Flight Crew Human Factors Advisory Panel

Practical Crew Resource Management (CRM) Standards: The Handy Guide

This guide is a standardisation tool, developed by the **Flight Crew Human Factors Advisory Panel** (FCHF), to help National Aviation Authority Inspectors [GM3 ARO GEN.300], Management, Auditors and Examiners in understanding or evaluating CRM Programmes or individual Crew Members. The FCHF panel is independent of the CAA. This guide can them to help monitor compliance, identify development areas, assist oversight of external trainers or training organisations, assess for effectiveness of training and identify areas for development. It is a practical tool and does not replace familiarity with regulations or imply that each list must score 10 out of 10.

10 Easy to Spot Markers of Effective Training

Operator

1. CRM is integrated into training programmes to align the SIM and Ground School
2. CRM has a scientifically robust basis in its design, as far as possible.
3. CRM targets or aims are set for training and the operator's management system
4. Training data are used to assess and evaluate CRM skills. Skills are individually assessed (rather than a simple CRM pass/fail)
5. Feedback on FDM and/or ASR includes analysis of CRM issues
6. The operator's management system recognises CRM issues
7. CRM articles or papers are distributed to the pilots (e.g. via safety magazines)
8. Instructors are suitably trained/checked in CRM and receive on-going development
9. In-depth CRM is understood beyond just teamwork/communication/combined training
10. There is a mix of combined and separate role-specific training

Training Pilots

1. CRM training has clear aims in terms development of specific skills
2. Routine and overt use of Behavioural Markers in briefing and debriefing
3. Trainers are able to identify CRM root causes of both effective and poor performance
4. Simulator lessons allow crews to practice time management skills that replicate the real world
5. Instructor is able to pass on practical CRM tips to enhance pilot performance
6. Instructors can use CRM models or illustrations to help pilot understanding
7. Instructors are able to facilitate effectively to a reasonable standard
8. Instructors limit the number of debrief items to maximise in-depth learning
9. Trainers are able to role model CRM skills
10. Training is practical, and integrates both technical and CRM / TEM aspects

Flight Crew

1. Pilots are familiar with the Operator's Behavioural Marker System (one example is NOTECHS)
2. Pilots demonstrate CRM skills openly (such as avoiding rushing / sharing thinking)
3. Flight deck atmosphere is relaxed and professional
4. Problems are anticipated
5. Contingency plans are included in briefings to enhance situation awareness (such as diversion routes)
6. Formal briefings are updated when things change
7. Tasks are performed in a timely way through the flight
8. Pilots routinely seek feedback from one another to maximise learning
9. Pilots are able to self-reflect on their performance to enhance self development
10. The flight deck gradient is appropriate to the situation

Useful Audit Items

1. EASA 3 Year Rolling Programme (Table 1) – check sufficient depth, quantity and time for the material
2. Expiry of recurrent CRM for flight crew
3. Company system of monitoring external suppliers
4. Operator still responsible for training / trainer qualification if sourced from elsewhere in their Airline Group
5. CRM Trainer suitable qualification process, certification and acceptable/unacceptable markers in Part D
6. Validity of any benefit claimed from SIM / LOFT or E-Learning to reduce class CRM
7. Suitable qualification of Line Checkers to assess CRM
8. Integration of risks identified by the operator's management system / MOR with training feedback
9. Types of CRM Course and timings listed in Part D (Initial Operator / Command / Annual Recurrent & Combined Training / Change of Type or Operator Conversion) – see Table 1 and GM3.ORO.FC.115
10. Instructors, Examiners, CRM Trainers and their assessors are listed in Part D

Individual Instructor Assessment Criteria

Were the training objectives achieved, YES or NO?

- Did the candidate demonstrate the knowledge required for the role?
- Did the candidate encourage trainees to participate, share their experience and self-analyse?
- Did the candidate identify and respond to the trainees' needs relative to their expertise / experience?
- Did the candidate incorporate Operator's Behavioural Marker System when appropriate?
- Did the candidate integrate practical CRM within technical training and line operations?
- Did the candidate identify CRM reasons for accidents / incidents?
- Did the candidate regularly check for understanding and resolve ambiguity?
- Did the candidate demonstrate effective instruction and facilitation skills?
- Did the candidate actively role model effective CRM behavior and attitudes?

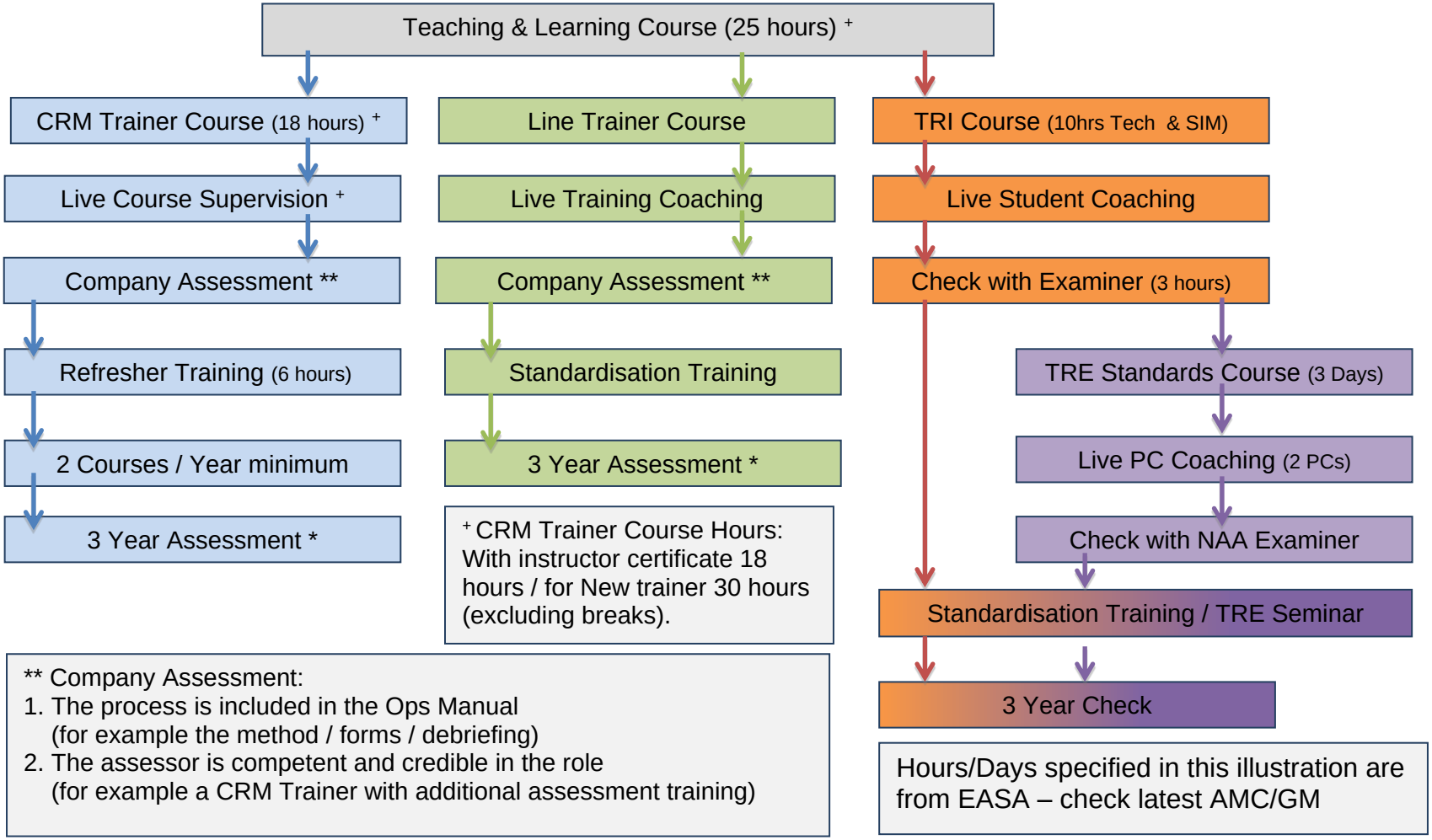
Useful Documents and Regulations to be considered

- Part ORO.FC 115 (including AMC1-3 and GM 1-7), 215, 220, 230 and Part ORO.GEN.200
- FCL Subpart J (Instructors) and K (Examiners)
- Reg 216/2008 Annex III generic instructional knowledge and techniques
- UK CAA Standards Document 29v7 and CAP737
- Part ORO.CC 115 (e) and associate AMC / GM

Practical Summary of Regulation

- CRM shall be integrated into all phases of training and checking
- CRM Training should address risks identified by the operator's management system
- All Instructors and Examiners shall be suitably qualified to integrate elements of CRM
- All checks will be conducted by Examiners trained in CRM concepts / assessment of CRM Skills
- All ground and refresher training shall be conducted by suitably qualified CRM Trainers
- The differences between the initial UKCAA AltMOC (now removed) and EASA AMC/GM were:
  - Surprise, startle and resilience topics will be included in the 3 year programme
  - Training standardisation / refresher for CRM Trainers will also be included

Illustration or sample of a suitable qualification process



10 Further Easy to Spot Markers of Effective Training

Technical Crew (such as Load Masters / Winchmen / Police Observers / SAR or HEMS Crew)

1. CRM aims are integrated into Technical Crew's training (such as TEM)
2. Safety data and feedback within the Operator's Safety System includes Technical Crew issues
3. Feedback on ASR includes analysis of CRM issues concerning Technical Crew
4. CRM related issues are distributed to the Technical Crew (e.g. via safety magazines)
5. Technical Crew anticipate problems
6. Pre-flight and Inflight activities are conducted in a timely way
7. Technical Crew actively show CRM Skills (i.e. how to interact with the Flight Crew in critical flight phases)
8. Communication with the Flight Deck Crew is open and timely
9. Briefings include Technical Crews when needed
10. The atmosphere with the Flight Crew is relaxed and professional

Cabin Crew Training

1. CRM is integrated into Cabin Crew training programmes
2. Trainers and Cabin Crew are familiar with the Operator's Behavioural Marker System if they have one
3. The training agenda includes analysis of CRM issues from Cabin Safety Reports
4. The operator's management system feedback is used in designing training
5. Cabin Crew Trainers are suitably trained/checked in CRM and receive on-going development
6. CRM Expiry dates and Trainer qualifications are suitably certificated
7. There is some combined CRM Training with Flight Crew in the 3 year syllabus
8. There is role-specific CRM Training for Cabin Crew training in the 3 year syllabus
9. CRM information is available to Cabin Crew (such as through safety magazines or articles)
10. CRM Training has clear aims of the Cabin Crew skills being developed

Cabin Crew Performance

1. Cabin Crew work well and openly share information with the Flight Crew
2. Cabin Crew demonstrate CRM skills openly (such as briefing / sharing thinking)
3. The working atmosphere for Cabin Crew is friendly and professional
4. Problems are anticipated
5. Contingency plans are included in briefings to enhance Crew awareness
6. Plans and briefings are updated when things change
7. Tasks are performed in a planned and timely way through the flight
8. Cabin Crew routinely seek feedback from one another to maximise learning
9. Cabin Crew are able to self-reflect on their performance to enhance self development
10. The authority gradient amongst the whole Crew is appropriate to the situation

Data Driven Programmes (such as ATQP or EBT)

1. Trainers understand, explain and support the Programme Aims
2. Trainers are able to explain and apply the marking system correctly
3. Real-time or LOE exercises have defined event sets for data gathering
4. There is evidence that Training Aims (both Technical and NTS/CRM) are established from data
5. Multiple data sources are used to establish Training Aims (i.e. Training records / ASR / FDM)
6. Flight Crew Performance is monitored against previous years and the initial benchmark standard
7. Training Data is still comparable between years if a system changes (i.e. marking scale /NTS system)
8. Quantitative (numerical) and qualitative (word) data are both used
9. There is a checking and standardisation system for trainer marking and retraining of outlier trainers
10. The Marking System addresses task exercises and CRM/NTS Skills or Competencies

Automation

1. Pilots have in-depth practical knowledge of all auto-flight systems and modes
2. Pilots use of automation levels is optimal
3. Pilots can move confidently and effectively from one level of automation to another
4. Pilots maintain confidence in handling the aircraft manually
5. Briefings include plans for how automation will be used and any changes are shared
6. There is active monitoring of auto-flight modes and FMA/FMAs
7. Pilots are confident using the auto-flight system in degraded modes
8. FMS/FMGS programming is included in the briefing and cross checked
9. Automation errors are spotted and managed in a timely way
10. Autopilot engagement and disengagement is clear to both pilots