

Record of Phone Conversation

21 Sept 2017

On September 5, 2017 I called the service department at Lycoming Engines. I was put in touch with Mike Caldera, Manager of Air Safety.

I called to discuss the engine issue with N957TA Cessna 172S, involved in accident, NTSB number WPR17LA176.

After the tear down of the engine, which took place on August 23, 2017, in Auburn, Washington.

Mike was familiar with the accident since the NTSB had sent an email with some preliminary pictures and notification of the accident.

During the conversation I emailed Mike several pictures from the tear down to document what we saw. I stepped Mike through the tear down and identified what we saw step by step as we took it apart.

My main goal in talking with Lycoming was to get their take on the issue but mainly to talk about the issue of the accessory case bolts and the right magneto. As the aircraft was removed from the water and the cowls taken off, the first thing that was noted was that the right magneto(mag), top bolt was loose and backed off to allow the mag to become disengaged and presented about a 3/8' inch gap at the top of the mag mounting to the case. It was also noted that several bolts were missing for the accessory case around the bottom.

During tear down, we removed the right mag and found that it was of course loose in its mount. We also found that there was no gear issues with the mag. On the mag gear or the accessory case gear, both looked normal. We did find metal flakes all around the mag gear as it was removed.

After all the accessories had been removed from the case, we then looked closely at the accessory case counting itself. We found four (4) bolts missing from the mounting, three on the bottom right and one on the bottom left. We also found one bolt more than half way backed out on the left bottom area of the case.

We then started to remove the remaining bolts from the case. At this time we found that more than half of the bolts were less than tight, far less than normal torque value of the mounting bolts for the accessory case to the engine block.

Also to note at this point is that all of the threads on the missing bolts were found to be normal, no stress was noted on the case threads. On the bolt that was half way out, there was no stress on its threads either. On all the bolts that held the accessory case on, no thread stress was noted on the bolts or the case.

After sending Mike several pictures of the engine and talking about the actual crank issue that we found, I asked for his opinion of what may have taken place with this engine.

Mike indicated to me that his opinion was that the right mag had come loose and backed out of its mount, thereby allowing all the oil to exit at the mag mounting hole. After the oil was gone his opinion was the engine did not last long before the middle bearing on the crank shaft failed and the crank shaft broke in half.

I asked Mike a direct question to find out what his experience told him about the missing bolts and the fact that there was no stress on any of the bolts or case threads. He indicated that this would only happen if the bolts when last installed had not been correctly installed to the proper torque value indicated by the manufactures manual.

As a matter of fact, the accessory case was removed 122 hours in front of the accident time frame, it was removed to replace the oil pump body, drive and impeller. When the case was removed no issue were noted with this oil pump body, drive or impeller.

At the tear down, no issues were found that indicated how the oil left the engine or what led to the bearing and crank shaft failure. This opinion by Lycoming fits what left of the engine and indicates that the accessory case and accessories installed (mag) may not have been installed and properly torque at the time it was removed and reinstalled 122 hours before the accident. This was the opinion of the Lycoming representative.

Bruce Kitelinger

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