



**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/19)**

Montréal, 1 to 5 April 2019

Agenda Item 2: Managing air-specific safety risks and identifying anomalies

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

FRENCH APPROACH TO COMPETENCY-BASED TRAINING FOR DANGEROUS GOODS

(Presented by P. Tatin)



French Approach of CBT related to DG



Montreal - April 2019

Pascal Tatin - Martial Cosset



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Philosophy of the French Approach Materials Questions/Answers Case study & Conclusion



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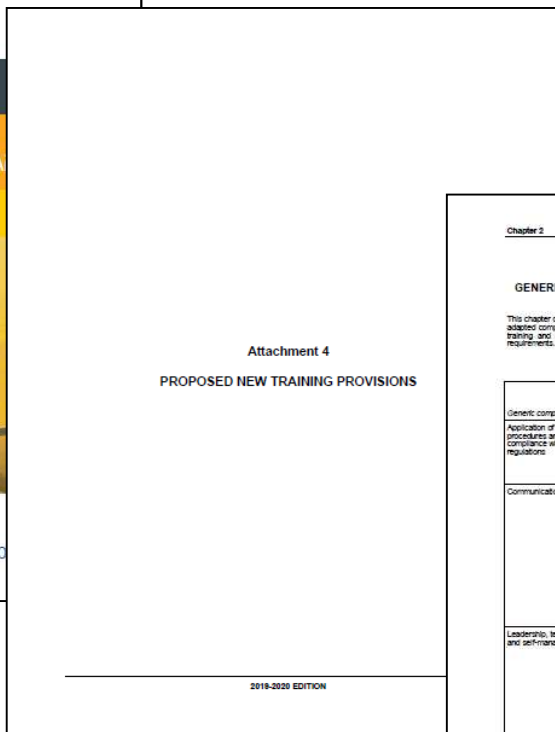
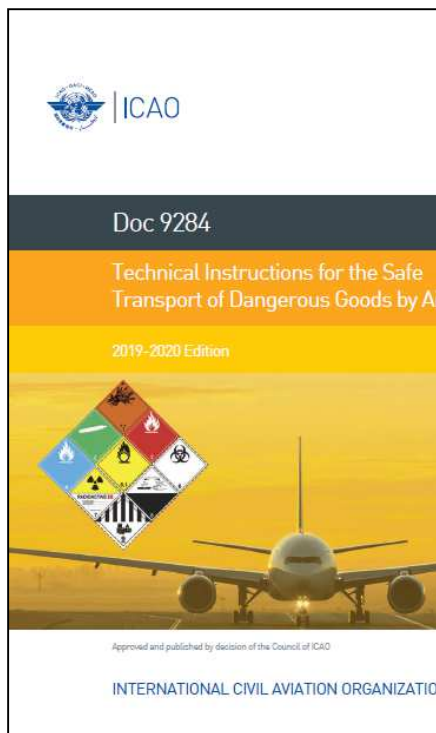


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Chapter 2 AA-2.7

DRAFT 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, 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

| Generic competency | Description | Observable behaviour |
|---|---|--|
| 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 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 |

2019-2020 EDITION



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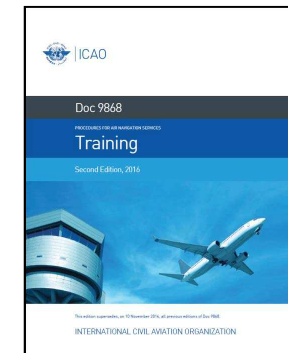


French Approach of CBT related to DG

Philosophy of the French Approach

The CBTA is already implemented in many trainings and is extending.

Even if in stand-by for the moment, the basement of the CBTA related to DG is defined.



As a CAA, **it's not our role to modify/rewrite** the ICAO requirements when applicable.

However, we can do our best to appropriate them

and make them understandable to everybody
by providing materials/tools with an **emphasis on pedagogy**



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Philosophy of the French Approach

As a consequence,
the French DG experts workgroup decided to work upfront on this matter.

Phase 1: full understanding of the CBT philosophy and its purposes

Phase 2: involving our operators in the considerations about its application

with a particular attention on how the **individuals** are taken into account.



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French Approach of CBT related to DG

Philosophy of the French Approach

The CBTA asks the operators to:

thoroughly customize their training plan
while taking into account the **human factors**.

Individual's competencies and inherent assessment:

- to follow the **evolution of the employees** (impact on operations);
- to assess the **efficiency of the program**.

The French Approach will particularly focus on how these points are taken into account by the operators.



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Philosophy of the French Approach

The purpose of the CBTA is not just assessing if the trainees meet the minimum requirements.

It is to assess their **real profile** and its evolution in a laps of time, by verifying:

- what they really know;
- how they behave;
- and what they are capable of.

ATTITUDES



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French Approach of CBT related to DG

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Several keys are provided for the definition of the requirements

- How to do -

Means which can be used for trainings and assessments

- Generalities on what could be done -

→ Many operators will want thorough guidelines on this matter.



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Philosophy of the French Approach

Materials

Questions/Answers

Case study & Conclusion



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French Approach of CBT related to DG

Materials: guide

Purpose:

Providing all the elements to allow the operators to create their own training plan and submit it to the DGAC for approval.

Logics:

Explaining very simply the CBTA and

giving a method to create the training plan by:

- breaking down **chronologically** the different phases;
- explaining **simply** each new notion when introduced;
- giving some short examples;
- proposing a simple matrix consolidating all the notions as a tool to work with;
- showing an example from A to Z (definition of the function → assessment);
- proposing FAQs.



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(with ICAO matrices proposed as attachments)



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French Approach of CBT related to DG

Materials: guide

Bien que ces listes puissent être utilisées telles quelles, l'exploitant est encouragé à les adapter aux réalités de ses opérations sur le terrain.

Les fonctions, tâches et sous-tâches ayant été identifiées, il convient de définir des activités inhérentes. Cette étape est importante pour cerner l'étendue des connaissances, des compétences et de l'expérience requises de la personne effectuant la fonction.

6.3.3 Les activités

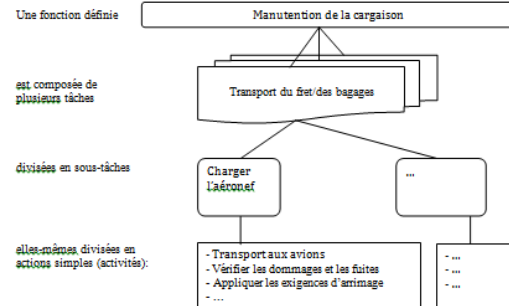
Voir annexe 2

Il s'agit des **actions simples**, observables, qui permettront de mener à bien la sous-tâche concernée.

Le fait de lister ces actions permettra également d'établir des critères d'évaluation.

Ex : « Vérifier les dommages et les fuites », « appliquer les exigences d'arrimage », ...

6.3.4 Résumé



En s'appuyant sur le cadre défini par l'OACI (ainsi que les annexes proposées dans ce guide, s'il le désire), l'exploitant sélectionne ou définit les tâches associées à ses opérations ainsi que les actions que son personnel exécute.

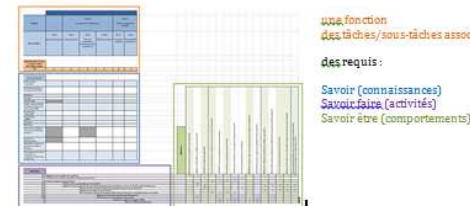
Les notions de tâches, sous-tâches et activités ont été créées car elles permettent de faciliter la définition, l'observation et l'évaluation des compétences requises pour un agent.

6.3.7 Matrices adaptées

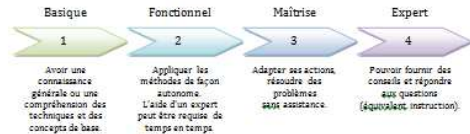
A partir de cette matrice consolidée, il sera possible, pour chaque fonction identifiée, de générer des matrices adaptées. (Voir « exemple de A à Z » en annexe 7)

Cette phase peut se décomposer en deux étapes :

1) Sélectionner les notions utiles et supprimer celles qui se révèlent inutiles (requis/non-requis). Cette démarche permettra de définir le profil type de chaque fonction.



2) Pour chaque compétence identifiée (connaissance, activité, comportement), définir un niveau de compétence attendu. Par exemple de 1 à 4 :



Cette notion de niveau de compétence n'a pas été introduite par l'OACI mais peut se révéler très utile, notamment pour l'évaluation des agents et du programme de formation lui-même.

Connaissances :

| Fonction | Niveau 1 | | | | Niveau 2 | | | | Niveau 3 | | | | Niveau 4 | | | |
|----------------------------------|----------|---|---|---|----------|---|---|---|----------|---|---|---|----------|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Connaissances générales | | | | | | | | | | | | | | | | |
| Connaissances techniques | | | | | | | | | | | | | | | | |
| Connaissances réglementaires | | | | | | | | | | | | | | | | |
| Connaissances des procédures | | | | | | | | | | | | | | | | |
| Connaissances des risques | | | | | | | | | | | | | | | | |
| Connaissances des ressources | | | | | | | | | | | | | | | | |
| Connaissances des équipements | | | | | | | | | | | | | | | | |
| Connaissances des environnements | | | | | | | | | | | | | | | | |
| Connaissances des personnes | | | | | | | | | | | | | | | | |
| Connaissances des procédures | | | | | | | | | | | | | | | | |
| Connaissances des risques | | | | | | | | | | | | | | | | |
| Connaissances des ressources | | | | | | | | | | | | | | | | |
| Connaissances des équipements | | | | | | | | | | | | | | | | |
| Connaissances des environnements | | | | | | | | | | | | | | | | |
| Connaissances des personnes | | | | | | | | | | | | | | | | |

1) Pour chaque sous-tâche, définition du niveau attendu des connaissances.

2) Pour chaque connaissance un niveau de compétence final dépendant du plus haut niveau attendu.

3) nous avons identifié les connaissances qu'il va falloir approfondir et celles qui ne nécessitent qu'une approche basique.

Activités et Comportements :

1) Pour chaque activité, définition du niveau attendu des comportements

2) Pour chaque comportement un niveau de compétence final dépendant du plus haut niveau attendu.

3) Pour chaque activité un niveau de compétence final dépendant du plus haut niveau attendu.



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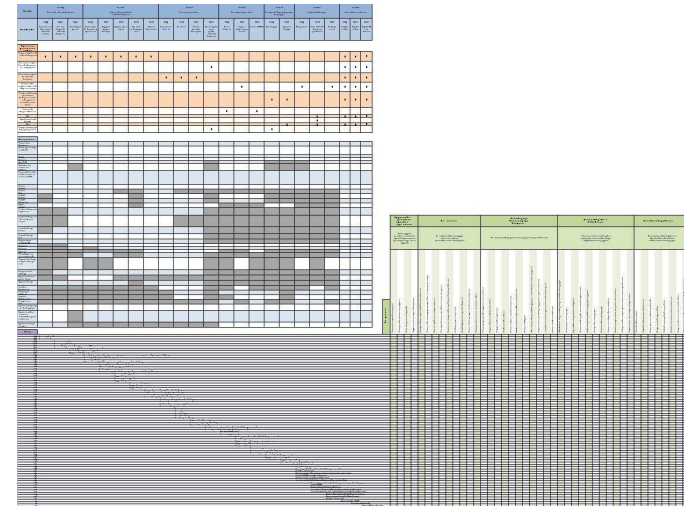
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French Approach of CBT related to DG

Materials: consolidated matrix

Purposes:

- consolidating all the notions;
- understanding at first sight **how they all interact**;
- **illustrating the process** of creation of a training plan;
- providing an useable tool for the implementation of a training plan.



French Approach of CBT related to DG

Materials: consolidated matrix

Consolidating all the notions:

Table 2-1 :
Generic competency framework

Table 3-1 :
Generic dangerous goods task list

Chapter 5 :
Task/Knowledge matrix tool

Draft 6 :
Adapted Task lists for certain
well-defined roles

| Generic competency | Description | Observable behaviour | Realisation of procedures and application with regulations | | | | | |
|---|---|--|--|-------------|---|-------------------------------------|---------------------|--|
| | | | Identify and apply relevant provisions | Communicate | Establish, Research and self-assessment | Problem solving and decision making | Workload Management | |
| Application of procedures and compliance with regulations | Identifies and applies appropriate procedures in accordance with published operating instructions and in compliance with applicable regulations | Follows relevant procedures; Consults with applicable regulations; Applies relevant procedural | | | | | | |
| Communication | Communicates through appropriate means in the work environment, in | Ensures the recipient is read; Selects appropriately what | | | | | | |

| Dangerous goods knowledge | Dangerous goods tasks | | | | | | |
|---|--------------------------------|---------------------------------------|-------------------------------|-------------------|---------------------------------|-----------------|----------------------|
| | 1. Classifying dangerous goods | 2. Preparing dangerous goods shipment | 3. Processing dangerous goods | 4. Managing cargo | 5. Accepting (passing) and crew | 6. Transporting | 7. Collecting safety |
| Scope and applicability | | | | | | | |
| Limitation of dangerous goods on aircraft | | | | | | | |
| Definitions | | | | | | | |
| Training | | | | | | | |
| Dangerous goods safety | | | | | | | |
| General provisions concerning radioactive material | | | | | | | |
| Reporting of dangerous goods incidents, accidents and other occurrences | | | | | | | |
| Classification --- General | | | | | | | |
| Classification --- Class 1 | | | | | | | |
| Classification --- Class 2 | | | | | | | |
| Classification --- Class 3 | | | | | | | |
| Classification --- Class 4 | | | | | | | |
| Classification --- Class 5 | | | | | | | |
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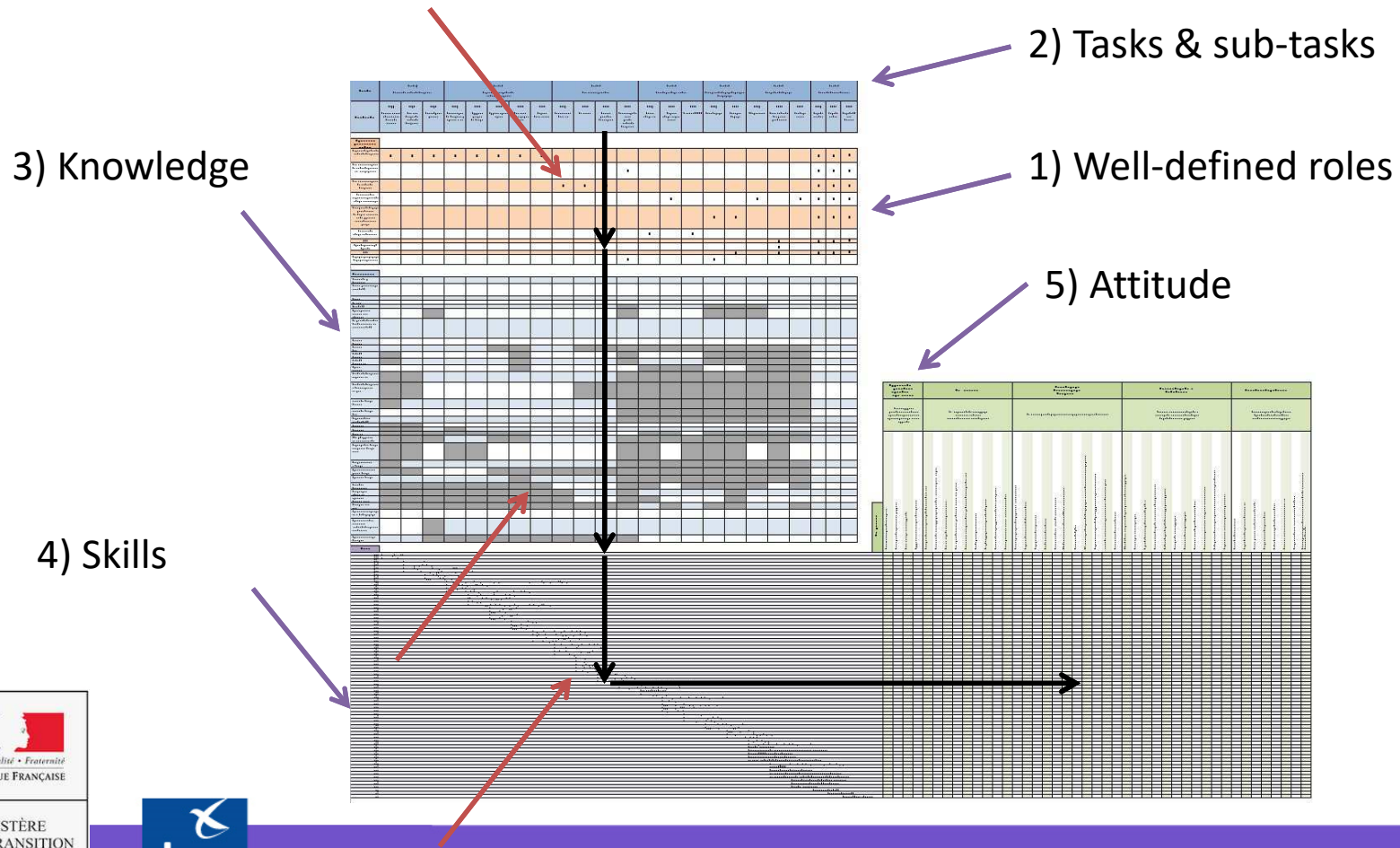
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French Approach of CBT related to DG

Materials: consolidated matrix

Understanding at first sight how all the notions interact:



French Approach of CBT related to DG

Materials: consolidated matrix

Summarizing in one document
all the needed competencies.

Knowledge

+

Adapted Competency Framework

=

Thorough definition of the function

Boolean approach (required/not required)

In accordance with 1.5.3...

we can now put in place a scoring system for each piece of knowledge and skill.



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French Approach of CBT related to DG

Materials: consolidated matrix

In addition to consolidating and defining the necessary requirements for a function the summary matrix, now identifies the competencies that require:

Basic knowledge

General knowledge or understanding of basic techniques.

Functional level

Ability to apply the methods independently. Expert help may be required from time to time.

Proven mastery

Ability to adapt actions, to solve problems without assistance.

Expertise level

Ability to provide advice and answer questions (supervision / instruction).



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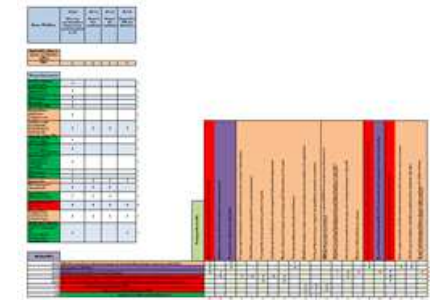
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French Approach of CBT related to DG

Materials: consolidated matrix



Advantages of a scoring system (levels of proficiency):

For the function:

identifying the **minimum** requirements for each competency

highlighting the most important ones (to particularly focus on during the training)

For the employee:

showing a detailed analysis of his/her real competencies (focus on the **individual**)

following his/her improvement → possibilities of **evolution**

For the training plan:

knowing on which points of the training program to focus

assessing the system and targeting the points to be improved

via the individual repetitive evaluations and their analysis



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Materials: evolutions to come

V1 of the guide validated.

The finalizing of edition is in progress.

(probable implementation of the English version).

Soon available to operators

for a **test/commentaries** phase.

(A presentation meeting will be planned)

V1 of the matrix validated

(the English version already exists)

BUT...

The image shows a large, complex matrix table. It has many columns and rows, with some cells highlighted in orange and green. The table appears to be a curriculum or training matrix, with columns likely representing different training modules or topics, and rows representing different levels or types of training. The table is very dense and difficult to read in detail.

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French Approach of CBT related to DG

Materials: evolutions to come

This Excel matrix was primarily developed to illustrate the CBTA.

Excel table of 128 lines by 69 columns

→ not easily useable by the operators.

Development of a micro-software which:

- will be **downloadable** from the DGAC website;
- will allow the operators to **generate and manage**:
 - databases of customized competencies;
 - customized Adapted Competency Frameworks for each function.

French Approach of CBT related to DG

Materials: evolutions to come

Simulation matrice

| | |
|---|--|
| Préparation d'expédition de marchandises dangereuses | Traitement ou acceptation de marchandises présentées comme cargo général |
| Traitement ou acceptation de marchandises dangereuses | Manutention de la cargaison (entrepot, unités de chargements, soutes cargo...) |
| Acceptation des bagages, gestion de la zone d'embarquement ou autres tâches impliquant un contact direct avec les passagers | Planification du chargement des aéronefs |

PNT

PNC

Connaissances

- Portée et champ d'application
- Restrictions imposées au transport aérien
- Définitions
- Formation
- Sûreté des MDs
- Dispositions générales relatives aux matières radioactives
- Compte rendu d'accidents, d'incidents et événements concernant des MDs
- Classification : Généralités
- Classification : Classes**
- Liste des MDs : Généralités
- Liste des MDs : Agencement
- Dispositions particulières
- Marchandises dangereuses en quantités limitées
- Marchandises dangereuses emballées en quantités exemptées

Sous-tâches et activités

- ST 6.2 Gérer les marchandises dangereuses avant et pendant le vol
 - 6.2.1 Détecter la présence dans les bagages de marchandises dangereuses non autorisées
 - 6.2.2 Interpréter la NOTOC
 - 6.2.3 Appliquer les procédures en cas d'urgence
 - 6.2.4 Informer l'agent technique d'exploitation/le contrôleur de la circulation aérienne en cas d'urgence
- ST 7.1 Report des accidents
 - 7.1 Signaler les accidents de MDs

Connaissances

| | ST 6.2 | ST 7.1 | ST 7.2 | ST 7.3 |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Portée et champ d'application | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Restrictions imposées au transport aérien de MDs | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Définitions | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Formation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sûreté des MDs | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dispositions générales relatives aux matières radioactives | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Compte rendu d'accidents, d'incidents et événements concernant des MDs | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Classification : Généralités | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Marquages | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Étiquetages | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Procédures d'acceptation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Entreposage et chargement | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inspection et décontamination | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Renseignements à fournir | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dispositions relatives aux passagers ou membres d'équipage | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dispositions visant à aider à reconnaître les marchandises dangereuses non déclarées | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Opérations effectuées par hélicoptère | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Comportements

| | 6.2.1 | 6.2.2 | 7.3 |
|--|-------------------------------------|--------------------------|--------------------------|
| Application des procédures et respect des règlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Application des procédures et respect des règlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Application des procédures et respect des règlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Communication | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Demonstration of the beta version



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Philosophy of the French Approach

The materials

Questions/Answers

Case study & Conclusion



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French Approach of CBT related to DG

Questions / Answers

Refresh trainings

We stick with a bi-yearly refreshment notion.

What is important is the date at which the training and assessment **are completed**.



The operators could rely on their SMS or an equivalent:

- too light or non-existing : complete training;
- efficient SMS: no need for thorough refreshments, just a few notions (e.g.: updates).

French Approach of CBT related to DG

Questions / Answers

Instructors

The old schema with one almighty instructor able to provide any kind of DG training will certainly have to be reviewed.

Considering all the useable means for trainings

(e.g.: classroom lessons, virtual classroom, e-learning, discussion in groups,...)

and especially the practical ones

(e.g.: On-Job-Training, supervision, audits, feedback...)

operators will have the possibility to **rely on their own SMS and employees** complementary to the « official » instructors.

Assesments

See next chapter



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During the benchmarking of our procedures
we have met operators and worked on particular cases,

Flight crew



Definition of the function → Adapted Competency Model → Content of the training

French Approach of CBT related to DG

Conclusion

The operators' **feedback is promising**.

Some of them are volunteers to help us in a global brainstorming.

Some questions remain (as, for example, issues with multiple bases with a lot of subcontractors) but ideas start to emerge.

The 2nd phase of our approach (provision of the guide, of the matrix-software and organization of meetings) will probably allow us to solve most of the remaining points.

Objective: **finalizing everything before October 2019**.

It goes without saying that if other organizations want to participate in these proceedings, they are **very welcome**.



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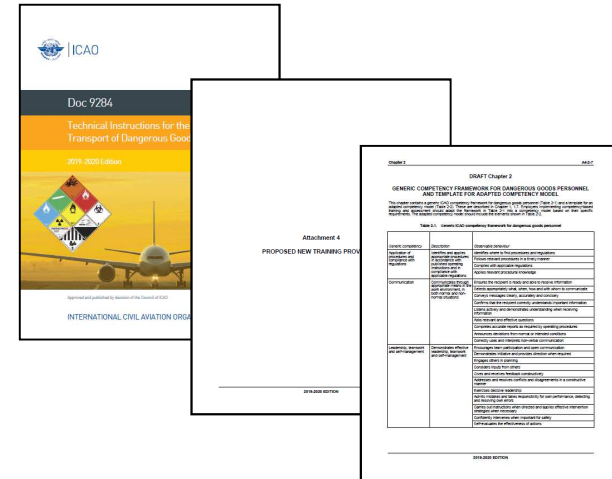
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Conclusion

Existing materials are already a **very good basis**

Potential improvements:

- Chronological approach
- Developing the notion of level of proficiency
- Thorough guidelines regarding assessment
- Solutions for certificates' content



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Conclusion

IF

a b c d e f g h i j k l m n o p q r s t u v w x y z

EQUALS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

THEN

KNOWLEDGE = 11+14+15+23+12+5+4+7+5 = 96 %

HARD WORK = 8+1+18+4+23+15+18+11 = 98 %

Both are important but fall just short of 100%

ATTITUDE = 1+20+20+9+20+21+4+5 = 100%

Coincidence ?



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Thank you very much for your attention

If some of you is interested in more details
we are at your disposal during all this week



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