National Air Transportation Association
The Voice of Aviation Business

818 Connecticut Avenue, NW, Suite 900 Washington, DC 20006
P (202) 774-1535 (800) 808-6282
www.nata.aero

NATA Aircraft Maintenance & System Technology Committee
Best Practices

In Performing a Pre-purchase Evaluation (Pre-buy), What is Considered "Airworthy?"

When you have been around the world of aircraft sales for any length of time, you will find yourself in a conversation about what is "airworthy" and who pays for what to have things repaired to complete the sale of an aircraft.

The current owner has flown the aircraft, is comfortable with its condition, and believes it to be airworthy. The potential new owner wants the aircraft to be as close to perfect as they can get for a used aircraft price. So, any discrepancy found is considered unairworthy. Any aircraft brokers involved want the deal to go through with as little cost to them. So, they try to have someone else involved with the aircraft pay for the repairs. In the end, it falls on the shoulders of the technician or maintenance organization to evaluate the aircraft and find anything that is wrong or that could cause a problem in the future. That information is passed on to the buyer who presents it to the seller to decide what does or doesn't need to be fixed and who will pay for which repairs. Usually, the buyer and seller write a contract to have the cost of repair of the "unairworthy" items paid by the seller and any items that need repair as an improvement or to prevent a later issue paid by the new owner. Since neither party wants to spend any extra money, the airworthiness decision by the technician or maintenance organization becomes the hot topic and could be a deal breaker. These technicians have their decisions and integrity questioned by everyone involved just because no one wants to spend any more money on the aircraft.

Airworthy means the combination of two things:

1. The aircraft must conform to its Type Design (FAA Order 8130.2G changed the word *certificate* to *design*)(or properly altered condition), and
2. The aircraft must be in condition for safe operation.

The aircraft must be both things. If the aircraft is only one or the other, then it is not considered airworthy and should not be flown. Here are some examples:

1. The instrument panel is held in place with six screws attached to nut plates; however, one nut plate is striped out and will not hold onto a screw. The prospective new owner wanted it fixed because it did not meet type design of all screws working. The current owner said everything was correct according to the parts book so it meets the type certificate and the other five screws are more than sufficient to keep the panel in place so they thought it was in condition for safe operation. Who do you think is correct?
2. The windshield has a .02 inch crack coming from an attach hole; however, the aircraft maintenance manual says the limit where the windshield has to be replaced is .2 of an inch from the attach hole. The buyer says it must be replaced because it does not meet

type certificate as it has a crack and type design does not allow a crack. However, the seller says it is the correct windshield and in condition for safe operation because the crack is within limits. Who is correct?

3. The left hand flap trailing edge has a quarter-size spot of missing paint and heavy surface corrosion. (Less than .001% of the flap surface area) The buyer says it must be repaired because type design does not include corrosion. The seller says it is the correct flap and is in condition for safe operation. Who is correct?
4. The aircraft lead acid battery is not the correct battery according to the parts manual, which only shows nickel cadmium batteries. The buyer says it must be replaced because it does not meet the type certificate. The seller says the battery is the same size and amp hour rating, so it is in condition for safe operation. Who is correct?
5. The aircraft's compact disk player is inoperative and the aircraft records only show a cassette tape player installed. The buyer wants the CD player fixed because it is not in condition for safe operation. The seller says it is not essential for flight so it is fine the way it is. Who is correct?
6. Both nose wheels have chips and dents in the bead area of the seat. According to the maintenance manual, there are no chips or dents allowed in that area. The seller says the wheels are original, meet type certificate and hold air, so they must be airworthy. The buyer says that because they are out of maintenance manual limits they have to be repaired or replaced. Who is correct?
7. An expensive part on the aircraft has an airworthiness directive against it and has to be removed from service at 6,000 hours. The current time on the part is 5,500 hours. The seller says it is airworthy and the buyer says it is not. Who is correct?
8. The galley counter top has a large chip, which shows the structure under the surface. The buyer wants it repaired or replaced because he or she believes it does not meet type design but the seller says it is structurally safe and it is only a cosmetic issue so it is in condition for safe operation. Who is correct?

Here are some standard questions to ask for meeting type certificate (or properly altered condition):

1. Is the item in question in the Manufacturer's Parts Manual? Yes, it meets type certificate. No, it might not meet type certificate.
2. Is the item in question in the Component Parts Manual? Yes, it meets type certificate. No, it might not meet type certificate.
3. Is the item in question in an Instruction for Continued Airworthiness? Yes, it meets type certificate. No, it might not meet type certificate.
4. Is the item in question in the data on the back of an FAA Form 337? Yes, it meets type certificate. No, it might not meet type certificate.
5. Is there a maintenance log entry to show that the aircraft has been properly altered to add this item to the aircraft? Yes, it meets type certificate or properly altered condition. No, it might not meet type certificate and might not be allowed.
6. Is the item in question installed under a Parts Manufacturing Authority (PMA)? Yes, it meets type certificate. No, it might not meet type certificate.

If all the answers above are no, then the aircraft probably does not meet type certificate (or a properly altered condition). If one is answered yes, then the aircraft meets its current type certificate or a properly altered condition.

Here are some standard questions to ask to determine being in condition for safe operation:

1. Does this discrepancy fall within the manufacturer's limits? Yes, then it can remain in service. No, then it could be unairworthy.
2. Does this discrepancy fall within any published limits? Yes, then it can remain in service. No, then it could be unairworthy.
3. Will this item continue to perform its tasks (with the discrepancy present) until the next inspection? Yes, then it can remain in service. No, then it could be unairworthy.
4. Has the experienced technician or maintenance organization determined that the defect is safe and could remain in service? Yes, then it can remain in service. No, then it could be unairworthy.

If all the answers above are yes, then the aircraft probably is in condition for safe operation. If one is answered no, then the aircraft should be grounded until maintenance is performed.

Often, the shop is its own worst enemy. Technicians could do a better job of articulating the discrepancy in precise terms. Limits need to be fully understood by the inspector prior to declaring a discrepancy in the work order.

Consider these tips when performing or contracting your next pre-purchase evaluation.

Be very specific and descriptive when describing the work-scope to be performed as the pre-purchase evaluation.

Discrepancy should be described in clear and concise terms. Be excruciatingly detailed with discrepancy description.

Define limits for out-of-limits inspection findings in the discrepancy. This is especially important when wear and tear is the reason for the discrepancy.

Don't issue any discrepancy reports until ALL inspections are completed.

Be very descriptive about system operational failures. Essentially, describe how the system works normally and what is not normal about its observed operation. Often the contracted parties have no experience with the type being inspected and rely on you for their education.

--Example--

Issue:
Because of a window leak, the aircraft is considered not to meet its "Type Design."

Response:
The FAA postulation that an aircraft does not meet its type design because of a window leak (presumed to mean the cockpit window), and is, therefore, unairworthy, is a flawed and an incorrect interpretation of the rules and current and past FAA policy.

In order for an aircraft to be deemed airworthy, two conditions must be met. The aircraft must meet its type design and be in condition for safe flight.

Definition Of The Term "Airworthy" For U.S. Type Certificated (TC) Aircraft.
Although the term "airworthy" is defined in 14 CFR § 3.5(a), a clear understanding of its meaning is essential for use in the FAA's airworthiness certification program. Below is a summary of the conditions necessary for the issuance of an airworthiness certificate. A review of case law relating to airworthiness reveals two conditions that must be met for an aircraft to be considered "airworthy." Title 49, United States Code (49 U.S.C.) § 44704(c) and 14 CFR § 21.183(a), (b), and (c) state that the following two conditions are necessary for issuance of an airworthiness certificate:

a. The aircraft must conform to its type design. Conformity to the type design is considered attained when the aircraft configuration and the engine, propeller, and articles installed are consistent with the drawings, specifications, and other data that are part of the TC. This includes any supplemental type certificate (STC) and repairs and alterations incorporated into the aircraft.

b. The aircraft must be in condition for safe operation. This refers to the condition of the aircraft relative to wear and deterioration, for example, skin corrosion, window delamination/crazing, fluid leaks, and tire wear.

Note: If one or both of these conditions are not met, the aircraft would not be considered airworthy. Aircraft that have not been issued a TC must meet the requirements of paragraph 200b of this order.
(Reference: FAA Order 8130.2G, Paragraph 200)

Conclusion:
A window leak that appeared as an intermittent discrepancy would fall into the safe operation (second condition for the aircraft to be airworthy) aspect of the above two conditions. The agency would have to prove that the aircraft was unsafe because of the window leak. The only way to show that the aircraft is unsafe is to prove the window leak would pose a danger to the safe operation of the aircraft. This clearly was not the case.

It is our understanding that the maintenance manual was followed in troubleshooting the air leak discrepancy. Furthermore, the aircraft operated for a period of time (43 flights) with no discrepancies noted by many flight crews.

Accordingly, no violation of the FARS occurred. The case should be closed with a NO ACTION result.

--Definitions--

Wikipedia definition and explanation is as follows (not for a hearing, but supports the agency position):

A **Type Certificate** is awarded by aviation regulating bodies to aerospace manufacturers after it has been established that the particular design of a civil aircraft, engine, or propeller has fulfilled the regulating bodies' current prevailing airworthiness requirements for the safe conduct of flights under all normally conceivable conditions (military types are usually exempted). Aircraft produced under a type certified design are issued a Standard Airworthiness Certificate.

- A Type Certificate (TC) is a design approval issued by the Civil Aviation Authority (CAA) of a given country (such as the U.S. FAA and EU EASA) when the applicant demonstrates that a product complies with the applicable regulations. The TC normally includes the type design, the operating limitations, the Type Certificate Data Sheet (TCDS), the applicable regulations, and other conditions or limitations prescribed by the CAA. The TC is the foundation for other approvals, including production and airworthiness approvals. TCs are normally issued for airframes, engines and propellers.

- An Airworthiness Certificate is only issued to an aircraft that is properly registered and found to conform to its TCDS and be in condition for safe operations. The Airworthiness Certificate is valid and the aircraft may be operated as long as it is maintained in accordance with the rules issued by the CAA