETENCIES APPLICABLE TO ALL STATE EMPLOYEES

Core competencies have not yet been identified for State employees. This will be done once the work of the Next Generation of Aviation Professionals Task Force progresses its work and provides a standardized basis from which to work.

5. COMPETENCIES RELATED TO SPECIFIC ACTIVITIES OF STATE EMPLOYEES

Dangerous goods are articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions. The transport of dangerous goods is recognized as an integral part of a State's overall safety oversight programme. Each State must provide training to each of its dangerous goods employees which emphasizes a State's specific dangerous goods standards and regulations. Training should be designed so that it enables all State employees involved in dangerous goods oversight to perform their tasks. In the same manner in which States require industries performing dangerous goods related functions to be trained in the transport of dangerous goods, States should provide their employees with training commensurate with their responsibilities. Table S-1-1 identifies competencies related to the specific activities conducted by dangerous goods State employees.

Table S-1-1. Competency units, competency elements and performance criteria related to specific activities of State employees

<i>Competency element</i>	<i>Performance criteria</i>	<i>Reference</i>
1. Competency unit: Establish and maintain dangerous goods oversight programme		
Each State shall take the necessary measures to achieve compliance with Annex 18 and the detailed provisions contained in the Technical Instructions.		
The competency elements and related performance criteria at regulatory, policy and management level are as follows:		
Promulgate and maintain dangerous goods regulations	<ul style="list-style-type: none"> — ensure national dangerous goods regulations are complete and up-to-date — establish exemption and approval procedures — establish procedures for approving operations specifications for the transport of dangerous goods — establish regulations for oversight of shippers of dangerous goods — establish regulations for oversight of operators for dangerous goods responsibilities — participate with international rule making bodies as appropriate to support national safety programme — Initiate amendments to national dangerous goods regulations to implement changes to Standards and Recommended Practices (SARPs) and regulations. 	Annex 18, paragraph 2.7: National authority Each Contracting State shall designate and specify to ICAO an appropriate authority within its administration to be responsible for ensuring compliance with this Annex.

<i>Competency element</i>	<i>Performance criteria</i>	<i>Reference</i>
Establish and maintain dangerous goods oversight programmes	<ul style="list-style-type: none"> — develop dangerous goods programme policy process — develop risk-based inspection programme — establish inspection procedures and process — develop, implement and maintain inspection protocols and tools — develop compliance and enforcement programme and process — develop a framework for an education programme which includes response to public requests for advice and guidance — support dangerous goods related research and development — develop, implement and maintain initial and recurrent training programme for dangerous goods personnel — develop and maintain performance plans and objectives for dangerous goods personnel — develop and maintain occupational safety programme 	
Conduct planning and organization	<ul style="list-style-type: none"> — coordinate inspections programme — establish priorities (risk-based approach) — establish inspection procedures — establish exemption and approval procedures — coordinate input by staff into dangerous goods policies — develop a framework for an education programme and response to requests for advice and guidance 	<p>Annex 18 Paragraph 2.1: “...States concerned may grant an exemption from the provisions of the Technical Instructions...”</p> <p>Paragraph 2.5 Notification of variations from the Technical Instructions</p>
Special operations	<ul style="list-style-type: none"> — exercise sound judgment in granting of exemptions and approvals — determine suitability of an operator or shipper to be granted an exemption or approval — use judgment to detain an aircraft when appropriate 	<p>Annex 18 Paragraph 2.2.1: Each Contracting State shall take the necessary measures to achieve compliance with the detailed provisions contained in the Technical Instructions.</p>

2. Competency unit: Conduct inspection for certification/approval of an operator

An operator engaged in commercial operations needs an air operators certificate (AOC) issued by the State of the Operator. The AOC certification process for all operators includes elements related to dangerous goods (e.g. approval of training programmes and operations manual) to minimize the likelihood of safety being compromised by non-compliance with the requirements. Operators who wish to carry dangerous goods as cargo are subject to additional authorization, which is dependent on enhanced operational manuals and training programmes with adequate processes and procedures in place to ensure compliance with the requirements of the Technical Instructions.

Note.— Non-AOC operators are also subject to these requirements.

Review of the application and the operations manual	<p>Verify:</p> <ul style="list-style-type: none"> — the identification of the applicant (air operators, certificate and authorized operations/limitations) — completion of appropriate application forms — clarification of administrative details of the approval process — dangerous goods acceptance, handling, loading, inspection and transport procedures — dangerous goods documentation management — reporting procedures of dangerous goods incidents/accidents and undeclared or misdeclared dangerous goods — emergency response procedures during ground handling and notification to emergency services — emergency response guidance for incidents during flight and notification to ATC 	<p>Annex 6 Paragraph 4.2: Operational certification and supervision CAO audit checklist: Conduct an initial inspection of a new operator or an operator intending to commence carriage of dangerous goods.</p>
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<i>Competency element</i>	<i>Performance criteria</i>	<i>Reference</i>
	<ul style="list-style-type: none"> — adequacy and operation of the internal quality monitoring system to ensure compliance with the Technical Instructions 	
Approve operations manual	<ul style="list-style-type: none"> — reviewing and approving the operations manual associated procedures and supporting documents 	""
Inspect facilities	Conduct an inspection to verify: <ul style="list-style-type: none"> — the application by the operator's staff of the dangerous goods procedures for acceptance, handling, loading, inspection and transport — familiarization of the operator's staff accepting and handling the dangerous goods consignments and associated documents 	Technical Instructions Chapter 7: Operators responsibilities
Evaluate and approve training programmes	<ul style="list-style-type: none"> — assess the operator's initial and recurrent training programme for aircrew, employees and agents against the requirements of the Technical Instructions — assess the program's continuous evaluation and update process as appropriate due to changes in the Technical Instructions, operations manual and dangerous goods procedures — assess the dangerous goods instructor's qualification against TI requirements 	Technical Instructions Paragraph 4.1: Establishment of training programmes Paragraph 4.1.2: Review by State authorities
Provide recommendation report	Provide a recommendation for issuing certificate/approval	

3. Competency unit: Conduct Inspection of an Operator

A State must inspect operators as part of routine surveillance and/or based upon non-compliance, trend analysis or safety concerns.

Note.— Inspections may take place at facilities located on or off the airport and at those entities acting on behalf of the operator.

For each of the following competency elements and performance criteria, the inspector will utilize the applicable inspection method.

Conduct pre-inspection process	<ul style="list-style-type: none"> — collect information on dangerous goods-related activities of an Operator — analyze information on dangerous goods related activities of an Operator — organize inspection activities 	Annex 18 Paragraph 11.1: Inspection systems: Each Contracting State shall establish inspection, surveillance and enforcement procedures with a view to achieving compliance with its dangerous goods regulations. Annex 18 Chapter 8: Operators responsibilities
Conduct inspection process	<ul style="list-style-type: none"> — conduct opening briefing — evaluate compliance with: <ul style="list-style-type: none"> — shipping and transporting aircraft spares and their replacements <p><i>Note.— A shipper inspection is to be conducted on such activity.</i></p> — limitation of dangerous goods on aircraft — general applicability — acceptance procedure requirements — storage and loading requirements — inspection and decontamination requirements — provision of information requirements 	""

<i>Competency element</i>	<i>Performance criteria</i>	<i>Reference</i>
	<ul style="list-style-type: none"> — provisions concerning passengers and crew — provisions for dangerous goods carried by passengers and crew — Provisions to aid recognition of undeclared dangerous goods — Conduct closing briefing 	
Conduct post inspection process	<ul style="list-style-type: none"> — Record inspection result — Determine follow up action 	""

4. Competency unit: Conduct Inspection of Dangerous Goods Shipper

A State must inspect shippers as part of routine surveillance and/or based upon non-compliance, trend analysis or safety concerns. A shipper may be an individual person (e.g. sending a package via a courier company) or a large company (e.g. chemical supplier, operator, repair station or freight forwarder shipping dangerous goods).

For each of the following competency elements and performance criteria, the inspector will utilize the applicable inspection method.

Conduct pre-inspection process	<ul style="list-style-type: none"> — collect information on dangerous goods activities of shipper — analyze information on dangerous goods activities of shipper — organize inspection activities 	Annex 18 Paragraph 11.1 Inspection systems: Each Contracting State shall establish inspection, surveillance and enforcement procedures with a view to achieving compliance with its dangerous goods regulations. Annex 18 Chapter 7 Shippers responsibilities ICAO audit checklist: Conduct an ad-hoc assessment on dangerous shipping and handling procedures of operators
Conduct inspection process	<ul style="list-style-type: none"> — conduct opening briefing — evaluate compliance with: <ul style="list-style-type: none"> — provision of information to employees requirements — training requirements — classification requirements — documentation requirements — packaging requirements — labeling requirements — marking requirements — unit load device loading requirements, as applicable — conduct closing briefing 	""
Conduct post inspection process	<ul style="list-style-type: none"> — record inspection result — determine follow-up action 	""

5. Competency unit: Conduct Investigation

With the aim of preventing the recurrence of non-compliances with the Technical Instructions which occur in its territory and which involve the transport of dangerous goods originating in or destined for another State, States must establish procedures for the investigation of:

- dangerous goods accidents;
- dangerous goods incidents;
- discoveries of undeclared or mis-declared dangerous goods; and
- discoveries of dangerous goods in baggage which are not permitted

As part of a State's enforcement obligation, procedures must also be established for the investigation of other non-compliances (e.g. when discovered during an inspection).

The competency elements and related performance criteria are defined as follows:

<p>Conduct pre-investigation process</p>	<ul style="list-style-type: none"> — collect information on dangerous goods related activities of an operator — analyze information on dangerous goods related activities of an operator — analyze event against regulatory framework — organize investigation — identify resources required 	<p>Annex 18 Paragraph 12.1: Contracting State shall establish procedures for investigating and compiling Information of dangerous goods incidents.</p> <p>ICAO audit checklist: Conduct an investigation on dangerous goods incidents and dangerous goods occurrences resulting from violations of the dangerous goods regulations;</p> <p>Annex 18 Paragraph 9.6: Provision of information in event of an aircraft accident or incident</p>
<p>Conduct investigation process</p>	<ul style="list-style-type: none"> — conduct interviews — collect evidence — assess evidence — document investigation — recommend corrective action 	<p>""</p>