

Technical Airworthiness Authority Advisory (TAA Advisory)	
Title	Human Factors Training
TAA Advisory Number	2017-03e-v3
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TAM Reference	Part 1, Chapter 4, Section 2
OPI / Telephone	DTAES 4-6 / 819-939-4082
RDIMS File	2182D-1027-812-6 – VOL 1 AEPM #1632780 (English) AEPM #1799085 (French)

1. Purpose

1.1 This Technical Airworthiness Authority (TAA) Advisory provides guidance regarding the Human Factors training requirements for personnel having technical responsibilities within a TAA-Accredited Maintenance Organization.

1.2 This TAA Advisory is not mandatory, nor does it constitute a regulation. It describes a means acceptable to the TAA, but is not the only means to demonstrate compliance to the regulation(s). If one chooses to use this TAA Advisory, then all its aspects must be followed.

2. Applicability

2.1 This TAA Advisory applies to all civilian maintenance organizations who have a direct contract with DND and are not currently approved by a regulatory agency that is recognized by the TAA for performing airworthiness-related activities, as defined in reference 3.2.1.a. Original Equipment Manufacturers (OEMs) are exempted from this advisory. TAA-accredited military organizations already meet the requirement of this advisory, through compliance to the RCAF Flight Operation Manual.

3. Related Material

3.1 Definitions

3.1.1 Nil.

3.2 Regulatory References

3.2.1 C-05-005-001/AG-001 – *Technical Airworthiness Manual* (TAM):

- a. Part 1, Chapter 3, Section 1 – Technical Airworthiness Program Features, para 1.3.1.4;
- b. Part 5, Chapter 5, Section 2 – Airworthiness Documentation, particularly Standard 3 in para 5.5.2.S3; and
- c. Part 1, Chapter 4, Section 2 – Assignment of Technical Airworthiness Authority criteria Para 1.4.2.S1.5.n.

3.2.2 Transport Canada – Part V - Standard 573.06 – Approved Maintenance Organizations – Training Program.

3.2.3 Transport Canada – TP 14573 – Fatigue Risk Management System for the Canadian Aviation Industry – Fatigue Management Strategies for Employees.

3.2.4 Federal Aviation Administration (FAA) AC120-72A (Maintenance Human Factors Training).

4. Discussion

4.1 The information contained in this TAA Advisory provides the necessary guidance and methods of compliance for developing and maintaining a TAA-acceptable Human Factors training program within a maintenance organization. It includes the requirements to establish policies, procedures and responsibilities for incorporating and coordinating Human Factors training in a maintenance organization.

4.2 The Human Factors training should be systematically integrated into a maintenance organization seeking accreditation by the TAA. It is the responsibility of the maintenance organization to either deliver in-house training to its personnel, or hire an outside agency that can provide the required Human Factors training. The organizational Airworthiness Process Manual (APM) requires defining how the organization will be delivering this training and applicable timelines for attending the initial and subsequent training on human factors. In addition, the APM must include a policy for the management of individuals' records, providing an auditable trail to the organization's Quality System and the TAA, during audit, for both initial and recurring training. As a minimum, these records should highlight who attended the training, the date the training took place and the material covered. These records should be retained in accordance with reference 3.2.1.b.

4.3 Initial Training and Training Syllabus

4.3.1 A TAA-Accredited Maintenance Organization must ensure that all personnel performing airworthiness-related activities receive an initial Human Factors training within one year of being hired by the organization. A sample course syllabus for the initial Human Factors training is provided in Appendix A to this advisory and was based on reference 3.2.2. Additional information can also be found at reference 3.2.4. As a minimum, the initial Human Factors training should include instruction on the following topics:

- a. Human Performance;
- b. The twelve elements (Dirty Dozen) influencing human error, including:
 - (1) fatigue (see reference 3.2.3 for more detail);
 - (2) stress;
 - (3) lack of assertiveness;
 - (4) awareness;
 - (5) lack of resources;
 - (6) lack of knowledge;
 - (7) lack of teamwork;
 - (8) complacency;
 - (9) pressure;
 - (10) distraction;
 - (11) lack of communication; and
 - (12) norms; and
- c. Error management, including error prevention and error containment.

4.4 Recurring Training

4.4.1 Upon completion of an initial Human Factors training, an organization must ensure that all personnel performing airworthiness-related activities also receive recurring human factors training. The frequency of the recurring training is determined by the maintenance organization. Every maintenance organization is different, but the selection of the recurring training frequency could be based on circumstances, such as: operational tempo, consumers demand, complexity and criticality of the work, maturity of the work force, work force turnover, nature of non-compliances and environmental concerns. However, the recurring training frequency should not exceed 36 months. Note that the Human Factors recurring training does not have to be limited to the initial training material. It is recommended that this training also include discussion on recent non-compliances from both internal and external audits, and recent incidents.

4.4.2 Recurring training may take the form of a dedicated course or, alternatively, may be integrated into other training or company activities, such as meetings, lectures and/or discussions. The recurring training syllabus, possible topics and delivery methods must be stipulated within the organization's APM. Again, the length of this training should be sufficient to ensure that the Human Factors principles and practices are continuously applied, considering some of the elements previously mentioned.

Notes

1. It is acceptable to the TAA for an organization to combine the Human Factors recurring training with other training (e.g., Flight Safety, Health and Safety).

2. Consideration should be given to the use of different training methods and tools to contribute fully to the long-term success of the organization's Human Factors program. For examples, types of delivery methods include classroom training, formal lecture, group discussions, accident/incident analysis, case studies from one's own organization, video, role-play exercises and teamwork exercises.

4.5 It is not the intention of the TAA to mandate initial Human Factors training for individuals who have been previously employed within an organization which had an acceptable program. Therefore, recent hires should be assessed for the need to receive the initial Human Factors training to meet the organization's new standard. This formal assessment, and how it is recorded, must be described within the organization's quality management system. This assessment should clearly state when recurring training must be taken by the new hire and the reason for deeming the initial training not applicable.

Example of syllabus for Initial Human Factors Training

- 1. General/Introduction to Human Factors**
 - a. Need to address Human Factors
 - b. Statistics
 - c. Incidents
- 2. Safety Culture/Organizational Factors**
- 3. Human Error**
 - a. Error models and theories
 - b. Types of errors in maintenance tasks
 - c. Violations
 - d. Implications of errors
 - e. Avoiding and managing errors
 - f. Human Reliability
- 4. Human Performance and Limitations**
 - a. Vision
 - b. Hearing
 - c. Information-Processing
 - d. Attention and Perception
 - e. Situational awareness
 - f. Memory
 - g. Claustrophobia and physical access
 - h. Motivation
 - i. Physical and Mental Health
 - j. Stress
 - k. Workload management
 - l. Fatigue
 - m. Alcohol, medication, drugs
 - n. Physical work
 - o. Repetitive tasks / complacency
- 5. Environment**
 - a. Peer pressure
 - b. Stressors
 - c. Time pressure and deadlines
 - d. Workload
 - e. Shift Work
 - f. Noise and fumes
 - g. Illumination
 - h. Climate and temperature
 - i. Motion and vibration
 - j. Complex systems
 - k. Hazards in the workplace
 - l. Lack of manpower
 - m. Distractions and interruptions
- 6. Procedures, Information, Tools and Practices**
 - a. Visual Inspection
 - b. Work logging and recording
 - c. Procedure – practice / mismatch / Norms
 - d. Technical documentation – access and quality

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- 7. Communication**
 - a. Shift / Task Handover
 - b. Dissemination of information
 - c. Cultural differences

- 8. Teamwork**
 - a. Responsibility
 - b. Management, supervision and leadership
 - c. Decision making

- 9. Professionalism and integrity**
 - a. Keeping up to date, currency
 - b. Error provoking behaviour
 - c. Assertiveness

- 10. Organization's Human Factors Program**
 - a. Effective reporting of errors and successes
 - b. Disciplinary policy
 - c. Error investigation
 - d. Action to address problems
 - e. Fatigue Risk Management
 - f. Feedback