# EAC
# No. 147

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# APPENDIX A

# TECHNICAL INSTRUCTORS And EXAMINERS



**A.1 Applicability.**
This appendix prescribes the requirements for issuing technical instructor Letter Of Authorization (LOA) and associated ratings and the general operating rules for the holder of this LOA and ratings.

**A.3 Technical Instructor Definition.**
A technical instructor is a person selected by a training center or an approved maintenance organization certificate holder who has appropriate knowledge, skills, experience, training, and demonstrated ability to instruct technical subjects. A technical instructor may certify the satisfactory completion of technical training curriculum segments. A technical instructor must hold a Letter Of Authorization (LOA) when conducting ECAR parts 65 and 145 training.

**A.5 Application and Issue**.

a) An applicant for a technical instructor LOA and rating, or for additional rating, under this appendix, is made on a form and in a manner as follows:

1- The training center should submit an application for approval of the instructor, using the appropriate form issued by the FSSS, along with all the official documents required before conducting any training activity requiring approval.

2- The applicant shall be noticed, within two weeks of submitting the application with the ECAA requirements to issue the LOA.

3- Upon fulfilling all the requirements, the instructor will be allowed to teach a course once under the supervision of approved civil aviation inspectors.

4- If his efficiency is less than very good, according the appropriate achievement form issued by the FSSS, he will be noticed with the requirements, and will be allowed to teach once more to fulfill those requirements and to re-evaluate him. If his re-evaluation is again less than very good, his request for the LOA shall be denied.

4- If his teaching talent proved to be efficient, a technical instructor LOA valid for three years will be issued to him.

5- When an approved instructor receives any approved specific course, his training center can add it to his valid approval.

b) An applicant who meets the requirements of this appendix is entitled to a technical instructor LOA with ratings naming the subjects that he is authorized to teach.

c) Unless authorized by the ECAA, a person whose technical instructor LOA is suspended may not apply for any rating to be added to that LOA during the period of suspension.

d) Unless the order of revocation provides otherwise, a person whose technical instructor LOA is revoked may not apply for any technical instructor LOA for one year after the date of revocation.

## A.7 Temporary LOA.

A temporary technical instructor LOA or rating effective for a period of not more than 90 days may be issued for a qualified applicant, pending the issue of the LOA or rating for which he applied.

## A.9 Duration of LOA.

a) A technical instructor LOA issued under this appendix is valid for three years unless surrendered, suspended, or revoked.

b) The holder of any technical instructor LOA issued under this appendix that is suspended or revoked shall upon the ECAA's request, return it to the ECAA.

### A.11 LOA Renewal and Maintainability.

a) Two weeks before the expiry date of a technical instructor LOA, an application for renewal should be submitted to the ECAA, using the appropriate FSSS form.

b) Any major change occurring to the teaching technique, adopted in the instructor's field of specialization, the FSSS should be notify with the change at least three weeks in advance, using the appropriate FSSS form.

## A.13 Eligibility Requirements.

A. To be eligible for a technical instructor LOA under this appendix, a person:

a) Must be at least 24 years of age.

b) Must be able to read, write, speak, and understand the English language.

c) Except as provided in paragraph B. of this section, must pass a knowledge test on the fundamentals of instructing to include:

(1)The learning process;
(2)Elements of effective learning;
(3)Student evaluation and testing;
(4) Course development;
(5) Lesson planning; and
(6) Classroom training techniques.

d) He must have had a license issued in any civil aviation field.

e) He should have accomplished the specific training related to the subjects he aims to teach.

B. The knowledge test specified in paragraph A. c) of this section is not required if the applicant holds an LOA issued under ECAR parts 61 or 142.

## A.15 Limitations.

No person may instruct courses leading to certifying privileges unless he holds a LOA

issued under this appendix.

## A.16 Examiners

To Be Developed (TBD)

# APPENDIX B
# RECORD KEEPING



## RECORD KEEPING

## SECTION 1. GENERAL

### B.1 GENERAL.

This appendix contains information and guidance to be used by ECAA when evaluating a certificate holder's (the training department of an ECAR Part 145 maintenance organization, or ECAR Part 147 aviation maintenance training center) record keeping system for acceptance or approval. If the system is found satisfactory, it will be approved or accepted. Approval will be indicated by a letter. Acceptance will be indicated by a letter or by the lack of any ECAA objections.

- **This Section**. Contains a general overview of proprietary information, the regulatory requirements for record keeping, and definitions of terms as they relate to a certificate holder record keeping.

- **Section Two**. Contains information and guidance about the acceptance or approval of a certificate holder's record keeping system.

- **Section Three.** Contains information and guidance about currency periods for records.

- **Section Four.** Contains information about computer based record keeping.

## B.2 CHARACTERISTICS OF INFORMATION AND RECORDS.

Certificate holders collect and use both information and records in the conduct of operations.

***a. Information Versus Record.*** Inspectors should be aware of the difference between a record keeping system and a management information system. A record is defined as an account which preserves evidence of the occurrence of an event. In general, a record must show what event occurred, to whom, by whom, when, and proof of the event's occurrence, such as a certification by signature or by electronic means. A system that collects related information for making operational decisions but does not preserve evidence of the event's occurrence is not a record keeping system.

***b. Proprietary Information.*** Proprietary information is that information which is the sole property of the certificate holder. Inspectors do not have a right to compel a certificate holder to divulge proprietary information.

## B.3 REQUIREMENTS.

a) It is required that the certificate holder must maintain records for trainees enrolled in a course, for instructors designated to instruct a course, and for examiners.

b) Computer record systems must be approved by the ECAA in compliance with the record keeping requirements of that appendix.

c) The certificate holder is required to keep the records at either the principal business office or another place approved by the ECAA.

## B.4 DEFINITIONS.

The following definitions are used throughout this appendix:

***a. Calendar Month.*** The first day through the last day of a particular month.

***b. Computer Based Record Keeping System.*** A system of record processing in which records are entered, stored, and retrieved electronically by a computer system rather than in traditional hard copy form.

***b. Computer Hardware.*** A computer and the associated physical equipment directly involved in the performance of communications or data processing functions.

***d. Computer Software.*** Written or printed data, such as programs, routines, and symbolic languages, essential to the operation of computers.

***e. Data Backup.*** Use of one of several recognized methods of providing a secondary means for storing records. This backup can be used to reconstruct the format and content of electronically stored records in case of loss of, failure of, or damage to the primary record keeping system.

***f. Data Base Management System (DBMS).*** A computer software program capable of maintaining stored information in an ordered format, manipulating that data by mathematical methods, and data processing functions such as retrieval of data.

***g. Data Entry.*** The process by which data or information is entered into a computer memory or storage medium. Sources include manually written records, real time information, and computer generated data.

***h. Data Verification.*** A process of assuring accuracy of data records by systematically or randomly comparing electronic records with manual data entry documents.

***i. Electronic Mail.*** The transmittal of messages, documents, or other communications between computer systems or other telecommunication channels.

***j. Electronic Signature.*** Any of several generally recognized techniques for electronically identifying individuals entering, verifying, or auditing computer based records, and checking for authenticity.

***k. Eligibility (Grace) Period.*** Three calendar months: the calendar month before the recurrent training month, the recurrent training month, and the calendar month after the recurrent training month. During this period, a maintenance engineer must receive recurrent training to remain in a qualified status. Recurrent training completed during the eligibility period is considered to be completed during the recurrent training month (base month). For example, if a maintenance engineer whose recurrent training month is August receives the required recurrent training in September, August remains as the recurrent training month.

***l. Modem.*** A device that can use existing telephone transmission circuits to transfer information between either two or more computer systems, or computers and remote terminals.

***m. Password.*** An identification code required to access stored material. A device intended to prevent information from being viewed, edited, or printed by unauthorized persons.

***n. Proprietary Information.*** Information which is the private property of the certificate holder.

***o. Real Time Record.*** Information that is entered into a computer based record keeping system immediately following the completion of an event or fulfillment of a condition, without first relying on the manual recording of the information on a data entry form.

***p. Records.*** Information in a predetermined format that shows that the certificate holder or its personnel have accomplished a particular event, have met certain criteria, or have fulfilled specific conditions required by the ECARs.

***q. System Security.*** Policies, procedures, and system structures designed to prevent users from gaining access to sections of a data base to which they are not authorized access.

***r. Telephone Dial In Access.*** A means of gaining access to a computer system from a remote location through a telephone modem and existing telephone circuits.

***s. Training Month (Base Month).*** The calendar month during which a maintenance engineer is due to receive required recurrent training.

***t. User Identification.*** A series of alphabetic and/or numeric characters assigned to one or more individuals or organizations for the purpose of gaining access to a computer system and accounting for time usage.

## B.5 MERGERS AND ACQUISITIONS.

When two or more computer based record keeping systems are being consolidated because of a merger or acquisition, the consolidation of the training programs and the record keeping systems which correlate to those programs is of particular importance. Accurate consolidation of those systems must be given priority by the ECAA. Training records of the acquired company's flight operations personnel must comply with the basic ECAR requirements before being accepted. Once the surviving system has been approved, the certificate holder should transfer data from the existing system into the surviving system.

**a. Unavailable Records.** Due to variances in record keeping methods of individual certificate holders, some records may not be available or useable for inclusion in the surviving computer based record keeping system. In this case, the certificate holder must reconstruct records from available resources. If there are no resources from which to reconstruct records, assumptions that experienced personnel have accomplished required training may be required. In these cases, the ECAA and certificate holder should agree on a method of identifying portions of a record that are based on these assumptions. The method used to identify this information should be discussed in the certificate holder's user manual.

***b. Changes to Existing Record Keeping System.*** The ECAA is responsible for evaluating any request for change to a certificate holder's existing record keeping system. Minor changes such as modifications to display formats may not require a formal evaluation and approval; major changes affecting system operation or capability may require an in depth evaluation and approval process.

***c. Transition from Existing System to Surviving System.*** The transition procedures from the certificate holder's existing system to the surviving system must be approved by the ECAA. During this transition, the ECAA shall determine the time period required for maintaining the two systems in parallel operation. The surviving system should have at least the same backup capability as the existing system. The integration of the existing and surviving systems may be accomplished by electronically combining the data bases of the two systems or by other methods, as long as the accuracy of the data is maintained.

NOTE: A change in computer hardware which does not affect functions or capabilities of the system does not constitute a system transition and does not require approval.

SECTION 2. ACCEPTANCE OR APPROVAL PROCESS

**B.6 GENERAL.**
This section contains information and guidance to be used by the Flight Safety Standards Sector (FSSS) inspectors when accepting or approving certificate holder (ECAR Part 145 certificate holders, or ECAR Part 147 aviation maintenance training centers) record keeping systems. The record keeping acceptance or approval process follows the general acceptance or approval process of the ECAA.

**B.7 REQUIREMENTS.**
The ECAA approve certificate holder's computer based record keeping system. All other record keeping systems must be acceptable to the ECAA requirements. FSSS inspectors shall determine that a certificate holder's record keeping system is in compliance with applicable ECARs and with the requirements of this appendix.

**B.8 GUIDELINES FOR APPROVAL OR ACCEPTANCE.**
During initial certification, the certificate holder should ensure that the compliance statement clearly describes the procedures to be used by the certificate holder for the generation and maintenance of required records. After certification, FSSS inspectors shall conduct surveillance of a certificate holder's records on a routine basis to ensure that the records are being maintained. FSSS inspectors shall also ensure that the records continue to contain the required information to show compliance with the ECARs. The certificate holder shall develop a section in its training exposition manual (TEM) that provides detailed instruction on the use of the record keeping system and as part of the TEM, must be provided to the ECAA.

**SECTION 3. CURRENCY PERIODS FOR RECORDS**

B.9 GENERAL. ECAA inspectors shall determine if an certificate holder's (ECAR Part 145 certificate holders, or ECAR Part 147 aviation maintenance training centers) record keeping system provides the necessary documentation to demonstrate compliance with the ECARs and this appendix. Adequate historical data must be maintained by the certificate holder to enable the ECAA inspectors to determine compliance at any time. This section contains information and guidance to be used by ECAA inspectors when determining the necessary currency periods for records.

**B.10 CATEGORIES OF RECORDS. In order to demonstrate regulatory compliance, training and qualification records must be retained to document currency and prerequisite qualification.**

***A. Permanent Records.*** Permanent records are the documentation of the successful completion of training or qualification events which are prerequisites for subsequent assignments. These records must be retained for the duration of the individual's employment with that certificate holder to substantiate the individual's qualifications. Examples of permanent records include the following:

a) Basic indoctrination records.
b) Initial qualification records.
c) Transition aircraft training records.
d) Required practical experience (PE) observation of by ECAA inspector records.

*B. Currency Records.* **Currency records are the documentation of training or qualification events which qualify individuals for their present assignments and are required to be re-accomplished at scheduled intervals. In order to show continuity of qualification, this type of record must be retained until superseded by a record of similar training or qualification.**

NOTE: Many certificate holders revise LOFT scenarios annually in order to preclude any crewmember from receiving the same scenario more than once. A certificate holder that revises LOFT scenarios less frequently should be required to maintain additional records to ensure that the crewmember does not receive the same in two consecutive training cycles.

***C. Records of Action.*** Regulations require that a certificate holder records each action taken concerning the release from employment or physical or professional disqualification of any maintenance engineer and keep the record for at least 6 calendar months.

**B.11 CURRENCY PERIODS FOR RECORD KEEPING SYSTEMS.** When evaluating any record keeping system, ECAA inspectors shall ensure that the system has the capability for entry, storage, retrieval, and archiving of all required records in the categories of records for which the certificate holder is seeking acceptance or approval (job aids for currency periods and regulatory references - to be developed).

## SECTION 4. COMPUTER BASED RECORD KEEPING

**B.12 GENERAL.** Many certificate holders are developing computer based record keeping systems, allowing more flexible and efficient maintenance of records. Some computer based systems offer electronic communications capabilities which benefit both the certificate holder and the ECAA. This section contains information and guidance to be used by ECAA inspectors when evaluating and approving a certificate holder's (ECAR Part 145 certificate holders, or ECAR Part 147 aviation maintenance training centers) computer based record keeping system.

**B.13 REQUIREMENTS.** Certificate holders must maintain records for trainees enrolled in a course, for instructors designated to instruct a course, and for examiners. Computer based record keeping systems must be approved by the ECAA.

**B.14 GUIDELINES FOR SYSTEM APPROVAL.** ECAA inspectors shall ensure that certificate holders follow certain guidelines and submit certain information when applying for approval of a computer based record keeping system.

***A. Approval and Evaluation Process.*** An certificate holder may apply for approval of a computer based record keeping system that is designed to satisfy either all regulatory requirements or specific regulatory requirements, such as training records. When evaluating a computer based record keeping system, ECAA inspectors shall ensure that the proposed system provides a means of maintaining accurate, timely, and reliable records required by the ECARs. When approving the system, ECAA inspectors shall follow the general 5 step approval process.

**(1) Application by Letter.** Certificate holders must apply for approval of computer based record keeping systems by letter.

a) Content of Letter.

The letter of application must contain the following information:

i) A general description of the proposed computer based record keeping system (including the facilities, hardware and software to be utilized).

ii) The data backup system to be used.

iii) Access and security procedures for both the certificate holder and ECAA personnel.

iv) Basic procedures for data entry personnel.

v) A general description of any special procedures and capabilities.

b) Categories of Records.

The letter of application must include one or more of the following categories of records which will be maintained by the computer based record keeping system:

i) Airman training records (including pilot, flight engineer, flight navigator, cabin crew, ground instructor, flight instructor, check airman, and aircraft dispatcher training records).

ii) Aircraft qualification records (including aircraft type ratings, proficiency checks, competency checks, and line checks).

iii) Flight time limitation and rest requirement records.

iv) Medical qualification records (when applicable).

v) Route, "special airport," and area qualification records.

vi) Operating experience (OE) and/or operating familiarization records.

vii) Pilot recency of experience records.

viii) Check airman, aircrew program designee (APD), and school designated examiner (SDE) designations or authorizations.

ix) Special training or testing requirements.

x) Aircraft listings.

xi) Load manifests, dispatch/flight releases.

xii) Communication records.

**(2) Parallel Record Keeping System.** The ECAA inspectors shall ensure that any certificate holder that requests approval of a computer based record keeping system retains data entry forms or other pertinent non-electronic records in a parallel record system. The ECAA inspectors shall ensure that all required records continue to be maintained while the computer based record keeping system is being installed, tested, and evaluated, and data entry personnel are being trained to recognize regulatory terminology and requirements.

***B. System Evaluation.*** ECAA inspectors shall evaluate the computer based record keeping system capabilities and level of security.

**(1) System Capabilities.** Prior to approval, the ECAA inspectors should carefully evaluate the proposed computer based record keeping system to ensure that the system is capable of providing accurate, timely, and reliable records, as required by the ECARs. The ECAA inspectors shall review the certificate holder's proposed transition plan and user manual, and observe operation of the certificate holder's existing record keeping system in parallel operation with the proposed computer based system. The extent of this evaluation depends on the complexity of the proposed system and its intended use. The evaluation of a system designed to comply with all regulatory requirements will be much more complex than that of a system designed to maintain records in one specific category. The ECAA inspectors shall ensure that system security, record retention periods, and data backups are adequate. Potential problem areas should be identified and corrected prior to approval.

**(2) Level of Security.** ECAA inspectors shall evaluate the proposed system's level of security to ensure that the data base is adequately protected.

(a) Authorized Access.

To maintain integrity of the data base and associated records, the ECAA inspectors should coordinate with the certificate holder during the approval process concerning which ECAA personnel will have access to the certificate holder's record keeping system. One frequently used approach is to rely on controlled user access codes and passwords.

(b) Monitoring User Access.

A representative designated by the certificate holder should actively monitor user access and periodically review access control requirements. This representative shall be specifically identified and authorized in the certificate holder's proposal and user manual.

(c) Electronic Signature.

The certificate holder should establish a procedure for allowing designated personnel such as flight instructors/check airmen, ground instructors, aircraft dispatcher supervisors, and cabin crew supervisors to electronically certify all record entries for which they are responsible. This certification may take one of many forms such as full name, initials, or unique identification number. Each designated person with authorization to make such entries shall be issued a unique individual access code and password in order to validate the entry. The certificate holder may devise a system that requires the validating official to either enter a real time record into the system or complete a written transmittal document to be given to data entry personnel. If a written transmittal document is used, the identification of the validating official must become part of the record.

(d) Unrestricted Data Retrieval.

Appropriate ECAA inspectors assigned to the certificate holder should be provided with an access level which allows unrestricted data retrieval of all records required by the ECARs. If the certificate holder elects to use the computer record keeping system's capability for electronic designation of APDs and check airmen, an appropriate level of access should be provided to the ECAA inspectors to allow necessary data entries.

**(3) Data Backup Capability and Storage.** The ECAA inspectors shall verify that the certificate holder has established a backup capability to generate a complete set of duplicate records, either electronic or non-electronic. These records should be stored in a location separate from the main information storage facility. These records may be stored in any form acceptable to the ECAA inspectors, including magnetic tape, magnetic or optical disk, microfiche, or printed records. The certificate holder shall backup data as frequently as appropriate to the certificate holder's level of operations and system complexity. For example, a major certificate holder may perform a simultaneous on-line data backup, while a smaller certificate holder may perform backups at less frequent intervals.

**(4) User Manual.** The certificate holder shall develop a working procedures manual for day today guidance and training for the certificate holder's employees. This manual should also be provided as a reference document for ECAA users. This manual will not require ECAA approval but must include guidance in the automated record keeping system structure and instructions for using computer commands for such operations as data entry, data processing, data retrieval, and report generation. This manual should address system security procedures and responsibilities, including identification of personnel charged with various levels of data entry, data verification and correction, data audits, and quality control. It should also identify individuals with the authority to issue user access codes and passwords.

**(5) Audit Procedures.** The ECAA inspectors shall ensure that certificate holders' programs contain audit procedures that are adequate to assure the accuracy of the data base. The frequency and scope of these procedures should reflect the complexity of the computer based record keeping system and the size of the data base.

**B.15 GRANTING APPROVAL.** When all requirements of paragraphs *B.* (1) through *B.*(5) have been met, the ECAA inspectors may either grant approval for the entire computer based record keeping system or any part of the system. This approval shall be a nonstandard paragraph in the operations specifications (OpSpecs) for Part 121 certificate holders or in the training specifications (TrngSpecs) for Part 141 and 142 certificate holders and shall directly reference the manual where the information in the record keeping system is maintained.

**B.16 SYSTEM SURVEILLANCE.** ECAA inspectors are responsible for conducting system surveillance which includes periodic inspections and audits, inspection intervals, and data entry accuracy.

***A. Inspections and Audits.*** After the computer based record keeping system is approved and fully operational, the ECAA inspectors shall ensure compliance through periodic inspections and audits. These inspections and audits shall be conducted using the same criteria as those used during the initial approval process. The ECAA inspectors should plan inspection intervals at least once every 12 months. The annual inspection should normally be conducted in conjunction with national program guidelines.

***B. Inspection Intervals.*** When determining inspection intervals, the ECAA inspectors shall consider the following:

a) The size of the data base.
b) The system's overall sophistication level.
c) The extent of the system's security measures.
d) The capability and frequency of the system's self-audit function.

***C. Scope of the Inspection.*** The ECAA inspectors shall determine the scope of the inspection. It may be appropriate to sample a small number of records in each category that the system is approved to maintain, or to conduct an in depth inspection of a specific category of records, such as aircraft dispatcher training.

***D. Data Entry Accuracy.*** The ECAA inspectors shall ensure data entry accuracy during all inspections and audits. A useful evaluation tool might be to compare the certificate holder's required records with ECAA surveillance, inspection, and certification records.

**B.17 ADDITIONAL SYSTEM CAPABILITIES.** In addition to record retention and retrieval, the certificate holder may request approval of a system with additional capabilities such as electronic communications and surveillance.

***A. Electronic Communications.*** The certificate holder may provide the ECAA inspectors with electronic mail capability which would allow the certificate holder to request designation of certain airmen, such as check airmen, and designees. This capability would also allow the ECAA inspectors to respond electronically to these requests, thereby increasing both certificate holder and ECAA efficiency and convenience. To implement this electronic mail capability, the certificate holder should provide the ECAA inspectors with system access from the ECAA inspectors facility by providing necessary hardware to be installed at the ECAA inspectors facility.

***B. Electronic Surveillance.*** The certificate holder may also provide direct access to the certificate holder's computer based record keeping system to allow the ECAA inspectors to carry out required surveillance activities such as random record retrieval for spot inspections, data audits, selective data retrievals, and reports or summaries. The certificate holder should limit system access to those portions of the record keeping system that are used for data retrieval of records required by the ECARs. Normally, the ECAA inspectors should not be given access to data entry areas; however, the certificate holder may authorize the ECAA inspectors access to data entry areas which pertain to ECAA-specific data, such as observations of the pilot in command (PIC) OE and observation events related to the designation of check airmen or designee candidates.

# APPENDIX C

# PHYSICAL FACILITIES



## C.1 Applicability.

This appendix prescribes the training center facilities requirements for issuing a training center certificate under ECAR Part 147.

## C.2 General.

The following facilities are required to accommodate the training of maintenance engineers. The instructional equipment, shop equipment, hand tools and physical layout of the building must meet the requirements outlined in ECAR 147.11. The facility must constitute an environment suitable for learning.

The facilities must be built in accordance with a reputable code, this includes electrical and mechanical installations.

An Aviation Maintenance Training Center must have instructional equipment and suitable facilities appropriate to the ratings taught and approved by the ECAA. Instructional aids must be of a type, quantity, and quality appropriate to the needs of the curriculum and the number of students.

## C.3 Classrooms.

The size of the classrooms must be adequate for the number of students in class (3.25 square meter per student). The number of student in a class should not exceed 18. Larger groups of students are acceptable for special types of training – films, visiting lecturers, etc. For Computer Based Training instruction, one station must be provided for not more than two students.

The classrooms must be adequately air-conditioned, ventilated, lighted and are not routinely subject to significant distractions. It should be provided with appropriate means to shadow natural light when using video tapes or similar devices.

A reasonably sized flat top desk (at least 60cm x 80cm) must be provided for each student together with a comfortable upright chair. The instructor needs a similar desk and chair.

The classrooms should be equipped with all necessary training aids for each approved course. All classrooms must be fitted with a white board, overhead projector and screen (the white board may be used instead of the screen). Student response systems which enable each student to visually signal an answer to a question posed by the instructor are recommended. Wiring (even empty wiring conduits) for possible future equipment installations should be provided.

An area suitable for classroom instruction may not be suitable for lab and/or shop. With appropriate scheduling and consideration of factors such as ventilation, lighting, noise, and temperature control, an area appropriate for lab and/or shop may be acceptable for classroom instruction.

In case of shops, ventilation must be such that fumes from painting, fueling, degreasing, doping facilities, etc., are properly removed from the immediate work area and are not allowed to pass into other instructional areas.

### C.4 Assembly Hall And Cinema.

A large hall must be provided to fulfill the occasional requirement for bringing a large audience together for special purposes such as examinations, special lectures and addresses, prize-giving ceremonies and film shows.

The seats must be in rows without desks and must be of the stackable type which will enable some of them to be moved out of the way, allowing desks, also stackable, to be brought in. The hall must be provided with a raised platform, a microphone system, video projection system and cinema.

### C.5 Management And Instructor Accommodation.

Each instructor must have a place where he can work in reasonable privacy and quiet for such purposes as preparing lectures and setting and marking examinations. He must have a desk for his books and other working material, and a locker for personal possessions. Individual private offices are not necessary, and double or even multi-occupation is acceptable provided there is a minimum floor space of about 5 or 6 square meters per instructor.

Management instructors and the chief instructor must be provided with reasonably sized private rooms for private interviews with staff and students. Secretarial accommodation and facilities should be adjacent to the management rooms. A meeting room must also be provided.

### C.6 Technical Library.

Must be adequately air-conditioned, ventilated, lighted and not routinely subject to significant distractions.

It must be comprehensive enough to provide those reference manuals, textbooks (training manuals) and lecture notes which are absolutely necessary to cover the curriculum. All students should be supplied with individual copies of the textbooks and lecture notes for their personal use and retention – at least one additional master set should be held in the library.

The library should also contain works, which supplement, explain and expand on the course material. It is desirable that it contains other works on related aspects of aviation.

There must be some tables and chairs for instructors and students to use in the library. In a small training center, a room of about 30 square meters with bookshelves on the wall and five or six tables will be adequate.

There must be a stocking, supervision, and control system.

In addition to the normal daytime hours, the library should be open for evening training activities.

### C.7 Printing And Copying Room.

The room must be adequately air-conditioned, ventilated, lighted, and maintained in a tidy and clean condition.

There must be a supervision and control system.

In addition to the normal daytime hours, the printing and copying room should be open for evening training activities.

### C.8 Facilities Emergency and Fire Fighting Equipment.

A reputable international life safety code must be adopted according to which the facilities should be equipped with safety and fire fighting devices, appropriate emergency equipment,

advisory marks in clear places of the buildings, along with appropriate emergency exits suitable for all abnormal conditions. A first aid kit must be readily available at all times. All employees must be trained for the use of the life saving and fire fighting equipment.

**C.9 Rest Rooms.**

A reputable international sanitary code must be adopted according to which the number of rest rooms should be suitable and must be adequately ventilated, and lighted. Rest rooms must be maintained in a clean condition.

**C.10 Catering Facilities.**

The size, service hours, and type (e. g. take away canteen, cafeteria-type canteen, or restaurant) of the catering facilities must be appropriate with respect to the training hours, the number of trainees and the number of employees. Vending machines must be provided to offer snacks, hot and cold drinks when training activities are expected to be held outside the normal working hours.

Whether the catering services are managed by the training center or a separate catering specialist contractor, high standards and quality of food and cleanliness must be maintained.

The catering facilities must be adequately lighted and ventilated.

# APPENDIX D

# QUALITY SYSTEM



## D.1 Applicability.

This appendix prescribes ECAA quality system requirements for Training Organizations responsible for the implementation of Aviation Maintenance Organizations' training programs; as well as quality system requirements for independent Aviation Maintenance Training Organizations (Aviation Maintenance Training Centers). An Aviation Maintenance Training Organization shall establish and maintain a quality system approved by the ECAA.

## D.2 General.

D.2.1 The rationale for the requirements of quality systems is the need to establish a distinct assignment of roles between the ECAA and Training Organizations by creating an evident division between the regulatory and surveillance responsibility on the one hand, and responsibility of the training activities in itself on the other. Therefore the Training Organizations must establish a system whereby they can monitor their activities, be able to detect deviations from set rules and standards, take the necessary corrective actions and thus ensure compliance with ECAA rules regulations (ECARs) and their own requirements. A well established 'and functioning quality system will make it possible for the ECAA to perform inspections and surveillance efficiently and with a reasonable amount of resources.

D.2.2 It is obvious and well recognized that the scope and complexity of a quality system should reflect the size and complexity of the Training Organization and its training activities. The objectives and the same principles apply, however, to any Training Organization, irrespective of size and complexity. Thus, in small and relatively small Training Organizations, the quality system may be quite simple and integrated in the basic organization, whereas larger organizations with more complex training activities will need to establish separate and independent quality organizations within the overall organizational set-up.

In determining size in this context the following guidelines apply:

-Training Organizations with 5 or less full time instructors employed are considered very small;

-Training Organizations employing between 6 and 20 full time instructors are considered small.

In determining complexity, factors such as number of aircraft types used for training, range of training courses offered, geographical spread of training activities (e.g. the use of satellites), range of training arrangements with other Training Organizations, etc. will be considered.

**D.2.3** In a quality system of any Training Organization or Training Program the following **five** elements should be clearly identifiable:

(a) Determination of the training policy, training and flight safety standards;

(b) Determination and establishment of assignment of responsibility, resources, organization and operational processes, which will make allowance for policy and training and flight safety standards;

(c) Follow up system to ensure that policy, training and flight safety standards are complied with;

(d) Registration and documentation of deviations from policy, training and flight safety standards together with necessary analysis, evaluations and correction of such deviations;

(e) Evaluation of experiences and trends concerning policy, training and flight safety standards.

D.2.4 A basis for quality should be established by every Training Organization and problem-solving techniques to run processes should be applied. Knowledge in how to measure, establish and ultimately achieve quality in training and education is considered to be essential.

D.2.5 The purpose of this appendix is to provide information and guidance to the Training Organizations on how to establish a Quality System.

**D.3 Definitions.**

D.3.1 ***Accountable Manager***. (May be the Head of Training.)

D.3.2 ***Quality.*** The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.

D.3.3 ***Quality Assurance.*** All those planned and systematic actions necessary to provide adequate confidence that all training activities satisfy given requirements, including the ones specified by the Training Organization in relevant manuals.

D.3.4 ***Quality Manager.*** The manager, acceptable to the ECAA, responsible for the management of the Quality System, monitoring function and requesting corrective ' actions.

D.3.5 ***Quality Manual.*** The document containing the relevant information pertaining to the operator's quality system and quality assurance program.

D.3.6 ***Quality Audit.*** A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

D.3.7 ***Training Organization.*** May be an independent organization (a training center or a training school) or may be the administration within a maintenance organization responsible for the implementation of its Training Program.

D.3.8 ***Training Program***: A system of instruction which includes curriculums, facilities, instructors, courseware, instructional delivery methods, training equipment, quality control and testing and checking procedures.

## D.4 Quality Policy and Strategy.

It is of vital importance that the Training Organization describes how the organization formulates, deploys, reviews its policy and strategy and turns it into plans and actions. A formal written Quality Policy Statement should be established that is a commitment by the Head of Training as to what the Quality System is intended to achieve. The Quality Policy should reflect the achievement and continued compliance with relevant parts of the ECARs together with any additional standards specified by the Training Organization.

The Head of Training (Accountable Manager) will have overall responsibility for the Quality System including the frequency, format and structure of the internal management evaluation activities.

## D.5 Purpose Of A Quality System

The implementation and employment of a Quality System will enable the Training Organization to monitor compliance with relevant parts of ECAR, the Training Exposition Manual, and any other standards and procedures as established by that Training Organization, or the ECAA, to ensure safe and efficient training.

## D.6 Quality Manager

The primary role of the Quality Manager is to verify, by monitoring activities in the field of training, that the standards required by the ECAR, and any additional requirements as established by the Training Organization, are being carried out properly under the supervision of the Head of Training, the Training Center Manager, and the Chief Ground Instructor.

The Quality Manager should be responsible for ensuring that the Quality Assurance Program is properly implemented, maintained and continuously reviewed and improved.
The Quality Manager should:
- have direct access to the Head of Training;
- have access to all parts of Training Organization.

In the case of small or very small Training Organizations, the posts of the Head of Training and the Quality Manager may be combined. However, in this event, quality audits should be conducted by independent personnel. It is not be acceptable for the Quality Manager to hold the position of chief instructor.

## D.7 Quality System

D.7.1 The Quality System of the Training Organization should ensure compliance with and adequacy of training activities requirements, standards and procedures.

D.7.2 The Training Organization should specify the basic structure of the Quality System applicable to all training activities conducted.

D.7.3 The Quality System should be structured according to the size of the Training Organization and the complexity of the training to be monitored.

## D.8 Scope

A Quality System should address the following:
(a) Leadership;
(b) Policy and Strategy;
(c) Processes;
(d) The provisions of relevant parts of the ECARs;
Additional standards and training procedures as stated by the Training Organization;
(f) The organizational structure of the Training Organization;
(g) Responsibility for the development, establishment and management of the Quality System;
(h) Documentation, including manuals, reports and records;
(i) Quality Assurance Program;
(j) The required financial, material, and human resources;

(k) Training requirements; and
(l) Customer satisfaction.

**D.9 Feedback System**

The quality system should include a feedback system to the Accountable Manager who will ensure that corrective actions are both identified and promptly addressed. The feedback system should also specify who is required to rectify discrepancies and non-compliance in each particular case, and the procedure to be followed if corrective action is not completed within an appropriate time scale.

**D.10 Documentation**

Relevant documentation includes the relevant part(s) of the Training Exposition Manual, which may be included in a separate Quality Manual.

D.10.1 In addition relevant documentation should also include the following:
(a) Quality Policy;
(b) Terminology;
(c) Specified training standards;
(d) A description of the Organization;
(e) The allocation of duties and responsibilities;
(f) Training procedures to ensure regulatory compliance.

D.10.2 The Quality Assurance Program, reflecting:
(a) Schedule of the monitoring process;
(b) Audit procedures;
(c) Reporting procedures;
(d) Follow-up and corrective action procedures; Recording system;
(e) The training syllabus; and
(f) Document control.

**D.11 Quality Assurance Program**

The Quality Assurance Program should include all planned and systematic actions necessary to provide confidence that all training is conducted in accordance with all applicable requirements, standards and procedures.

**D.12 Quality Inspection**

The primary purpose of a quality inspection is to observe a particular event/action/document etc., in order to verify whether established training procedures and requirements are followed during the accomplishment of that event and whether the required standard is achieved.
Typical subject areas for quality inspections are:
(a) Actual training;
(b) Technical Standards; and
(c) Training Standards.

**D.13 Audit**

An audit is a systematic, and independent comparison of the way in which training is being conducted against the way in which the published training procedures say it should be conducted.

D.13.1 Audits should include at least the following quality procedures and processes:
(a) An explanation of the scope of the audit;
(b) Planning and preparation;
(c) Gathering and recording evidence; and
(d) Analysis of the evidence.

D.13.2 The various techniques that make up an effective audit are:
(a) Interviews or discussions with personnel;
(b) A review of published documents;

(c) The examination of an adequate sample of records;
(d) The witnessing of the activities which make up the training; and
(e) The preservation of documents and the recording of observations.

## D.14 Auditors

The Training Organization should decide, depending on the complexity of the training, whether to make use of a dedicated audit team or a single auditor. In any event, the auditor or audit team should have relevant training and/or operational experience.
The responsibilities of the auditors should be clearly defined in the relevant documentation.

## D.15 Auditor's Independence

D.15.1 Auditors should not have any day-to-day involvement in the area of the operation or training activity which is to be audited. A Training Organization may, in addition to using the services of full-time dedicated personnel belonging to a separate quality department, undertake the monitoring of specific areas or activities by the use of part-time auditors.

D.15.2 A Training Organization whose structure and size does not justify the establishment of full-time auditors, may undertake the audit function by the use of part-time personnel from within its own Organization or from an external source under the terms of an agreement acceptable to the ECAA.

D.15.3 In all cases the Training Organization should develop suitable procedures to ensure that persons directly responsible for the activities to be audited are not selected as part of the auditing team. Where external auditors are used, it is essential that any external specialist is familiar with the type of training conducted by the Training Organization.

D.15.4 The Quality Assurance Program of the Training Organization should identify the persons within the company who have the experience, responsibility and authority to:
(a) Perform **quality** inspections and audits as part of ongoing Quality Assurance;
(b) Identify and record any concerns or findings, and the evidence necessary to substantiate such concerns or findings;
(c) Initiate or recommend solutions to concerns or findings through designated reporting channels;
(d) Verify the implementation of solutions within specific times scales;
(e) Report directly to the Quality Manager.

## D.16 Audit Scope

Training Organizations are required to monitor compliance with the Training Exposition Manual they have designed to ensure safe and efficient training. In doing so they should as a minimum, and where appropriate, monitor:
(a) Organization;
(b) Plans and objectives;
(c) Training Procedures;
(d) Safety;
(e) Manuals; and
(f) Training Aids and Equipment.

## D.17 Audit Scheduling

D.17.1 A Quality Assurance Program should include a defined audit schedule and a periodic review cycle. The schedule should be flexible and allow unscheduled audits when trends are identified. Follow-up audits should be scheduled when necessary to verify that corrective action was carried out and that it was effective.

D.17.2 A Training Organization should establish a schedule of audits to be completed during a specific calendar period. All aspects of the training should be reviewed within a period of 12 months in accordance with the Quality Assurance Program unless an extension to the audit period is accepted as explained below.

D.17.3 A Training Organization may increase the frequency of audits at its discretion but should not decrease the frequency without the acceptance of the ECAA. It is considered unlikely that a period of greater than 24 months would be acceptable for any audit topic.

D.17.4 When a Training Organization defines the audit schedule, significant changes to the management, organization, training, or technologies should be considered, as well as changes to the regulatory requirements.

**D.18 Monitoring And Corrective Action**

The aim of monitoring within the Quality System is primarily to investigate and judge its effectiveness and thereby to ensure that defined policy, and training standards are continuously complied with. Monitoring activity is based upon quality inspections, audits, corrective action and follow-up.

D.18.1 The Training Organization should establish and publish a quality procedure to monitor regulatory compliance on a continuing basis. This monitoring activity should be aimed at eliminating the causes of unsatisfactory performance.

D.18.2 Any non-compliance identified should be communicated to the Accountable Manager and the manager responsible for taking corrective action. Such non-compliance should be recorded, for the purpose of further investigation, in order to determine the cause and to enable the recommendation of appropriate corrective action.

D.18.3 The Quality Assurance Program should include procedures to ensure that corrective actions are developed in response to findings. These quality procedures should monitor such actions to verify their effectiveness and that they have been completed. Organizational responsibility and accountability for the implementation of corrective action resides with the department cited in the report identifying the finding. The Accountable Manager will have the ultimate responsibility for ensuring, through the Quality Manager(s), that corrective action has re-established compliance with the standard required by the ECAA and any additional requirements established by the Training Organization.

**D.19 Corrective Action**

D.19.1 Subsequent to the quality inspection/audit, the Training Organization should establish:
(a) The seriousness of any findings and any need for immediate corrective action;
(b) The origin of the finding;
(c) What corrective actions are required to ensure that the non-compliance does not recur;
(d) A schedule for corrective action;
(e) The identification of individuals or departments responsible for implementing corrective action;
(f) Allocation of resources by the Accountable Manager where appropriate.

D.19.2 The Quality Manager should:
(a) Verify that corrective action is taken by the manager responsible in response to any finding of non-compliance;
(b) Verify that corrective action includes the elements outlined in paragraph D.19.1 above;
(c) Monitor the implementation and completion of corrective action;
(d) Provide management with an independent assessment of corrective action, implementation and completion;
(e) Evaluate the effectiveness of corrective action through the follow-up process.

**D.20 Management Evaluation**

D.20.1 A management evaluation is a comprehensive, systematic documented review by the management of the quality system, training policies, and procedures, and should consider:
(a) The results of quality inspections, audits and any other indicators; as well as

(b) The overall effectiveness of the management organization in achieving state objectives.

D.20.2 A management evaluation should identify and correct trends, and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to the responsible manager for action. The responsible manager should be an individual who has the authority to resolve issues and take action.

D.20.3 The Accountable Manager should decide upon the frequency, format, and structure of internal management evaluation activities.

**D.21 Recording**

Accurate, complete, and readily accessible records documenting the results of the Quality Assurance Program should be maintained by the Training Organization. Records are essential data to enable a Training Organization to analyze and determine the root causes of non-conformity, so that areas of non-compliance can be identified and' subsequently addressed.

The following records should be retained for a period of 5 years:

(a)Audit Schedules;
(b)Quality inspection and Audit reports;
(c)Responses to findings;
(d)Corrective action reports;
(e)Follow-up and closure reports;
(f)Management Evaluation reports.

**D.22 Quality Assurance Responsibility For Sub-Contractors**

D.22.1 A Training Organization may decide to sub-contract out certain activities to external organizations subject to the approval of the authority.

D.22.2 The ultimate responsibility for the training provided by the sub-contractor always remains with the Training Organization. A written agreement should exist between the Training Organization and the sub-contractor clearly defining the safety related services and quality to be provided. The sub-contractor's safety related activities relevant to the agreement should be included in the Training Organization's Quality Assurance Program.

D.22.3 The Training Organization should ensure that the sub-contractor has the necessary authorization/approval when required, and commands the resources and competence to undertake the task. If the Training Organization requires the sub-contractor to conduct activity, which exceeds the sub-contractor's authorization/approval, the Training Organization is responsible for ensuring that the sub-contractor's quality assurance takes account of such additional requirements.

**D.23 Quality System Training**

Correct and thorough training is essential to optimize quality in every organization. In order to achieve significant outcomes of such training the Training Organization should ensure that all staff understands the objectives as laid down in the Quality Manual.

Those responsible for managing the Quality System should receive training covering:

(a) An introduction to the concept of Quality System;
(b) Quality management;
(c) Concept of Quality Assurance;
(d) Quality manuals;
(e) Audit techniques;
(f) Reporting and recording, and
(g) The way in which the Quality System will function in the Training Organization.

Time should be provided to train every individual involved in quality management and for briefing the remainder of the employees. The size and complexity of the operation concerned should govern the allocation of time and resources.

## D.24 Sources Of Training

Quality management courses are available from the various National or International Standards Institutions, and a Training Organization should consider whether to offer such courses to those likely to be involved in the management of Quality Systems. Organizations with sufficient appropriately qualified staff should consider whether to carry out in-house training.

## D.25 Quality Systems For Small/Very Small Organizations

The requirement to establish and document a Quality System and to employ a Quality Manager applies to all Training Organizations.

D.25.1 Complex quality systems could be inappropriate for small or very small Training Organizations and the clerical effort required to draw up manuals and quality procedures for a complex system may stretch their resources. It is therefore accepted that such Training Organizations should tailor their quality systems to suit the size and complexity of their training and allocate resources accordingly.

D.25.2 For small and very small Training Organizations it may be appropriate to develop a Quality Assurance Program that employs a checklist. The checklist should have a supporting schedule that requires completion of all checklist items within a specified time scale, together with a statement acknowledging completion of a periodic review by top management. An occasional independent overview of the checklist content and achievement of the Quality Assurance should be undertaken.

D.25.3 The small Training Organization may decide to use internal or external auditors or a combination of the two. In these circumstances it would be acceptable for external specialists and or qualified organizations to perform the quality audits on behalf of the Quality Manager.

D.25.4 If the independent quality audit function is being conducted by external auditors, the audit schedule should be shown in the relevant documentation.

D.25.5 Whatever arrangements are made, the Training Organization retains the ultimate responsibility for the quality system and especially the completion and follow-up of corrective actions.

# APPENDIX E

## EVALUATE ECAR PART 147 AVIATION MAINTENANCE TRAINING CENTER'S CURRICULUM/REVISION



**E.1 Objective.**
This chapter provides guidance for evaluating the curriculum or curriculum revision of an Aviation Maintenance Training Center certificated under ECAR Part 147.

**E.2 Definitions.**

***(a) Course.*** A program of instruction to meet requirements for airman training, certification, qualification, authorization, or currency.

***(b) Courseware.*** Instructional material developed for each course or curriculum, including lesson plans, flight event descriptions, computer software programs, audiovisual programs, aircraft operating manuals, workbooks, checklists, and handouts.

**(c) Curriculum.** A specific course or courses of study or, collectively, all the courses of study at a training center. It may be identified as either a "core" or "specialty" curriculum. Components of a curriculum are called curriculum segments.

(1) ***Core Curriculum.*** A document approved by the FSSS that contains airman certification requirements. Each curriculum segment includes consideration of an applicant's training and experience and training and testing procedures. A core curriculum may include training to meet part or all of the current requirements of parts 65, 121 or 147. It may also contain curriculum segments for re-qualification (refresher). It does not include training for tasks and circumstances unique to a training center client (such as equipment differences training).

(2) ***Specialty Curriculum***. A specialty curriculum is an FSSS-approved document that contains operator-specific training that is unique to a training center client; for example, basic indoctrination, or differences training. The ECAA inspectors should accomplish a comprehensive review before approval.

(3) ***Curriculum Segments***. Integral parts of a curriculum that can be separately evaluated and individually approved but, by themselves, do not qualify a person for a certificate or rating; for example, for an airplane type, airframe theoretical segment, avionics theoretical segment, power plant theoretical segment, or on the job training segment.

***(d) Element.*** An integral part of a module that is subject-oriented; for example, electrical inverter, landing gear actuator, thunderstorm characteristics, or knowledge of steep turns, stalls, or glides.

***(e) Lesson***. One event or element, or part of an event or element, to be learned or taught, usually during one period of instruction.

***(f) Module.*** A subpart of a curriculum segment that constitutes a logical, self-contained unit. A module contains elements or events that relate to a specific subject; for example, hydraulic system, flight controls, flight director, or electrical power generation.

***(g) Quality Standards.*** A center's highest priority is to develop, in the student, those manipulative skills needed to stimulate return to service. However, it is not necessary for the training aid itself to meet "return to service" standards.

***(h) Syllabus (Lesson Plan).*** An arrangement of subjects in lesson format, which are to be presented in learning order sequence. It includes scheduled hours, media, methods, and courseware. It is not an integral part of a curriculum but is used to implement a curriculum. An acceptable syllabus is required for each curriculum.

**E.3 Background.**

ECAR 147.7 sets forth the general curriculum requirements. Maintenance of curriculum requirements is set forth in ECAR 147.9.

**E.4 Curriculums Requirements.**

The curriculum or revision must be approved by the ECAA.

An Aviation Maintenance Training Center must adhere to its approved curriculum. Any new course material the center wishes to add must be incorporated into the approved curriculum and approved by the ECAA before it may be used. This does not prohibit a center from teaching unapproved courses, such as courses for non-certifying technical staff, courses to increase the technical knowledge of functioning technical staff, or academic courses. However, those courses must be clearly distinguishable from approved Aviation Maintenance Training Center courses.

The ECAR Part 147 curriculum will consist of the following for each subject:

* Subjects taught
* Course content
* Teaching level requirements
* Test requirements
* Classroom or theory hours
* The total number of hours required for the successful completion of the training
* Practical, field trips, and hands on training hours
* List the training aids and equipment necessary for the successful completion of the training
* A schedule of required exams or quizzes
* References, from which curriculum parts are extracted, and which conform with, the approved publications of the manufacturer or ICAO or other approved training center should be specified.

The following are general requirements to be fulfilled by each approved curriculum:

a- These curriculums should provide the minimum level of knowledge and experience required in ICAO Annex 1.

b- They should conform with the knowledge level defined in the ICAO training document ( to specified field ).

c- It is preferable to conform with the corresponding curriculums used in the international training centers of aircraft's manufacturers and their units.

d- A syllabus should be set to each curriculum including a schedule for each part of the curriculum such that it could be suitable to the trainees level, and could be efficiently realized in practice.

e- The sequential order to follow in teaching the curriculum parts, and also the intermediate steps, to identify different level of trainees, if any, should be specified in the syllabus.

**E.5 Scheduling of Tests.**

Upon completion of each curriculum module a test must be scheduled. In addition, quizzes may be scheduled between subject elements.

**E.6 Grading Criteria.**

Accepted standard for passing is a minimum of 70 percent. However, the Aviation Maintenance Training Center may require a higher minimum passing grade. All theoretical and practical portions of each subject listed in the curriculum must be passed to the approved grading standard.

**E.7 Makeup Provisions**

(1) The curriculum must show the number of hours of allowed absences.

(2) All material missed shall be made up in the same subject area.

**E.8 Revisions To The Curriculum.**

Changes to the approved curriculum must be approved before implementation. Changes in the curriculum may include changes in any of the following:

* Teaching level
* Hours of instruction
* Testing
* Makeup provisions
* Course content
* Equipment or facilities affecting instruction in theoretical subjects or the accomplishment of practical training.
* Order of instruction

# APPENDIX F

## CERTIFICATION FORMS AND JOB AIDS



CERTIFICATION SCHEDULE OF EVENTS FORM

**EGYPTIAN CIVIL AVIATION AUTHORITY AIRWORTHINESS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**SCHEDULE OF EVENTS**

| **PART 147 TRAINING CENTER SCHEDULE OF EVENTS - CERTIFICATION** | | | | |
|---|---|---|---|---|
| **OFFICIAL NAME OF CENTER:** | | **LOCATION ADDRESS:** | | |
| **MAILING ADDRESS** (if different from location) | | **PRECERTIFICATION No.** | | |
| **Scheduled date of Submission, Demonstration, or inspection** | | **Date Received/ Accomplished** | **Date Returned for Changes** | **Date Approved/ Accepted** |
| **FORMAL APPLICATION PHASE** | | | | |
| | Formal Application Letter. | | | |
| | Schedule of Events. | | | |
| | Statement Of Compliance (SOC). | | | |
| | Organization Structure. | | | |
| | Management Qualifications Resumes. | | | |
| | Copy of purchase or lease contracts of training equipment ( FTD's, MTDs…etc). | | | |
| | Proposed training courses (courses list) | | | |
| | Instructors and examiners list. | | | |
| | Proposed authorization for | | | |

| | | | | |
|---|---|---|---|---|
| | examiners. | | | |
| | A description of the training facilities, equipment, and qualifications of personnel to be used. | | | |
| | Curriculums , including syllabuses, outlines, courseware, and documentation to support the proposed course. | | | |
| | Proposed evaluation plans. | | | |
| | Description of the record keeping system. | | | |
| | Description of the quality control measures. | | | |
| | Training Agreements (if any). | | | |

***** TBD :To Be Developed
****** N/A : Not Applicable



**SCHEDULE OF EVENTS (CONTINUED)**

| **PART 147 TRAINING CENTER SCHEDULE OF EVENTS - CERTIFICATION** | | | | |
|---|---|---|---|---|
| **Scheduled date of Submission, Demonstration, or inspection** | | **Date Received/ Accomplished** | **Date Returned for Changes** | **Date Approved/ Accepted** |
| **FORMAL APPLICATION PHASE (CONTINUED)** | | | | |
| | Policy & Procedure Manual (Training Exposition Manual) | | | |
| | Quality Manual. | | | |
| | | | | |
| | | | | |
| | | | | |

***** TBD: To Be Developed

## SCHEDULE OF EVENTS (CONTINUED)

| **PART 147 TRAINING CENTER SCHEDULE OF EVENTS - CERTIFICATION** | | | | |
|---|---|---|---|---|
| **Scheduled date of Submission, Demonstration, or inspection** | | **Date Received/ Accomplished** | **Date Returned for Changes** | **Date Approved/ Accepted** |
| **DOCUMENT COMPLIANCE PHASE** | | | | |
| | Management qualifications Resumes. | | | |
| | Policy & Procedure Manual (Training Exposition Manual) | | | |
| | Statement of Compliance (SOC) | | | |
| | Training Curriculums (core or specialty or both)<br>-Basic Indoctrination<br>-Initial<br>-Transition<br>-Recurrent<br>-Recurrent/Troubleshooting<br>-Differences<br>-Maintenance Instructors<br>-Ground Handling/Servicing<br>-ETOPS | | | |
| | Training Programs<br>-Curriculums (as above) and courses list.<br>-Courseware ( syllabuses, computer programs, audio-visual programs, workbooks, checklists, and handouts.)<br>-Facilities<br>-Training Equipment (FTDs, MTDs….etc.) | | | |

| | | | | |
|---|---|---|---|---|
| | -Training Aids (projectors, computers for CBT,….etc)<br>-Instructors and examiners<br>(list and qualifications) | | | |
| | Evaluation Plan | | | |
| | Quality Manual | | | |
| | Lease/Contract Agreements | | | |
| | Training Agreements | | | |
| | | | | |
| | | | | |

***** TBD**:** To Be Developed ****** N/A: Not Applicable

CERTIFICATION JOB AIDS

**EGYPTIAN CIVIL AVIATION AUTHORITY AIRWORTHINESS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**TRAINING CENTER CERTIFICATION JOB AID**
**ECAR PART 147**

| FSS 1000 | ACA 1100 | FOCA 1200 | I. PREAPPLICATION PHASE | INSP. INITIAL | DATE | REF. |
|---|---|---|---|---|---|---|
| | **NAME OF APPLICANT:** | | | | | |
| | **1st.INITIAL ORIENTATION : INSPECTOR**<br>1. PRESENTATION.<br>2. CERTIFICATION ADVISORY CIRCULAR PROVIDED.<br>3. PREAPPLICATION LETTER OF INTENT (PLI):<br>One. Forwarded to FSSS office _____<br>**Two.** Precertification number | | | | | |
| | **B. CERTIFICATION TEAM DESIGNATED** ( one airframe and power plant, one electrical, and one avionics inspector should be available).<br>**~~Name~~ ~~Specialty~~**<br>**CPM** | | | | | |

| | | | | |
|---|---|---|---|---|
| | **3rd. CONDUCT PREAPPLICATION MEETING**<br><br>1. VERIFY **PLI** INFORMATION<br>2. ADVISE ELEMENTS OF FORMAL APPLICATION<br>3. OVERVIEW OF CERTIFICATION PROCESS<br>4. PROVIDE CERTIFICATION PACKAGE<br>One. Certification Job Aid<br>Two. Schedule of Events<br>Three. Advisory Circular Checklist<br>Four. Training Specifications data sheet<br>Five. Other applicable publications and documents<br>5. EXPLAIN FORMAL APPLICATION SUBMISSION<br>6. ADVISE APPLICANT TO SUBMIT FORMAL APPLICATION AS FAR IN ADVANCE AS POSSIBLE. | | | |
| **REMARKS:** | | | | |

**EGYPTIAN CIVIL AVIATION AUTHORITY AIRWORTHINESS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**TRAINING CENTER CERTIFICATION JOB AID**
**ECAR PART 147**

| **FSSS 1000** | **II. FORMAL APPLICATION PHASE** | **INSP. INITIAL** | **DATE** | **REF.** |
|---|---|---|---|---|
| | 1st. REVIEW APPLICANT'S SUBMISSIONS | | | |
| | **1. FORMAL APPLICATION LETTER** | | | |
| | a. Full official name (legal). | | | |
| | b. Mailing address and telephone/fax. | | | |
| | c. Locations where training shall be conducted. | | | |
| | d. Starting date. | | | |
| | e. Key management personnel names and a statement acknowledging that the applicant shall notify the FSSS within 10 working days of any change made in the assignment of persons in the required management positions. | | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | **2. FORMAL APPLICATION ATTACHMENTS** | | | |
| | a. ECAA FORM FSSS-1000-AMTC-147 (completed) | | | |
| | b. Schedule of events | | | |
| | c. Initial Statement Of Compliance (ISOC) | | | |
| | d. Organization Structure | | | |
| | e. A management qualifications resumes. | | | |
| | f. Copy of purchase or lease contracts of training equipment ( FTDs…etc). | | | |
| | g. Proposed training courses (courses list) | | | |
| | h. Instructors and examiners list. | | | |
| | i. Proposed authorization for examiners. | | | |
| | j. (Reserved) | | | |
| | k. A description of the applicant's training facilities, equipment, and qualifications of personnel to be used. | | | |
| | l. Curriculums , including syllabuses, outlines, courseware, and documentation to support the proposed course. | | | |
| | m. Proposed evaluation plans. | | | |
| | n. Description of the record keeping system. | | | |
| | o. Description of the quality control measures. | | | |
| | p. Training Agreements (if any). | | | |
| | 2nd. EVALUATE ECAA RESOURCE CAPABILITY BASED ON SCHEDULE OF EVENTS. | | | |
| **REMARKS:** | | | | |

**EGYPTIAN CIVIL AVIATION AUTHORITY AIRWORTHINESS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**TRAINING CENTER CERTIFICATION JOB AID**
**ECAR PART 147**

| **FSSS 1000** | **II. FORMAL APPLICATION PHASE (CONT.)** | **INSP. INITIAL** | **DATE** | **REF.** |
|---|---|---|---|---|
| | C. FORMAL APPLICATION MEETING<br>1. SCHEDULE MEETING ~~Date~~: | —— | | |

| | | | | |
|---|---|---|---|---|
| | Time:<br>2. DISCUSS EACH SUBMISSION.<br>3. RESOLVE DISCRIPANCIES/OPEN ITEMS.<br>4. REVIEW CERTIFICATION PROCESS.<br>5. REVIEW IMPACT IF SCHEDULE OF EVENTS IS<br>NOT MET. | | | |
| | D. ISSUE LETTER ACCCEPTING/REJECTING APPLICATION. | | | |
| **REMARKS:** | | | | |

**EGYPTIAN CIVIL AVIATION AUTHORITY FLIGHT OPERATIONS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**TRAINING CENTER CERTIFICATION JOB AID**
**ECAR PART 147**

| **FSS 1000** | **III. DOCUMENT COMPLIANCE PHASE** | **INSP. INITIAL** | **DATE RET'D** | **DATE RESUB** | **DATE ACCEP** | **REF.** |
|---|---|---|---|---|---|---|
| | A. EVALUATE MANAGEMENT PERSONNEL RESUMES. | | | | | |
| | B. EVALUATE TRAINING PROGRAMS. | | | | | |
| | C. EAVLUATE APPLICABLE MANUALS OR PROCEDURES: | | | | | |
| | 1. Policy and Procedures Manual. | | | | | |
| | 2. Quality Manual. | | | | | |
| | | | | | | |
| | D. EVALUATE LEASE/CONTRACT AGREEMENTS. | | | | | |
| | E. EVALUATE TRAINING AGEEMENTS. | | | | | |
| **REMARKS:** | | | | | | |

**EGYPTIAN CIVIL AVIATION AUTHORITY AIRWORTHINESS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**TRAINING CENTER CERTIFICATION JOB AID**
**ECAR PART 147**

| FSSS 1000 | IV. DEMONSTRATION & INSPECTION PHASE | INSP. INITIAL | DATE RET'D | DATE RESUB | DATE ACCEP | REF. |
|---|---|---|---|---|---|---|
| | A. TRAINEES TESTING. | | | | | |
| | B. TRAINING CENTER FACILITIES. | | | | | |
| | C. FTDs CONFORMITY INSPECTION. | | | | | |
| | D. FTDs AND TRIANING EQUIPMENT MAINTENANCE PROGRAMS. | | | | | |
| | E. RECORD KEEPING SYSTEM: | | | | | |
| | 1. Maintenance Engineers. | | | | | |
| | 2. Instructors and Examiners. | | | | | |
| | F. TRAINING (Initial Cadre of Instructors). | | | | | |
| | G. EXAMINERS TRAINING. | | | | | |

**REMARKS:**

**EGYPTIAN CIVIL AVIATION AUTHORITY AIRWORTHINESS CENTRAL**
**Flight Safety Standards Sector (FSSS) ADMINSTRATION (ACA)**

**TRAINING CENTER CERTIFICATION JOB AID**
**ECAR PART 147**

| FSSS 1000 | V. CERTIFICATION PHASE | INSP. INITIAL | DATA COMPLETED |
|---|---|---|---|
| | A. OBTAIN FINAL CERTIFICATE NUMBER. | | |
| | B. PREPARE AND APPROVE OPERATION SPECIFICATIONS. | | |
| | C. PRESENT CERTIFICATE AND OPERATIONS SPECIFICATIONS TO CERTIFICATE HOLDER. | | |
| | D. PREPARE CERTIFICATION REPORT: | | |
| | **1. ASSEMBLE REPORT** | | |
| | a. Preapplication Letter of Intent. | | |
| | b. Certification Job Aid. | | |
| | c. Formal Application Letter. | | |
| | d. Schedule of Events. | | |
| | e. Final Compliance Statement. | | |
| | f. Copy of Operation Specifications. | | |
| | g. Copy of the Certificate. | | |
| | h. Summary of Difficulties. | | |
| | i. Suggestions to Improve Certification Process. | | |
| | **2. DISTRIBUTE REPORT** | | |
| **REMARKS:** | | | |
| | E. DEVELOP POST CERTIFICATION SURVEILLANCE PROGRAM: | | |
| | 1. Within the FSSS, ACA, and FOCA area. | | |
| | 2. Outside the FSSS, ACA, and FOCA area. | | |
| **REMARKS:** | | | |

CERTIFICATION REPORT CONTENTS

*Arab Republic Of Egypt*
*Ministry of Transportation*
*Egyptian Civil Aviation Authority*

جمهورية مصر العربية
وزارة النقل
الهيئة العامة المصرية للطيران المدني

**XYZ AIRLINES**
**MAINTENANCE TRAINING CENTER**

**MAINTENANCE TRAINING CENTER CERTIFICATION REPORT UNDER ECAR PART 147**

**CERTIFICATION REPORT CONTENTS**

1- Preapplication Letter of Intent (PLI).
2- Certification Job Aid (JA).
3- Formal Application Letter.
4- Schedule of Events.
5- Final Compliance Statement.
6- Copy of Training Specifications (TrnSpecs) – on electronic storage media.
7- Copy of the Certificate.
8- Copies of all ECAA-approved materials used in the training programs such as curriculums.
9- Summary of Difficulties.

A summary of major difficulties experienced during the certification process and/or any recommendations that may enhance the process must be noted by phase. Summaries of major difficulties and/or recommendations should be arranged as follows:

(1) Pre-application Phase.
Include summaries of difficulties or recommendations.
(2) Formal Application Phase.
Include summaries of difficulties or recommendations.
(3) Document Compliance Phase.
Include summaries of difficulties or recommendations.
(4) Demonstration and Inspection Phase.
Include summaries of difficulties or recommendations.

10- Suggestions to Improve Certification Process.

**CERTIFICATION REPORT DISTRIBUTION**
The report will be maintained in the permanent file relating to the new certificate holder during the business life of the certificate holder.

# APPENDIX G

## DIFFERENCES TRAINING
## ALL TRAINING CATEGORIES

| CONTENTS | Page No. |
|---|---|


### G.1 General
This section contains information, direction, and guidance to be used by inspectors when evaluating an operator's differences training program in all categories of training.

### G.2 Background
Due to differences in instrumentation, systems, and installed equipment, the skills and knowledge required to maintain two aircraft of the same make and model can differ. The range of differences between variations of a basic aircraft model has become extremely wide in recent years with the introduction of computerized guidance systems, electronic instrument displays, and two crewmember cockpit crews. Maintenance engineers qualified on one variant of an aircraft may require additional training to safely and efficiently carry out maintenance tasks on other variants of that aircraft. It is required that maintenance organizations and maintenance training centers conduct "differences" training in all categories of training when the maintenance engineer is to be licensed or approved authorized on more than one variant of an aircraft.

### G.3 Terminology
The following terminology is defined as it applies to differences training:

**** Base Aircraft:***

The aircraft or group of aircraft designated by the operator for use as a reference to compare differences with other aircraft within the operator's fleet. Operators designate base aircraft by the airline tail number (such as "aircraft 801 - 820"), the make/model/series (such as "A320-200"), and/or other classifications which can uniquely distinguish between the operator's different aircraft pertaining to the different configurations, handling characteristics, performance procedures, limitations, controls, instruments, indicators, systems, equipment, options or modifications. A base aircraft may either be a single aircraft or a group of aircraft with the same features and may be re-designated at the discretion of the operator. Base aircraft are typically those aircraft within a fleet which the flight crews are first trained in, which the airline has the most number of, or which represent a target configuration for the operator to eventually use as a standard.

* ***Variant Aircraft:***

An aircraft or a group of aircraft with the same features, that have pertinent differences from a base aircraft. Typical pertinent differences are those relating to configuration, handling qualities, performance, procedures, limitations, controls, instruments, indicators, systems, equipment, options, or modifications. Variants exist within a model or series, due to differences in installed equipment. For example, a B737-200 ADV with a performance data computer system, Omega, SP-177 auto-pilot, dual cue flight director, and auto-land is a different variant than another B737-200 ADV with a single cue flight director, SP-77 auto-pilot, and basic VOR/DME navigation equipment. An operator may have a number of variants, in addition to a base aircraft within a fleet.

## G.4 Methods For Accounting For Differences

There are several acceptable methods operators may use to account for differences. Inspectors should be knowledgeable of the following acceptable methods.

***A. Standardized Configurations.*** The simplest and most traditional method for operators to use when dealing with differences is to avoid them by installing common instruments and equipment in each aircraft in the fleet.

***B. Separate Fleets.*** Some operators treat variants of an aircraft as if they were different aircraft by developing separate curriculums for each variant.

***C. Integrated Training.*** An operator can conduct differences training as an integral part of each of the defined categories of training. When the operator chooses to use this method, ECAA inspectors must ensure that an analysis of the differences between the variants of aircraft in the operator's fleet has been made and that instructional elements have been provided in each curriculum segment to account for the identified differences. ECAA inspectors may approve this method when systems differences between the aircraft are minor. Approval of integrated differences training is accomplished in conjunction with the approval of the curriculum of which it is a part. When the operator chooses this method, a differences evaluation should be submitted as supporting documentation for the initial curriculum outline.

***D. Separate Differences Curriculum Segments.*** The operator may choose to limit instruction throughout a curriculum to one specific "base" aircraft and then conduct training as to the differences present in variations of the aircraft as a separate and distinct curriculum segment. For example, an operator might designate the 100 series aircraft as the base aircraft in a B-737 transition course. At an appropriate point in the instruction, a distinct segment of training would be presented to cover differences in the 200, 300, or 400 series aircraft. This method is advantageous when the operator operates numerous variants of an aircraft.

## G.5 Specific Situations Requiring Differences Training

Inspectors should be knowledgeable in the several situations in which differences training may be required, as follows:

***A.*** When an operator contracts for training from another party or from a training center who provides a courseware different from the aircraft operated by the operator.

***B.*** When an operator generates a need for differences training by introducing a variation of an aircraft into an existing fleet or by creating a variant aircraft by modifying one or more aircraft in the fleet

***C.*** When airline mergers and acquisitions generate the need for fleets to be merged in operations

## G.6 Differences Evaluation

Differences training must be based on an accurate analysis of the differences in systems, equipment, and maintenance procedures of the aircraft involved. An operator preparing a training program must submit a difference analysis conducted by the operator or other qualified party (such as a manufacturer or another operator). The analysis may take any form as long as it accurately identifies all differences. One acceptable way of constructing a differences analysis, but not the only means, is to construct a curriculum outline for the base aircraft and to identify each curriculum item in which there is a difference.

**DIFFERENCES EVALUATION WORKSHEET**

| BASE AIRCRAFT | VARIANT AIRCRAFT |
|---|---|
| **Aircraft Systems Subject Areas** | |
| Hydraulic Systems | |
| * Pumps | Pneumatic pump deleted |
| | Electric pump added |
| * Supply | Same |
| * System A components | Same |
| * System B components | Yaw damper added |
| * RAT | Deleted |
| * Limitations | Electrical pump time |
| | Yaw damper off below 100' |
| Electrical System Module | Same |
| Air Conditioning Module | Same |
| Etc. | |

Figure 1
EXAMPLE OF DIFFERENCES WORKSHEET

**G.7 Degrees Of Differences**

ECAA inspectors must ensure that the methods and devices used to conduct differences training are appropriate to the degree of difference between the base aircraft and the variant aircraft. For purposes of describing degrees of difference and for defining acceptable training methods, five levels of differences have been defined (Levels A - E).

***A. Level A Differences.*** Level A differences are those differences which the maintenance engineer needs to be aware of, but which have little effect on systems operations. For example, an engine starter on one variant aircraft has different time limits but does not have differences in controls, indicators, function, or procedures. Self instruction methods such as highlighted pages of training manuals, training bulletins, or computer based training (CBT) are acceptable for these differences. At the Level A of differences, testing may not be required.

***B. Level B Differences.*** Level B differences are those differences in systems, controls, and indicators that have only minor differences. Level B differences are of great enough degree to require formal training in aircraft systems. An example of a Level B difference might be a fuel system with additional fuel tanks, pumps, and gauges. Procedural differences are limited to the operation of transfer valves and pumps while an aircraft is on ground. Appropriate instructional methods for Level B differences include, but are not limited to, tape slide/presentations, lectures, and CBT. At the Level B of differences, testing may not be required.

***C. Level C Differences.*** Level C differences are those differences of great enough degree to require formal training in aircraft systems. An example of a Level C difference is the installation of a flight management system (FMS) computer. Appropriate instructional methods for Level C differences include, but are not limited to, tape slide/presentations, lectures, and CBT. At the Level C of differences, testing is required.

**G.9 Approval Process**

The approval process for differences training follows the five step process. The operator or training organization must submit an outline of the differences training program. This outline should contain appropriate modules and elements. Before the ECAA inspector may grant initial approval of the training program, the operator must also submit documentation supporting the differences analysis. The documentation may also be a differences analysis prepared by the operator, training organization, or other qualified party. When the operator chooses to use the integrated method of training, differences training appears in the outline as differences modules in the appropriate curriculum segment. When the operator conducts differences training as a separate and distinct curriculum segment, all differences modules are grouped in that segment. In either case, the ECAA inspector's approval should be predicated on the applicant meeting the following required criteria:

* Differences analysis is complete and accurate (but not necessarily in great detail)
* Outline contains the appropriate instructional elements to account for the differences identified in the analysis
* The appropriate modes of instruction and devices to conduct the training.