

EASA Part 147 TNA Considerations

Sofema Aviation Services www.sassofia.com takes a deep dive into the TNA Process.

TNA Background & Purpose

The role of the training needs analysis (TNA) is to assess the gap between the knowledge and skills which the trainee currently possesses (Generic within the group) against the knowledge and skills which they will require to perform safe and effective maintenance on the aircraft.

Additionally, the TNA justifies both the content and the duration of each course based on the course learning objectives.

Roles & Responsibility to Deliver the TNA

Typically the Training Manager (Post Holder) holds the responsibility for the compilation, preparation and updating of the organization's approved courses TNAs.

To enable effective delivery of the obligation the Training may use support from Instructors or other persons who are Subject Matter Experts (SME's).

The TNA is supported by the following basic considerations

Maximum Delegates up to 28 for any theoretical training

Maximum Delegates up to 15 for any practical training

Note: All trainees are accepted as competent aircraft engineers who hold at least a basic licence, with either minimum or no experience on the aircraft type. Additionally, all delegates have an acceptable command of English language and can read, write & speak to an appropriate level.

Training Delivery – All Training delivery is based on Instructor-Led Training

- a) Whilst lecturing (with interactive participation) is the preferred teaching method for theoretical training programs, other teaching methods may be employed from and in each case will be identified within the TNA Document.
- b) Practical Instructor-led demonstrations, as well as supervised practical activities, is the preferred training methodology for practical training. (again when other methods or resources are used they will be clearly documented in the respective TNA.)

Constructing the TNA

The theoretical elements syllabus summarizes the course content and organizes the training in a logical and chronological sequence of teaching subjects.

In order to perform the TNA analysis, an XL spreadsheet is often used as an effective tool.

An XL sheet or workbook is able to both consolidate as well as facilitate the collection of all necessary information.

Note – Whilst the TNA is only mandated for the Theoretical Course it is highly recommended to also perform for the Practical Tasks as well.

The Training Needs Analysis (TNA) provides for a method of grouping the theoretical and practical elements of a course within a single document, to identify each of the areas (or elements) where there is a need for training.

Each ATA chapter is broken down to its respective sub-ATA level.

An intensive review of the Aircraft Maintenance Manual (AMM) permits the organization to identify areas where training is required in respect of the following criteria:

- a) The level of training required identified in PART-66 appendix III together with the corresponding objectives.
- b) System complexity, either on its own or when compared with the same system on similar aircrafts or similar operational characteristics
- c) The relevance of the Subject Matter
- d) Interfaces with other systems
- e) The uniqueness or novelty of the element or system
- f) The applicable maintenance practices, including servicing, testing, together with the use of any diagnosis tools

Practical Tasks

The TNA can be used to identify the practical tasks which should be included in the practical elements part of the course.

In accordance with Part 66 appendix III, the Practical Training Tasks are identified, and the overall objective is to achieve 50% of the crossed items per ATA. Consequently, it also identifies which areas within a system are required to be taught.

Practical Task accomplishment areas may be summarized as follows:

- a) System description and operation
- b) System components (location, description, operation)
- c) System controls & indications
- d) System maintenance practices
- e) Deactivation/reactivation
- f) Servicing, Testing & Diagnosis
- g) Troubleshooting

TNA Information Source

The Aircraft Maintenance Manual constitutes the prime reference document for the analysis, either for theoretical or practical elements of the course.

The following documents can be used as a supplement source of information for further analysis:

FAA / EASA AD's & Service Bulletins (STC's if applicable). Especially those having resulted in significant changes to the aircraft design, operation and maintenance, if such changes have not already been included in the respective AMM.

Aircraft Flight Operation Manual (FOM) may be used as a true reference data. In addition, OPS Manual Part B can be used for guidance.

Component Maintenance Manuals (if available for the aircraft type) can also be used to assist in the analysis, especially when system components require further description and the related information is not available in the AMM.

Theoretical TNA Detailed Objective

- a) To define the learning objectives per training level.
- b) To determine which information is required to be included in the course training materials and to which level, taking (a) and (b) above as guidance.
- c) Estimate course duration.

- d) Theoretical courses duration is a product of the summation of the individual subject tuition times.
- e) Individual subject tuition times are determined based on:
 - i) Amount of training material collected and required to fulfill the learning objectives per subject (ATA, sub-ATA)
 - ii) The difficulty of the subject being taught; determined by comparison with similar systems on other aircraft models and/or the organization's actual experience teaching the subject
 - iii) Novelty (new concepts or technology included in the particular system)
 - iv) Comparison with the course average duration time for similar courses on similar aircrafts, among EASA approved training organizations
 - v) Availability/use of supplemental training aids such as Computer-Based Training Software, Computer-Based Simulation Software, Flight Simulators, Fixed Based Trainers, etc.

Practical TNA Detailed Objective

Actual experience teaching the subject For practical courses the training duration is calculated based on the following criteria:

- i) Amount of practical tasks selected per subject
- ii) The complexity of the selected tasks
- iii) Compliance with the minimum duration requirements stated in the AMC to Part 66 Appendix III
- iv) Compares the calculated course duration (Tuition time) with that minimum recommended by EASA

General Observations & Notes Related to the TNA Process

1/ A training day must not contain more than 6 tuition hours and should exclude examinations and break periods.

2/ A training hour is defined as a 60 minute teaching period.

3/ There is a course syllabus per approved course. The Syllabus is consolidated using a common format for all the aircraft types, it is segregated in training days, specifies the ATA Chapter (Subject), Tuition Time per subject, the training level and the minimum number of examination questions expected to be in the phase examination.

- 4/ MTOE Part 4 should contains a sample of each approved course syllabus.
- 5/ The practical elements syllabus summarizes the course content per ATA chapter and provides an estimated completion time per subject (ATA).
- 6/ Defines the teaching method (both for theoretical and practical elements of the training) and which training/teaching resources are available per subject on that particular aircraft type.
- 7/ Training procedure expands on teaching methodology used by the organization to deliver theoretical and practical training.
- 8/ Regarding Practical Tasks to show the relevant practical tasks selected for each particular chapter and sub-chapter.
- 9/ Practical tasks corresponding to each ATA chapter are selected based on the following criteria:
 - i) They complement the theoretical elements of the training in terms of operation, function, installation, key maintenance and safety significance.
 - ii) They are relevant and representative of the maintenance requirements for that particular system i.e. criticality of the task or system function.
 - iii) They may include components/systems unique to the particular type or installation (i.e. ATA 42, ATA 45, ATA 46, ATA 47, etc).
 - iv) They are sufficient in quantity (not less than 50% of the identified tasks per ATA presented in PART 66 Appendix III).
 - v) They include human factors and safety.
 - vi) Incorporate new technologies.
 - vii) Refer to a specific location.

Training Needs Analysis Revision Process

Should allow for flexibility for correction, updating, revision and to ensure continuous feedback and updating throughout the life of the training course.

Performed when deemed but at least on a 12-month basis.

To update and support the TNA, the organization should encourage all instructors to provide continuous feedback as well as actual experience from the training delivery.

Basic criteria to revise or update the TNA should be based on the following items:

- i) Major changes in the aircraft systems, as a result of Airworthiness Directives, major service bulletins or maintenance occurrences.
- ii) Inclusion of new technologies, new materials or new systems.
- iii) New regulatory standards either on the training delivery side or the aircraft design, maintenance and operational side or mechanic competencies.
- iv) Incorporation of new training aids, (computer-based training tools, maintenance trainers).
- v) Changes in the training delivery method as a consequence of the inclusion of new training aids.

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