



The Update Report

The Airline Suppliers Association

Volume 7, Issue 1

January 1999

LAW YOU CAN USE

Back-to-Birth Traceability and Life-Limited Parts

Last month, the first part of this article addressed parts traceability and the ways that traceability can support an installer's regulatory obligations. A key feature in last month's article was the fact that no regulation requires "back-to-birth" traceability. This second half of the article summarizes some of the arguments on both sides of the "back-to-birth" debate, and then explains why back-to-birth traceability is the preferred method for life-limited parts even though the regulations do not require it.

The Back-to-Birth Argument

The term "back to birth traceability" describes documentation that clearly demonstrates every owner and installation of a part all the way back to the time that it was manufactured (the "birth" of the part). A person who reviews this documentation can easily identify every past owner of the part. Some people in the aviation industry feel that every part in the industry ought to bear traceability documentation that shows that it was originally manufactured by a company holding FAA production approval.

There are a number of potential benefits to back-to-birth traceability. Some installers like to have this sort of traceability for parts that they purchase,

because they feel more comfortable knowing who possessed a part in the past. In the event that a part is found to be unairworthy, traceability helps an inspector to track the source of the problem, and may therefore provide useful assistance in preventing similar problems in the future. Traceability to a prior finding of conformity (at the manufacturer's facility) or airworthiness (e.g. by an overhauler) shows that at the moment of that finding, the part was in a condition at least equal to that shown in the type design of the aircraft on which it was meant to be installed. This helps the installer, who must merely show that the part remains in this condition.

On the other hand, there are also arguments against traceability. The most important is that reliance on traceability places a stronger emphasis on paperwork than it does on the actual airworthiness of the part. A part may appear to be airworthy on paper, but its actual condition could be unairworthy. There are many reasons for this, like shipping damage, degradation due to shelf-time or human error in labeling. No matter what conditions may apply to the airworthiness of the part, the installer bears the responsibility to judge the airworthiness of the part at the time of installation.

(Continued on page 6)

Inside this Issue:

ASA's 1999 Workshop Series!	3
ASA Board Nominations	3
Y2K : Advice and New Law	4
Y2K : Compliance Tools	5
Glueckler Award Nominations	9
Hazard Communications	10

Congratulations to:

The Ages Group

Boca Raton, FL, West Babylon, NY,
Surrey, England, Shannon, Ireland and
Singapore

Baron International Aviation, Inc.

Eagan, MN & Seattle, WA

for their reaccreditation and

Eagle Industries International, Inc.

Brewster, NY

*for their accreditation to the
Airline Suppliers Association's
Accreditation Program.*

Keep monitoring,
<http://www.airlinesuppliers.com>
for a growing list of
FAA accredited distributors.



**AIRLINE SUPPLIERS
ASSOCIATION**

Life Limited Part Documentation Must State Current Status

(Continued from page 1)

Other opponents have been quick to point out that the weight of the paperwork associated with a small part could be greater than the weight of the part itself. Not only does the idea of paperwork that is heavier than a part evoke a powerful but humorous image, but it also raises the question of where the industry would store such a volume of documentation. Paperwork storage issues represent only half of the battle; reassociation is also an issue.

Complete traceability would create a paperwork nightmare for air carriers that needed to store documentation for a part upon installation and then reattach the documentation to the part in question at the time of sale. The act of reassociating the paperwork with the part could be complicated if the documentation is stored in a location far from the base at which the part was removed.

There are also commercial concerns to be addressed. Some distributors fear that complete traceability would permit a customer to bypass them in the future, going directly to the prior source for the part. These distributors prefer to provide sufficient documentation to demonstrate airworthiness without necessarily identifying every prior owner of the part.

As a matter of law, the traceability argument is settled in favor of the opponents, because there is still no regulation that requires back-to-birth traceability. While there is no rule requiring traceability, there is a rule requiring owner/operators to track the times/cycles of their life-limited parts. Back-to-birth traceability is the standard industry practice for tracking times/cycles on life-limited parts.

Life-Limited Parts

Present day aircraft and engines commonly have life-limited parts installed.¹ These are parts for which there is a limited service life. When this service life has been exhausted, the part must be removed from the aircraft and replaced before the aircraft is permitted to fly again.² The service life of life-limited parts may be expressed in hours of operation, cycles of operation, or calendar time.³

Life limits are proposed by the manufacturer as a component of the Instructions for Continued Airworthiness (ICAs);⁴ they are approved when the FAA approves the Airworthiness Limitations Section (ALS) of the ICAs.⁵ The Federal Aviation Regulations generally require that operators of aircraft comply with the life limits stated in the ALS.⁶ Sometimes, the FAA permits extensions to these life-limits, but a request for an extension to a life-limit must be supported by adequate engineering data to show that the new life limit is appropriate.

The general operations regulations that apply to all aircraft require replacement of expired life-limited parts. They also require each owner or operator of an aircraft to keep certain aircraft records;⁷ and one set of records that must be kept is records of the current status of all life-limited parts.⁸ Current status means total time on the part.⁹ These records help to confirm that the life-limited parts are installed and removed appropriately. The FAA suggests that the records should include the name of the part, part number, serial number, date of installation, total time in service, date removed, and signature and certificate number of the person installing or removing the part.¹⁰

The question that always arises is, to what extent must the life-limited parts' records verify the current status information provided. Some people feel that there must be an audit trail for each life-limited part that permits an auditor to trace the part all the way back to its "birth." Such records would show all past owners of the part and would indicate all dates of installation and removal, with appropriate indications of then-current life-status. This additional information substantiates the recorded statements concerning the time that has accrued on the part. Although back-to-birth traceability of this sort is often not necessary for other parts, industry practice is for owners and operators to maintain back-to-birth traceability of this sort for all life-limited parts.

Back to Birth Traceability is Not Required

Does the law require back-to-birth traceability for life-limited parts? No. The FAA has stated that complete back-to-birth traceability for life-limited parts is not necessary.¹¹ This means that air carriers and other persons are free to establish alternative systems for establishing and tracking the time on life-limited parts.

When an aircraft is being transferred, the transferring operator's certification that the current status of life-limited parts is true and correct can be acceptable as valid (without further substantiation) unless obvious discrepancies are apparent. Remember, though, that the owner or operator of an aircraft remains liable for assuring its airworthiness, and the FAA may ask the owner/operator to substantiate that its recordkeeping system is sufficiently robust to assure accurate records.¹²

(Continued on page 7)

Back-to-Birth Traceability Can Support the Quality System

(Continued from page 6)

The FAA could also ask for an audit trail tracing a life-limited part back to its origin in situations where the operator's records are incomplete or inadequate so that an accurate determination of the time elapsed on the life-limited part could not be made from them.¹³

The FAA has said that life-limited parts records that do not contain complete back-to-birth traceability, but which are traceable to an air carrier's approved recordkeeping system, are generally acceptable. Piecemeal records such as stand alone parts tags that are not traceable to historical source documents may not be acceptable because they are not records from which the current status can be determined.

In some rare cases, the FAA is willing to remedy a record-keeping lapse by assuming that the part was in service for its maximum possible hours and cycles during the lapsed period. Generally, if the FAA does this, they also add a 'fudge factor' of +50% just to be sure that the hours and cycles on the life-limited parts reflect a number that could not possibly represent an underestimate. This is only possible where the lapsed aircraft records fall within a verifiable time period upon which the estimates may be made. This is one example of a situation where records may be adequate to reflect current status, but they do not represent a pure back-to-birth traceability.

The Air Carrier's Recordkeeping System

Air carrier's today are more concerned than ever before about whether the parts they buy are demonstrably airworthy, and whether they can sell their own excess inventory. Some are changing the way they track and docu-

ment parts to support better quality within their own systems and better quality throughout the entire aviation parts industry. In developing a comprehensive quality system, an air carrier must consider all of its safety, commercial, and legal goals and challenges.

For most air carriers, meeting the minimum safety standards of the regulations is not enough. This is one reason why some operators choose to require "back-to-birth" traceability as their own 'in-house' requirement for all parts. Related reasons include the fact that back-to-birth traceability provides an audit trail of verification documentation to support the air carrier's determination of the current status on the life-limited part.

Whether the records reflect back-to-birth traceability or some of other method acceptable to the FAA, it is often helpful for an owner/operator to maintain separate records for each life-limited part on the aircraft. If the records are kept separately for each such part, it makes it easier to keep the records with the part if the part is removed and subsequently sold or installed on another aircraft or engine. This is not a legal requirement, though, and the life-limited parts records may be incorporated as part of the records for the entire aircraft so long as they contain sufficient information to clearly establish the status of the life-limited parts installed.¹⁴

Applying the Lessons to an Inventory

What does this mean to a distributor of life-limited parts, particularly one who has surplus life-limited parts in inventory? It means that he should be certain that the documentation showing parts status is adequate to show current status, and also sufficiently robust to meet his customer's needs. If the

customer's operations specifications insist on back-to-birth traceability, then back-to-birth traceability will be required.

When receiving parts, the distributor should bear in mind the customer's requirements. If the customer does not require back-to-birth traceability, then the distributor should still review the paperwork associated with the life-limited parts to make sure that these parts bear records of their current time in service, and that these records can be relied upon. An air carrier's airworthiness certification indicating the time in service based upon the air carrier's approved recordkeeping system is generally adequate; a commercial document that indicates time in service is generally considered inadequate. Examples of commercial document generally considered inadequate include: work orders, maintenance installation records, purchase requests, and sales receipts.

Sometimes, a distributor obtains life-limited parts with no remaining service life, or whose service life can not be verified (so they must be treated as having no remaining service life). There is no legal requirement concerning the disposition of these parts; however industry practice tends to follow the FAA recommendations, which suggest segregating expired life-limited parts in a secure area, and using caution to assure that such parts are mutilated so they will not be placed back in actual use.¹⁵

Endnotes

1. Other popular terms for life limits include: retirement times, service life limitations, parts retirement limitations, retirement life limits, and life limitations. *Maintenance Records*, FAA Advisory Circular

(Continued on page 8)

Life Limited Parts: Endnotes

(Continued from page 7)

43-9B, ¶ 15(a) (June 8, 1998).

2. See 14 C.F.R. § 91.403(c) (prohibiting the operation of an aircraft unless the aircraft complies with the mandatory replacement times).

3. *Maintenance Records*, FAA Advisory Circular 43-9B, ¶ 15(a) (June 8, 1998).

4. E.g., 14 C.F.R. app'x H25.4 (requiring life limits to be published in the ICAs for transport category aircraft).

5. 14 C.F.R. § 21.31(c) (making the ALS an element of the approved type design).

6. 14 C.F.R. § 91.403(c).

7. 14 C.F.R. § 91.417; see also 14 C.F.R. §§ 121.380, 135.439.

8. 14 C.F.R. § 91.417(a)(2)(ii) ; see also 14 C.F.R. §§ 121.380(a)(2)(ii), 135.439(a)(2)(ii).

9. *FAA Letter of Interpretation from Kenneth P. Quinn, FAA Chief Counsel to Senator Howell Heflin (D-AL)* (June 1, 1992).

10. *Maintenance Records*, FAA Advisory Circular 43-9B, ¶ 15(b) (June 8, 1998).

11. *Letter of Interpretation from Kenneth P. Quinn, FAA Chief Counsel to Senator Howell Heflin (D-AL)* (June 1, 1992); see also *Current Federal Aviation Administration (FAA) Policy Regarding Aircraft Records*, FSAW 92-04 (stating "It is not intended that the regulations be interpreted to require historical records which are complete to the date of manufacture").

12. According to FAA policy, Part 135 operators must be able to verify the accumulated time in service of all life-limited items by providing records for the item showing each segment of its operation, in service since its manufacture. *Airworthiness Inspector's Handbook*, FAA Order 8300.10, Volume 3, Chapter 41, § 1 ¶ 9(C). This back-to-birth traceability requirement is not extended to other operators. See id. at Chapter 42 § 1 ¶ 7(C) (for Part 121 operators) and id. at Chapter 61 §

1 ¶ 7(C) (for Part 125 operators).

13. *Letter of Interpretation from Kenneth P. Quinn, FAA Chief Counsel to Senator Howell Heflin (D-AL)* (June 1, 1992).

14. See *Maintenance Records*, FAA Advisory Circular 43-9B, ¶ 15(b) (June 8, 1998).

15. See *Disposition of Unsalvageable Aircraft Parts and Materials*, Advisory Circular 21-38 (July 5, 1994) for complete recommendations. Note that ASA-100 follows these recommendations

Software Solutions

(Continued from page 5)

Corporate licenses for the YMARK2000 software are also available for sale from NSTL. The corporate version can be automated over a network, and also provides the user with greater technical support.

One apparent drawback to the NSTL software is that NSTL explicitly denies any warranties with respect to their software. This means that NSTL does not guarantee accuracy, adequacy or completeness of the program. Because of laws modifying the effect of Y2K warranties, NSTL's denial of warranty is not necessarily the obstacle it may appear to be. For more information on why Y2K warranties are not really warranties, see *Y2K: All's Fair in Love and Warranty* on page 4 in this issue.

FAA Recommendations for Reviewing Validity of Life-limited Parts Documentation from Foreign Sources (from FAA Order 8300.10)

"(1) If the operator holds an FAA-approved FAR Part 129 maintenance program, that approval includes the records requirements of International Civil Aviation Organization (ICAO) Annex 6. A spot check of visible ADs and source records would indicate the quality of the operators records.

(2) If the State of the operator is an ICAO signatory, the operator's records should meet ICAO requirements and an operator certified record of current status would be acceptable. However, the operator's ICAO compliance posture must be established.

(3) A spot check of visible ADs would be indicative of the accuracy of those records.

(4) A spot check of source records for the operator's system would indicate the quality of the operator's records.

(5) The state of the operator's shop records would be indicative of the integrity of the operator's system.

(6) Significant errors or omissions in a records status report would indicate