

Investigator Name: Brian C. Rayner
Title: Senior Air Safety Investigator
Division: AS-ERA

Date: 07/10/2024

Subject: ERA23LA112 Middlefield, Ohio

Contact: Russell Gait – Air Safety Manager – Lycoming Engines

Mr. Gait was consulted on this case in overlapping telephone and email conversations. He was asked for an update on the spark plugs that were sent to the Lycoming factory for examination.

Due to interruptions in staffing and engineering capabilities, the full range of tests available had not been completed as of this writing. After consultation with Mr. Gait, it was decided that further testing of the spark plugs was unnecessary.

The conversation was based on the content of an email excerpted below:

The report is mostly completed, with at least one good Keyence photo of each spark plug, with observations noted about their general condition. Shortly after that work was done, we lost our radiographer, and it took a while for us to get back up and running for X-ray work. We want to include X-ray inspection for the spark plugs, and that hasn't yet been completed. If the NTSB investigator wants us to just send what we have, we can finalize our report and send it out, without X-ray. One of the spark plugs has a badly damaged (cracked) insulator - the #5 Top, and 3 others appear to possibly also be cracked. X-rays would allow us to see more of the internals, including the brazed joint below. If NTSB wants us to do the X-ray, we can probably get that done some time next week. The new digital system is now in place and functioning, but we have some room renovations in progress that may take a few more days.

According to Mr. Gait, detonation events were typically associated with a lean fuel mixture, and the damage displayed was likely the result of detonation in the #5 cylinder.