

JAR-OPS Part 1 - Notice of Proposed Amendment (NPA)

NPA-OPS-16

CREW RESOURCE MANAGEMENT - FLIGHT CREW

INTRODUCTION

1. The original adopted text of JAR-OPS contains numerous requirements which introduce mandatory Crew Resource Management (CRM) training. These requirements reflect the increasing importance which both the Regulatory Authorities and operators place on the development of this aspect of training. In some (but not all) of the JAA Member States, *mandatory* training in this critically important skill has not, prior to the implementation of JAR-OPS, been undertaken.

2. It was known, at the time of the adoption of the JAR, that much work was still to be done to refine and to amplify the detail of the requirements and, in places, to explain what was intended. The proposals contained in this Notice of Proposed Amendment (NPA) result from lengthy discussion between the parties involved including the representatives of the Pilot organisations.

3. Since February of 1998, the JAA has provided guidance to Authorities on the subject of CRM training for flight crew in the form of Temporary Guidance Leaflet (TGL) No: 5. It is explained in the introductory 'Note' to that Leaflet that the guidance which the leaflet contains would, in due course, give rise to NPA and also that the "... .. *content of this Leaflet may be modified in the light of experience before any NPA consultation.*". Subject to the comments which may be received, and which will be considered by the Operations Committee, it is believed that the new material which is now offered is more mature than TGL No: 5 and more effective in achieving the JAA's aims. Moreover, as mentioned above, the content of this NPA results from more effective liaison than has hitherto been possible.

4. It is the hope of the Operations Committee that, from the date of publication of this NPA until the time when it is possible for a revised and adopted text of the JAR to be published, Authorities will regard the proposals in this document as the preferred guidance although, for administrative reasons, the TGL will remain in existence for the time being. This procedure will, in the opinion of the Operations Committee, enable a smoother and easier transition to the finally amended provisions.

5. This NPA contains proposals to amend only Subpart N (Flight Crew) of JAR-OPS Part 1 (Aeroplanes). Further work is required before equivalent proposals are made to improve the existing text which relates to CRM for Cabin Crew or to JAR-OPS Part 3 (Helicopters).

6. This paper is in **two parts**;

a. **This introduction** which provides an overall view and an explanation of the proposals and/or the reason for the proposal, and

b. **The proposed amendments.** Some of the proposals are to amend an existing text and some are entirely new. For ease of reference, the proposals are shown in approximately the same format as they would appear in the JAR. Thus Section 1 material is shown in columnar format and Section 2 reads across the page. As is common with all such proposals, the proposed changes to the adopted 'Change 1' text are shown by a combination of ~~strikeout~~ and/or ***bold italics***. The latter indicates to the reader the new wording which is intended.

PROPOSALS

7. These proposals affect five categories of CRM training:

- i. Initial CRM training;
 - ii. Conversion course CRM training when changing aeroplane type;
 - iii. Conversion course CRM training when changing operator;
 - iv. Command course CRM training; and
 - v. Recurrent CRM training.
- 7.1 *JAR-OPS 1.940(a)(7) - (Page N-1)* introduces the need to provide initial CRM training for commanders who are self-employed and/or working on a freelance or part-time basis and who may not be employed continuously for a full year with one operator. ***Such commanders should already be familiar with the aeroplane type and with the differing operators' cultures and hence CRM training must be completed prior to unsupervised line flying, given that other crew members may not have completed such training.*** (1.943(a) refers).
- 7.2 *JAR-OPS 1.943 - (Page N-1)* introduces the requirement for initial CRM training. CRM training at this stage aims at introducing for the first time a new crew-member into a company, and is a logical follow-on to the Human Performance and Limitations (HPL) programme and Multi Crew Co-operation (MCC) training requirements applicable to the issue of Flight Crew Licences. Initial CRM training is tailored to the culture of a company (Philosophy), the nature of the operations (Policy), and its standard operating procedures (SOPs). It starts a general awareness phase and gives first opportunities to acquire necessary skills. Allowing a period of up to one year for initial CRM training permits crews to become acquainted with the culture of the company before undertaking formal courses ***(but see 1.940(a) (7) for the requirement for initial CRM training for commanders who are self-employed and/or working on a freelance or part-time basis).***
- 7.3 *JAR-OPS 1.945 - (Page N-2)* introduces the requirement for integration of CRM elements into the existing training events of the conversion course. New text in Appendix 1 to JAR-OPS 1.945 is contingent upon changes to the main Rule and is, therefore, self-explanatory.
- 7.4 *JAR-OPS 1.955 - (Page N-4)* introduces the requirement for integration of CRM elements into the existing training events of the command course. Together with training under JAR-OPS 1.945, this training requirement is the continuous reinforcement of CRM methods in all situations. It demonstrates to the trainees that the operator and all the training personnel support and encourage the CRM principles.
- 7.5 *JAR-OPS 1.965 - (Page N-5)* introduces the CRM requirement for recurrent training. For that kind of training, an integration of CRM elements into existing training events (e.g. simulator sessions with appropriate briefing/de-briefing) ***and*** separate, dedicated training modules are required. These programmes provide the required opportunities for a pilot to adopt the theoretical principles of CRM into individual working styles. New text in Appendix 1 to JAR-OPS 1.965 *(Page N-9)* is contingent upon changes to the main Rule and is, therefore, self-explanatory.
- 7.6 *AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) - (Page N-15)* describes an Acceptable Means of Compliance with JAR-OPS CRM requirements and is intended to replace the existing AMC OPS 1.945(a)(9)/1.955(b)(6)/1.965(e). The first two paragraphs of the existing IEM 1.945(a)(9)/1.955(b)(6)/1.965(e) (which are general statements on CRM) have been moved to the beginning of the revised AMC 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) as general introductory text.
- 7.7 *Paragraph 2.2 of AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) - (Page N-15)* Critical to the success of CRM programmes is the competence of instructors of CRM training, not least for credibility. This is no different to the approach in qualifying instructors of

technical training. The proposal reflects the categories of training personnel who conduct initial and modular CRM training, as follows:

- i. Those who recently gained an ATPL and took Human Performance and Limitations (HPL) exams as part of the licence;
 - ii. Those who gained a Flight Crew Licence acceptable under JAR-OPS 1.940(a)(3) before the HPL exam was introduced and who must cover the theory of HPL; and
 - iii. Those experienced non-flight crew personnel who have a knowledge of HPL.
 - iv. Those former flight crew members who have a knowledge of HPL.
- 7.8 *Table 1 of paragraph 6 of AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) - (Page N-17)* indicates which CRM elements should be included in each type of training.
- 7.9 *IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) - (Page N-19)* is intended to replace the existing IEM OPS 1.945(a)(9)/1.955(b)(6)/1.965(e).
- 7.10 Paragraph 8 of *AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) - (Page N-18)* and paragraph 4 of *IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e) (Page N-19)* include important elements relating to the assessment of CRM skills.
- 7.11 Note that AMC OPS 1.945 is retained in toto.
- 7.12 *A new AMC, AMC OPS 1.945(a)(9) - (Page N-19)*, is introduced to address the use of automation. The inclusion of a reference to an operator's policy on the use of automation may be needed to amplify the content of Subpart P of JAR-OPS.
- 7.13 *A new AMC, AMC OPS 1.965(d) (Emergency and Safety Equipment Training) - (Page N-20)* deals with Emergency and Safety Equipment training. The text is copied in total from the existing AMC OPS 1.945(a)(9)/1.955(b)(6)/1.965(e) paragraph 6, but is now attributed to Emergency and Safety Equipment rather than initial and recurrent CRM training. In addition, the content of IEM OPS 1.965, paragraph 5 has also been added to this new AMC.
- 7.14 *IEM OPS 1.965 - (Page N-20)* with the omission of paragraph 5 (as explained in para. 7.13 above), is included for completeness. Paragraph 2 has been amended so as to be consistent with the phraseology concerning the use of an aeroplane or flight simulator in JAR-OPS 1.970 as amended by NPA-OPS 7. Text at paragraph 3 relating to the person conducting the line check has been moved to Appendix 1 to 1.965 because it is considered important enough to warrant Section 1 status.
8. Finally, in addition to this NPA, operators are encouraged to become familiar with the *Guide to Performance Standards for Instructors of CRM Training in Commercial Aviation*, published in September 1998 jointly by the RAeS, UK CAA, and UK Aviation Training Association (ATA) for guidelines to suitably qualify all personnel delivering any form of CRM training or conducting checks which include the assessment of CRM skills. Moreover, operators should be aware that trials, funded by the EU and monitored by the JAA Human Factors Project Advisory Group, are being conducted by a number of JAA operators of the EU Non-Technical Skills (NOTECHS) behavioural markers. Results of these **or equivalent** trials **may** provide **validated** guidelines for team and individual assessment criteria.

JAR-OPS 1.940 Composition of Flight Crew

(See Appendices 1 & 2 to JAR-OPS 1.940)

(a) An operator shall ensure that:

- (1)
- (2)
- (3)
- (4)
- (5)
- (6)

no changes are proposed to the existing text of subparas. (a)(1) to

(6)

(7) ~~An operator shall ensure that~~ When engaging the services of flight crew members who are self-employed and/or working on a freelance or part-time basis, the requirements of Subpart N are complied with. In this respect, particular attention must be paid to the total number of aircraft types or variants that a flight crew member may fly for the purposes of commercial air transportation, which must not exceed the requirements prescribed in JAR-OPS 1.980 and JAR-OPS 1.981, including when his services are engaged by another operator. ***For crew members serving the operator as a commander, initial Crew Resource Management (CRM) training shall be completed before commencing unsupervised line flying.***

JAR-OPS 1.943

Initial Crew Resource Management (CRM) training

(See AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e))

(See IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e))

(a) When a flight crew member has not previously completed initial Crew Resource Management (CRM) training (either new employees or existing staff), then the operator shall ensure that the flight crew member completes an initial CRM training course. New employees shall complete initial CRM Training within their first year of joining an operator. Flight crew who are already operating as flight crew members in commercial air transportation at the date of JAR-OPS applicability and who have not completed CRM training before shall complete an initial CRM training course within the first year of the applicability of JAR-OPS.

(b) If the flight crew member has not previously been trained in Human Factors then a theoretical course, based on the human performance and limitations programme for the ATPL (see the requirements applicable to the issue of Flight Crew Licences) should be completed before the initial CRM training or combined with the initial CRM training.

(c) Initial CRM training shall be conducted by at least one CRM trainer acceptable to the Authority (see AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)) who may be assisted by experts in order to address specific areas.

(d) Initial CRM training is conducted in accordance with a detailed course syllabus included in the Operations Manual and acceptable to the Authority.

JAR-OPS 1.945 Conversion Training and checking
 (See Appendix 1 to JAR - OPS 1.945)
 (See AMC OPS 1.945)
 (See IEM OPS 1.945)
(See AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e))
(See IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e))

(a) An operator shall ensure that:

(1) A flight crew member completes a Type Rating course which satisfies the **requirements** applicable **to the issue of Flight Crew Licences** when changing from one type of aeroplane to another type or class for which a new type or class rating is required;

(2) A flight crew member completes an operator's conversion course before commencing unsupervised line flying:

(i) When changing to an aeroplane for which a new type or class rating is required; or

(ii) When changing operator;

(3) Conversion training is conducted by suitably qualified persons~~nel~~ in accordance with a detailed course syllabus included in the Operations Manual and acceptable to the Authority. **The operator shall ensure that the personnel integrating elements of CRM into conversion training are suitably qualified.**

(4) The amount of training required by the operator's conversion course is determined after due note has been taken of the flight crew member's previous training as recorded in his training records prescribed in JAR-OPS 1.985;

(5) The minimum standards of qualification and experience required of flight crew members before undertaking conversion training are specified in the Operations Manual;

(6) Each flight crew member undergoes the checks required by JAR-OPS 1.965(b) and the training and checks required by JAR-OPS 1.965(d) before commencing line flying under supervision;

(7) Upon completion of line flying under supervision, the check required by JAR-OPS 1.965(c) is undertaken;

(8) Once an operator's conversion course has been commenced, a flight crew member does not undertake flying duties on another type or class until the course is completed or terminated; and

(9) **Elements of CRM** training is **are** integrated ~~incorporated~~ into the conversion course. (See AMC OPS **1.943/1.945(a)(9)/1.955(b)(6)/ 1.965(e)** & IEM OPS **1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)** **and AMC OPS 1.945(a)(9) and IEM OPS 1.945(a)(9)**).

(b) In the case of changing aeroplane type or class, the check required by 1.965(b) may be combined with the type or class rating skill test ***under the requirements applicable to the issue of Flight Crew Licences*** required by JAR-FCL.

(c) The operator's conversion course and the Type or Class Rating course required ***for the issue of Flight Crew Licences*** by JAR-FCL may be combined.

JAR-OPS 1.955 **Nomination as commander**

(a) An operator shall ensure that for upgrade to commander *etc. etc.*

(no changes are proposed to the existing text of paragraph (a))

(b) The command course required by sub-paragraph (a)(2) above *etc. etc.*

(no changes are proposed to the existing text of subparagraphs (b)(1) to (b)(5))

(6) **Elements of** Crew Resource Management training. (See AMC OPS **1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)** & IEM OPS **1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)**)

JAR-OPS 1.965 Recurrent Training and Checking

(See Appendices 1 & 2 to JAR-OPS 1.965)

—See AMC OPS 1.965 **(See AMC OPS 1.943/1.945(a)(9)/1.955(b) (6)/1.965(e))**

(See IEM OPS 1.943/1.945(a)(9)/1.955(b) (6)/1.965(e))

(See IEM OPS 1.965)

(a) General. An operator shall ensure that:

(1) Each flight crew member undergoes recurrent training and checking and that all such training and checking is relevant to the type or variant of aeroplane on which the flight crew member operates;

(2) A recurrent training and checking programme is established in the Operations Manual and approved by the Authority;

(3) Recurrent training is conducted by the following personnel:

(i) *Ground and refresher training* - by suitably qualified personnel;

(ii) *Aeroplane/flight simulator training* - by a Type Rating Instructor (TRI) or, in the case of the flight simulator content, a Synthetic Flight Instructor (SFI), providing that the TRI or the SFI satisfies the operator's experience and knowledge requirements sufficient to instruct on the items specified in **paragraphs** (a)(1)(i)(A) and (B) of Appendix 1 to JAR-OPS 1.965;

(iii) *Emergency and safety equipment training* - by suitably qualified personnel; and

(iv) *Crew Resource Management (CRM): training*

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

(B) Modular CRM training
- by at least one CRM trainer acceptable to the Authority (see AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)) who may be assisted by experts in order to address specific areas.

(4) Recurrent checking is conducted by the following personnel:

(i) *Operator proficiency checks* - by a Type Rating Examiner or, if the check is conducted in a flight simulator qualified and approved for the purpose in accordance with JAR-STD 1A, a Synthetic Flight Examiner;

(ii) *Line checks* - **by suitably qualified** commanders nominated by the operator and acceptable to the Authority;

(iii) *Emergency and safety equipment checking* - by suitably qualified personnel;

(b) *Operator Proficiency Check*

(1) An operator shall ensure that:

(i) Each flight crew member undergoes operator proficiency checks to demonstrate his competence in carrying out normal, abnormal and emergency procedures; and

(ii) The check is conducted without external visual reference when the flight crew member will be required to operate under IFR.

(iii) Each flight crew member undergoes operator proficiency checks as part of a normal flight crew complement.

(2) The period of validity of an operator proficiency check shall be 6 calendar months in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous operator proficiency check, the period of validity shall extend from the date of issue until 6 calendar months from the expiry date of that previous operator proficiency check.

(c) *Line Check.* An operator shall ensure that each flight crew member undergoes a line check on the aeroplane to demonstrate his competence in carrying out normal line operations described in the Operations Manual. The period of validity of a line check shall be 12 calendar months, in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous line check the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous line check. (See AMC OPS 1.965(c)).

(d) *Emergency and Safety Equipment training and checking.* An operator shall ensure that each flight crew member undergoes training and checking on the location and use of all emergency and safety equipment carried. The period of validity of an emergency and safety equipment check shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous emergency and safety check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous emergency and safety equipment check. (See AMC OPS 1.965(d))

~~(e) *CRM.* An operator shall ensure that each flight crew member undergoes Crew Resource Management training as part of recurrent training. (See AMC OPS 1.945(a)(9)/1.955(b)(6)/1.965(e) & IEM OPS 1.945(a)(9)/1.955(b)(6)/1.965(e).) An operator shall ensure that :~~

~~(1) *Elements of CRM are integrated into all appropriate phases of the recurrent training, and;*~~

~~(2) *Each flight crew member undergoes specific modular CRM training. All major topics of CRM training shall be covered over a period not exceeding 3 years;*~~

(f) *Ground and Refresher training.* An operator shall ensure that each flight crew member undergoes ground and refresher training at least every 12 calendar months. If the training is conducted within 3 calendar months prior to the expiry of the 12 calendar months period, the next ground and refresher training must be completed

within 12 calendar months of the original expiry date of the previous ground and refresher training.

(g) *Aeroplane/flight simulator training.*
An operator shall ensure that each flight crew member undergoes aeroplane/flight simulator training at least every 12 calendar months. If the training is conducted within 3 calendar months prior to the expiry of the 12 calendar months period, the next aeroplane/flight simulator training must be completed within 12 calendar months of the original expiry date of the previous aeroplane/flight simulator training.

**Appendix 1 to JAR-OPS 1.945
Operator's Conversion Course**

(See AMC OPS 1.945)

***(See AMC OPS 1.943/1.945(a)(9)/
1.955(b)(6)/1.965(e))***

***(See IEM OPS 1.943/1.945(a)(9)/
1.955(b)(6)/1.965(e))***

(See IEM OPS 1.945)

(a) An operator's conversion course shall include:

(1) Ground training and checking including aeroplane systems, normal, abnormal and emergency procedures;

(2) Emergency and safety equipment training and checking which must be completed before aeroplane training commences;

~~(3) Crew Resource Management Training;~~

~~(4-3)~~ Aeroplane/flight simulator training and checking; and

~~(5 4)~~ Line flying under supervision and line check.

(b) The conversion course shall be conducted in the order set out in subparagraph (a) above.

(c) Elements of Crew Resource Management shall be integrated into the conversion course.

(e d) When a flight crew member has not previously completed an operator's conversion course, the operator shall ensure that in addition to sub-paragraph (a) above, the flight crew member undergoes general first aid training and, if applicable, ditching procedures training using the equipment in water.

Appendix 1 to JAR-OPS 1.965

Recurrent training and checking - Pilots

(See AMC OPS 1.965)

(See AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e))

(See IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e))

(See IEM OPS 1.965)

(a) *Recurrent Training.* - Recurrent training shall comprise:

(1) *Ground and refresher training*

(i) The ground and refresher training programme shall include:

- (A) Aeroplane systems;
- (B) Operational procedures and requirements including ground de-/anti-icing (see AMC OPS 1.345(a)) and pilot incapacitation (**see AMC to Appendix 1 to JAR-OPS 1.965**); and
- (C) Accident/Incident and occurrence review.

(ii) Knowledge of the ground and refresher training shall be verified by a questionnaire or other suitable methods.

(2) *Aeroplane/Flight Simulator training*

(i) The aeroplane/flight simulator training programme shall

be established such that all major failures of aeroplane systems and associated procedures will have been covered in the preceding 3 year period.

(ii) When engine-out manoeuvres are carried out in an aeroplane, the engine failure shall be simulated.

(iii) Aeroplane/flight simulator training may be combined with the operator proficiency check.

(3) *Emergency and Safety Equipment Training*

(i) Emergency and safety equipment training may be combined with emergency and safety equipment checking and shall be conducted in an aeroplane or a suitable alternative training device.

(ii) Every year the emergency and safety equipment training programme must include the following:

(A) Actual donning of a lifejacket where fitted;

(B) Actual donning of protective breathing equipment where fitted;

(C) Actual handling of fire extinguishers;

(D) Instruction on the location and use of all emergency and safety equipment carried on the aeroplane;

(E) Instruction on the location and use of all types of exits; and

(F) Security procedures.

(iii) Every 3 years the programme of training must include the following:

(A) Actual operation of all types of exits;

(B) Demonstration of the method used to operate a slide where fitted;

(C) Actual fire-fighting using equipment representative of that carried in the aeroplane on an actual or simulated fire except that, with Halon extinguishers, an alternative method acceptable to the Authority may be used;

(D) The effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment;

(E) Actual handling of pyrotechnics, real or simulated, where fitted; and
 Demonstration in the use of the life-raft(s) where fitted.

(4) Crew Resource Management (CRM) Training;

(i) Elements of CRM shall be integrated into all appropriate phases of recurrent training; and

(ii) A specific modular CRM training programme shall 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) Company safety culture, 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 co-ordination inside and outside the cockpit;**
- (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 based studies;**
- (K) **Additional areas which warrant extra attention, as identified by an accident prevention and flight safety programme (see JAR-OPS 1.037).**

(b) *Recurrent checking.* Recurrent checking shall comprise:

(1) *Operator proficiency checks*

(i) Where applicable, operator proficiency checks shall include the following manoeuvres:

- (A) Rejected take-off when a flight simulator is available, otherwise touch drills only;
- (B) Take-off with engine failure between V1 and V2 or as soon as safety considerations permit;
- (C) Precision instrument approach to minima with, in the case of multi-engined aeroplanes, one engine inoperative;
- (D) Non-precision approach to minima;
- (E) Missed approach on instruments from minima with, in the case of multi-engined aeroplanes, one engine inoperative; and
- (F) Landing with one engine inoperative. For single-engined aeroplanes a

practice forced landing is required.

(ii) When engine out manoeuvres are carried out in an aeroplane, the engine failure must be simulated.

(iii) In addition to the checks prescribed in sub-paragraphs (i)(A) to (F) above, the requirements of ~~JAR-FCL~~ **applicable to the issue of Flight Crew Licences** must be completed every 12 months and may be combined with the operator proficiency check.

(iv) For a pilot operating VFR only, the checks prescribed in sub-paragraphs (i)(C) to (E) above may be omitted except for an approach and go-around in a multi-engine aeroplane with one engine inoperative.

(v) Operator proficiency checks must be conducted by a Type Rating Examiner.

(2) *Emergency and safety equipment checks.* The items to be checked shall be those for which training has been carried out in accordance with sub-paragraph (a)(3) above.

(3) *Line checks*

(i) Line checks must 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.

(ii) The flight crew must be assessed on their CRM skills ***in accordance with a methodology acceptable to the Authority and published in the Operations Manual. The purpose of such assessment is to:***

(A) Provide feedback to the individual and serve to identify retraining; and

(B) Be used to improve the CRM training system.

(iii) When pilots are assigned duties as pilot flying and pilot non-flying they must be checked in both functions.

(iv) Line checks must be completed in an aeroplane.

(v) Line checks must be conducted by commanders nominated by the operator and acceptable to the Authority. ***The person conducting the line check, who is described in JAR-OPS 1.965(a)(4)(ii), shall be trained in CRM concepts and the assessment of CRM skills and shall occupy an observer's seat where installed.***

NOTE: *It is proposed to delete in its entirety AMC OPS 1.945(a)(9)/1.955(b)(6)/1.965(e) and to replace it with the following new AMC OPS*

AMC OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)

Crew Resource Management (CRM)

See JAR-OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)/1.965(a)(3)(iv)

See IEM-OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)

1 General

1.1 Crew Resource Management (CRM) is the effective utilisation of all available resources (e.g. crew members, aeroplane systems, and supporting facilities) to achieve safe and efficient operation.

1.2 The objective of CRM is to enhance the communication and management skills of the flight crew member concerned. The emphasis is placed on the non-technical aspects of flight crew performance.

2 Initial CRM Training

2.1 Initial CRM training programmes should provide knowledge of and familiarity with human factors relevant to flight operations. The course duration should be a minimum of one day for single pilot operations and two days for all other types of operations. It should cover all elements in Table 1, column (a) to the level required by column (b) (Initial CRM training).

2.2

a. A CRM trainer should possess group facilitation skills and should at least:

i. Have current commercial air transport experience as a flight crew member; and have either:

(A) Successfully passed the Human Performance and Limitations (HPL) examination whilst recently obtaining the ATPL (see the requirements applicable to the issue of Flight Crew Licences); or,

(B) If holding a Flight Crew Licence acceptable under JAR-OPS 1.940(a)(3) prior to the introduction of HPL into the ATPL syllabus, followed a theoretical HPL course covering the whole syllabus of the HPL examination.

ii. Have completed initial CRM training; and

iii. Be supervised by suitably qualified CRM training personnel when conducting their first initial CRM training session; and

iv. Have received additional education in the fields of group management, group dynamics and personal awareness.

b. Notwithstanding paragraph (a) above, and when acceptable to the Authority;

i. A flight crew member holding a recent qualification as a CRM trainer may continue to be a CRM trainer even after the cessation of active flying duties;

ii. An experienced non-flight crew CRM trainer having a knowledge of HPL, may also continue to be a CRM trainer;

iii. A former flight crew member having knowledge of HPL may become a CRM trainer if he maintains adequate knowledge of the operation and aeroplane type and meets the provisions of paragraphs 2.2a ii, iii and iv.

2.3 *Initial CRM training should address the nature of the operations of the company concerned, as well as the associated procedures and the culture of the company. This will include areas of operations which produce particular difficulties or involve adverse climatic conditions and any unusual hazards.*

2.4 *If the operator does not have sufficient means to establish initial CRM training, use may be made of a course provided by another operator, or a third party or training organisation acceptable to the Authority. When crew members from several companies follow the same course, CRM core elements should be specific to the nature of operations of the companies and the trainees concerned.*

2.5 *A flight crew member's CRM skills should not be assessed during initial CRM training.*

3 *Conversion Course CRM training*

3.1 *If the flight crew member undergoes a conversion course with a change of aeroplane type, all elements in Table 1, column (a) should be integrated into all appropriate phases of the operator's conversion course and covered to the level required by column (c) (conversion course when changing type).*

3.2 *If the flight crew member undergoes a conversion course with a change of operator, all elements in Table 1, column (a) should be integrated into all appropriate phases of the operator's conversion course and covered to the level required by column (d) (conversion course when changing operator).*

3.3 *A flight crew member should not be assessed when completing elements of CRM training which are part of an operator's conversion course.*

4 *Command course CRM training*

4.1 *An operator should ensure that all elements in Table 1, column (a) are integrated into the command course and covered to the level required by column (e) (command course).*

4.2 *A flight crew member should not be assessed when completing elements of CRM training which are part of the command course, although feedback should be given.*

5 *Recurrent CRM training*

5.1 *An operator should ensure that :*

a. *Elements of CRM are integrated into all appropriate phases of recurrent training every year; and that all elements in Table 1, column (a) are covered to the level required by column (f) (recurrent training); and that modular CRM training covers the same areas over a maximum period of 3 years.*

b. *Relevant modular CRM training is conducted by CRM trainers qualified according to paragraph 2.2.*

5.2 *A flight crew member should not be assessed when completing elements of CRM training which are part of recurrent training.*

6 *Implementation of CRM*

6.1 *The following table indicates which elements of CRM should be included in each type of training:*

Table 1

Core Elements <i>(a)</i>	Initial CRM Training <i>(b)</i>	Operator's conversion course when changing type <i>(c)</i>	Operator's conversion course when changing operator <i>(d)</i>	Command course <i>(e)</i>	Recurrent training <i>(f)</i>
Human error and reliability, error chain, error prevention and detection	In depth	In depth	Overview	Overview	Overview
Company safety culture, SOPs, organisational factors		Not required	In depth		
Stress, stress management, fatigue & vigilance					
Information acquisition and processing situation awareness, workload management			Not required	In depth	
Decision making		Overview			
Communication and co-ordination inside and outside the cockpit			Overview		
Leadership and team behaviour synergy					
Automation, philosophy of the use of automation (if relevant to the type)	As required	In depth	In depth	As required	As required
Specific type-related differences			Not required		
Case based studies	In depth	In depth	In depth	In depth	As appropriate

7 Co-ordination between flight crew and cabin crew training

7.1 Operators should, as far as is practicable, provide combined training for flight crew and cabin crew including briefing and debriefing.

7.2 There should be an effective liaison between flight crew and cabin crew training departments. Provision should be made for flight and cabin crew instructors to observe and comment on each others training.

8 Assessment of CRM Skills (See IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e), paragraph 4)

8.1 Assessment of CRM skills should:

- a. **Provide feedback to the individual and serve to identify retraining; and**
- b. **Be used to improve the CRM training system.**

8.2 Prior to the introduction of CRM skills assessment, a detailed description of the CRM methodology including terminology used, acceptable to the Authority, should be published in the Operations Manual.

8.3 Operators should establish procedures to be applied in the event that personnel do not achieve or maintain the required standards (Appendix 1 to 1.1045, Section D, paragraph 3.2 refers).

8.4 If the operator proficiency check is combined with the Type Rating revalidation check, the assessment of CRM skills will satisfy the Multi Crew Co-operation requirements of the Type Rating renewal. This assessment will not affect the validity of the Type Rating.

NOTE: *It is proposed to delete, in its entirety, the following;*

~~IEM OPS 1.945(a)(9)/1.955(b)(6)/1.965(e)~~

~~Crew Resource Management (CRM) Training~~

~~See JAR-OPS 1.945(a)(9)/1.955(b)(6)/1.965(e)~~

~~1 CRM is the effective utilisation of all available resources etc. etc.~~

~~2 etc.~~

~~3 etc.~~

~~...~~

~~...~~

~~7 etc.~~

~~another operator, if that course has already been accepted.~~

and to replace the above, deleted, text with the following new IEM;

IEM OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)

Crew Resource Management (CRM)

See JAR-OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)

See AMC-OPS 1.943/1.945(a)(9)/1.955(b)(6)/1.965(e)

1 CRM training should reflect the culture of the operator and be conducted by means of both classroom training and practical exercises including group discussions and accident and serious incident reviews to analyse communication problems and instances or examples of a lack of information or crew management.

2 *Whenever it is practicable to do so, consideration should be given to conducting relevant parts of CRM training in synthetic training devices.*

3 *It is recommended that, whenever possible, initial CRM training be conducted in a group session outside the company premises so that the opportunity is provided for flight crew members to interact and communicate away from the pressures of their usual working environment.*

4 *Assessment of CRM Skills*

4.1 *Assessment is the process of observing, recording, interpreting and evaluating, where appropriate, pilot performance and knowledge against a required standard in the context of overall performance. It includes the concept of self-critique, and feedback which can be given continuously during training or in summary following a check.*

4.2 *CRM skills assessment should be included in an overall assessment of the flight crew members performance and be in accordance with approved standards. Suitable methods of assessment should be established, together with the selection criteria and training requirements of the assessors and their relevant qualifications, knowledge and skills.*

4.3 *Individual assessments are not appropriate until the crew member has completed the full cycle of CRM recurrent training. For individual CRM skills assessment, the following methodology is considered satisfactory:*

a. *An operator should establish the CRM training programme including an agreed terminology. This should be evaluated with regard to methods, length of training, depth of subjects and effectiveness.*

b. *A training and standardisation programme for training personnel should then be established.*

c. *For a transition period, the evaluation system should be crew rather than individually based.*

AMC OPS 1.945(a)(9)

Crew Resource Management - Use of Automation

See JAR-OPS 1.945(a)(9)

1 *The conversion course 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. An operator should therefore ensure that a 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.*

2 *The objective of this training should be to provide appropriate knowledge, skills and behavioural patterns for managing and operating automated systems. Special attention should be given to the way in which the different modes associated with the automated systems function and interact.*

AMC OPS 1.965(c)
 Line Checks
 See JAR-OPS 1.965(c)

NOTE: *The only amendment to this AMC is the addition of (c); the text remains unchanged.*

NOTE: *The following has been taken from the existing text of paragraph 6 of AMC OPS 1.945(a)(9)/1.955(b)(6)/1.965(e) together with the existing text of paragraph 5 of IEM OPS 1.965. It is proposed to relocate both these paragraphs into the following AMC under the single title of 'Emergency and Safety Equipment Training'.*

AMC OPS 1.965(d)
Emergency and Safety Equipment Training
 See JAR-OPS 1.965(d)

1 *The successful resolution of aeroplane emergencies requires interaction between flight crew and cabin crew and emphasis should be placed on the importance of effective co-ordination and two-way communication between all crew members in various emergency situations.*

2 *Initial and recurrent CRM training Emergency and Safety Equipment training should include joint practice in aeroplane evacuations so that all who are involved are aware of the duties other crew members should perform. When such practice is not possible, combined flight crew and cabin crew training should include joint discussion of emergency scenarios.*

3 *Emergency and safety equipment training should, as far as is practicable, take place in conjunction with cabin crew undergoing similar training with emphasis on co-ordinated procedures and two-way communication between the flight deck and the cabin.*

NOTE: *For the detailed explanation of changes to the following IEM, see paragraph 7.14 of the Introductory Notes.*

IEM OPS 1.965
Recurrent training and checking
 See JAR-OPS 1.965

1 Line checks, route and aerodrome competency and recent experience requirements are intended to ensure the crew member's ability to operate efficiently under normal conditions, whereas other checks and emergency and safety equipment training are primarily intended to prepare the crew member for abnormal/emergency procedures.

2 The line check is performed in the aeroplane. All other training and checking should be performed in an aeroplane **of the same type or a flight simulator, qualified and approved for the purpose in accordance with JAR-STD 1A** or, in the case of emergency and safety equipment training, in a representative training device. The type of equipment used for training and checking should be representative of the instrumentation, equipment and layout of the aeroplane type operated by the flight crew member.

3 Line Checks

3.1 The line check is considered a particularly important factor in the development, maintenance and refinement of high operating standards, and can provide the operator with a valuable indication of the usefulness of his training policy and methods. Line checks are a test of a flight crew member's ability to perform a complete line operation satisfactorily, including pre-flight and post-flight procedures and use of the equipment provided, and an opportunity for an overall assessment of his ability to perform the duties required 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 line check is not intended to determine competence on any particular route. ~~3.2 In addition to the above duties, flight crew members should be assessed on their crew resource management skills.~~ The commander, or any pilot who may be required to relieve the commander, should also demonstrate his ability to 'manage' the operation and take appropriate command decisions. ~~When assessing crew resource management skills, the examiner required by JAR OPS 1.965(a)(4)(ii) should occupy an observer's seat.~~

4 Proficiency Training and Checking

4.1 When a flight simulator is used, the opportunity should be taken, where possible, to use Line Orientated Flying Training (LOFT).

4.2 Proficiency training and checking for System Panel Operators should, where practicable, take place at the same time a pilot is undergoing proficiency training and checking.

~~5 Emergency and safety equipment training. Emergency and safety equipment training should, as far as is practicable, take place in conjunction with cabin crew undergoing similar training with emphasis on co-ordinated procedures and two-way communication between the flight deck and the cabin.~~