

Appendix IV to AMC5 145.A.30(e) and AMC2 145.B.200(a)(3) — Fuel Tank Safety Training

ED Decision 2022/011/R

This appendix includes general instructions for providing training on fuel tank safety issues.

A. Effectivity:

- Large aeroplanes as defined in Decision 2003/11/RM of the Executive Director of the Agency (CS-25) and certified after 1 January 1958 with a maximum type certified passenger capacity of 30 or more or a maximum certified payload capacity of 7500 lbs (3402 kg) cargo or more, and
- Large aeroplanes as defined in Decision 2003/11/RM of the Executive Director of the Agency (CS-25) which contains CS-25 amendment 1 or later in their certification basis.

B. Affected organisations:

- [Part-145](#) approved maintenance organisations involved in the maintenance of aeroplanes specified in paragraph A) and fuel system components installed on such aeroplanes when the maintenance data are affected by CDCCL.
- Competent authorities that are responsible for the oversight of the [Part-145](#) approved organisations specified in this paragraph B).

C. Persons from affected organisations who should receive training:

Phase 1 only:

- The group of persons representing the maintenance management structure of the organisation, the compliance monitoring manager, the safety manager and the staff who are directly involved in monitoring the compliance of the organisation.
- Personnel of the competent authorities who are responsible for the oversight of Part-145 approved maintenance organisations specified in paragraph B).

Phase 1 + Phase 2 + recurrent training:

- Personnel of the Part-145 approved maintenance organisation who are required to plan, perform, supervise, inspect and certify the maintenance of the aircraft and fuel system components specified in paragraph A).

D. General requirements of the training courses

Phase 1 – Awareness:

The training should be carried out before the person starts to work without supervision but not later than 6 months after joining the organisation. The persons who have already attended the Level 1 Familiarisation course in compliance with ED Decision 2007/002/R Appendix IV are already in compliance with Phase 1.

Type: It should provide awareness of the principal elements of the subject. It may take the form of a training bulletin, or any other self-study or informative session. The signature of the trainer is required to ensure that the person has passed the training.

Level: It should be a course at the level of familiarisation with the principal elements of the subject.

Objectives: The trainee should, after the completion of the training:

1. be familiar with the basic elements of the fuel tank safety issues,
2. be able to give a simple description of the historical background and the elements requiring a safety consideration, using common words and showing examples of non-conformities,
3. be able to use typical terms.

Content: The course should include:

- a short background showing examples of FTS accidents or incidents,
- the description of concept of fuel tank safety and CDCCL,
- some examples of manufacturers documents showing CDCCL items,
- typical examples of FTS defects,
- some examples of TC holders repair data,
- some examples of maintenance instructions for inspection.

Phase 2 – Detailed training

A flexible period may be allowed by the competent authorities to allow organisations to set up the necessary courses and provide the training to the personnel, taking into account the organisation's training schemes/means/practices. This flexible period should not extend beyond 31 December 2010.

The persons who have already attended the Level 2 Detailed training course in compliance with ED Decision 2007/002/R Appendix IV either from a Part-145 maintenance organisation or from a Part-147 training organisation are already in compliance with Phase 2 with the exception of recurrent training.

Staff should have received Phase 2 training by 31 December 2010 or within 12 months of joining the organisation, whichever comes later.

Type: It should be a more in-depth internal or external course. It should not take the form of a training bulletin, or any other self-study. At the end of the course, the trainees should be required to take an examination, which should be in the form of multiple-choice questions, and the pass mark of the examination should be 75%.

Level: It should be a detailed course on the theoretical and practical elements of the subject.

The training may be made either:

- in appropriate facilities containing examples of components, systems and parts affected by Fuel Tank Safety (FTS) issues. The use of films, pictures and practical examples on FTS is recommended; or
- by attending a distance course (e-learning or computer based training) including a film when such film meets the intent of the objectives and content here below. An e-learning or computer based training should meet the following criteria:
 - A continuous evaluation process should ensure the effectiveness of the training and its relevance;
 - Some questions at intermediate steps of the training should be proposed to ensure that the trainee is authorized to move to the next step;
 - The content and results of examinations should be recorded;

- Access to an instructor in person or at distance should be possible in case support is needed.

A duration of 8 hours for phase 2 is an acceptable compliance.

When the course is provided in a classroom, the instructor should be very familiar with the data in Objectives and Guidelines. To be familiar, an instructor should have attended himself a similar course in a classroom and made additionally some lecture of related subjects.

Objectives:

The attendant should, after the completion of the training:

- have knowledge of the history of events related to fuel tank safety issues and the theoretical and practical elements of the subject, have an overview of the FAA regulations known as SFAR (Special FAR) 88 of the FAA and of JAA Temporary Guidance Leaflet TGL 47, be able to give a detailed description of the concept of fuel tank system ALI (including Critical Design Configuration Control Limitations CDCCL, and using theoretical fundamentals and specific examples;
- have the capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner;
- have knowledge on how the above items affect the aircraft;
- be able to identify the components or parts of the aircraft subject to FTS from the manufacturer's documentation,
- be able to plan the action or apply a Service Bulletin and an Airworthiness Directive.

Content: Following the guidelines described in paragraph E).

Recurrent training:

The organisation should ensure that the recurrent training is required in each 2-year period. The syllabus of the training programme referred to in Chapter 3.9 of the maintenance organisation exposition (MOE) should include the additional syllabus for this recurrent training.

The continuation training may be combined with the phase 2 training in a classroom or at distance.

The continuing training should be updated when new instructions are issued which are related to the material, tools, documentation and manufacturer's or competent authority's directives.

E. Guidelines for preparing the content of Phase 2 courses.

The following guidelines should be taken into consideration when the phase 2 training programme are being established:

- (a) understanding of the background and the concept of fuel tank safety,
- (b) how the mechanics can recognise, interpret and handle the improvements in the instruction for continuing airworthiness that have been made or are being made regarding the fuel tank system maintenance,
- (c) awareness of any hazards especially when working on the fuel system, and when the Flammability Reduction System using nitrogen is installed.

Paragraphs a), b) and c) above should be introduced in the training programme addressing the following issues:

- (i) The theoretical background behind the risk of fuel tank safety: the explosions of mixtures of fuel and air, the behaviour of those mixtures in an aviation environment, the effects of temperature and pressure, energy needed for ignition etc, the 'fire triangle', - Explain 2 concepts to prevent explosions:
 - (1) ignition source prevention and
 - (2) flammability reduction,
- (ii) The major accidents related to fuel tank systems, the accident investigations and their conclusions,
- (iii) SFAR 88 of the FAA and JAA Interim Policy INT POL 25/12: ignition prevention program initiatives and goals, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance),
- (iv) Explain the briefly concepts that are being used: the results of SFAR 88 of the FAA and JAA INT/POL 25/12: modifications, airworthiness limitations items and CDCCL,
- (v) Where relevant information can be found and how to use and interpret this information in the applicable maintenance data as defined in [145.A.45\(b\)](#),
- (vi) Fuel Tank Safety during maintenance: fuel tank entry and exit procedures, clean working environment, what is meant by configuration control, wire separation, bonding of components etc,
- (vii) Flammability reduction systems when installed: reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS,
- (viii) Recording maintenance actions, recording measures and results of inspections.

The training should include a representative number of examples of defects and the associated repairs as required by the TC/STC holders' maintenance data.

F. Approval of training

For [Part-145](#) approved organisations, the approval of the initial and continuation training programme and the content of the examination can be achieved by the change to the MOE. The necessary changes to the MOE to meet the content of this decision should be made and implemented at the time requested by the competent authority.