

## Annex II to Decision 2015/022/R

The Annex to Decision 2014/017/R<sup>1</sup> is hereby amended as follows:

The text of the amendment is arranged to show deleted, new or amended text as shown below:

1. deleted text is marked with ~~strike through~~;
2. new or amended text is highlighted in grey; and
3. an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

AMC1 ORO.FC.115&215 and AMC1.1 ORO.FC.115&215 are deleted,  
and new AMC1 ORO.FC.115, AMC2 ORO.FC.115 and AMC3 ORO.FC.115 are inserted as follows:

### **AMC1 ORO.FC.115 Crew resource management (CRM) training**

#### **CRM TRAINING — MULTI-PILOT OPERATIONS**

##### **(a) General**

##### **(1) Training environment**

CRM training should be conducted in the non-operational environment (classroom and computer-based) and in the operational environment (flight simulation training device (FSTD) and aircraft). Tools such as group discussions, team task analysis, team task simulation and feedback should be used.

##### **(2) Classroom training**

Whenever possible, classroom training should be conducted in a group session away from the pressures of the usual working environment, so that the opportunity is provided for flight crew members to interact and communicate in an environment conducive to learning.

##### **(3) Computer-based training**

Computer-based training should not be conducted as a stand-alone training method, but may be conducted as a complementary training method.

##### **(4) Flight simulation training devices (FSTDs)**

Whenever practicable, parts of the CRM training should be conducted in FSTDs that reproduce a realistic operational environment and permit interaction. This includes but is not limited to line-oriented flight training (LOFT) scenarios.

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<sup>1</sup> Decision 2014/017/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ORO of Commission Regulation (EU) No 965/2012 and repealing Decision 2012/017/R of the Executive Director of the Agency of 24 October 2012 ('AMC and GM to Part-ORO — Issue 2').

## (5) Integration into flight crew training

CRM principles should be integrated into relevant parts of flight crew training and operations including checklists, briefings, abnormal and emergency procedures.

## (6) Combined CRM training for flight crew, cabin crew and technical crew

(i) Operators should provide combined training for flight crew, cabin crew and technical crew during recurrent CRM training.

(ii) The combined training should address at least:

(A) effective communication, coordination of tasks and functions of flight crew, cabin crew and technical crew; and

(B) mixed multinational and cross-cultural flight crew, cabin crew and technical crew, and their interaction, if applicable.

(iii) The combined training should be expanded to include medical passengers, if applicable to the operation.

(iv) Combined CRM training should be conducted by flight crew CRM trainer or cabin crew CRM trainer.

(v) There should be an effective liaison between flight crew, cabin crew and technical crew training departments. Provision should be made for transfer of relevant knowledge and skills between flight crew, cabin crew and technical crew CRM trainers.

## (7) Management system

CRM training should address hazards and risks identified by the operator's management system described in ORO.GEN.200.

## (8) Competency-based CRM training

(i) Whenever practicable, the compliance-based approach concerning CRM training may be substituted by a competency-based approach such as evidence-based training. In this context, CRM training should be characterised by a performance orientation, with emphasis on standards of performance and their measurement, and the development of training to the specified performance standards.

(ii) CRM training should be an essential element of the alternative training and qualification programme (ATQP) described in ORO.FC.A.245, when the operator applies ATQP.

## (9) Contracted CRM training

If the operator chooses not to establish its own CRM training, another operator, a third party or a training organisation may be contracted to provide the training in accordance with ORO.GEN.205. In case of contracted CRM training, the operator should ensure that the content of the course covers the specific culture, the type of operations and the associated procedures of the operator. When crew members from different operators attend the same course, the CRM training should be specific to the relevant flight operations and to the trainees concerned.

## (b) Initial operator's CRM training

(1) The flight crew member should complete the initial operator's CRM training once. When the type of operation of a new operator is not different, the new operator should not be required to provide the initial operator's CRM training to this flight crew member a second time.

(2) The initial training should cover all elements specified in Table 1 of (g).

(c) Operator conversion course — CRM training

When the flight crew member undertakes a conversion course with a change of aircraft type or change of operator, elements of CRM training should be integrated into all appropriate phases of the operator's conversion course, as specified in Table 1 of (g).

(d) Annual recurrent CRM training

(1) Annual recurrent CRM training should be provided in such a way that all CRM training elements specified for the annual recurrent training in Table 1 of (g) are covered over a period not exceeding 3 years.

(2) Operators should update their CRM recurrent training programme over a period not exceeding 3 years. The revision of the programme should take into account information from the operator's management system including the results of the CRM assessment.

(e) Command course — CRM training

The operator should ensure that elements of CRM training are integrated into the command course, as specified in Table 1 of (g).

(f) Training elements

The CRM training elements to be covered are specified in Table 1 of (g). The operator should ensure that the following aspects are addressed:

(1) Automation and philosophy on the use of automation

(i) The CRM training should include training in the use and knowledge of automation, and in the recognition of systems and human limitations associated with the use of automation. The operator should, therefore, ensure that the flight crew member receives training on:

(A) the application of the operations policy concerning the use of automation as stated in the operations manual; and

(B) system and human limitations associated with the use of automation, giving special attention to issues of mode awareness, automation surprises and over-reliance including false sense of security and complacency.

(ii) The objective of this training should be to provide appropriate knowledge, skills and attitudes for managing and operating automated systems. Special attention should be given to how automation increases the need for crews to have a common understanding of the way in which the system performs, and any features of automation that make this understanding difficult.

(iii) If conducted in an FSTD, the training should include automation surprises of different origin (system- and pilot-induced).

**(2) Monitoring and intervention**

Flight crew should be trained in CRM-related aspects of operation monitoring before, during and after flight, together with any associated priorities. This CRM training should include guidance to the pilot monitoring on when it would be appropriate to intervene, if felt necessary, and how this should be done in a timely manner. Reference should be made to the operator procedures for structured intervention as specified in the operations manual.

**(3) Resilience development**

CRM training should address the main aspects of resilience development. The training should cover:

**(i) Mental flexibility**

Flight crew should be trained to:

- (A) understand that mental flexibility is necessary to recognise critical changes;
- (B) reflect on their judgement and adjust it to the unique situation;
- (C) avoid fixed prejudices and over-reliance on standard solutions; and
- (D) remain open to changing assumptions and perceptions.

**(ii) Performance adaptation**

Flight crew should be trained to:

- (A) mitigate frozen behaviours, overreactions and inappropriate hesitation; and
- (B) adjust actions to current conditions.

**(4) Surprise and startle effect**

CRM training should address unexpected, unusual and stressful situations. The training should cover:

**(i) surprises and startle effects; and****(ii) management of abnormal and emergency situations, including:**

- (A) the development and maintenance of the capacity to manage crew resources;
- (B) the acquisition and maintenance of adequate automatic behavioural responses; and
- (C) recognising the loss and re-building situation awareness and control.

**(5) Cultural differences**

CRM training should cover cultural differences of multinational and cross-cultural crews. This includes recognising that:

- (i) different cultures may have different communication specifics, ways of understanding and approaches to the same situation or problem;
- (ii) difficulties may arise when crew members with different mother tongue communicate in a common language which is not their mother tongue; and

- (iii) cultural differences may lead to different methods for identifying a situation and solving a problem.

(6) Operator's safety culture and company culture

CRM training should cover the operator's safety culture, its company culture, the type of operations and the associated procedures of the operator. This should include areas of operations that may lead to particular difficulties or involve unusual hazards.

(7) Case studies

- (i) CRM training should cover aircraft type-specific case studies, based on the information available within the operator's management system, including:

- (A) accident and serious incident reviews to analyse and identify any associated non-technical causal and contributory factors, and instances or examples of lack of CRM; and

- (B) analysis of occurrences that were well managed.

- (ii) If relevant aircraft type-specific or operator-specific case studies are not available, the operator should consider other case studies relevant to the scale and scope of its operations.

(g) CRM training syllabus

Table 1 below specifies which CRM training elements should be covered in each type of training. The levels of training in Table 1 can be described as follows:

- (1) 'Required' means training that should be instructional or interactive in style to meet the objectives specified in the CRM training programme or to refresh and strengthen knowledge gained in a previous training.
- (2) 'In-depth' means training that should be instructional or interactive in style taking full advantage of group discussions, team task analysis, team task simulation, etc., for the acquisition or consolidation of knowledge, skills and attitudes. The CRM training elements should be tailored to the specific needs of the training phase being undertaken.

**Table 1 — Flight crew CRM training**

CRM training elements	Initial operator's CRM training	Operator conversion course when changing aircraft type	Operator conversion course when changing operator	Annual recurrent training	Command course
General principles					
Human factors in aviation; General instructions on CRM principles and objectives; Human performance and limitations; Threat and error management.	In-depth	Required	Required	Required	Required
Relevant to the individual flight crew member					
Personality awareness, human error and reliability, attitudes and behaviours, self-assessment and self-critique; Stress and stress management; Fatigue and vigilance; Assertiveness, situation awareness, information acquisition and processing.	In-depth	Not required	Not required	Required	In-depth
Relevant to the flight crew					
Automation and philosophy on the use of automation	Required	In-depth	In-depth	In-depth	In-depth
Specific type-related differences	Required	In-depth	Not required	Required	Required
Monitoring and intervention	Required	In-depth	In-depth	Required	Required
Relevant to the entire aircraft crew					
Shared situation awareness, shared information acquisition and processing; Workload management; Effective communication and coordination inside and outside the flight crew compartment;	In-depth	Required	Required	Required	In-depth

CRM training elements	Initial operator's CRM training	Operator conversion course when changing aircraft type	Operator conversion course when changing operator	Annual recurrent training	Command course
Leadership, cooperation, synergy, delegation, decision-making, actions; Resilience development; Surprise and startle effect; Cultural differences.					
Relevant to the operator and the organisation					
Operator's safety culture and company culture, standard operating procedures (SOPs), organisational factors, factors linked to the type of operations; Effective communication and coordination with other operational personnel and ground services.	In-depth	Required	In-depth	Required	In-depth
Case studies	In-depth	In-depth	In-depth	In-depth	In-depth

## (h) Assessment of CRM skills

- (1) Assessment of CRM skills is the process of observing, recording, interpreting and debriefing crews and crew member's performance using an accepted methodology in the context of the overall performance.
- (2) The flight crew member's CRM skills should be assessed in the operational environment, but not during CRM training in the non-operational environment. Nevertheless, during training in the non-operational environment, feedback from the flight crew CRM trainer or from trainees on individual and crew performance may be given to the crew members concerned.
- (3) The assessment of CRM skills should:
  - (i) include debriefing the crew and the individual crew member;
  - (ii) serve to identify additional training, where needed, for the crew or the individual crew member; and
  - (iii) be used to improve the CRM training system by evaluating de-identified summaries of all CRM assessments.
- (4) Prior to the introduction of CRM skills assessment, a detailed description of the CRM methodology, including the required CRM standards and the terminology used for the assessment, should be published in the operations manual.

**(5) Methodology of CRM skills assessment**

The assessment should be based on the following principles:

- (i) only observable behaviours are assessed;
- (ii) the assessment should positively reflect any CRM skills that result in enhanced safety; and
- (iii) assessments should include behaviour that results in an unacceptable reduction in safety margin.

**(6) Operators should establish procedures, including additional training, to be applied in the event that flight crew members do not achieve or maintain the required CRM standards.****AMC2 ORO.FC.115 Crew resource management (CRM) training****CRM TRAINING — SINGLE-PILOT OPERATIONS**

- (a) For single-pilot helicopter operations with technical crew, AMC1 ORO.FC.115 should be applied.
- (b) For single-pilot operations other than those specified in (a), AMC1 ORO.FC.115 should be applied with the following differences:

**(1) Relevant training**

Training should cover the relevant CRM training, i.e. initial operator's training, the operator conversion course and recurrent training.

**(2) Relevant training elements**

CRM training should focus on the elements specified in Table 1 of (g) of AMC1 ORO.FC.115 which are relevant to single-pilot operations. Therefore, single-pilot CRM training should include, among others:

- (i) situation awareness;
- (ii) workload management;
- (iii) decision-making;
- (iv) resilience development;
- (v) surprise and startle effect; and
- (vi) effective communication and coordination with other operational personnel and ground services.

**(3) Computer-based training**

Notwithstanding (a)(3) of AMC1 ORO.FC.115, computer-based training may be conducted as a stand-alone training method.

**(4) Operation with ELA2 aircraft**

Notwithstanding (1) and (2), for operations with ELA2 aircraft the relevant CRM training and its duration should be determined by the operator, based on the aircraft type and the complexity of the operation.



**AMC3 ORO.FC.115 Crew resource management (CRM) training****FLIGHT CREW CRM TRAINER****(a) Applicability**

The provisions described herein:

- (1) should be fulfilled by flight crew CRM trainers responsible for classroom CRM training; and
- (2) are not applicable to:
  - (i) instructors, holding a certificate in accordance with Commission Regulation (EU) No 1178/2011, who conduct CRM training in the operational environment; and
  - (ii) trainers or instructors conducting training other than CRM training, but integrating CRM elements into this training.

**(b) Qualification of flight crew CRM trainer**

- (1) A training and standardisation programme for flight crew CRM trainers should be established.
- (2) A flight crew CRM trainer, in order to be suitably qualified, should:
  - (i) have adequate knowledge of the relevant flight operations;
  - (ii) have adequate knowledge of human performance and limitations (HPL), whilst:
    - (A) having obtained a commercial pilot licence in accordance with Commission Regulation (EU) No 1178/2011; or
    - (B) having followed a theoretical HPL course covering the whole syllabus of the HPL examination;
  - (iii) have completed flight crew initial operator's CRM training;
  - (iv) have received training in group facilitation skills;
  - (v) have received additional training in the fields of group management, group dynamics and personal awareness; and
  - (vi) have demonstrated the knowledge, skills and credibility required to train the CRM training elements in the non-operational environment, as specified in Table 1 of AMC1 ORO.FC.115.
- (3) The following qualifications and experiences are also acceptable for a flight crew CRM trainer in order to be suitably qualified:
  - (i) A flight crew member holding a recent qualification as a flight crew CRM trainer may continue to be a flight crew CRM trainer after the cessation of active flying duties if he/she maintains adequate knowledge of the relevant flight operations.
  - (ii) A former flight crew member may become a flight crew CRM trainer if he/she maintains adequate knowledge of the relevant flight operations and fulfils the provisions of (2)(ii) to (2)(vi).

- (iii) An experienced CRM trainer may become a flight crew CRM trainer if he/she demonstrates adequate knowledge of the relevant flight operations and fulfils the provisions of (2)(ii) to (2)(vi).

(c) Training of flight crew CRM trainer

- (1) Training of flight crew CRM trainers should be both theoretical and practical. Practical elements should include the development of specific trainer skills, particularly the integration of CRM into line operations.
- (2) The basic training of flight crew CRM trainers should include the training elements for flight crew, as specified in Table 1 of AMC1 ORO.FC.115. In addition, the basic training should include the following:
  - (i) introduction to CRM training;
  - (ii) operator's management system;
  - (iii) characteristics, as applicable:
    - (A) of the different types of CRM trainings (initial, recurrent, etc.);
    - (B) of combined training; and
    - (C) related to the type of aircraft or operation; and
  - (iv) assessment.
- (3) The refresher training of flight crew CRM trainers should include new methodologies, procedures and lessons learned.
- (4) Instructors, holding a certificate in accordance with Commission Regulation (EU) No 1178/2011, who are also CRM trainers, may combine the CRM trainer refresher training with instructor refresher training.
- (5) Instructors for other-than complex motor-powered aircraft should be qualified as flight crew CRM trainers for this aircraft category with no additional training, as specified in (2) and (3) when:
  - (i) holding a certificate in accordance with Commission Regulation (EU) No 1178/2011; and
  - (ii) fulfilling the provisions of (b)(2) or (b)(3).
- (6) The training of flight crew CRM trainers should be conducted by flight crew CRM trainers with a minimum of 3 years' experience. Assistance may be provided by experts in order to address specific areas.

(d) Assessment of flight crew CRM trainer

- (1) A flight crew CRM trainer should be assessed by the operator when conducting the first CRM training course. This first assessment should be valid for a period of 3 years.
- (2) The operator should ensure that the process for the assessment is included in the operations manual describing methods for observing, recording, interpreting and debriefing the flight crew CRM trainer. All personnel involved in the assessment must be credible and competent in their role.

**(e) Recency and renewal of qualification as flight crew CRM trainer**

- (1) For recency of the 3-year validity period, the flight crew CRM trainer should:
  - (i) conduct at least 2 CRM training events in any 12-month period;
  - (ii) be assessed within the last 12 months of the 3-year validity period by the operator; and
  - (iii) complete CRM trainer refresher training within the 3-year validity period.
- (2) The next 3-year validity period should start at the end of the previous period.
- (3) For renewal, i.e. when a flight crew CRM trainer does not fulfil the provisions of (1), he/she should, before resuming as flight crew CRM trainer:
  - (i) comply with the qualification provisions of (b) and (d); and
  - (ii) complete CRM trainer refresher training.

GM1 ORO.FC.115&215 is deleted, and new GM1 ORO.FC.115 to GM7 ORO.FC.115 are inserted as follows:

**GM1 ORO.FC.115 Crew resource management (CRM) training**

**GENERAL**

- (a) CRM is the effective utilisation of all available resources (e.g. crew members, aircraft systems, supporting facilities and persons) to achieve safe and efficient operation.
- (b) The objective of CRM is to enhance the communication and management skills of the flight crew member concerned. Emphasis is placed on the non-technical knowledge, skills and attitudes of flight crew performance.

**GM2 ORO.FC.115 Crew resource management (CRM) training**

**TRAINING ENVIRONMENT, TRAINERS AND INSTRUCTORS**

- (a) Flight crew CRM training can be separated as follows:
  - (1) training in the non-operational environment:
    - (i) classroom; and
    - (ii) computer-based;
  - (2) training in the operational environment:
    - (i) flight simulation training device (FSTD); and
    - (ii) aircraft.
- (b) In general, CRM training is provided as follows:
  - (1) classroom training by a flight crew CRM trainer;
  - (2) training in the operational environment by an instructor holding a certificate in accordance with Commission Regulation (EU) No 1178/2011;

- (3) computer-based training as a self-study training method. If needed, directions concerning CRM-related issues are provided by a flight crew CRM trainer or by an instructor holding a certificate in accordance with Commission Regulation (EU) No 1178/2011.

### **GM3 ORO.FC.115 Crew resource management (CRM) training**

#### **MINIMUM TRAINING TIMES**

- (a) The following minimum training times are appropriate:

- (1) multi-pilot operations:

- (i) combined CRM training: 6 training hours over a period of 3 years; and
- (ii) initial operator's CRM training: 18 training hours with a minimum of 12 training hours in classroom training;

- (2) initial operator's CRM training for single-pilot operations: 6 training hours; and

- (3) flight crew CRM trainer:

- (i) basic training:

- (A) 18 training hours for trainees holding an instructor certificate for complex motor-powered aircraft, as specified in Commission Regulation (EU) No 1178/2011, which includes 25-hour training in teaching and learning; or

- (B) 30 training hours for trainees who do not hold an instructor certificate as specified in (A); and

- (ii) refresher training: 6 training hours.

- (b) 'Training hours' means actual training time excluding breaks and assessment.

### **GM4 ORO.FC.115 Crew resource management (CRM) training**

#### **DESIGN, IMPLEMENTATION AND EVALUATION OF CRM TRAINING**

The checklist in Table 1 provides guidance on the design, implementation and evaluation of CRM training, and on their incorporation into the operator's safety culture. Elements of the operator's management systems and the competency-based approach are incorporated in the checklist.

**Table 1 — Checklist for design, implementation, evaluation and incorporation of CRM training**

Step No	Description	Element
1	Needs analysis	Determine the necessary CRM competencies
		Develop CRM training goals
		Ensure the organisation is ready for CRM training
2	Design	Develop CRM training objectives
		Determine what to measure and how to measure it
3	Development	Describe the CRM learning environment
		Develop full-scale prototype of training
		Validate and modify CRM training
4	Implementation	Prepare trainees and environment
		Set a climate for learning (e.g. practice and feedback)
		Implement the CRM training programme
5	Evaluation	Determine training effectiveness
		Evaluate CRM training at multiple levels
		Revise the CRM training programme to improve effectiveness
6	Incorporation	Establish an environment where CRM training is positively recognised
		Reinforce CRM behaviours in daily work
		Provide recurrent CRM training

**GM5 ORO.FC.115 Crew resource management (CRM) training****RESILIENCE DEVELOPMENT**

(a) The main aspects of resilience development can be described as the ability to:

- (1) learn ('knowing what has happened');
- (2) monitor ('knowing what to look for');
- (3) anticipate ('finding out and knowing what to expect'); and
- (4) respond ('knowing what to do and being capable of doing it').

(b) Operational safety is a continuous process of evaluation of and adjustment to existing and future conditions. In this context, and following the description in (a), resilience development involves an ongoing and adaptable process including situation assessment, self-review, decision and action. Training in resilience development enables crew members to draw the right conclusions from both positive and negative experiences. Based on those experiences, crew members are better prepared to maintain or create safety margins by adapting to dynamic complex situations.

(c) The training topics in (f)(3) of AMC1 ORO.FC.115 are to be understood as follows:

**(1) Mental flexibility**

- (i) The phrase 'understand that mental flexibility is necessary to recognise critical changes' means that crew members are prepared to respond to situations for which there is no set procedure.
- (ii) The phrase 'reflect on their judgement and adjust it to the unique situation' means that crew members learn to review their judgement based on the unique characteristics of the given circumstances.
- (iii) The phrase 'avoid fixed prejudices and over-reliance on standard solutions' means that crew members learn to update solutions and standard response sets, which have been formed on prior knowledge.
- (iv) The phrase 'remain open to changing assumptions and perceptions' means that crew members constantly monitor the situation, and are prepared to adjust their understanding of the evolving conditions.

**(2) Performance adaptation**

- (i) The phrase 'mitigate frozen behaviours, overreactions and inappropriate hesitation' means that crew members correct improper actions with a balanced response.
- (ii) The phrase 'adjust actions to current conditions' means that crew members' responses are in accordance with the actual situation.

**GM6 ORO.FC.115 Crew resource management (CRM) training****NON-TECHNICAL SKILLS ASSESSMENT**

- (a) NOTECHS (non-technical skills) is a validated method for assessing flight crew CRM skills. The NOTECHS framework consists of four main categories:
  - (1) Cooperation: Cooperation is the ability to work effectively in a crew.
  - (2) Leadership and managerial skills: Effective leadership and managerial skills help to achieve joint task completion within a motivated, fully functioning team through coordination and persuasiveness.
  - (3) Situation awareness: Situation awareness relates to one's ability to accurately perceive what is in the flight crew compartment and outside the aircraft. It is also one's ability to comprehend the meaning of different elements in the environment and the projection of their status in the near future.
  - (4) Decision-making: Decision-making is the process of reaching a judgement or choosing an option.
- (b) Each of the four categories is subdivided into elements and behavioural markers. The elements are specified in Table 1 with examples of behavioural markers (effective behaviour). The behavioural markers are assessed by a rating scale to be established by the operator.

**Table 1 — Categories, elements and behavioural markers of NOTECHS**

Category	Element	Behavioural marker (examples)
Cooperation	Team building and maintaining	Establishes atmosphere for open communication and participation
	Considering others	Takes condition of other crew members into account
	Supporting others	Helps other crew members in demanding situations
	Conflict solving	Concentrates on what is right rather than who is right
Leadership and managerial skills	Use of authority and assertiveness	Takes initiative to ensure crew involvement and task completion
	Maintaining standards	Intervenes if task completion deviates from standards
	Planning and coordination	Clearly states intentions and goals
	Workload management	Allocates adequate time to complete tasks
Situation awareness	Awareness of aircraft systems	Monitors and reports changes in systems' states
	Awareness of external environment	Collects information about environment (position, weather and traffic)
	Anticipation	Identifies possible future problems
Decision-making	Problem definition and diagnosis	Reviews causal factors with other crew members
	Option generation	States alternative courses of action
		Asks other crew members for options
	Risk assessment and option selection	Considers and shares estimated risk of alternative courses of action
	Outcome review	Checks outcome against plan

**GM7 ORO.FC.115 Crew resource management (CRM) training****FLIGHT CREW CRM TRAINER ASSESSMENT**

- (a) For assessing flight crew CRM trainers, the operator may nominate experienced flight crew CRM trainers who have demonstrated continued compliance with the provisions for a flight crew CRM trainer and capability in that role for at least 3 years.
- (b) An operator that does not have the resources to conduct the assessment may employ a contractor. The standard as regards the assessment is confirmed on a 3-year basis by the operator.
- (c) The checklist in Table 1 provides guidance on the assessment of a flight crew CRM trainer. If a flight crew CRM trainer is competent in his/her role, the response to the questions in Table 1 should be 'yes'. When answering the questions in Table 1, justifications and examples related to the responses given should be provided.

**Table 1 — Flight crew CRM trainer assessment checklist**

<b>Questions to assess a flight crew CRM trainer</b>	<b>Response yes/no</b>
Did the CRM trainer demonstrate the knowledge required for the role?	
Did the CRM trainer support CRM concepts?	
Did the CRM trainer encourage trainees to participate, share their experiences and self-analyse?	
Did the CRM trainer identify and respond to the trainees' needs relative to expertise/experience?	
Did the CRM trainer show how CRM is integrated in technical training and line operations?	
Did the CRM trainer incorporate company CRM standards when appropriate?	
Did the CRM trainer identify and discuss the non-technical reasons involved in accidents, incidents and events included in case studies?	
Did the CRM trainer regularly check for understanding and resolve ambiguities?	
Did the CRM trainer demonstrate effective instruction and facilitation skills?	

A new AMC1 ORO.FC.215 is inserted as follows:

#### **AMC1 ORO.FC.215 Initial operator's crew resource management (CRM) training**

##### **TRAINING ELEMENTS AND TRAINER QUALIFICATION**

Initial operator's CRM training should:

- (a) cover the applicable provisions of AMC1 ORO.FC.115, including the training elements as specified in Table 1 thereof; and
- (b) be conducted by a flight crew CRM trainer who is qualified as specified in AMC3 ORO.FC.115.

AMC1 ORO.FC.220 is amended as follows:

#### **AMC1 ORO.FC.220 Operator conversion training and checking**

##### **OPERATOR CONVERSION TRAINING SYLLABUS**

- (a) General
  - (1) The operator conversion training should include, in the following order:



- (i) ground training and checking, including aircraft systems, and normal, abnormal and emergency procedures;
  - (ii) emergency and safety equipment training and checking, (completed before any flight training in an aircraft commences);
  - (iii) flight training and checking (aircraft and/or FSTD); and
  - (iv) line flying under supervision and line check.
- (2) When the flight crew member has not previously completed an operator's conversion course, he/she should undergo general first-aid training and, if applicable, ditching procedures training using the equipment in water.
  - (3) Where the emergency drills require action by the non-handling pilot, the check should additionally cover knowledge of these drills.
  - (4) The operator's conversion may be combined with a new type/class rating training as required by Regulation (EU) No 1178/2011.
  - (5) The operator should ensure that:
    - (i) applicable elements of CRM training, as specified in Table 1 of AMC1 ORO.FC.115, are integrated into all appropriate phases of the conversion training; and
    - (ii) the personnel integrating elements of CRM into conversion training are suitably qualified, as specified in AMC3 ORO.FC.115.
- (b) (...)

AMC1 ORO.FC.230 is amended as follows:

#### **AMC1 ORO.FC.230 Recurrent training and checking**

##### **RECURRENT TRAINING SYLLABUS**

##### **(a) Recurrent training**

Recurrent training should comprise the following:

- (1) Ground training
- (...)
- (2) Emergency and safety equipment training
- (...)
- (3) CRM
  - (i) Elements of CRM training, as specified in Table 1 of AMC1 ORO.FC.115, should be integrated into all appropriate phases of recurrent training.
  - (ii) ~~A specific modular CRM training programme should be established such that all major topics of CRM training are covered over a period not exceeding 3 years, as follows:~~

- ~~(A) human error and reliability, error chain, error prevention and detection;~~
- ~~(B) operator safety culture, standard operating procedures (SOPs), organisational factors;~~
- ~~(C) stress, stress management, fatigue and vigilance;~~
- ~~(D) information acquisition and processing, situation awareness, workload management;~~
- ~~(E) decision making;~~
- ~~(F) communication and coordination inside and outside the flight crew compartment;~~
- ~~(G) leadership and team behaviour, synergy;~~
- ~~(H) automation and philosophy of the use of automation (if relevant to the type);~~
- ~~(I) specific type related differences;~~
- ~~(J) case studies;~~
- ~~(K) additional areas which warrant extra attention, as identified by the safety management system.~~

~~(iii) Operators should establish procedures to update their CRM recurrent training programme. Revision of the programme should be conducted over a period not exceeding 3 years. The revision of the programme should take into account the identified results of the CRM assessments of crews, and information identified by the safety management system.~~

(4) Aircraft/FSTD training

(...)

(b) Recurrent checking

Recurrent checking should comprise the following:

(1) Operator proficiency checks

(...)

(2) Emergency and safety equipment checks-

(...)

(3) Line checks

(i) Line checks should establish the ability to perform satisfactorily a complete line operation including pre-flight and post-flight procedures and use of the equipment provided, as specified in the operations manual. The route chosen should be such as to give adequate representation of the scope of a pilot's normal operations. When weather conditions preclude a manual landing, an automatic landing is acceptable. The commander, or any pilot who may be required to relieve the commander, should also demonstrate his/her ability to 'manage' the operation and take appropriate command decisions.

- (ii) The flight crew should be assessed on their CRM skills in accordance with ~~the~~ methodology described in AMC1 ORO.FC.115 and as specified in the operations manual. ~~The purpose of such assessment is to:~~

- ~~(A) provide feedback to the crew collectively and individually and serve to identify retraining; and~~

- ~~(B) be used to improve the CRM training system.~~

- (iii) CRM assessment ~~alone~~ should not be used as a reason for a failure of the line check, unless the observed behaviour could lead to an unacceptable reduction in safety margin.

- (iv) When pilots are assigned duties as pilot flying and pilot monitoring they should be checked in both functions.

- (v) Line checks should be conducted by a commander nominated by the operator. The operator should inform the competent authority about the persons nominated. The person conducting the line check should occupy an observer's seat where installed. His/her CRM assessments should solely be based on observations made during the initial briefing, cabin briefing, flight crew compartment briefing and those phases where he/she occupies the observer's seat.

- (c) Flight crew incapacitation training, except single-pilot operations

(...)

- (d) Personnel providing training and checking

Training and checking should be provided by the following personnel:

- (1) ground and refresher training by suitably qualified personnel;
- (2) flight training by a flight instructor (FI), type rating instructor (TRI) or class rating instructor (CRI) or, in the case of the FSTD content, a synthetic flight instructor (SFI), providing that the FI, TRI, CRI or SFI satisfies the operator's experience and knowledge requirements sufficient to instruct on the items specified in paragraphs (a)(1)(i)(A) and (B);

- (3) emergency and safety equipment training by suitably qualified personnel;

- (4) CRM:

- (i) integration of CRM elements into all the phases of the recurrent training by all the personnel conducting recurrent training. The operator should ensure that all personnel conducting recurrent training are suitably qualified to integrate elements of CRM into this training;

- (ii) ~~modular~~ classroom CRM training by at least one CRM trainer, qualified as specified in AMC3 ORO.FC.115, who may be assisted by experts in order to address specific areas.

- (5) recurrent checking by the following personnel:

- (i) operator proficiency check by a type rating examiner (TRE), class rating examiner (CRE) or, if the check is conducted in a FSTD, a TRE, CRE or a synthetic flight examiner (SFE), trained in CRM concepts and the assessment of CRM skills.

- (ii) emergency and safety equipment checking by suitably qualified personnel.

(e) (...)

AMC1 ORO.CC.115(e) is amended as follows:

**AMC1 ORO.CC.115(e) Conduct of training courses and associated checking**

~~CREW RESOURCE MANAGEMENT—CRM INSTRUCTORS AND TRAINING PROGRAMMES~~

**CREW RESOURCE MANAGEMENT (CRM) TRAINING — MULTI CABIN CREW OPERATIONS**

~~(a) Implementation of CRM training~~

Table 1 below indicates which CRM training elements should be covered in each type of training.

**(a) General**

**(1) Training environment**

CRM training should be conducted in the non-operational environment (classroom and computer-based) and in the operational environment (cabin training device and aircraft). Tools such as group discussions, team task analysis, team task simulation and feedback should be used.

**(2) Classroom training**

Whenever possible, classroom training should be conducted in a group session away from the pressures of the usual working environment, so that the opportunity is provided for cabin crew members to interact and communicate in an environment conducive to learning.

**(3) Computer-based training**

Computer-based training should not be conducted as a stand-alone training method, but may be conducted as a complementary training method.

**(4) Cabin training devices and aircraft**

Whenever practicable, relevant parts of CRM training should be conducted in representative cabin training devices that reproduce a realistic operational environment, or in the aircraft. During practical training, interaction should be encouraged.

**(5) Integration into cabin crew training**

CRM principles should be integrated into relevant parts of cabin crew training and operations, including checklists, briefings and emergency procedures.

**(6) Combined CRM training for flight crew and cabin crew**

(i) Operators should provide combined training for flight crew and cabin crew during recurrent CRM training.

(ii) The combined training should address at least:

(A) effective communication, coordination of tasks and functions of flight crew and cabin crew; and

(B) mixed multinational and cross-cultural flight crew and cabin crew, and their interaction, if applicable.

(iii) Combined CRM training should be conducted by flight crew CRM trainer or cabin crew CRM trainer.

(iv) There should be an effective liaison between flight crew and cabin crew training departments. Provision should be made for transfer of relevant knowledge and skills between flight crew and cabin crew CRM trainers.

(7) Management system

CRM training should address hazards and risks identified by the operator's management system described in ORO.GEN.200.

(8) Competency-based CRM training

Whenever practicable, the compliance-based approach concerning CRM training may be substituted by a competency-based approach. In this context, CRM training should be characterised by a performance orientation, with emphasis on standards of performance and their measurement, and the development of training to the specified performance standards.

(9) Contracted CRM training

If the operator chooses not to establish its own CRM training, another operator, a third party or a training organisation may be contracted to provide the training in accordance with ORO.GEN.205. In case of contracted CRM training, the operator should ensure that the content of the course covers the specific culture, the type of operations and the associated procedures of the operator. When crew members from different operators attend the same course, the CRM training should be specific to the relevant flight operations and to the trainees concerned.

(b) Operator's CRM training

The operator's CRM training should cover all elements listed in Table 1 of (g). Several training elements are specified as 'not required' for the operator's CRM training, since they are covered under the introductory CRM course for cabin crew as required in Annex V (Part-CC) to Commission Regulation (EU) No 1178/2011.

(c) Operator aircraft type conversion CRM training

If the cabin crew member undertakes the operator's conversion training on an aircraft type, the applicable CRM training elements should be covered as specified in Table 1 of (g).

(d) Annual recurrent CRM training

(1) Annual recurrent CRM training should be provided in such a way that all CRM training elements specified for the annual recurrent training in Table 1 of (g) are covered over a period not exceeding 3 years.

(2) Operators should update their recurrent CRM training programme over a period not exceeding 3 years. The revision of the programme should take into account information from the operator's management system.

(e) Senior cabin crew member course

- (1) CRM training for senior cabin crew members should be the application of knowledge gained in previous CRM training and operational experience relevant to the specific duties and responsibilities of a senior cabin crew member. The operator should ensure that for the senior cabin crew member course the CRM training elements are integrated into the training, as specified in Table 1 of (g).
- (2) During the training the senior cabin crew member should demonstrate the ability:
  - (i) to manage the operation; and
  - (ii) to take appropriate leadership and management decisions.

(f) Training elements

The CRM training elements to be covered are specified in Table 1 of (g). The operator should ensure that the following aspects are addressed:

(1) Resilience development

CRM training should address the main aspects of resilience development. The training should cover:

(i) Mental flexibility

Cabin crew should be trained to:

- (A) understand that mental flexibility is necessary to recognise critical changes;
- (B) reflect on their judgement and adjust it to the unique situation;
- (C) avoid fixed prejudices and over-reliance on standard solutions; and
- (D) remain open to changing assumptions and perceptions.

(ii) Performance adaptation

Cabin crew should be trained to:

- (A) mitigate frozen behaviours, overreactions and inappropriate hesitation; and
- (B) adjust actions to current conditions.

(2) Surprise and startle effect

CRM training should address unexpected, unusual and stressful situations including interruptions and distractions. Therefore, CRM training should be designed to prepare cabin crew to master sudden events and associated uncontrolled reactions.

(3) Cultural differences

CRM training should cover cultural differences of multinational and cross-cultural crews. This includes recognising that:

- (i) different cultures may have different communication specifics, ways of understanding and approaches to the same situation or problem;
- (ii) difficulties may arise when crew members with different mother tongue communicate in a common language which is not their mother tongue; and

(iii) cultural differences may lead to different methods for identifying a situation and solving a problem.

(4) Operator's safety culture and company culture

CRM training should cover the operator's safety culture, its company culture, the type of operations and the associated procedures of the operator. This should include areas of operations that may lead to particular difficulties or involve unusual hazards.

(5) Case studies

(i) CRM training should cover aircraft type-specific case studies, based on the information available within the operator's management system, including:

(A) accident and serious incident reviews to analyse and identify any associated non-technical causal and contributory factors, and instances or examples of lack of CRM; and

(B) analysis of occurrences that were well managed.

(ii) If relevant aircraft type-specific or operator-specific case studies are not available, the operator should consider other case studies relevant to the scale and scope of its operations.

(g) CRM training syllabus

Table 1 below specifies which CRM training elements should be covered in each type of training. The levels of training in Table 1 can be described as follows:

(1) 'Required' means training that should be instructional or interactive in style to meet the objectives specified in the CRM training programme or to refresh and strengthen knowledge gained in a previous training.

(2) 'In-depth' means training that should be instructive or interactive in style taking full advantage of group discussions, team task analysis, team task simulation, etc., for the acquisition or consolidation of knowledge, skills and attitudes. The CRM training elements should be tailored to the specific needs of the training phase being undertaken.

Table 1 — Cabin crew CRM training

CRM TRAINING ELEMENTS to be covered CRM training elements	Operator's CRM Training	Operator Aircraft Type Conversion Training	Annual Recurrent Training	Senior Cabin Crew member (SCCM) Course
General Principles				
Human Factors in aviation; General instructions on CRM principles and objectives; Human performance and limitations; Threat and error management.	Not required (as covered under initial training required by Part-CC)	Not required Required	Not required Required	Overview Required
Relevant to the individual cabin crew member				
Personality awareness, human error and reliability, attitudes and behaviours, self-assessment and self-critique; Stress and stress management; Fatigue and vigilance; Assertiveness, situation awareness, information acquisition and processing.	Not required (as covered under initial training required by Part-CC)	Not required Required	Overview Required (3-year cycle)	Not required Required
Relevant to the entire aircraft crew				
Error prevention and detection Shared situation awareness, shared information acquisition and processing; Workload management; Effective communication and coordination between all crew members including the flight crew as well as inexperienced cabin crew members; Cultural differences Leadership, cooperation, synergy, delegation, decision-making, delegation actions; Individual and team responsibilities, decision making, and actions Resilience development; Surprise and startle effect; Cultural differences; Identification and management of the passenger human factors: crowd control, passenger stress, conflict management, medical factors.	In-depth	Required (when relevant to the type(s))	Overview Required (3-year cycle)	Reinforcement (relevant to the SCC duties) In-depth



CRM TRAINING ELEMENTS to be covered CRM training elements	Operator's CRM training	Operator Aircraft Type Conversion Training	Annual Recurrent Training	Senior Cabin Crew member (SCCM) course
Specifics related to aircraft types (narrow-/wide-bodied, single-/multi-deck), flight crew and cabin crew composition and number of passengers	Not required Required	In-depth	Overview Required (3-year cycle)	Reinforcement (relevant to the SCC duties) In-depth
Relevant to the operator and the organisation				
Company/Operator's safety culture and company culture, standard operating procedures (SOPs), organisational factors, factors linked to the type of operations; Effective communication and coordination with other operational personnel and ground services; Participation in cabin safety incident and accident reporting.	In-depth	Required (when Relevant to the type(s))	Overview Required (3-year cycle)	Reinforcement (relevant to the SCC duties) In-depth
Case studies	Required In-depth	Required (when Relevant to the type(s))	Required In-depth	Reinforcement (relevant to the SCC duties) In-depth

## (b) CRM training programmes for commercial air transport operations

- (1) There should be an effective liaison between flight crew and cabin crew training departments. Provision should be made to allow, whenever practicable, flight and cabin crew instructors to observe and comment on each other's training. Consideration should be given to creating films of flight deck scenarios for playback to all cabin crew during recurrent training, and to providing the opportunity for cabin crew, particularly senior cabin crew, to participate in flight crew line oriented flying training (LOFT) exercises.
- (2) The programme of each CRM training course, its content and the level to be achieved should comply with the relevant elements specified in table 1 below as applicable to the appropriate training course to be completed.
- (3) CRM training for senior cabin crew
  - (i) CRM training for senior cabin crew members should be the application of knowledge gained in previous CRM training and operational experience relevant to the specific duties and responsibilities of a senior cabin crew member.
  - (ii) The senior cabin crew member should demonstrate the ability to manage the operation and take appropriate leadership/management decisions.

## (c) CRM instructor qualifications for commercial air transport operations

- ~~(1) All personnel conducting training should be appropriately qualified to integrate elements of CRM into all appropriate training programmes.~~
- ~~(2) A training and standardisation programme for CRM instructors should be established.~~
- ~~(3) The cabin crew CRM instructor should:~~
  - ~~(i) have suitable experience of commercial air transport operations as a cabin crew member;~~
  - ~~(ii) have received instruction on human factors performance limitations (HPL);~~
  - ~~(iii) have completed an introductory CRM course as required by Part CC and all cabin crew CRM training required by Part-ORO;~~
  - ~~(iv) have received instruction in training skills in order to conduct CRM courses; and~~
  - ~~(v) be supervised by an appropriately qualified CRM instructor when conducting their first CRM training course.~~
- ~~(4) An experienced non-cabin crew CRM instructor may continue to be a cabin crew CRM instructor, provided that the provisions specified in (3)(ii) to (3)(v) are satisfied and that the instructor demonstrates a satisfactory knowledge of the nature of the operation, the relevant specific aircraft types and the cabin crew working environment.~~
- ~~(5) Instructors integrating elements of CRM into aircraft type training, recurrent training, or senior cabin crew training should have acquired relevant knowledge of human factors and have completed appropriate CRM training.~~

New AMC2 ORO.CC.215(e) and AMC3 ORO.CC.215(e) are inserted as follows:

## **AMC2 ORO.CC.115(e) Conduct of training courses and associated checking**

### **CREW RESOURCE MANAGEMENT (CRM) TRAINING — SINGLE CABIN CREW OPERATIONS**

For single cabin crew operations, AMC1 ORO.CC.115(e) should be applied with the following differences:

#### **(a) Relevant training elements**

CRM training should focus on the elements specified in Table 1 of (g) of AMC1 ORO.CC.115(e) which are relevant to single cabin crew operations. Therefore, single cabin crew CRM training should include, among others:

- (1) situation awareness;
- (2) workload management;
- (3) decision-making;
- (4) resilience development;
- (5) surprise and startle effect; and
- (6) effective communication and coordination with
  - (i) the flight crew; and

(ii) other operational personnel and ground services.

(b) Computer-based training

Notwithstanding (a)(3) of AMC1 ORO.CC.115(e), computer-based training may be conducted as a stand-alone training method for a cabin crew member operating on aircraft with a maximum operational passenger seating configuration of 19 or less.

**AMC3 ORO.CC.115(e) Conduct of training courses and associated checking**

**CABIN CREW CRM TRAINER**

(a) Applicability

The provisions described herein:

- (1) should be fulfilled by cabin crew CRM trainers responsible for classroom CRM training; and
- (2) are not applicable to trainers or instructors conducting training other than CRM training, but integrating CRM elements into this training. Nevertheless, trainers or instructors who are integrating CRM elements into the aircraft type training, recurrent training or senior cabin crew member training should have acquired relevant knowledge of human performance and limitations, and have completed appropriate CRM training.

(b) Qualification of cabin crew CRM trainer

- (1) A training and standardisation programme for cabin crew CRM trainers should be established.
- (2) The cabin crew CRM trainer, in order to be suitably qualified, should:
  - (i) have adequate knowledge of the relevant flight operations;
  - (ii) have received instructions on human performance and limitations (HPL);
  - (iii) have completed an introductory CRM course, as required in Annex V (Part-CC) to Commission Regulation (EU) No 1178/2011, and an operator's CRM training, as specified in AMC1 ORO.CC.115(e);
  - (iv) have received training in group facilitation skills;
  - (v) have received additional training in the fields of group management, group dynamics and personal awareness; and
  - (vi) have demonstrated the knowledge, skills and credibility required to train the CRM training elements in the non-operational environment, as specified in Table 1 of AMC1 ORO.CC.115(e).
- (3) An experienced CRM trainer may become a cabin crew CRM trainer if he/she demonstrates a satisfactory knowledge of the relevant flight operations and the cabin crew working environment, and fulfils the provisions specified in (2)(ii) to (2)(vi).

(c) Training of cabin crew CRM trainer

- (1) Training of cabin crew CRM trainers should be both theoretical and practical. Practical elements should include the development of specific trainer skills, particularly the integration of CRM into day-to-day operations.

(2) The basic training of cabin crew CRM trainers should include the training elements for cabin crew, as specified in Table 1 of AMC1 ORO.CC.115(e). In addition, the basic training should include the following:

- (i) introduction to CRM training;
- (ii) operator's management system; and
- (iii) characteristics, as applicable:
  - (A) of the different types of CRM trainings (initial, recurrent, etc.);
  - (B) of combined training; and
  - (C) related to the type of aircraft or operation.

(3) The refresher training of cabin crew CRM trainers should include new methodologies, procedures and lessons learned.

(4) The training of cabin crew CRM trainers should be conducted by cabin crew CRM trainers with a minimum of 3 years' experience. Assistance may be provided by experts in order to address specific areas.

(d) Assessment of cabin crew CRM trainer

- (1) A cabin crew CRM trainer should be assessed by the operator when conducting the first CRM training course. This first assessment should be valid for a period of 3 years.
- (2) Assessment is the process of observing, recording, interpreting and debriefing the cabin crew CRM trainer. The operator should describe the assessment process in the operations manual. All personnel involved in the assessment must be credible and competent in their role.

(e) Recency and renewal of qualification as cabin crew CRM trainer

- (1) For recency of the 3-year validity period, the cabin crew CRM trainer should:
  - (i) conduct at least 2 CRM training events in any 12-month period;
  - (ii) be assessed within the last 12 months of the 3-year validity period by the operator; and
  - (iii) complete CRM trainer refresher training within the 3-year validity period.
- (2) The next 3-year validity period should start at the end of the previous period.
- (3) For renewal, i.e. when a cabin crew CRM trainer does not fulfil the provisions of (1), he/she should, before resuming as cabin crew CRM trainer:
  - (i) comply with the qualification provisions of (b) and (d); and
  - (ii) complete CRM trainer refresher training.

GM1 ORO.CC.115(e) is amended as follows:

**GM1 ORO.CC.115(e) Conduct of training courses and associated checking**

**CREW RESOURCE MANAGEMENT (CRM) — GENERAL**

**(a) CRM General**

- (1)(a) CRM should be the effective utilisation of all available resources (e.g. crew members, aircraft systems, and supporting facilities) to achieve safe and efficient operation.
- (2)(b) The objective of CRM should be to enhance the communication and management skills of the crew member, as well as the importance of effective coordination and two-way communication between all crew members.
- (3) Operator's CRM training should reflect the culture of the operator, the scale and scope of the operation together with associated operating procedures and areas of operation that produce particular difficulties.
- (4) Accordingly, where required during CRM training, if relevant aircraft type-specific case studies are not available, then other case studies relevant to the scale and scope of the operation should be considered.

**(b) General principles for CRM training for cabin crew**

- (1) Cabin crew CRM training should focus on issues related to cabin crew duties and, therefore, should be different from flight crew CRM training. However, the coordination of the tasks and functions of flight crew and cabin crew should be addressed.
- (2) Whenever practicable, combined training should be provided to flight crew and cabin crew, particularly senior cabin crew members. This should include feedback.
- (3) Where appropriate, CRM principles should be integrated into relevant parts of cabin crew training.
- (4) CRM training should include group discussions and the review of accidents and incidents (case studies).
- (5) Whenever it is practicable to do so, relevant parts of CRM training should form part of the training conducted in cabin training devices or in the aircraft.
- (6) CRM training courses should be conducted in a structured and realistic manner.
- (7) There should be no assessment of CRM skills. Feedback from instructors or members of the group on individual performance should be given during training to the individuals concerned.

New GM2 ORO.CC.115(e) to GM5 ORO.CC.115(e) are inserted as follows:

**GM2 ORO.CC.115(e) Crew resource management (CRM) training**

**MINIMUM TRAINING TIMES**

(a) The following minimum training times are appropriate:

(1) multi cabin crew operations:

(i) combined CRM training: 6 training hours over a period of 3 years; and

(ii) operator's CRM training: 6 training hours;

(2) operator's CRM training for single cabin crew operations: 4 training hours for a cabin crew member operating on aircraft with a maximum operational passenger seating configuration of 19 or less;

(3) cabin crew CRM trainer:

(i) basic training:

(A) 18 training hours when the operator can justify that the trainee already has received sufficient and suitable instruction on training skills in order to conduct CRM training courses; or

(B) 30 training hours for trainees not fulfilling (A); and

(ii) refresher training: 6 training hours.

(b) 'Training hours' means actual training time excluding breaks.

**GM3 ORO.CC.115(e) Crew resource management (CRM) training****DESIGN, IMPLEMENTATION AND EVALUATION OF CRM TRAINING**

The checklist in Table 1 provides guidance on the design, implementation and evaluation of CRM training, and on their incorporation into the operator's safety culture. Elements of the operator's management systems and the competency-based approach are incorporated in the checklist.

**Table 1 — Checklist for design, implementation, evaluation and incorporation of CRM training**

Step No	Description	Element
1	Needs analysis	Determine the necessary CRM competencies
		Develop CRM training goals
		Ensure the organisation is ready for CRM training
2	Design	Develop CRM training objectives
		Determine what to measure and how to measure it
3	Development	Describe the CRM learning environment
		Develop full-scale prototype of training
		Validate and modify CRM training
4	Implementation	Prepare trainees and environment
		Set a climate for learning (e.g. practice and feedback)
		Implement the CRM training programme
5	Evaluation	Determine training effectiveness
		Evaluate CRM training at multiple levels
		Revise the CRM training programme to improve effectiveness
6	Incorporation	Establish an environment where CRM training is positively recognised
		Reinforce CRM behaviours in daily work
		Provide recurrent CRM training

**GM4 ORO.CC.115(e) Crew resource management (CRM) training****RESILIENCE DEVELOPMENT**

(a) The main aspects of resilience development can be described as the ability to:

- (1) learn ('knowing what has happened');
- (2) monitor ('knowing what to look for');
- (3) anticipate ('finding out and knowing what to expect'); and
- (4) respond ('knowing what to do and being capable of doing it').

(b) Operational safety is a continuous process of evaluation of and adjustment to existing and future conditions. In this context, and following the description in (a), resilience development involves an ongoing and adaptable process including situation assessment, self-review, decision and action. Training on resilience development enables crew members to draw the right conclusions from both positive and negative experiences. Based on those experiences, crew members are better prepared to maintain or create safety margins by adapting to dynamic complex situations.

(c) The training topics in (f)(1) of AMC1 ORO.CC.115(e) are to be understood as follows:

(1) Mental flexibility

- (i) The phrase 'understand that mental flexibility is necessary to recognise critical changes' means that crew members are prepared to respond to situations for which there is no set procedure.
- (ii) The phrase 'reflect on their judgement and adjust it to the unique situation' means that crew members learn to review their judgement based on the unique characteristics of the given circumstances.
- (iii) The phrase 'avoid fixed prejudices and over-reliance on standard solutions' means that crew members learn to update solutions and standard response sets, which have been formed on prior knowledge.
- (iv) The phrase 'remain open to changing assumptions and perceptions' means that crew members constantly monitor the situation, and are prepared to adjust their understanding of the evolving conditions.

(2) Performance adaptation

- (i) The phrase 'mitigate frozen behaviours, overreactions and inappropriate hesitation' means that crew members correct improper actions with a balanced response.
- (ii) The phrase 'adjust actions to current conditions' means that crew members' responses are in accordance with the actual situation.

## **GM5 ORO.CC.115(e) Conduct of training courses and associated checking**

### **CABIN CREW CRM TRAINER ASSESSMENT**

- (a) For assessing cabin crew CRM trainers, the operator may nominate experienced cabin crew CRM trainers who have demonstrated continued compliance with the provisions for a cabin crew CRM trainer and capability in that role for at least 3 years.
- (b) An operator that does not have the resources to conduct the assessment may employ a contractor. The standard as regards the assessment is confirmed on a 3-year basis by the operator.
- (c) The checklist in Table 1 provides guidance on the assessment of a cabin crew CRM trainer. If a cabin crew CRM trainer is competent in his/her role, the response to the questions in Table 1 should be 'yes'. When answering the questions in Table 1, justifications and examples related to the responses given should be provided.



**Table 1 — Cabin crew CRM trainer assessment checklist**

Questions to assess a cabin crew CRM trainer	Response yes/no
Did the CRM trainer demonstrate the knowledge required for the role?	
Did the CRM trainer support CRM concepts?	
Did the CRM trainer encourage trainees to participate, share their experiences and self-analyse?	
Did the CRM trainer identify and respond to the trainees' needs relative to expertise/experience?	
Did the CRM trainer show how CRM is integrated in technical training?	
Did the CRM trainer incorporate company CRM standards when appropriate?	
Did the CRM trainer identify and discuss the non-technical reasons involved in accidents, incidents and events included in case studies?	
Did the CRM trainer regularly check for understanding and resolve ambiguities?	
Did the CRM trainer demonstrate effective instruction and facilitation skills?	

AMC1 ORO.CC.125(d) is amended as follows:

#### **AMC1 ORO.CC.125(d) Aircraft type-specific training and operator conversion training**

##### **TRAINING PROGRAMME — OPERATOR CONVERSION TRAINING**

The following training elements should be covered as relevant to the aircraft type and the related operator's specifics:

(...)

#### **(h) ~~Crew resource management~~ CRM**

~~(1) Each cabin crew member should complete the operator's CRM training covering the applicable training elements to the level specified in the relevant column of Table 1 of AMC1 ORO.CC.115(e).~~

~~(2) When a cabin crew member undertakes the operator's conversion training on an aircraft type, the applicable training elements specified in Table 1 of AMC1 ORO.CC.115(e) should be covered to the level specified in column 'Operator's aircraft type conversion training'.~~

(1) The operator should ensure that all applicable CRM training elements, as specified in Table 1 of AMC1 ORO.CC.115(e), are covered to the level required in the column 'Operator aircraft type conversion training'.

~~(3)~~(2) The operator's CRM training and the CRM training covered during the operator aircraft type conversion training should be conducted by at least one cabin crew CRM trainer.

(...)

AMC1 ORO.CC.140 is amended as follows:

**AMC1 ORO.CC.140 Recurrent training**

**TRAINING PROGRAMMES**

- (a) Elements of the annual recurrent training programme
- (1) Training on the location and handling of safety and emergency equipment should include all relevant oxygen systems, and any equipment such as defibrillators if carried on board.
  - (2) Training on emergency procedures should cover pilot incapacitation procedures and crowd control techniques.
  - (3) CRM training should satisfy the following:
    - (i) the applicable training elements specified in Table 1 of AMC1 ORO.CC.115(e) should be covered within a 3-year cycle to the level required by column 'Annual Recurrent Training';
    - (ii) the definition and implementation of the CRM training programme should be managed by a cabin crew CRM instructor/trainer; and
    - (iii) when CRM training is provided by stand-alone modules, it should be conducted by at least one cabin crew CRM instructor/trainer.
- (b) (...)

A new AMC1 ORO.TC.110(a) is inserted as follows:

**AMC1 ORO.TC.110(a) Training and checking**

**CRM TRAINING**

The technical crew training programme for initial, operator conversion and recurrent training should include relevant CRM training elements as specified in AMC1 ORO.FC.115.

AMC1 ORO.TC.115 is amended as follows:

**AMC1 ORO.TC.115 Initial training**

**ELEMENTS**

- (a) The elements of initial training mentioned in ORO.TC.115 should include in particular:
- (...)
- ~~(8) — Relevant CRM elements of AMC1 and AMC1.1 ORO.FC.115 & 215.~~