VOLUME 3 GENERAL TECHNICAL ADMINISTRATION

CHAPTER 24 EVALUATE 14 CFR PARTS 91 SUBPART K/121/135.411(A)(2) MAINTENANCE TRAINING PROGRAM RECORD

Section 2 Evaluate and Accept a Maintenance Human Factors Training Program

3-1903 PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

    A. Maintenance: 4306, 4307, 4372, 4373.

    B. Avionics: 6306, 6307, 6372, 6373.

3-1904 OBJECTIVE. This section provides guidance for the evaluation, acceptance, and in certain scenarios approval of human factors training programs. This guidance may also be used for acceptance of human factors Aviation Maintenance Technician (AMT) awards training programs and Inspection Authorization (IA) renewal human factors training programs.

3-1905 GENERAL.

    A. Effective training is the basis for a successful maintenance and inspection program. Although many procedures for maintaining and inspecting aircraft may be similar, the equipment, procedures, and task documentation vary widely depending on the operator/applicant's specific program. Human factors training plays an essential part in identifying those areas and is the most efficient manner of educating maintenance technicians and others of the importance of good human factors principles, practices, and techniques.

    B. Numerous airlines, repair stations, and training organizations now provide human factors training and desire Federal Aviation Administration (FAA) recognition of their training programs. This document will provide guidance in accepting or approving these vital human factors training programs.

    C. In October 1991, the Aircraft Maintenance Division, AFS-300, determined a need for an incentive program to encourage training recognition for AMT employees and employers. Human factors training is now an acceptable portion of the training for the AMT awards program.

3-1906 DISCUSSION.

    A. Human factors issues contribute to approximately 80 percent of all aviation accidents and incidents. Research and experience have shown that human factors training can address many of the issues that contribute to these maintenance events. Attention to maintenance human factors can raise efficiency, effectiveness, and safety in aviation environments. This translates to better expense control and long-term safety benefits.

B. Maintenance human factors training is part of a total system in managing human error designed to discourage procedural violations. It is an essential part of a system aimed at individuals engaged in hands-on maintenance, and those who supervise and plan maintenance activity. Human factors training should cover basic safety principles and practices integrated within a maintenance organization's program.

C. The objective of human factors training is to provide principles and techniques that will help operators do a better job by:

- Improving safety;
- Decreasing organizational exposure to risk;
- Reducing and capturing errors; and
- Encouraging employees to report safety issues and concerns without fear of retribution.

NOTE: These objectives contribute to the FAA's safety goal of achieving the lowest possible accident rate and continuously improving safety.

D. Human factors training is often most effective when it is designed for specific organizations, considering such factors as:

- Characteristics of the people in the work force;
- Physical and social conditions of the work environment;
- Type of work being performed, like heavy maintenance, light maintenance, aircraft line maintenance and aircraft size and type; and
- Resources necessary to complete the work safely and efficiently.

E. For initial or general human factors training it may not be necessary for an operator to conduct an extensive job and task analysis, but to merely understand the most important safety concerns within its organization. There are many fundamental principles of human factors that apply to all maintenance work.

F. The aviation safety inspector (ASI) should review proposed human factors training to ensure that it is focused on "real-world" human factors challenges faced in aviation maintenance or related work. Proposed training plans that lack sound fundamentals or examples of real world aviation maintenance challenges are likely not as acceptable or desirable for aviation maintenance human factors training.

G. Repeated, recurrent, or continuation human factors training within a specific organization should be designed and delivered based on company-specific examples derived from its event investigation system data. AMTs learn best from specific examples within their own organization.

H. There are a number of commercial multi-media human factors training products that should be considered for an accepted or approved training program. However, these products are best when they are supplemented with discussion lead by a credible human factors instructor.

The ASI must review all media and movies that are included in the application package to ensure suitability for all types of audiences.

      I. The instructor should have capabilities and experience related to aviation maintenance and/or the human factors discipline that a reasonable person would accept as credible. The instructor should have effective communication skills and the ability to convey credibility to the majority of the students or course participants. Experience in aviation maintenance is the most highly preferred attribute for an acceptable course leader.

3-1907 CONSIDERATIONS FOR ACCEPTABLE CONTENT.

      A. There are an unlimited number of human performance topics that are acceptable for all types of human factors training. Approval of content should be at the discretion of the FAA ASI and may require additional discussion or correspondence with the applicant. The ASI should consider the size of an organization and the work being performed when reviewing an organization's human factors training program.

      B. The FAA's maintenance human factors experts along with other regulatory agencies, including the European Aviation Safety Agency and Transport Canada, have identified the following key topics as likely to be included in a good human factors training program:

      1) A general introduction to human factors.

      2) Safety culture/organizational factors.

      3) Human error—error principles, event investigation, and case studies.

      4) Human performance and limitations.

      5) Environments, both physical and social.

      6) Organizational procedures, information, tools, and proper task documentation and sign-off practices.

      7) Planning of tasks, equipment, and spares.

      8) Communication and the lack thereof.

      9) Teamwork and leadership.

      10) Professionalism and integrity.

      11) Shift and task turnover.

      12) Undocumented maintenance.

      13) Complacency.

      14) Lack of knowledge.

15)   Distraction.

16)   Lack of resources.

17)   Pressures.

18)   Lack of assertiveness.

19)   Norms.

20)   Stress.

21)   Lack of Awareness.

22)   Fatigue management/fitness for duty.

23)   Procedural noncompliance.

C. The ASI should still consider content not included in paragraph B if it is directly related to a case study or other scenarios that support human factors initiatives.

3-1908 HOURS OF HUMAN FACTORS TRAINING CREDIT. A formal block of human factors training lasting at least 50 minutes constitutes 1 hour of training. For the AMT awards program, see Advisory Circular (AC) 65-25D, Aviation Maintenance Technician Awards Program, for details on acceptable hours of human factors training credit. The FAA will also accept up to 6 hours of human factors training towards IA renewal.

3-1909 APPLICATION PROCESS.

A. For review of a human factors training program, an applicant should contact the FAA office in person, make arrangements to have a meeting, or submit a Letter of Request for course review to the local FAA office. All material used for the training must be provided to the FAA to ensure proper course review.

B. Non-U.S. organizations also provide training in areas required by their aviation authority that may crossover to required training such as human factors. These courses may be accepted or approved using this guidance, but caution should be exercised during the review process to ensure foreign aviation authority regulations are not embedded which could confuse technicians on FAA regulatory and nonregulatory requirements. The foreign applicant should contact its closest regional FAA office for further assistance.

C. Applicants using any unconventional or non-traditional means of providing human factors training such as computer-based instruction, satellite delivered media, internet, etc. or nonconventional training will submit it to AFS-300 for review to determine a suitable means of delivery.

3-1910 RECONSIDERATIONS.

A. If the FAA determines that a course is unacceptable, it will notify the training provider in writing and explain why. It is highly recommended that the training provider work closely with the FAA office to understand why the training program was unsatisfactory and to remedy the training deficiencies as soon as possible.

B. If the training provider does not agree with the reviewing office regarding the nonacceptance, the training provider may request reconsideration of the decision by writing to: FAA Headquarters, Aircraft Maintenance Division, AFS-300, 800 Independence Ave., SW, Washington, DC 20591.

C. AFS-300 will make the final decision on the request for reconsideration. The decision will be forwarded to the training provider directly from AFS-300 with a copy to the associated FAA office. The AFS-300 decision may affirm, modify, or reverse the initial decision.

3-1911 RELATED REGULATORY AND CONTENT GUIDANCE. For more information, consult the following documents (current editions):

A. Title 14 of the Code of Federal Regulations (14 CFR) part 1, Definitions and Abbreviations.

B. Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration.

C. AC 120-16, Air Carrier Maintenance Programs, which describes air carrier aircraft maintenance programs. It explains the background as well as the FAA's regulatory requirements for these programs.

D. AC 120-66, Aviation Safety Action Program (ASAP), which provides information encouraging air carrier and repair station employees to voluntarily report critical safety information.

E. AC 120-72, Maintenance Resource Management Training, which presents guidelines for developing, implementing, reinforcing, and assessing maintenance resource management training programs for improving communication, effectiveness, and safety in maintenance operations. This AC also provides a training template.

F. AC 120-78, Acceptance and Use of Electronic Signatures, Electronic Recordkeeping Systems, and Electronic Manuals, which provides information on electronic recordkeeping.

G. AC 120-79, Developing and Implementing a Continuing Analysis and Surveillance System, which provides information on how to implement a Continuing Analysis and Surveillance System (CASS), which is required for air carriers under 14 CFR part 121.

H. AC 120-92, Introduction to Safety Management Systems for Air Operators, which provides information on how to develop a safety management system.

I. FAA Order 8900.1, Volume 3, Chapter 24, Section 1, Evaluate FAR Part 121/135.411(a)(2) Maintenance Training Program/Record, which provides guidance for evaluating and accepting an operator/applicant's maintenance/inspection training program.

J. The FAA Operator's Manual for Human Factors in Aviation Maintenance, which provides information on how to implement a human factors program in maintenance. The manual is available at http://www.hf.faa.gov/opsmanual/.

K. Air Transportation Association of America Specification 104, Guidelines for Aircraft Maintenance Training, Air Transport Association provides guidance on training development, including task analysis and industry-defined training levels. This document is available at http://www.hfsky.faa.gov/2007.

L. Further information regarding the 12 common causes of maintenance human factor errors (included in paragraph 3-4520B) and how to obtain posters can be found at the following Web sites:

1) http://www.tc.gc.ca/civilaviation/systemsafety/posters/menu.htm.

2) http://www.system-safety.com/hfhistory/human_factors_history.htm.

3-1912 PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites. Open PTRS activity code if applicable:

- Knowledge of the regulatory requirements of 14 CFR parts 43, and 65.

B. Coordination. This task may require coordination with other Flight Standards District Offices, certificate management offices, and International Field Offices.

3-1913 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- AC 65-25;
- AC 120-72;
- FAA's Operators Manual for Human Factors in Aviation Maintenance;
- Order 8900.1, Volume 5, Chapter 5, Section 7, Evaluate Title 14 CFR Part 65 Inspection Authorization (IA); and
- Order 8900.10, Volume 3, Chapter 24, Section 1.

B. Forms:

- FAA Form 8310-5, Inspection Authorization;
- FAA Form 8610-1, Mechanic's Application for Inspection Authorization;
- Aviation Maintenance Technician Awards Certificates; abd
- Aviation Maintenance Technician Awards Brochure.

C. Jobs Aids. None.

3-1914 PROCEDURES.

    A. Ensure Applicant Meets Eligibility Requirements.

    B. Evaluate Training Program Content.

    1) The procedures for obtaining the training program approval normally begin with a meeting between the training provider's key personnel and the principal inspector (PI) or responsible ASI to discuss the scope of the training, the timing of the program document submittal, and other issues. This meeting will be an opportunity for the training provider to ask questions about the FAA process. Although highly recommended, this meeting is not required.

    2) The training provider may submit its training program contents as electronic media if it ensures the reviewing FAA office is equipped to look at and store the submitted material in the media the training provider selects. Material submitted electronically must be accompanied by a transmittal document. These transmittal documents may be in the form of an e-mail, fax, or letter and may include the use of electronic signatures. The training provider's accountable manager or someone acting on the manager's behalf should sign the submittal. If a program is too large to send electronically, it will be the responsibility of the training provider to make alternate arrangements to deliver the program to the FAA office for review.

    3) The reviewing FAA office may use the criteria and standards described in AC 120-72 and the items listed in paragraph 3-4519 of this chapter to review the content of the initial training program. Not every item listed in section 1, paragraph 5 needs to appear in the training, but the reviewing office should use the list to select items that better meet the needs of the maintenance organization.

    4) The FAA will review the proposed training program or revision and either approve it or prepare an explanation of why the program or revision cannot be accepted as submitted. The reviewing office will send a letter or electronic transmittal of its approval or nonacceptance to the individual who signed the submittal for the training.

    5) If the FAA does not accept a submittal, the training provider should propose revisions that address the FAA's concerns. When the training provider has adequately addressed all the concerns expressed in the FAA nonacceptance, the program will be accepted and/or approved.

    6) A change to the accepted or approved training program can be initiated by the training provider or by input from the PI or responsible ASI. Any revision to the program document should be provided to the inspector for further acceptance or approval. The training program may change to accommodate modifications to the training provider's work and/or customers, and in response to the ongoing assessment processes of the customer and of the FAA. Correction of typographical errors and changes to phone numbers would be examples of changes not requiring FAA acceptance or approval. However, the training provider should send a corrected copy to the FAA.

7)   The instructor should have capabilities and experience related to aviation maintenance and/or the human factors discipline that a reasonable person would accept as credible. The instructor should have effective communication skills and the ability to convey credibility to the majority of the students or course participants. Experience in aviation maintenance is the most highly preferred attribute for an acceptable course leader.

8)   The FAA does not determine instructor qualifications. However, if the FAA—through its surveillance process—finds that the qualifications or skills of an instructor are deficient, the training provider must correct any deficiency associated with that instructor and with its instructor selection.

9)   The training program should have a process measurement element that verifies the effectiveness of the training. This provides a continuous improvement characteristic to the training program. Therefore, one of the key areas the FAA will monitor is the feedback process that takes evaluation results and adjusts training needs. The FAA might also independently assess training to evaluate the effectiveness, particularly where safety risk is relatively high.

10)   If the program or program revision is submitted in an electronic format, the FAA inspector will indicate acceptance, approval, or nonacceptance with an e-mail message or letter. If the submittal is denied, the FAA e-mail message or letter will include an explanation of the denial.

11)   The training provider should initiate its revision process as follows. The training provider or operator informs the FAA that it is planning to submit a training program for approval by way of an initial meeting in person, or a letter of request sent to its local FAA office.

12)   The FAA may initiate the training program acceptance or nonacceptance process as follows. When review of the training program or revision has shown compliance with the form and manner prescribed in this chapter, the FAA issues a letter of acceptance. See acceptance and nonacceptance example letters.

13)   When review for approval of the training program or revision is rejected, issue a letter of nonacceptance, with an explanation of discrepancies; the letter of acceptance format may be used.

Figure 3-1, Example Letter of Acceptance

XYZ Training
Accountable Manager
123 Anywhere Blvd
Somewhere, PA. 13579

Dear Mr. Trainer,

The FAA is pleased to notify you we reviewed and accepted the XYZ human factors training course for the purpose submitted with the revision date of [XX/XX/XX].

As a training provider of an FAA-accepted course you must:
- Keep the course material current and complete as it was originally submitted.
- Facilitate it in the manner and length for which it was intended.
- Allow Flight Standards to monitor sessions presented under this letter of acceptance. In addition, provide all training materials the attendees of the training would receive if requested by the FAA individual monitoring the training.
- Upon completion of training, provide the attendees with a certificate verifying their completion of the training accepted by the FAA, and the total length of time for the course.
- Maintain a list of attendees or training records to document that personnel are adequately trained in human factors, which can be made available to any FAA office upon request.

You may revise the course at any time using one of the following two methods:

1.   Change: These are minor updates, alterations, and deletions that constitute minimal course revisions to the original material. The training provider does not have to notify the FAA of these types of changes.

2.   Revisions: These are major rewrites to the original course material submitted for acceptance. Revisions may include changing course subjects, subtracting or adding course material not found on the original course. The training provider must submit the revision to this office for review and acceptance at least 30 days prior to facilitating the revised course. After review and acceptance of the modifications, the FAA will issue a new letter of acceptance in accordance with AC 65-25D, or as revised.

Again, congratulations and thank you for your interest in maintenance human factors, your commitment to maintenance training, and aviation safety. Should you have any further questions contact this office at [(XXX) XXX-XXXX].

Sincerely,

John J. Inspector
Aviation Safety Inspector
800 Independence Ave. SW
Washington, DC 20591

Figure 3-2, Example Letter of Acceptance (AMT Awards Program)

ABC Training
Accountable Manager
456 Anywhere Blvd
Anywhere, PA. 24680

Dear Mr. Trainer,

The FAA is pleased to notify you we reviewed and accepted the ABC human factors training course for the purpose submitted. As of this date, the training course provided with the revision date of [XX/XX/XX] meets the requirements specified in AC 65-25D and is granted X hours of credit towards the AMT Awards Program.

As a training provider of an FAA-accepted course you must:

- Keep the course material current and complete as it was originally submitted.
- Facilitate it in the manner and length for which it was intended.
- Allow Flight Standards to monitor sessions presented under this letter of acceptance. In addition, provide all training materials the attendees of the training would receive if requested by the FAA individual monitoring the training.
- Upon completion of training, provide the attendees with a certificate verifying their completion of the training accepted by the FAA, and the total length of time for the course.
- Maintain a list of attendees or training records to document that personnel are adequately trained in human factors, which can be made available to any FAA office upon request.

Please advise those individuals successfully completing this training that the FAA will accept the total hours of your training program towards the AMT Awards Program. Simply have them provide a copy of their training certificate to their local FAA office when applying for the AMT award.

You may revise the course at any time using one of the following two methods:

1. Change: These are minor updates, alterations, and deletions that constitute minimal course revisions to the original material. The training provider does not have to notify the FAA of these types of changes.

2. Revisions: These are major rewrites to the original course material submitted for acceptance. Revisions may include changing course subjects, subtracting or adding course material not found on the original course. The training provider must submit the revision to this office for review and acceptance at least 30 days prior to facilitating the revised course. After review and acceptance of the modifications, the FAA will issue a new letter of acceptance in accordance with AC 65-25D, or as revised.

Again, congratulations and thank you for your interest in maintenance human factors, your commitment to maintenance training and aviation safety. Should you have any further questions contact this office at [(XXX) XXX-XXXX].

Sincerely,

John J. Inspector
Aviation Safety Inspector
800 Independence Ave. SW
Washington, DC 20591

Figure 3-3, Example Letter of Nonacceptance

XYZ Training
Accountable Manager
123 Anywhere Blvd
Somewhere, PA. 13579

Dear Mr. Trainer,

This letter is in response to your request for acceptance of Revision 2 to XYZ training program/revision, dated [XX/XX/XX]. Your request for approval of revision 2 is rejected for the following reason(s). Revision 2 deletes training previously given on communications and fatigue and does not provide any additional type of identifiable instruction to your mechanics, repairmen, or technicians.

Presently there is not another course of training for XYZ training containing adequate information on these important human factors issues. For further in formation you may contact this office at [(XXX) XXX-XXXX].

Sincerely,

John J. Inspector
Aviation Safety Inspector
800 Independence Ave. SW
Washington, DC 20591

3-1915 TASK OUTCOMES.

    A. Complete the PTRS Record.

    B. Air Transportation Oversight System (ATOS) Action. Airworthiness PIs will ensure that their air carrier's Director of Safety is aware of this change.

        1) PIs will assess the air carrier's response to the recommendation. An air carrier's failure to implement these recommendations into its existing program could result in an increase in risk in several areas.

        2) PIs will determine if additional surveillance is required or further air carrier action is necessary to address the potential increased risk. Possible additional actions may include retargeting the Comprehensive Assessment Program (CAP) to include accomplishing appropriate design assessments or performance assessments, convening a System Analysis Team (SAT) or re-evaluating air carrier approvals or programs.

    C. ATOS Reporting. PIs will make an ATOS entry using the Other Observation Dynamic Observation Report (DOR) functionality to record the actions directed by this change. PIs will access the Create DOR option on their ATOS Homepage, select the Other Observation tab, and:

        1) Select System: 4.0 Personnel Training and Qualifications.

        2) Select Sub-system: 4.2 Training Programs.

        3) Select the appropriate air carrier from the drop-down menu.

        4) Select appropriate PTRS Activity Number from the drop-down menu.

        5) Enter the date the activity was started and completed.

        6) Enter the location where the activity was performed.

        7) Enter "8900MHF" in the Local/Regional/National Use field.

        8) Use the Comments field to record any comments reflecting interaction with the air carrier and the air carrier's response to the recommendation.

        9) Input any actions taken in the Reporting Inspector Action Taken field.

        10) Select the Save button after all entries have been made.

3-1916 FUTURE ACTIVITIES. Routine surveillance.

RESERVED. Paragraphs 3-1917 through 3-1920.