

Response to NPRM

Docket No. FAA-2012-0002; Directorate Identifier 2011-NE-42-AD

I am responding as Technical Director of a 1200+ member aircraft owners group, The Twin Cessna Flyer, as well as an active DOM for a maintenance facility specializing in the maintenance of nearly 200 piston twin Cessna's annually. I have over 35 years of experience working on aircraft piston engines equipped with cylinders of all the various manufactures. Many of the aircraft I currently maintain are equipped with the ECi cylinders that are the subject of this NPRM.

It is my opinion that this NPRM, as written, is unwarranted and if implemented, will reduce safety, not improve it.

Below are my comments:

1) NPRM Discussion of root cause noted: Discussion states, "*the exact root cause of each failure mode could not be definitively identified.*" Without causation it is unwarranted to demand the replacement of perfectly airworthy cylinders.

If pilot operations, maintenance procedures, or some other factor is the root problem then the newly installed cylinders will simply suffer the same failure mode at something near the same failure rate.

2) NPRM Discussion of failure rate noted: Discussion states, "*We received multiple failure reports.*" Without specific quantitative reports, how can you make a true estimate of "likelihood?" And without that, how do you complete an accurate "Risk Assessment Matrix?" Additionally, if the failure rate is at or below that of initial mandated certification rates, then this proposed action is completely unnecessary.

3) NPRM unfairly targets ECi with no attempt to identify ECi failures in comparison to other manufacturers or other in-service cylinders, such as reworked or overhauled cylinders.

Are ECi's cylinder failures rates, per installed units, in excess of other types? If not, then the risk assessment is flawed.

It would be an owners option to install multiple-cycled, re-barreled, channel-chrome cylinders as legal replacements for perfectly functioning ECi units, likely resulting in an even greater failure rate.

4) Cost impact estimations are unrealistically low: In Cessna Aircraft's "Removal and Installation Labor Allowance Manual" a Cessna 340A cylinder replacement is shown as 6 hours for first cylinder on each side with 3 additional hours for each additional cylinder.

The aircraft manufacturer thus states that a top overhaul would take 24 hours, far exceeding the NPRM's estimated 18 hours per engine, which at the assumed \$85 per hour, understates the cost by over \$3,000,000 alone.

Additionally this action will assuredly create some, if not a great deal of parts shortages. Experience shows that shortages can cause dramatic increases in parts pricing, further increasing the overall costs to owners.

Finally, no cost estimates have been included to address the many commercially operated aircraft that may experience long periods of forced grounding while waiting on parts.

5) Small Entity Impact: The NPRM regulatory evaluation statement of “*No significant economic impact on a substantial number of small entities as defined in the Regulatory Flexibility Act (RFA)*” is totally incorrect. A vast majority of the aircraft affected by this proposal are owned, and operated by entities (small business, small organization) defined in RFA 601.0 para (3) thru (6). A simple registry check can verify the large number of these affected aircraft registered to small corporations and LLC's. Further, a 2010 survey by The Twin Cessna Flyer owners group indicated that over 60% of all its members use their airplanes for business purposes. This percentage is likely much higher for the larger twin Cessna models that are more likely to have ECi cylinders.

6) Additional safety considerations: Mandating such heavy maintenance (multiple cylinders removed and replaced) also comes with a great deal of risk. Every maintenance event of this complexity has a great deal of error risk associated with it.

While agreeing that cracked cylinders need to be removed, the mandatory replacement of good units carries a high risk of inducing a much greater engine failure rate instigated by unneeded maintenance events. Even at a meager error rate of 1% we would negatively affect 60 engines, much higher than the mentioned 30 cylinder failures.

7) The maintenance procedures called for are out-of-date and incomplete: The NPRM proposal, para (h) (3) specifies that as part of the reoccurring inspection phase a standard differential compression test be used stated that “*pressure reading of less than 55/80 pounds per square inch gauge pressure...remove the cylinder from service.*” The directions in the NPRM goes on to specify use of Continental service bulletin SB96-12.

Performance of the differential compression check is now defined in Continental service information SB03-3. Allowable leak rates can be far below the proposal 55/80 minimums stated in the NPRM.

Second, the proposal requirement for leak checks is supposedly to identify cracks, yet para (h) (3) does not note the critical need of determining the cause of less than 55/80 PSIG reading.

Many low compression readings can be a result of poor ring fit, combustion byproducts in the valve interface, etc., that have nothing to do with cylinder cracking.

Thus the NPRM directions would result in the premature removal of non-cracked, perfectly airworthy cylinders just because of a less than 55/80 compression check.

8) Removal mandates of easily inspected items: While agreeing that in-flight cylinder failure creates an unsafe condition, the planned early retirement of 1000's of serviceable, non-cracked cylinders seems totally unwarranted.

As noted in the NPRM para (h) as well as in ECi and Continental service information it is possible to identify cracks in cylinders long before catastrophic head failures occurs.

My recommendation would be to continue some level of recurring inspection to the affected cylinders, and only if they are found cracked to then mandate removal, thus avoiding many of the potential additional safety risks and unnecessary costs.

This approach would provide for an adequate level of safety without undue burden.

In Conclusion: Due to the above mentioned inaccuracies in the proposal, lack of adequate justification data, and lack of factual causation I feel that this proposal is seriously lacking in merit.

My recommendation is to withdraw this proposal as written.

Tony Saxton

Director of Tech Support – The Twin Cessna Flyer

Owner and DOM, TAS Aviation

National Aviation Maintenance Technician of the Year - 1993