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Standard Guide for Airframe and Systems Aviation Maintenance Personnel¹

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1. Scope

1.1 The purpose of this guide primarily is to address the fundamental subject knowledge, task performance, and task knowledge activities labeled “Airframe and Systems,” which ensures the Aircraft Maintenance Technician (AMT)/Aircraft Maintenance Engineer (AME) have the necessary basic knowledge and skills for today’s global aviation maintenance environment. Thus, the ASTM F46 Aerospace Personnel Committee has developed academic and skills knowledge standards that have been developed by aerospace industry-lead working groups. These standards reflect industry best practices and provide a focus on levels of safety that may exceed current regulatory guidance for aircraft maintenance technician academic and skills standards. This guide may supplement a state’s basic general requirements for AMT/AME certification. It is not the intent of this guide to replace the AMT requirements, but to ensure the AMT/AME is trained to the level as indicated. It is recommended that ASTM F3376, Standard Guide for Core Competencies for Aviation Maintenance Personnel, be used as a prerequisite for this guide. This guide may be used as a basis for an approval when specifically identified as such by the appropriate governing authority.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This guide is under the jurisdiction of ASTM Committee F46 on Aerospace Personnel and is the direct responsibility of Subcommittee F46.03 on Airframe and Systems Endorsements.

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2. Referenced Documents

2.1 *ASTM Standards:*²

F3060 Terminology for Aircraft

F3376 Guide for Core Competencies for Aviation Maintenance Personnel

2.2 *Advisory Document:*³

14 CFR Part 1 Definitions and Abbreviations

3. Terminology

3.1 *Definitions*—See 14 CFR Part 1, Definitions and Abbreviations.

3.2 *Definitions*—See ASTM F3060, Standard Terminology for Aircraft.

3.3 *Acronyms and Abbreviations:*

3.3.1 *ADF*—automatic direction finder

3.3.2 *APU*—auxiliary power unit

3.3.3 *BITE*—built-in test equipment

3.3.4 *DME*—distance measuring equipment

3.3.5 *ELT*—emergency locator transmitter

3.3.6 *ICA*—instructions for continued airworthiness

3.3.7 *ILS*—instrument landing system

3.3.8 *MSG3*—maintenance steering group, 3rd generation

3.3.9 *PMA*—parts manufacturing approval

3.3.10 *RVSM*—reduced vertical separation minimum

3.3.11 *STC*—supplemental type certificate

3.3.12 *TCAS*—traffic alert collision avoidance system

3.3.13 *TSO*—technical standard order

3.3.14 *VHF*—very high frequency

3.3.15 *VOR*—VHF omni-directional ranging

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

³ Available from Federal Aviation Administration (FAA), 800 Independence Ave., SW, Washington, DC 20591, <http://www.faa.gov>.

3.4 See **Table 1** for explanations for task knowledge and subject knowledge levels.

4. Significance and Use

4.1 This industry developed standard is to be used in conjunction with AMT/AME curriculum programs to help ensure enhanced knowledge and skill levels for the maintenance technician/engineer in today's ever-changing and highly technical aviation environment.

4.2 Task requirements are divided by Air Transport Association of America (ATA) category and listed in ATA order.

4.3 If a task is only listed as Level 3, it is understood the task will require knowledge at Level 1 and Level 2 as well.

4.4 Advanced, specific, or specialized knowledge standards may be developed in future endorsements. Aircraft model specific courses and aircraft painting are examples of endorsement areas.

5. Knowledge and Task Requirements

5.1 See **Table 1** for detailed explanations of Levels 1, 2, and 3.

5.2 (ATA 5) *Aircraft Inspection and Conformity – LEVEL 1*—Understands and can describe the following:

5.2.1 Certification categories (type certification, production certification, airworthiness certification).

5.2.2 Products and parts, Supplemental Type Certificate (STC), Parts Manufacturing Approval (PMA), Technical Standard Order (TSO).

5.2.3 Time limited maintenance, Maintenance Steering Group, 3rd Generation (MSG3), Instructions for Continued Airworthiness (ICA), airworthiness limitations.

5.3 *Airworthiness Requirements for Structural Strength – LEVEL 2*—Understands and can apply the theory related to the following:

5.3.1 Classification of structures (primary, secondary, and tertiary).

5.3.2 Inspections using borescope and remote electronic methods.

5.4 *Airworthiness Definition and Application – LEVEL 2*—Understands and can apply the theory related to the following:

5.4.1 Airframe conformity inspection.

5.4.2 Special inspections (heavy landing, lightning strikes).

5.4.3 Airworthiness requirements.

5.5 (ATA 6) *Dimensions and Areas – LEVEL 1*—Understands and can describe the following:

5.5.1 Aircraft Dimensions (wingspan, length, height, measurement references).

5.5.2 Areas and Zones.

5.6 (ATA 7) *Lifting and Shoring – LEVEL 1*—Understands and can describe the following:

5.6.1 Sling or trestle major component.

5.7 *Lifting and Shoring – LEVEL 3*—Can describe in detail and perform tasks related to the following:

5.7.1 Aircraft jacking.

5.8 (ATA 8) *Leveling and Weighing – LEVEL 2*—Understands and can apply the theory related to the following:

5.8.1 Configuration of aircraft against equipment list.

5.8.2 Preparation, leveling, and weighing aircraft.

5.9 (ATA 12) *Servicing - Routine Maintenance – LEVEL 1*—Understands and can describe the following:

5.9.1 Fueling and defueling.

5.9.2 Tire pressure checks.

5.9.3 Servicing of oil, hydraulic fluid, accumulators, and pneumatic systems.

TABLE 1 Knowledge and Task Levels

LEVEL 1	A familiarization with the principal elements of the subject. Objectives: • The student should be familiar with the basic elements of the subject. • The student should be able to give a simple description of the entire subject. • The student should be able to locate methods, procedures, instructions, and reference material. • The student should be able to use typical terms. • No skill demonstration is required under this level.
LEVEL 2	A general knowledge of the theoretical and practical aspects of the subject, and an ability to apply that knowledge in a practical manner. Objectives: • The student should be able to find and interpret maintenance data and information. • The student should be able to give a general description of the subject using, as appropriate, typical examples. • The student should be able to use mathematical formulae in conjunction with physical laws describing the subject. • The student should be able to read and understand sketches, drawings, and schematics describing the subject. • A high level of skill is not required.
LEVEL 3	A detailed knowledge of theoretical and practical aspects of the subject. To know, understand, and apply facts, principles, theories, and concepts. Objectives: • The student should be able to give a detailed description of the subject using theoretical fundamentals and specific examples. • The student should be able to apply their knowledge in a practical manner using manufacturer's or other acceptable data. • The student should be able to interpret results from various sources and measurements and apply corrective action where appropriate. • Perform all skill operations to a return-to-service standard using appropriate data, tools, and equipment. • The student should be able to perform inspections in accordance with acceptable or approved data. • A high level of skill is required.