



สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

TCAR OPS OM-D Workshop

Crew Resource Management: CRM Training

Flight Operations Standards Department

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Main Regulatory References

Crew Resource Management: CRM

ORO. FC.115	CRM Training
ORO. FC.145	Provision of training
AMC2 ORO.FC.146	Flight Crew CRM Instructor
ORO. FC.205	Command Course
ORO. FC.215	(initial) CRM Training
ORO. FC.220	Operator conversion training and checking
ORO. FC.230	Recurrent training and checking

Crew Resource Management: CRM

Preamble:

- Flight crew shall have received CRM training appropriate to their **Role** as specified in OM. [ORO.FC.115]
- **Initial CRM** shall completed before commencing normal Line Flying. [ORO.FC.215]

CRM training elements	Initial operator's CRM training	Operator conversion course when changing aircraft type	Operator conversion course when joining an operator	Annual recurrent training	Command course
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* FC must complete initial CRM on it **initial OCC**;

** If change operators, must complete CRM training for **joining operator**;

*** in case, change **type of operations** must take initial CRM training again. (e.g. LH, SH/MC, Bizjet)

Crew Resource Management: CRM

Course	Details summary
Initial CRM Training	Mandatory when FC enroll to initial OCC , Difference Type of Operations (e.g. Flag carrier to Air Taxi, Freighter, ...) NOTE: 18 training hours with a minimum of 12 training hours in classroom training
Conversion Course (OCC)	<ul style="list-style-type: none">• Change/Joining operators (same type/class);• Change Type/Class in same organization. NOTE: see table 1 AMC1 ORO.FC.115(g)
Commander Course	Integrated into commander upgrade training.
Recurrent Training	<ul style="list-style-type: none">• Combined training (FC, CC, TC);• Annually;• All elements in table 1 (g) covered over period not exceed 3 years. NOTE: 6 training hours over a period of 3 years

Crew Resource Management: CRM

CRM Training for Multi-Pilot Operations (MPO)

[AMC1 ORO.FC.115]

Where the CRM training is always required for Flight crew (integrated in training programme)?

- OCC (first operator, change operator, new type/class);
- CC (commander upgrade);
- RTC (recurrent training).

NOTE: CRM should rely on **experience** and **SMS** of operator, focus on the particularities related to **automation**, **monitoring**, **resilience**, the **startling** effect, **cultural** differences, the Operator's **safety culture**, in particular by using **case studies (internal or external)**

Crew Resource Management: CRM

Considerations for establishing CRM Training

Environment:

- **Non-operational environment** (classroom, Computer Base Training);
 - Method: group discussions, team task analysis, task simulation, feedback.
- **Operational environment** (FSTD, Actual A/C).

Combined CRM Training:

- At Recurrent training, to address:
 - Communication, Coordination, Mixed multinational and Cross-culture.

Crew Resource Management: CRM

Contracted CRM training [ORO.GEN.205]

What (elements) must be emphasis:

- Type of operations;
- Specific culture;
- Associated procedure of operators.

NOTE: 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.

Crew Resource Management: CRM

Creation of training Module , Training plan for CRM

(CBTA approach)

Required Elements in CRM Training (f):

- ❖ Automation and philosophy on the use of automation;
- ❖ Monitoring and intervention;
- ❖ Resilience development;
- ❖ Surprise and startle effect;
- ❖ Cultural differences;
- ❖ Operator's safety culture and company culture;
- ❖ Case studies.

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

Crew Resource Management: CRM

CRM Training Syllabus: table 1 (g) contains all details and element of CRM training

Table 1: Flight crew CRM training

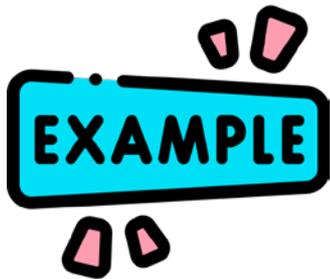
CRM training elements	Initial operator's CRM training	Operator conversion course when changing aircraft type	Operator conversion course when joining an operator	Annual recurrent training	Command course
General principles					
Human factors in aviation; General instructions on CRM principles and objectives; Human performance and limitations; Threat and error management.	In-depth	Not 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	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; Leadership, cooperation, synergy, delegation, decision-making, actions;	In-depth	Required	Required	Required	In-depth
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

Crew Resource Management: CRM

Assessment of CRM skill: NOTECHs skill assessment only in operational environment

- Assessment of CRM skills is the process of **observing, recording, interpreting** and **debriefing** crews.
- 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



Condition	
Performance	
Standards	

Crew Resource Management: CRM

FC CRM Instructor (classroom) [AMC2 ORO.FC.146]

Prerequisite:

- Human performance & Limitation knowledge;
- Completed initial operator's CRM training;
- Received training in group facilitation skill;
- Have knowledge of flight operations;
- Receive initial FC CRM instructor;
- Pass assessment of FC CRM by operator.

Maintenance of Competency:

- **Completed** CRM instructor **refresher** (within 12 months of 3 year validity periods); **and**
- Meets 1 or 2 of these:
 - Conduct ≥ 3 CRM training event within 3 years / be assessed within 12 months of 3 year validity periods

Crew Resource Management: CRM

FC CRM Instructor (classroom) [AMC2 ORO.FC.146]

Case CRM qualification has expired:

- Completed Refresher training;
- refresher training on knowledge of the relevant flight operations (if necessary);
- Be assessed of a flight crew CRM instructor.

FC CRM Instructor Courses:

- Initial training.
- Refresher training.

NOTE: More details for FC CRM instructor are detailed in AMC2 ORO.FC.146.

