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## **“Risky Business”: Liability for Running an Engine Past TBO?**

Decades ago, when a piston engine reached TBO, most mechanics told the aircraft owner: “*Hey, it’s time for an overhaul*”. Today, there is a general consensus that such a statement is a foolish waste of time and money. Most COPANs have embraced the philosophy of reliability-centered maintenance as espoused by Mike Busch and others, as opposed to complying with arbitrary time-based maintenance intervals.

Still, the wheels spin in the back of an owner’s head: “*Yeah, what if my engine quits way-past TBO? Can I get sued?*” While anyone can file a frivolous lawsuit against anyone else, we should not run scared of them. In the end, we must focus on operating our airplanes in a reasonably safe (and reasonably economical) manner. The statistical likelihood of a 100-hour engine failing is far greater than a 2,000-hour engine that has been properly maintained.<sup>1</sup>

### **What is TBO?**

As part of a piston engine’s certification process, the FAA requires the manufacturer to establish a recommended time between overhauls, or TBO. In the case of an engine being operated under FAR Part 91, compliance with the manufacturer’s TBO is not mandatory. Even if TBO is 2,000 hours, and you’re past 4,000 hours, that excess time is not, in and of itself, a violation of any FAR. However, those FARs do state that every aircraft owner has a non-delegable duty to maintain their aircraft in an airworthy condition.<sup>2</sup> Additionally, every Pilot in Command (PIC) has a similar non-delegable duty to only operate an aircraft when it is in an airworthy condition.<sup>3</sup>

### **Negligence: Essential Elements**

There are four required elements to prove negligence: 1) a legal duty; 2) a breach of that duty; 3) damages; and 4) causation between the damages and the breach. Since there is absolutely no legal duty to overhaul an engine at TBO, that alone cannot be used as a basis for negligence. If a plaintiff’s lawyer attempted to do so, that case would likely get tossed on a Motion for Summary Judgment before it ever got to a jury.

To date, there have been no published civil court cases in the United States in which an aircraft owner was found negligent exclusively for an operating an engine that failed past TBO.

However, what if the engine was speaking to the owner (or PIC), and they failed to listen? If an owner or PIC knows an engine is running rough, is not producing its usual power, or has significant deviations from normal CHTs/EGTs, they better land ASAP and get it diagnosed and resolved before further flight. It might be something as simple as cleaning and gapping the spark plugs (which an owner can do), or it might require the specialized skills of a mechanic. To do otherwise would almost certainly be a breach of a legal duty of those same FARs. Certain cases have told us so.

In 2012, a Cirrus SR22 made an emergency off-airport landing (no CAPS pull) when the engine lost all power. The engine had accumulated 2,978 total hours without ever having been overhauled. The flight instructor admitted routinely operating the aircraft with only five quarts of oil, even though the recommended minimum level was six quarts. Further, cylinder #2's EGT showed fluctuations from the start of the flight, and as fate would have it, that same #2 connecting rod bearing had failed due to a lack of oil. The NTSB's final conclusion:

*“The inadequate servicing and maintenance of the engine and the airplane owner and maintenance personnel's disregard of the manufacturer's recommended engine overhaul schedule and service bulletins, which resulted in an in-flight internal failure and seizure of the engine.”*

Note: the conclusions of the NTSB are not admissible in any civil court proceeding.

In 2007, an aircraft owner's fiancé (a professional pilot) was flying a Cessna 337 Skymaster when the rear engine quit. The aircraft crash landed, causing severe burns to both the pilot and her passenger. They both brought a lawsuit against the maintenance shop that worked on the aircraft, with claims that: a) the engine had been plagued with problems and misdiagnosed; and b) the shop failed to recommend an engine overhaul on the front engine (which was past TBO) and may not have produced enough power in its condition. The verdict against the shop was \$11.35 million.<sup>4</sup> The NTSB's findings (again, not admissible) were:

*“The pilot's failure to utilize all of the power available following an engine failure. Contributing to the accident were the failure of the rear engine for undetermined reasons.”<sup>5</sup>*

### **What Does All This Mean?**

As an owner, don't wait for failures to happen, either before or after TBO. Many future failures can be easily diagnosed and prevented before they happen. Change the oil at least every 50 hours, send the samples out for laboratory oil analysis, and make sure your mechanic knows how to read any adverse trends. Borescope the engine frequently, preferably every 100 hours. Either know what to look for, or email the pictures of the cylinders and valves to someone who does. If you see erratic CHTs/EGTs, don't assume it's a bad probe or connector. Get it checked out, and rechecked if need be. Look at your engine data on the ground for what you may have missed in flight.

Running an engine past TBO is fine, but engines do require work (and someday, an overhaul) “on condition”. Owners have a serious obligation to carefully monitor their engine's health using all available tools, so they know what “condition” their engine is really in. Eventually, your engine will tell you when it's ready for an overhaul.

*Scott Williams, Esq. represents buyers and sellers in aircraft transactions, and provides FAA certificate enforcement defense to all pilots. He is a panel attorney for AOPA's Pilot Protection Services. Scott is a COPA Board member and serves as our Vice President.*

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<sup>1</sup> [https://www.avweb.com/news/savvyaviator/savvy\\_aviator\\_45\\_how\\_risky\\_is\\_going\\_past\\_tbo\\_195241-1.html](https://www.avweb.com/news/savvyaviator/savvy_aviator_45_how_risky_is_going_past_tbo_195241-1.html)

<sup>2</sup> FAR 91.403(a)

<sup>3</sup> FAR 91.7(a)

<sup>4</sup> [http://avstop.com/news\\_december\\_2011/11\\_million\\_verdict\\_against\\_winner\\_aviation\\_for\\_negligence\\_resulting\\_in\\_plane.htm](http://avstop.com/news_december_2011/11_million_verdict_against_winner_aviation_for_negligence_resulting_in_plane.htm)

<sup>5</sup> [https://www.nts.gov/layouts/nts.aviation/brief.aspx?ev\\_id=20070909X01342](https://www.nts.gov/layouts/nts.aviation/brief.aspx?ev_id=20070909X01342)