

**MyFBO.com Advanced Curriculum Tracking Feature
Advisory Circular (AC) 120-78 / 141.101 Conformity**



753 Main St., Suite 1B
Danville, VA 24541
434-793-6800
support@myfbo.com

Overview

Purpose of this Document

This document was created to assist FAA Inspectors (FAA) and Certified and Applicant Part 141 Flight Schools (Flight School) gaining approval of the MyFBO.com Advanced Curriculum Tracking Feature (ACT) as their Electronic Record Keeping System.

Although there are no regulations concerning electronic record keeping systems, the FAA has provided guidance in AC 120-78 titled “Acceptance and Use of Electronic Signatures, Electronic Recordkeeping Systems, and Electronic Manuals”.

Although Electronic Record Keeping Systems are approved by the FSDO on an Operator-by-Operator basis, this document can assist schools and particularly the FAA in ensuring that the MyFBO.com ACT Conforms to AC 120-78. This document also compares the ACT and CFR Part 141.101.

This document performs a point-by-point comparison to AC 120-78. Also, there are sections in red with a (FAA) heading. These sections are suggestions, tips, and things to watch out for. The red comments are intended to further assist the FAA in the approval process.

Introduction to MyFBO.com

MyFBO.com provides Aviation Management and Scheduling Software to FBOs, Schools, and Clubs. The software is web based and sold via Subscription. MyFBO.com has been doing business since 1998 and at the time of this document is in use at more than 360 airports.

In addition to the Part 141 Advanced Curriculum Feature or ACT, MyFBO.com provides scheduling, dispatch, qualification checking, and point-of-sale features to Flight Schools. More information about MyFBO.com can be found at <http://myfbo.com/>.

Precedents for Electronic Record Keeping

The FAA not only accepts but encourages use of electronic records in place of traditional records. Details are laid out in AC 120-78, Page 2, Number 4.

The 3 Step Approval Process

As defined in the AC, schools that wish to have the MyFBO.com ACT approved as their Electronic Record Keeping System can apply to the FAA FSDO. According the AC (Page 8, Paragraph 8), approval is a 3 step process:

1. Announcing Intent to Use Electronic Signatures / Electronic Recordkeeping.
2. Description of Electronic System and Proposed Manual Changes.

3. FAA Approval Process.

Key Points

Key Points from AC 120-78

AC 120-78 is divided into and provides guidance on 3 main points.

- Electronic Signatures
- Electronic Record Keeping Systems
- Electronic Manuals

This document deals with points 1 and 2, electronic signatures and electronic record keeping systems. The Flight School, at least in terms of this document is not seeking approval of point 3, electronic manuals.

Conformity - Electronic Signatures

The following paragraphs address the guidelines for electronic signatures contained in AC 120-78 point-by-point. Excerpts from the AC are highlighted in grey, followed with information how MyFBO.com conforms.

AC 120-78 Digital Signature Definition

d. Digital Signature. Cryptographically generated data that identifies a document's signatory (signer) and certifies that the document has not been altered. Digital signature technology is the foundation of a variety of security, electronic business, and electronic commerce products. This technology is based on public/private key cryptography, digital signature technology used in secure messaging, public key infrastructure (PKI), virtual private network (VPN), web standards for secure transactions, and electronic digital signatures.

The ACT digital signature functions the same as a handwritten signature. Students and/or flight instructors digitally sign an electronic training record upon completion of a lesson by entering a unique password. Password fields use hidden character fields so they are not visible while being typed. They also use cryptology so that they can not be read in the database ordering transmission. The encryption key is not even known by the Flight School.

DISCUSSION—ELECTRONIC SIGNATURE

5. What is an acceptable electronic signature?

a. General. Before recent changes to permit the use of electronic signatures, handwritten signatures were used on any required record, record entry, or document. The electronic signature's purpose is identical to that of a handwritten signature or any other form of

signature currently accepted by the FAA. The handwritten signature is universally accepted because it has certain qualities and attributes (e.g., subparagraph c(4)(d) below concerning employee termination) that should be preserved in any electronic signature. Therefore, an electronic signature should possess those qualities and attributes that guarantee a handwritten signature's authenticity.

b. Forms of Electronic Signatures.

(1) An electronic signature may be in the following forms.

A digital signature

A digitized image of a paper signature

A typed notation

An electronic code

Any other unique form of individual identification that can be used as a means of authenticating a record, record entry, or document

(2) Not all identifying information found in an electronic system may constitute a signature. For example, the entry of an individual's name in an electronic system may not constitute an electronic signature. Other guarantees equal to those of a handwritten signature should be provided.

The ACT System utilizes a digital signature, which is entered by typed notation, it is an electronic code, and unique. This password is only known by the individual user.

FAA

The ACT System has password strength rules in place to limit the use of easy passwords such as "1234" and "password". However, the Flight School should have information about password sharing in their Management Policies or Training Procedures. Personnel and students should be aware of the impact of sharing their passwords with others.

c. Attributes of an Acceptable Electronic Signature. First and foremost, an electronic signature must be part of a well-designed program. This program should, at a minimum, consider the following.

(1) **Uniqueness.** An electronic signature should retain those qualities of a handwritten signature that guarantee its uniqueness. A signature should identify a specific individual and be difficult to duplicate. A unique signature provides evidence that an individual agrees with a statement. An electronic system cannot provide a unique identification with reasonable certainty unless the identification is difficult for an unauthorized individual to

duplicate. An acceptable method of proving the uniqueness of a signature is by using an identification and authentication procedure that validates the identity of the signatory. For example, an individual using an electronic signature should be required to identify himself or herself, and the system that produces the electronic signature should then authenticate that identification. Acceptable means of identification and authentication include the use of separate and unrelated identification and authentication codes. These codes could be encoded onto badges, cards, cryptographic keys, or other objects. Systems using PINs or passwords also are an acceptable method of ensuring uniqueness. Additionally, a system could use physical characteristics, such as a fingerprint, handprint, or voice pattern, as a method of identification and authorization.

To digitally sign the training record in the MyFBO.com ACT the user must enter their unique password. Each user of the system has an individual password unique to that individual.

If the flight lesson was a “dual” flight both the student and flight instructor must sign the training record (as shown in the screen shot below). If the flight lesson was a “solo” flight the student must sign the training record.

Upon signature the ACT System programmatically compares the password to the user’s record and returns a verified or invalid code. If the Flight School elects to utilize digital signatures, the training record form must be signed and verified. If the record is not signed and verified the record can not be entered or saved.

The screenshot shows a web form for entering training records. It includes a text area for 'Training Remarks' with the text 'Review something on next lesson.' Below this are radio buttons for 'Lesson Complete' (Yes/No) and a 'Postflight Time' field with a dropdown menu. There are two signature fields: 'Instructor Signature' and 'Student Signature'. The instructor's signature is marked as 'Verified' and the student's as 'Invalid'. A 'Sign' button is present for each signature field. At the bottom is a button labeled 'Enter Training Record'.

Digital Signatures Must Be Entered, Click to Sign, and Verified

Training Remarks: Review something on next lesson.
(required)


Lesson Complete: on standards

Postflight Time: .2 (hr)

Instructor Signature: Sign **Verified** IP enter password.

Student Signature: Sign **Invalid** Student enter password.

Enter Training Record



Form Can't Be Submitted if Signatures are Not Entered and Validated

(2) Significance. An individual using an electronic signature should take deliberate and recognizable action to affix his or her signature. Acceptable, deliberate actions for creating a digital electronic signature include, but are not limited to, the following:

- __ Badge swipes
- __ Signing an electronic document with a stylus
- __ Typing specific keystrokes
- __ Using a digital signature

ACT Users must both enter a unique password via key stroke and click a “sign” button.

(3) Scope. The scope of information being affirmed with an electronic signature should be clear to the signatory and to subsequent readers of the record, record entry, or document. Handwritten documents place the signature close to the information to identify those items attested to by a signature. However, electronic documents may not position a signature in the same way. It is therefore important to clearly identify the specific sections of a record or document that are affirmed by a signature from those sections that are not. Acceptable methods of marking the affected areas include, but are not limited to, highlighting, contrast inversion, or the use of borders or flashing characters. Additionally, the system should notify the signatory that the signature has been affixed. The user should be asked to ensure that the identified material is, in fact, what is being signed for after affixing the signature. The user also should be able to retrieve a report listing all places where his or her digital electronic signature has been applied. The FAA is not concerned with the computer technology used to accomplish the above tasks. Instead, the FAA concern is with the accuracy of the record and that the signatory is fully aware of what he or she is signing.

ACT Signatures are at the bottom of the same form that is being signed. This is in the same position as a handwritten would be entered.

(4) Signature Security. The security of an individual's handwritten signature is maintained by ensuring that it is difficult for another individual to duplicate or alter it. An electronic signature should maintain an equivalent level of security. An electronic system that produces signatures should restrict other individuals from affixing another individual's signature to a record, record entry, or document. Such a system enhances safety by preventing an unauthorized individual from certifying required documents, such as an airworthiness release.

Only the individual user has access and the ability to change their unique password. Flight School Management has the capability to "reset" a user's password if they forget it, however the ACT does not allow signature with a "reset" password. A user with a reset password would have to log in using the password reset procedures and enter a new individual password before training records can be signed.

(a) A corresponding policy and management structure must support the computer hardware and software that delivers the information.

The ACT supports access levels for this purpose. For example only Manager Access and above can modify course definition. Only Administrator access or above can modify signature capture settings. There are 4 administrative settings in the system regarding ACT:

1. Whether or not the ACT Feature itself is turned on or enabled.
2. Whether or not the ACT Requires Digital Signatures and;
3. If digital signatures are required; are student signatures required on ground only lessons.
4. Whether or not a customer receipt can be prepared if the training record has not been entered (Internal Control Setting).

FAA:

The ACT can only verify level of access. In other words it is not a replacement for a proper policy and management structure. For example, the owner of the Flight School may have Administrator Level access to the system. The owner and any other person with that high level access should be aware of curriculum settings and the impact on operations if the settings are changed.

(b) Signature authenticity/verification: Through control and archives, the computer software should determine if the signature is genuine and if the individual is authorized to participate. This can be accomplished by comparing the signature to a public key archive or some other means. This capability should be an integral part of the computer software.

This is integral to the ACT. Only active and approved users can participate.

(c) Archiving electronically signed documents: Since no paper document with an ink signature exists, a means of safely archiving electronically signed documents should be part of any electronic signature computer software. This will provide for future authentication.

The ACT saves and stores the above records indefinitely. In addition to keeping the records indefinitely, the data is backed up and stored off-site.

More details can be found in the MyFBO.com Documentation located at

http://help.myfbo.com/docs/about/security_about.htm.

(d) The system should contain restrictions and procedures to prohibit the use of an individual's electronic signature when the individual leaves or terminates employment. This should be done immediately upon notification of the change in employment status.

The ACT has long had system-wide procedures for handling termination. Inactive employees and students can be locked out of the system.

(e) Procedures should be established allowing the organization to correct documents that were electronically signed in error. The signature should be invalidated anytime a superseding entry is made on the same document. (The entry should be voided but remain in place. Reference to a new entry should be made and electronically signed and dated).

Training records are saved and archived. Training records can be edited. New signatures are required to edit the record. In addition to the signature data required the system stores the date, time, and user login identification.

Training Records for: Student Pilot

Curriculum: **ASA Private Pilot 2** Enrolled: 01/07/08 Completed: ~ (sort by lesson)

Date	Stage	Stage Name	Lesn	Lesson Name	Score	Compl	Staff	Rmk	Signed	Ticket	Edit	i
02/12/08	1	Stage 1 Intro	1	Stage 1/Module 1	3	Yes	Jones	●	No	1237	View	i
02/21/08	1	Stage 1 Intro	2	Stage 1/ Module 2	3	Yes	Jones	●	STU/CFI	1250	View	i
03/04/08	1	Stage 1 Intro	3	Stage 1/ Module 3	3	Yes	Jones	●	No	1257	View	i
04/16/08	1	Stage 1 Intro	4	Stage 1/ Module 4	3	Yes	Jones	●	No	1299	View	i
04/17/08	1	Stage 1 Intro	5	Stage 1/ Module 5	3	Yes	Jones	●	No	1301	View	i
06/19/08	2	Stage 2- Solo	3	Stage 2/ Module 3	3	Yes	Jones	●	No	1446	View	i
07/02/08	2	Stage 2- Solo	1	Stage 2/ Module 1	3	Yes	Jones		No	1449	View	i
07/02/08	2	Stage 2- Solo	2	Stage 2/ Module 2	3	Yes			No	1449	View	i
07/02/08	2	Stage 2- Solo	2	Stage 2/ Module 2	3	Yes	Jones		No	1449	View	i
07/02/08	2	Stage 2- Solo	4	Stage 2/ Module 4	3	Yes			No	1450	View	i
07/02/08	2	Stage 2- Solo	5	Optional review	3	Yes	Jones	●	No	1452	View	i
07/02/08	1	Stage 1 Intro	6	Optional Review/ Stage Check	3	Yes	Jones	●	No	n/a	View	i
08/14/08	3	Stage 3- X Country	2	Stage 3/ Module 2	3	Yes	Jones	●	No	1485	View	i

Training Record Reports Indicate if Document was Signed and Who Last Updated It

ASA Private Pilot 2 Training Record / Sub-Activity Matrix for: Student Pilot

Signature Verified	False	True	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False		
Training Date	02/12/08	02/21/08	03/04/08	04/16/08	04/17/08	06/19/08	07/02/08	07/02/08	07/02/08	07/02/08	07/02/08	07/02/08	07/02/08	07/02/08	08/14/08	08/20/08	08/21/08	08/21/08	08/21/08	08/21/08	08/26/08
Lesson	Stage 1/Module 1	Stage 1/Module 2	Stage 1/Module 3	Stage 1/Module 4	Stage 1/Module 5	Stage 2/Module 3	Stage 2/Module 1	Stage 2/Module 2	Stage 2/Module 2	Stage 2/Module 4	Optional review	Optional Review/ Stage Check	Stage 3/Module 2	Stage 3/Module 3	Stage 2/Module 6	Stage 2/Module 6	Stage Check	Stage 3/Module 1	Stage 2/Module 5		
Preflight Preparation																					
Certificates and documents	U				U																
Weather information	U				U				U	U											

The Training Record Matrix Indicates if Record was Signed, Red = No

(5) Non-repudiation. An electronic signature should prevent a signatory from denying that he or she affixed a signature to a specific record, record entry, or document. The more difficult it is to duplicate a signature, the likelier the signature was created by the signatory. The system’s security features that make it difficult for others to duplicate signatures or alter signed documents usually ensure that a signature was indeed made by the signatory. Many off-the-shelf computer software packages, such as Adobe Acrobat, contain a self-sign utility. Although such computer software can provide an electronic signature for individuals or a group of individuals participating in an electronic signature program, a self-sign utility by itself cannot be used. However, it can become the basis of a digital signature program if the public and private keys are issued and controlled by a trusted third party.

Signatures are unique and only known to the individual.

(6) Traceability. An electronic signature should provide positive traceability to the individual who signed a record, record entry, or any other document.

Along with signatures, user identification, name, etc. are stored. Signatures are easily traceable.

e. Compliance with Other Regulatory Requirements. Although the FAA now permits the use of electronic signatures to meet certain FAA operational and maintenance requirements, any computer hardware used to generate the required documents and records must continue to meet current regulatory requirements. A proper signature affixed to an improperly created document still results in a document that does not meet regulatory requirements. Methods and procedures used to generate an electronic signature must therefore meet all regulatory requirements for a recordkeeping system to be used by

owners, operators, or maintenance personnel. In addition, electronic signatures should only be used to satisfy the maintenance and operational requirements relating to this AC. Electronic signatures may not be considered acceptable in other areas covered by 14 CFR having more specific applicability (i.e., legal depositions and various other applications). Although the acceptance of electronic signatures will foster the use of electronic recordkeeping systems, the FAA continues to accept paper documents to satisfy current regulatory requirements.

FAA

The training records record the tasks and grades for each lesson. However, it has no way of knowing that the initial data is correct, in computer terms; garbage in – garbage out.

Flight Schools have the responsibility to ensure their courses are set up properly. In many cases this is not an issue because the courses are or mimic commercially produced courses such as Jepessen® or ASA®.

Also, computers can not replace good common sense. MyFBO.com recommends the following to Flight Schools:

1. Have an open reporting policy for Personnel and Students to report any possible issues.
 2. Have policy statement that if there is any discrepancies between the courseware (computerized or written) and the Regulations, that the regulations should be followed.
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Conformity - Electronic Record Keeping Systems

The following paragraphs address the electronic record keeping system guidelines contained in AC 120-78 point-by-point. Excerpts from the AC are highlighted in grey, followed with information how MyFBO.com conforms.

FAA

Please note that the ACT is a replacement for Student Record Folders but does not replace the student pilot's logbook.

DISCUSSION—ELECTRONIC RECORDKEEPING SYSTEMS

7. What is an acceptable electronic recordkeeping system?

When constructing an electronic recordkeeping system to meet the operational and maintenance requirements addressed in this AC, the following elements must be considered and addressed in the operator's manual or in the directions for the system.

This information must be made available to each individual responsible for using the system.

MyFBO.com had provides the Flight Schools the following information to assist and train users of the System.

1. Curriculum Tracking Web Conference Training Available to All Users
2. eLearning Training on Setting Up and Managing the ACT
3. Software Help Documentation (<http://help.myfbo.com/help.asp?call=curabout>)
4. TCO Supplements (<http://help.myfbo.com/docs/curric/Section10.doc>)
5. 5. Free Technical Support for all ACT Users

a. Security.

(1) The electronic system should protect confidential information.

MyFBO.com uses GoDaddy® security certificates to assure the privacy and security of data. This is the same SSL 128-bit encrypted data transmission security used for online banking.

In addition, the most critical data (password, social security number, pilot certificate number, driver's license number, credit card and checking account numbers, etc.) are internally encrypted in the database.

More details can be found in the MyFBO.com Documentation located at http://help.myfbo.com/docs/about/security_about.htm.

(2) The system should ensure that the information is not altered in an unauthorized way.

Users of the ACT log in to the system with a unique username and personal password to the system. The unique login allows the system to record which user performed which task in the system. It also allows Flight School Management to specify which user can perform which tasks within the system. For example line service personnel can not modify training records.

(3) A corresponding policy and management structure should support the computer hardware and computer software that delivers the information.

There are no special hardware and software requirements to run MyFBO.com. Only a computer with an Internet connection is needed. The Administrator should ensure that the flight school has procedures in the event Internet connection loss. A typical procedure is to have a back-up dial up connection in addition to the usual broadband connection.

b. Procedures. Before introducing an electronic recordkeeping system, computer procedures must be incorporated into the operator's manual or in the directions for the system to include the following:

(1) Procedures for making required records available to both the National Transportation Safety Board (NTSB) and FAA personnel. If the computer hardware and software system is not compatible with the FAA and the NTSB system, the organization will provide an employee or representative to assist. This individual must be familiar with the computer system and assist in accessing the necessary computerized information. This procedure and computer system must be capable of producing paper copies of the viewed information at the request of the FAA or NTSB authorized representative.

NOTE: The FAA and NTSB must be able to review the records and information at their respective offices when necessary and on request. **Persons or entities can fulfill this request in many ways, i.e., floppy disk, paper copy, etc.**

Procedures are in place for the FAA or NTSB to gather this information upon appropriate request. Unfortunately, MyFBO.com has complied with such requests in the past concerning aircraft accidents.

In addition to cooperation, the System allows for the setup of Administrator Read-Only Access. This allows the FAA access to view the curriculum records. Records can be viewed securely on the Internet, allowing for effective surveillance from the FSDO.

FAA

Read-only access is at the discretion of the Flight School. The FAA should request the access from the Flight School.

(2) Procedures for reviewing the computerized personal identification codes system to ensure that the system will not permit password duplication.

Procedures are not necessary. The MyFBO.com System prevents password duplication programmatically, duplication is not possible. In addition, MyFBO.com conforms to Payment Card Industry (PCI) Standards, which include:

- Locking out user access for 45 minutes after five failed login attempts to prevent automated password guessing.
- Assigning unique temporary passwords to staff users who have forgotten their password.
- Requiring password reentry to see sensitive information.
- Posting Message Center alerts for 90-days of staff inactivity.
- Requiring staff users to update their passwords at least every 90 days.

(3) Procedures for auditing the computer system every 60 days to ensure the integrity of the system. A record of the audit should be completed and retained on file as part of the operator's record retention requirements. This audit may be a computer program that automatically audits itself.

MyFBO.com runs a software program that checks system Integrity daily. Any program issues are addressed immediately. If the issue affects a particular flight they are notified through a Message Center in the software.

(4) Audit procedures to ensure the integrity of each computerized workstation. If the workstations are server-based and contain no inherent attributes that enable or disable access, there is no need for each workstation to be audited.

The system is run from an Internet Server. Terminals and work stations only need an Internet connection, which does require a detailed audit. Terminal users only need to know who within the Flight School to report problems to.

(5) Procedures describing how the operator will ensure that the computerized records are transmitted in accordance with the appropriate regulatory requirements to customers or to another operator. The records may be either electronic or paper copies.

Flight Schools can pack the records electronically or in print form. Students can also log into the system and view or print their training records.

(6) Procedures to ensure that records required to be transferred with an aircraft are in a format (either electronic or on paper) that is acceptable to the new owner/operator.

Not applicable. The ACT System deals specifically with training records which are the property of the Student and Flight School.

(7) Guidelines for authorized representatives of the owner/operator to use electronic signatures and to have access to the appropriate records.

Flight school owners and operators can grant and control access to the records through a User Security Menu.

(8) A description of the training procedure and requirements necessary to authorize access to the computer hardware and software system. (Recognizing that the details will vary with the different individuals who need access, the training description may simply be part of the position description. Its location should be referenced in the manual.)

MyFBO.com provides the Flight Schools the following information to assist and train users of the System.

1. Curriculum Tracking Web Conference Training Available to All Users
2. eLearning Training on Setting Up and Managing the ACT
3. Software Help Documentation (<http://help.myfbo.com/help.asp?call=curabout>)
4. TCO Supplements (<http://help.myfbo.com/docs/curric/Section10.doc>)
5. Free Technical Support for all ACT Users

MyFBO.com ACT and CFR Part 141.101

Sec. 141.101

Training records.

(a) Each holder of a pilot school certificate or provisional pilot school certificate must establish and maintain a current and accurate record of the participation of each student enrolled in an approved course of training conducted by the school that includes the following information:

(1) The date the student was enrolled in the approved course;

The MyFBO.com ACT performs a student enrollment. The enrollment date is stored and available to the Instructor and Student at any time.

(2) A chronological log of the student's course attendance, subjects, and flight operations covered in the student's training, and the names and grades of any tests taken by the student; and

The ACT records subjects, flight operations covered during training, names and grades of test and partial attendance. The ACT does keep chronological attendance records for flight operations. It also stores cancellations and the reason or cancellation if the reservation is cancelled by the Flight School and a fee applied. The system does NOT keep roster attendance records, such as a Flight School would keep with a formal classroom ground school setting.

(3) The date the student graduated, terminated training, or transferred to another school.

The MyFBO.com ACT performs graduations and terminations. The dates are stored and available to the Instructor and Student at any time.

(b) The records required to be maintained in a student's logbook will not suffice for the record required by paragraph (a) of this section.

Not applicable to ACT.

(c) Whenever a student graduates, terminates training, or transfers to another school, the student's record must be certified to that effect by the chief instructor.

This is a Flight School Policy. The ACT supports the electronic retrieval and/or printing of records. However, certification falls upon the Flight School Policy.

(d) The holder of a pilot school certificate or a provisional pilot school certificate must retain each student record required by this section for at least 1 year from the date that the student:

- (1) Graduates from the course to which the record pertains;
- (2) Terminates enrollment in the course to which the record pertains; or
- (3) Transfers to another school.

Records are store indefinitely.

(e) The holder of a pilot school certificate or a provisional pilot school certificate must make a copy of the student's training record available upon request by the student.

Records are available to active students via a student interface menu.