

Standards Document No. 29 Version 7

Guidance on the requirements that pertain to Flightcrew
for the training and testing of Human Factors under EASA
Part - ORO and EASA Part - FCL

All amendments to this document will be completed electronically. The latest version of the document can be found on the CAA website: www.caa.co.uk/standardsdocuments

TABLE OF CONTENTS

AMENDMENT SUMMARY	4
GLOSSARY	5
1 INTRODUCTION.....	6
1.1 Origin.....	6
2 THE REGULATORY FRAMEWORK	6
2.1 Introduction.....	6
2.2 Training and Testing under Part FCL and Part ORO.....	7
2.3 Instructor, Trainer, and Examiner Competence	8
3 CRM TRAINING AND TESTING – AN ACCEPTABLE MEANS OF COMPLIANCE.....	8
3.1 General Requirements	8
3.2 Use of Third-party Training Providers	9
4 CRM TRAINERS - GENERAL	9
4.1 Suitability	9
5 CRM TRAINERS – GROUND SCHOOL	10
5.1 Training	10
5.2 CRM Trainer Standards	11
6 CRM TRAINER EXAMINERS – GROUND SCHOOL	11
6.1 Suitability	11
6.2 Training	11
7 INSTRUCTORS and EXAMINERS - SIMULATOR.....	12
7.1 Requirements	12
8 INSTRUCTORS and EXAMINERS - LINE FLYING.....	12
8.1 Requirements	12
9 NON-TECHNICAL SKILLS ASSESSMENT	13
9.1 Introduction.....	13
APPENDIX 1	
THE SHORT GUIDE TO PERFORMANCE STANDARDS FOR CRM INSTRUCTORS.....	15

APPENDIX 2

GUIDANCE FOR A CRMT EXAMINER CONDUCTING AN ASSESSMENT.....	22
1 Introduction.....	22
2 Documents	22
3 The Test	22
4 Briefing/Conducting the Test.....	23
5 Assessment Criteria	23
6 Examiner's Checklist for CRM Trainer Observations.....	24
7 Unacceptable Performance Indicators	25
8 Conducting the Debrief	28

APPENDIX 3

SPECIMEN CRM TRAINER ASSESSMENT FORM	29
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APPENDIX 4

GUIDANCE FOR A SENIOR EXAMINER or TRAINING POST HOLDER CONDUCTING AN ASSESSMENT OF INSTRUCTOR/EXAMINER CRM/MCC COMPETENCE	31
1 Introduction.....	31
2 Documents	31
3 The Test	31
4 Assessment Criteria	33
5 Unacceptable Performance Indicators	34
6 Conducting the Debrief	36

APPENDIX 5

SPECIMEN TRI/TRE AND LIFUS ASSESSMENT FORM	37
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APPENDIX 6

EASA PART ORO CRM TRAINING SYLLABUS	39
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APPENDIX 7	40
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FLIGHT CREW HUMAN FACTORS ADVISORY PANEL: TERMS OF REFERENCE.....	40
1. MISSION STATEMENT:.....	40
2. PURPOSE:.....	40
3. STANDARDS:.....	40
4. RESPONSIBILITIES:.....	41
5. RESOURCES:	41
6. PERSONNEL:.....	41
6.1 Appointment to the Panel.....	41
6.2 Membership Criteria	41

APPENDIX 1 to TERMS OF REFERENCE	42
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APPENDIX 2 to TERMS OF REFERENCE	43
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AMENDMENT SUMMARY

Version 7 August 2016

Standards Document 29 includes an updated terms of reference of the Flight Crew Factors Advisory Panel (Appendix 7).

Version 6 June 2015

Standards Document 29 has been substantially re-written to provide guidance for individuals and Operators subject to the requirements of EASA Part FCL and Part ORO with regard to the training and testing of CRM, including recognisable human factors and behavioural markers.

GLOSSARY

AMC	Acceptable Means of Compliance
AAMC	Alternative Acceptable Means of Compliance
AoC	Assessment of Competence
ATPL	Airline Transport Pilot Licence
CRE	Class Rating Examiner
CRI	Class Rating Instructor
CRM	Crew Resource Management
CRMT	Crew Resource Management Trainer
CRMT (E)	Crew Resource Management Trainer Examiner
FSTD	Flight Synthetic Training Device
GM	Guidance Material
HPL	Human Performance and Limitations
LPC	Licence Proficiency Check
LIFUS	Line Flying under supervision
MCC	Multi-Crew Co-operation
NOTECHS	Non-Technical Skills
NTS	Non-Technical Skills
OPC	Operator Proficiency Check
SAR	Search and Rescue
TOR	Terms of Reference
TRE	Type Rating Examiner
TRI	Type Rating Instructor

1 INTRODUCTION

1.1 Origin

This document has been developed in conjunction with the UK CRM Advisory Panel. The requirements and qualifications described relate to the rules and regulations for commercial flight operations under EASA Part ORO and EASA Part FCL.

Safety research has shown human error to be a prime contributing factor in many aviation incidents and accidents; mandatory Crew Resource Management (CRM)/Multi-crew Cooperation (MCC) training was therefore introduced over 20 years ago to support safer flight operations. Early courses drew heavily on existing management training approaches and focused upon individual behaviour in an attempt to drive out the 'wrong stuff', but often met with little success as a strong and relevant link to flight operations was frequently lacking. Non-technical training has developed considerably since these early iterations and is now much more operationally focused. The principle that human error is ubiquitous and inevitable is widely accepted. Furthermore, safety is enhanced considerably when an Operator and its Flightcrew are able to demonstrate consistently effective 'Threat and Error Management', or TEM as it is widely known.

The implementation by Operators of training programs which focus upon and support the development of their Flightcrew's non-technical skills (CRM/MCC) enhance the efficacy of the TEM process. Effective threat and error management is the goal; effective CRM/MCC is the means by which it is achieved. The regulatory requirements have been written to support this.

2 THE REGULATORY FRAMEWORK

2.1 Introduction

The regulatory framework acknowledges the significant safety benefits accrued from an integrated approach to the training and testing of both technical and non-technical skills (NOTECHS). The concepts and competencies which underpin the core non-technical elements of performance are defined in the EASA Regulations, and while these may appear at first glance to be labeled and described differently by Part FCL and Part ORO, in reality, Part FCL and Part ORO require exactly the same competencies (knowledge, skills and behaviours) to be trained, and then tested.

MCC concept (Part-FCL)	CRM concept (Part-ORO)
'Multi-crew cooperation' (MCC) means the functioning of the flight crew as a team of co-operating members led by the pilot-in-command. The objectives of MCC training are to develop the technical and non-technical components of the knowledge, skills and attitudes (competencies) required to operate a multi-crew aircraft."	'Crew Resource Management (CRM) is the effective utilisation of all available resources (e.g. crewmembers, aeroplane systems, supporting facilities and persons) to achieve a safe and efficient operation. The objective of CRM is to enhance the communication, human factors and management skills of the crewmembers concerned. The emphasis is placed on the non-technical aspects of the crew performance.'

From AMC FCL.735:

MCC Competency Requirements	MCC Knowledge Requirements
• Communication • Leadership and teamwork • Situation Awareness • Workload Management • Problem Solving and Decision Making • Monitoring and Crosschecking • Task Sharing • Briefing • Flight Management	• Human Factors • Threat and Error Management • Crew Resource Management • Application of Threat and Error Management and CRM principles. • SOPs • Aircraft systems • Undesired aircraft states • PF and PNF roles • Emergency and abnormal procedures

From AMC ORO.115, 215:

CRM Competency Requirements	CRM Knowledge Requirements
• Communication • Application of Threat and Error Management and CRM principles. • Threat and Error Management • Leadership and teamwork • Situation Awareness • Workload Management • Problem Solving and Decision Making • Use of Automation • Task Sharing • Stress, Stress management	• Error detection, error prevention • Application of Threat and Error Management and CRM principles. • Information acquisition, processing and Situation Awareness • SOPs • Human Performance and Limitations • Automation Philosophy • SOPs • Operator Safety Culture

2.2 Training and Testing under Part FCL and Part ORO

The training and testing of Non-technical Skills (CRM, MCC, TEM) is integral to both Part FCL and Part ORO. Part FCL stipulates the training/testing requirements for the initial issue and maintenance of validity of licence and type/class rating privileges; additional training and testing in MCC is a prerequisite before those privileges may be extended to the multi-crew environment. The regulations governing CRM training/testing for an Operator are described in Part-ORO and apply equally to both multi-crew and single-pilot Operators.

Part FCL and Part ORO mandate CRM/MCC training for Flightcrew as follows:

- **Initial Training:** A Flight Crew member may not commence unsupervised Line Flying until they have completed the Operator's Initial CRM training course.
- **Conversion Training and Checking:** CRM/MCC/TEM training may be integrated into all Operator's type conversion training and checking.
- **Recurrent Training and Checking:** Elements of CRM may be integrated into all appropriate phases of recurrent training. Flight Crew may undergo specific modular CRM training in all of

major topics of CRM training to the depth specified in AMC1 ORO.FC.115&215 Crew resource management (CRM) training. All topics may be covered over a three-year period. Modular training sessions may be distributed as evenly as possible

- Command Training: An operator's Command Course may include specific CRM Training

2.3 Instructor, Trainer, and Examiner Competence

CRM/MCC training and testing takes place in three distinct contexts, namely Ground School, Simulator, and Line Operations.

Part FCL:

MCC training and testing is required by Part FCL regulation for the initial issue and maintenance of validity of a type-rating. Authorised Examiners and rated Instructors (i.e. Type/Class Rating Examiners (TRES/CREs) and Type/Class Rating Instructors (TRIs/CRIs) must comply with the requirements of Part FCL and Part ORO and demonstrate their ability to integrate and where applicable, assess MCC/CRM and TEM - see pertaining AMC/GM and Standards Documents 14, 24, 28 and 29, as applicable.

Part ORO:

CRM training and testing is required by Part ORO regulation for both multi-crew and single-pilot Operators. The UK CAA ceased to administer a formal scheme of accreditation for those personnel involved in the delivery of CRM Training for Flightcrew following the introduction of Part ORO in October 2014.

Part ORO requires an Operator to ensure that the CRM Trainers it employs (or contracts) are 'suitably qualified', and must be able to demonstrate to the Competent Authority (the UK CAA) how this requirement is achieved. The UK CAA remains responsible under Part ORO for the maintenance of standards of CRM Training and Examining in the UK. Inspectors from the CAA will therefore observe ground school training, simulator training/testing and training/testing in an aircraft including Line Checks on an opportunity basis.

Detailed performance standards exist for TRIs and TRES. Performance standards for CRM Trainers are under development by EASA and it is expected that these will be issued as revised AMC and Guidance material. In the interim, compliance with the Basic Regulation, published UK CAA AltMOC CRM and the guidance included in this document will be deemed to constitute an acceptable means of compliance under Part FCL and Part ORO.

3 CRM TRAINING AND TESTING – AN ACCEPTABLE MEANS OF COMPLIANCE

3.1 General Requirements

Operators are required to be able to demonstrate how they comply with the Part ORO requirements and how they ensure their CRM Trainers are suitably qualified, in accordance with the regulation for both flight and cabin crew. Operators will therefore need to develop and publish procedures within Part D of their Operations Manual that describe the selection, training and assessment of all personnel involved in the training and testing of CRM/MCC, regardless of the context in which the training takes place (Ground School, Simulator, or Line Operations.)

Operators are expected to may nominate a person to act as a single point of contact responsible for managing CRM training under the oversight of the UK CAA. This person may develop and maintain CRM training programs in accordance with present regulation.

Operators will also need to establish a process whereby all CRM Trainers (CRMTs) are

assessed and standardised; this assessment may be conducted by an 'Operator appointed' CRMT Examiner (CRMTE). This assessment will be undertaken every three years and records maintained to confirm the activity.

An Operator's Part D must also include the processes by which a CRMTE is selected, trained and assessed in the role. An Assessment of the CRMTE may be completed by a nominated person acceptable to the UK CAA.

3.2 Use of Third-party Training Providers

Operators who utilise the services of a third-party CRM Training provider remain responsible under Part ORO for ensuring that the CRMTs employed are suitably qualified, and must establish and publish a process which ensures this in their Part D.

4 CRM TRAINERS - GENERAL

4.1 Suitability

CRM Trainers have a pivotal role to play within the Operator's safety system and are an important means by which high CRM/MCC standards are developed and maintained. In addition, it is a specific requirement of Part-ORO that all of the personnel who conduct CRM Training are 'suitably qualified' as a CRM trainer.'

In order to be suitably qualified, a CRM Trainer must:

(1)

- (i) have adequate knowledge of the relevant flight operations, preferable through current experience as flight crewmember;
- (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 initial flight crew 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 elements specified in AMC1 ORO.FC.115 (repeated in AMC1 ORO.FC.115&215 Crew resource management (CRM) training)

(2) The following qualifications and experience are also acceptable:

- (i) A flight crew member holding a recent qualification as a CRM trainer may continue to be a 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 having adequate knowledge of HPL may become a CRM trainer if he/she maintains adequate knowledge of the relevant flight operations and meets the provisions of paragraph (1)(iii) to (1)(vi).
- (iii) An experienced non-flight crew CRM trainer having adequate knowledge of HPL may become a flight crew CRM trainer if he/she meets the provisions of paragraph (1)(i) and (1)(iii) to (1)(vi).

CRM Trainers must also be able to demonstrate that:

- a) they have the knowledge specified for their relevant role, and can role-model best CRM Practice;
- b) they have the necessary instruction and facilitation skills;
- c) they are able to assess Non-Technical Skills where required; and
- d) they are able to facilitate a constructive debrief of the above.

5 CRM TRAINERS – GROUND SCHOOL

5.1 Training

A well-defined minimum standard of CRM Trainer competency is essential if high standards of CRM instruction, and the effective integration of CRM and Threat and Error Management strategies are to be achieved in accordance with the requirements of Part FCL and Part ORO.

ICAO PANS-TRG states that:

“In competency-based programs, Instructor competencies are made explicit, and instructors have to demonstrate their instructional skills and their knowledge of the subject matter and training course content.”

The training course for a CRM Trainer may be both theoretical and practical. Practical elements may include the development of specific trainer skills, and how to integrate CRM/MCC into line operations in particular.

CRM Trainer competency can be subdivided into ‘Units of Competence’, each containing a number of performance elements and background knowledge requirements, as detailed in Appendix A.

- (1) The training duration for CRM trainers may be a minimum of:
 - (i) 24 hours for trainees holding an instructor certificate, as specified in Commission Regulation (EU) No 1178/2011, which includes a training of 25 hours in teaching and learning; or
 - (ii) 40 hours for trainees who do not hold an instructor certificate as specified in (i).
- (2) This training may be conducted by CRM trainers with a minimum of three years’

experience or by CRM Trainer Examiners. Assistance may be provided by experts in order to address specific areas.

5.2 CRM Trainer Standards

CRM Trainer requirements are described in AMC/GM ORO.FC.115, 215 and expanded in Appendix 2 of this document. They mirror the competence standards for an Instructor described in Part-FCL Subpart J, and pertaining AMC/GM. Guidance on a means of assessing a CRM Trainer against these standards is given in appendix 2.

An operator may ensure that the process for CRM Trainer assessment is described in their Operations Manual, and that it includes the methodology by which the CRM Trainer is observed.

The assessment is valid for a period of three years and subject to the following provisions:

- (1) A CRM Trainer may be assessed by a CRM Trainer Examiner nominated by the operator. All personnel involved in assessing standards must be credible and competent in their role.
- (2) A CRM Trainer may have conducted at least two CRM training courses in the last 12 months.
- (3) For continued validity, the CRM Trainer may be re-assessed within the last 12 months of the three-year validity period by.
- (4) The next three-year validity starts at the end of the previous three-year period.
- (5) Renewal: If no assessment or training was conducted over the 3-year period, a CRM Trainer may comply with the qualification provisions of paragraph 5.2 (1) and (2) before resuming CRM instruction.

6 CRM TRAINER EXAMINERS – GROUND SCHOOL

6.1 Suitability

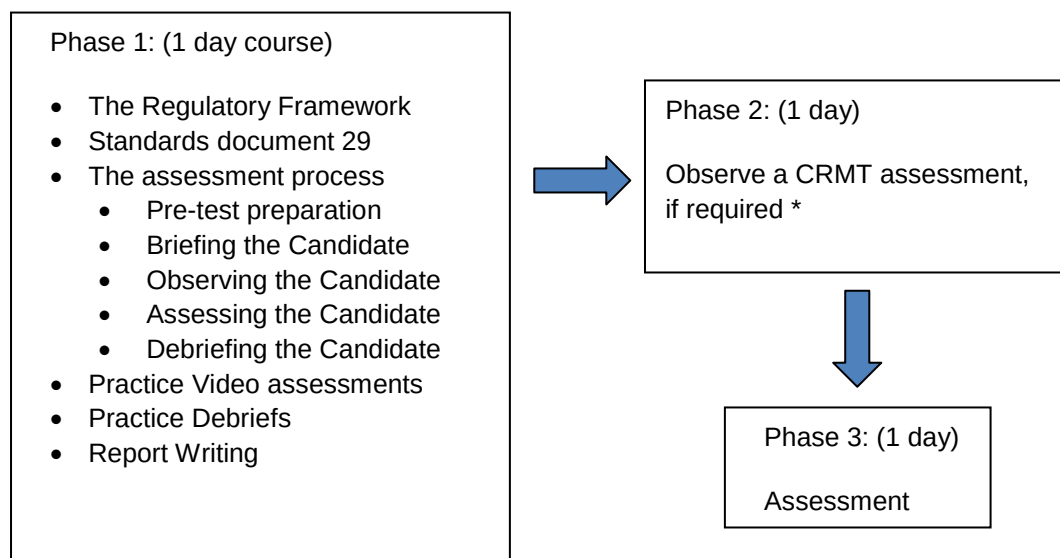
An Operator may nominate suitably experienced CRM Trainers to act as Examiners. Operators who do not have sufficient in-house resources may utilise a third-party, however, the standard and validity of the external CRM Trainer Examiner utilised may be confirmed by the Operator.

Continued suitability in the role of CRM Trainer Examiner may be subject to the following provisions:

- (i) The Examiner may demonstrate continued compliance with the provisions for a CRM trainer and may demonstrate capability in that role.
- (ii) The Examiner may have conducted at least two CRM Trainer assessments in the previous 12 months.
- (iii) Within the last 12 months of the three-year validity period the examiner may be observed conducting an assessment of a CRM Trainer by the nominated person or Training Post Holder.
- (iv) The next three-year validity starts at the end of the previous three-year period.
- (v) Renewal: If the examiner has not maintained activity in the role, he/she may be supervised by a valid CRMTE until recency is achieved or comply with the provisions of (III) before resuming activities as an examiner.

6.2 Training

All prospective CRMTEs may undergo training designed to equip them with the relevant Examiner competencies prior to being assessed as a CRMTE. A suggested methodology is as follows:



7 INSTRUCTORS and EXAMINERS - SIMULATOR

7.1 Requirements

Part ORO requires elements of CRM be integrated into all appropriate phases of recurrent training. Whenever it is practicable, parts of the CRM practical training may be conducted in FSTDs that reproduce a realistic operational environment and permit interaction.

Rated Instructors and Authorised Examiners (TRIs/CRIs and TRES/CREs) must comply with the requirements of Part FCL Sub-Parts J, K, Part ORO, and CAA Standards Doc 24A, and AMC1 ORO.FC.115&215 - Crew resource management (CRM) training in particular. They must be able to train to the required depth, all of the relevant CRM training topics in Appendix 6 – EASA Part ORO CRM Training Syllabus. Authorised Examiners must also comply with the requirements of section 8 – Non-technical Skills assessment.

Appendix 5 of this document includes a 'specimen Assessment Form' which Senior Examiners and TRI Examiners may use to assess the CRM/MCC elements of Instructor/Examiner competence.

8 INSTRUCTORS and EXAMINERS - LINE FLYING

8.1 Requirements

Part ORO states that: 'CRM/MCC/TEM training may be integrated into all Operators' type conversion training and checking'; this includes Line Flying under Supervision (LIFUS). Line flying under supervision provides the opportunity for a flightcrew member to practice and consolidate the procedures and techniques he/she has been made familiar with during the ground and flight training of an operator conversion course.

This is accomplished under the supervision of a commander specifically nominated and trained for the task. All personnel involved in LIFUS training must comply with the requirements of AMC1 ORO.FC.115&215 Crew resource management (CRM) training and must be able to train

to the required depth, all of the relevant CRM training topics in Appendix 6 – EASA Part ORO CRM Training Syllabus. Operators must be able to show how this is achieved and how standards are maintained in their Part D.

Appendix 5 of this document includes a 'specimen Assessment Form' which may be used by a Senior Examiner or Commander nominated by the Operator for the task of assessing the competence of personnel involved in LIFUS training.

Line Checks are conducted by a suitably qualified commander nominated by the Operator. The nominated commander may be trained in CRM concepts and the assessment of CRM skills and must comply with the requirements of section 9 - Non-technical Skills assessment.

9 NON-TECHNICAL SKILLS ASSESSMENT

9.1 Introduction

The training and testing of Non-technical Skills is integral to Part-FCL and Part-ORO. There are five occasions during which CRM/MCC competence is specifically assessed: the Licence Skill Test (LST); the Licence Proficiency Check (LPC); the Operator's Proficiency Check (OPC); the Line Check and for ATQP fleets, the Line Orientated Evaluation (LOE). The same technical and non-technical pass/fail criteria may apply to all of these events. The purpose of the assessment is to provide feedback to the individual/crew and to identify any retraining requirements. An applicant may be failed for CRM/MCC alone; however, it may normally be linked with a technical failure.

In the past, the assessment of NTS lacked formal measurements of competence, potentially leading to a subjective and extremely variable application of standards. Research into a means of assessment has determined that acquired NTS skills are reflected in recognisable behaviours, whose characteristics are identifiable as measurable behavioural markers. This research is outlined in CAA Paper 98005 – "Behavioural Markers for Crew Resource Management".

Assessment of CRM skills is the process of observing, recording, interpreting and debriefing crews and crewmember's performance using a validated and generally accepted methodology in the context of overall performance.

The non-technical skills (NOTECHS) framework is one such method. The flightcrew member's CRM skills may 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 CRM trainer or from trainees on individual and crew performance may be given during training to the individuals concerned.

Assessment of CRM skills may:

- (i) include debriefing the crew and the individual and serve to identify additional training where needed for the crew or the individual crew member; and
- (ii) be used to improve the CRM training system by evaluating summaries of all CRM assessments.

Prior to the introduction of CRM skills assessment, a detailed description of the CRM methodology, including the terminology used for the assessment may be published in the Operators Part D. This must also include the process by which Examiners are trained to undertake NTS assessment, including those commanders nominated to undertake Line Checks who are not Authorised Examiners (CRE and TRES).