



In the News

Press Release

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FOR IMMEDIATE RELEASE

FAA Issues Proposed AD that will Cost Aircraft Owners \$83 Million

ECi believes the FAA's proposed action will degrade safety, not improve it.

Affected owners and associations have 60 days to submit comments.

SAN ANTONIO, TX. August 12, 2013 — The FAA proposed an Airworthiness Directive (AD) to limit the allowable time-in-service of more than 30,000 TITAN brand 520- and 550-series cylinder assemblies installed on about 6,000 Continental IO-520, TSIO-520, IO-550 and IOF-550 engines. The proposed AD affects a broad serial number range of cylinder assemblies (p/n AEC631397), and would require that these cylinders be removed from service at 1,000 hours time-in-service. In addition, about half the affected cylinders would be required to be removed from service within 25 hours if their time-in-service is less than 500 hours. Cylinders permitted to continue in service would be subject to repetitive 50-hour inspections until they are retired. The FAA estimates cost of compliance to be \$82,620,000.

Engine Components International (ECi) believes that the FAA's proposed AD is unwarranted, inappropriate, and unnecessarily punitive for the owners of the affected aircraft. The FAA's action was prompted by 30 instances (out of 30,000 installed) of head-to-barrel junction failures in TITAN[®] cylinders, but none of these failures resulted in an accident or injury. Such failures result in a loss of 20% of engine power, leaving ample power to make a safe landing, which is exactly what happened in every case. In fact, FAA regulation requires that engines must be designed to operate safely with one cylinder not functioning. A substantial number of the failures occurred in twin-engine aircraft, where the safety consequences were even less significant. In fact, there have been more than 1,200 similar head-to-barrel failures in 520/550 cylinders manufactured by other Production Approval Holders for which the FAA has taken no action.

Airmotive Engineering Corp (AEC), sister company of ECi and the Production Approval Holder for the TITAN cylinder, provided the FAA with a detailed analysis of such failures from the FAA's own Service Difficulty Report (SDR) database showing that the failure rate of TITAN cylinders is the lowest in the industry.

The FAA's action arose out of a February 2012 safety recommendation by the NTSB (A-12-7). However, in a move that is almost unprecedented, the FAA's proposed AD goes far beyond what the NTSB recommended. The NTSB's recommendation was to remove the cylinders from service when they reached Continental's recommended engine TBO (typically 1,600 to 2,200 hours), but the FAA is proposing to remove them from service at 1,000 hours, and in addition to remove a substantial number of under 500-hour cylinders immediately.

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On February 14, 2013, top executives of AEC met with representatives of the FAA and NTSB to present results of extensive research performed by the company—including test-cell runs, torture testing of head-to-barrel junctions, and mathematical finite-element modeling—which demonstrated conclusively that the head-to-barrel junctions in these cylinders would not fail if the cylinder was operated within its design temperature limits. AEC explained to the FAA and NTSB that the few separations suffered were due to operation of the cylinders with CHTs well above the maximum allowable operating limit of 460°F. In some cases, the failures were caused by improper leaning and powerplant management by the pilot; in other cases, they were caused by abnormal combustion events such as heavy detonation and pre-ignition that can cause thermal runaway and rapidly increase CHT to temperatures of 650°F or more. No cylinder assembly from any manufacturer can survive such temperatures for more than a few minutes.

There is no empirical or theoretical evidence that life-limiting the cylinders will reduce the incidence of head-to-barrel separations. To the contrary, industry experience demonstrates that the FAA's proposed AD would actually degrade safety rather than improve it.

The FAA's action would result in thousands of premature "top overhauls" where all six cylinders are removed and replaced in hundreds of general maintenance shops by A&P mechanics who are not engine specialists. Industry experience shows that there is a substantial risk of catastrophic engine failure following such top overhauls. All eight through-bolts that clamp the crankcase halves together are un-torqued, opening the door for main bearing displacement and other potentially catastrophic issues. In addition, the replacement cylinders are then broken in "in the field" rather than on the test stand in an engine shop, which often leads to improper break-in and excessive blow-by that can overheat and compromise the integrity of the head-to-barrel junction of the replaced cylinder.

Affected owners of these cylinders, and the organizations that represent their interests (AOPA, EAA, American Bonanza Society, Cessna Pilots Association, Cirrus Owners and Pilots Association, Twin Cessna Flyer, Malibu/Mirage Owners and Pilots Association, etc.), have 60 days to submit their comments to the docket #FAA-2012-002. The submission deadline is October 11, 2013. Detailed instructions for submitting docket comments can be found on the ECi website at www.eci.aero/NPRM, together with the NPRM itself, the research results and data AEC presented to the FAA and NTSB, and copies of correspondence with the FAA and NTSB.

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