

http://www.easa.eu.int/doc/Certification/Org_Appro/cert_org_BA_SA_MIP_guidance.pdf

European Aviation Safety Agency Guidance for the BASA/MIP Agreement (MIP-G)

European Aviation Safety Agency

Guidance material for the
US / European Bilateral Aviation Safety
Agreement (BASA)
and
Maintenance Implementation Procedures
(MIP)

MIP Guidance (MIP-G) (Superseding former JAA TGL 22)

Interim Note 1

It is the responsibility of all EASA Part-145 approval holders to ensure that their supplement meets the requirements of the MIP-G.

The repair station should contact the local FAA FSDO for acceptance of any EASA Part-145 supplement amendments in accordance with this guidance.

16. PROVISION OF HANGAR SPACE FOR AIRCRAFT MAINTENANCE

Hangar space should be available for aircraft operated under the regulatory control of an EU Member State undergoing maintenance and/or alteration. There is a need to ensure hangar space will be available at the time of maintenance and alterations, when the contract is agreed with the customer. This is only applicable to repair stations with airframe and/or limited airframe ratings.

17. CONTRACTED MAINTENANCE

When part of the maintenance is contracted to another organisation, the repair station must ensure that the other organisation(s) are either approved by the EASA for the maintenance they carry out or such contracted organisation(s) must work under the repair station contracted provisions stated in FAR Part 145.

All organisations contracted by the repair station shall be listed by the repair station stating against each organisation whether it is EASA approved or under the repair station control via FAR Part 145.

18. HUMAN FACTORS (applicable from September 28th 2006)

Procedures must be in place to detect and rectify maintenance errors that may endanger the safe operation of aircraft. Procedures must also address resources, human performance limitations and shift changeover and how personnel are trained to ensure an understanding of the application of human factors principles.

Article 6

Training organisation requirements

1. Organisations involved in the training of personnel referred to in Article 5 shall be approved in accordance with Annex IV to be entitled:

- (a) to conduct recognised basic training courses; and/or
- (b) to conduct recognised type training courses; and
- (c) to conduct examinations; and
- (d) to issue training certificates.

2. Any maintenance training organisation approval issued or recognised by a Member State in accordance with the JAA requirements and procedures and valid at the time of entry into force of this Regulation shall be deemed to have been issued in accordance with this Regulation. For this purpose, by derogation from the provisions of 147.B.130(b) under Annex IV, level 2 findings associated with the differences between JAR 147 and Annex IV may be closed within one year.

Article 7

Entry into force

1. This Regulation shall enter into force on the day following that of its publication in the *Official Journal of the European Union*.
2. By way of derogation from paragraph 1 the provisions of Annex I, except for M.A.201(h)(2) and M.A.708(c) shall apply as from 28 September 2005.
3. By way of derogation from paragraph 1 and 2, Member States may elect not to apply:
 - (a) the provisions of Annex I to aircraft not involved in commercial air transport, until 28 September 2008;
 - (b) the provisions of Annex I(l) to aircraft involved in commercial air transport, until 28 September 2008;
 - (c) the following provisions of Annex II, until 28 September 2006:
 - 145.A.30(e), human factors elements,
 - 145.A.30(g) as applicable to large aircraft with a maximum take-off mass of more than 5 700 kg,
 - 145.A.30(h)(1) as applicable to aircraft with a maximum take-off mass of more than 5 700 kg,
 - 145.A.30(j)(1), Appendix IV,
 - 145.A.30(j)(2), Appendix IV;
 - (d) the following provisions of Annex II, until 28 September 2008:
 - 145.A.30(g) as applicable to aircraft with a maximum take-off mass of 5 700 kg or below,
 - 145.A.30(h)(1) as applicable to aircraft with a maximum take-off mass of 5 700 kg or below,
 - 145.A.30(h)(2);
 - (e) the provisions of Annex III, as applicable to aircraft with a maximum take-off mass above 5 700 kg until 28 September 2005;
 - (f) the provisions of Annex III, as applicable to aircraft with a maximum take-off mass of 5 700 kg or below until 28 September 2006.

4. Member States may issue approvals with regard to Annex II and Annex IV of a limited duration until 28 September 2005.

5. When a Member State makes use of the provisions of paragraphs 3 or 4 it shall notify the Commission and the Agency.

6. The Agency shall make an evaluation of the implication of the provisions of Annex I to this Regulation with a view to submitting an opinion to the Commission, including possible amendments to it, before 28 March 2005.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

http://www.easa.eu.int/doc/Regulation/reg_2042_2003_Part145.pdf

145.A.30 Personnel requirements

(a) The organisation shall appoint an accountable manager who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by this Part. The accountable manager shall:

1. ensure that all necessary resources are available to accomplish maintenance in accordance with 145.A.65(b) to support the organisation approval.
2. establish and promote the safety and quality policy specified in 145.A.65(a).
3. demonstrate a basic understanding of this Part.

(b) The organisation shall nominate a person or group of persons, whose responsibilities include ensuring that the organization complies with this Part. Such person(s) shall ultimately be responsible to the accountable manager.

1. The person or persons nominated shall represent the maintenance management structure of the organisation and be responsible for all functions specified in this Part.
2. The person or persons nominated shall be identified and their credentials submitted in a form and manner established by the competent authority.

3. The person or persons nominated shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or component maintenance and demonstrate a working knowledge of this Part.
 4. Procedures shall make clear who deputises for any particular person in the case of lengthy absence of the said person.
- (c) The accountable manager under paragraph (a) shall appoint a person with responsibility for monitoring the quality system, including the associated feedback system as required by 145.A.65(c). The appointed person shall have direct access to the accountable manager to ensure that the accountable manager is kept properly informed on quality and compliance matters.
- (d) The organisation shall have a maintenance man-hour plan showing that the organisation has sufficient staff to plan, perform, supervise, inspect and quality monitor the organisation in accordance with the approval. In addition the organisation shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period.
- (e) The organisation shall establish and control the competence of personnel involved in any maintenance, management and/or quality audits in accordance with a procedure and to a standard agreed by the competent authority. In addition to the necessary expertise related to the job function, competence must include an understanding of the application of human factors and human performance issues appropriate to that person's function in the organisation. 'Human factors' means principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance. 'Human performance' means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

http://www.easa.eu.int/doc/Agency_Mesures/AMC_GM/decision_ED_2003_19_RM_Part145_amc.pdf

AMC 145.A.30(e) Personnel requirements

1. The referenced procedure requires amongst others that planners, mechanics, specialised services staff, supervisors and certifying staff are assessed for competence by 'on the job' evaluation and/or by examination relevant to their particular job role within the organisation before unsupervised work is permitted. A record of the qualification and competence assessment should be kept.

2. Adequate initial and recurrent training should be provided and recorded to ensure continued competence.
3. To assist in the assessment of competence, job descriptions are recommended for each job role in the organisation. Basically, the assessment should establish that:
 - a. Planners are able to interpret maintenance requirements into maintenance tasks, and have an appreciation that they have no authority to deviate from the maintenance data.
 - b. Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and will notify supervisors of mistakes requiring rectification to re-establish required maintenance standards.
 - c. Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data and will both inform and await instructions from their supervisor in any case where it is not possible to complete the specialised maintenance in accordance with the maintenance data.
 - d. Supervisors are able to ensure that all required maintenance tasks are carried out and where not completed or where it is evident that a particular maintenance task cannot be carried out to the maintenance data, then such problems will be reported to the 145.A.30(c) person for appropriate action. In addition, for those supervisors who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.
 - e. Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.
4. In the case of planners, specialised services staff, supervisors and certifying staff, a knowledge of organisation procedures relevant to their particular role in the organisation is important. The aforementioned list is not exclusive and may include other categories of personnel.
5. Quality audit staff are able to monitor compliance with Part-145 identifying non compliance in an effective and timely manner in order that the organisation may remain in compliance Part-145.
6. In respect to the understanding of the application of human factors and human performance issues, maintenance, management, and quality audit personnel should be assessed for the need to receive Initial human factors training, but in any case all maintenance, management, and quality audit personnel should receive human factors continuation training. This should concern to a minimum:
 - Post-holders, managers, supervisors;
 - Certifying staff, technicians, and mechanics;
 - Technical support personnel such as, planners, engineers, technical record staff;
 - Quality control/assurance staff;

- Specialised services staff;
- Human factors staff/ human factors trainers;
- Store department staff, purchasing department staff;
- Ground equipment operators;
- Contract staff in the above categories.

7. Initial human factors training should cover all the topics of the training syllabus specified in GM 145.A.30(e) either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the particular nature of the organisation. The syllabus may also be adjusted to meet the particular nature of work for each function within the organisation. For example:

- small organisations not working in shifts may cover in less depth subjects related to teamwork and communication,
- planners may cover in more depth the scheduling and planning objective of the syllabus and in less depth the objective of developing skills for shift working.

Depending on the result of the evaluation as specified in paragraph 5, initial training should be provided to personnel within 6 months of joining the maintenance organisation, but temporary staff may need be trained shortly after joining the organisation to cope with the duration of employment.

Personnel being recruited from another maintenance organisation approved under Part-145 and temporary staff should be assessed for the need to receive any additional Human factors training to meet the new maintenance organisation's approved under Part-145 human factors training standard.

8. The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary.

Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information available to the organisation on human errors in maintenance.

9. Human factors training may be conducted by the maintenance organisation itself, or independent trainers or any training organisations acceptable to the competent authority.

10. The Human factors training procedures should be specified in the maintenance organisation exposition.

**GM 145.A.30 (e) Personnel requirements
(Training syllabus for initial human factors training)**

The training syllabus below identifies the topics and subtopics to be addressed during the human factors training.

The maintenance organisation may combine, divide, change the order of any subject of the syllabus to suit its own needs, so long as all subjects are covered to a level of detail appropriate to the organisation and its personnel.

Some of the topics may be covered in separate training (health and safety, management, supervisory skills, etc.) in which case duplication of training is not necessary.

Where possible, practical illustrations and examples should be used, especially accident and incident reports.

Topics should be related to existing legislation, where relevant. Topics should be related to existing guidance/ advisory material, where relevant (eg. ICAO HF Digests and Training Manual).

Topics should be related to maintenance engineering where possible; too much unrelated theory should be avoided.

1 General / Introduction to human factors

1.1 Need to address human factors

1.2 Statistics

1.3 Incidents

2 Safety Culture / Organisational factors

3 Human Error

3.1 Error models and theories

3.2 Types of errors in maintenance tasks

3.3 Violations

3.4 Implications of errors

3.5 Avoiding and managing errors

3.6 Human reliability

4 Human performance & limitations

4.1 Vision

4.2 Hearing

4.3 Information-processing

4.4 Attention and perception

4.5 Situational awareness

4.6 Memory

4.7 Claustrophobia and physical access

4.8 Motivation

4.9 Fitness/Health

- 4.10 Stress
- 4.11 Workload management
- 4.12 Fatigue
- 4.13 Alcohol, medication, drugs
- 4.14 Physical work
- 4.15 Repetitive tasks / complacency
- 5 Environment
 - 5.1 Peer pressure
 - 5.2 Stressors
 - 5.3 Time pressure and deadlines
 - 5.4 Workload
 - 5.5 Shift Work
 - 5.6 Noise and fumes
 - 5.7 Illumination
 - 5.8 Climate and temperature
 - 5.9 Motion and vibration
 - 5.10 Complex systems
 - 5.11 Hazards in the workplace
 - 5.12 Lack of manpower
 - 5.13 Distractions and interruptions
- 6 Procedures, information, tools and practices
 - 6.1 Visual Inspection
 - 6.2 Work logging and recording
 - 6.3 Procedure – practice / mismatch / norms
 - 6.5 Technical documentation – access and quality
- 7 Communication
 - 7.1 Shift / Task handover
 - 7.2 Dissemination of information
 - 7.3 Cultural differences
- 8 Teamwork
 - 8.1 Responsibility
 - 8.2 Management, supervision and leadership
 - 8.3 Decision making
- 9 Professionalism and integrity
 - 9.1 Keeping up to date; currency
 - 9.2 Error provoking behaviour
 - 9.3 Assertiveness
- 10 Organisation's HF program
 - 10.1 Reporting errors
 - 10.2 Disciplinary policy
 - 10.3 Error investigation
 - 10.4 Action to address problems
 - 10.5 Feedback