



RECORD OF CONVERSATION

All persons listed were interviewed by Zoë Keliher

The following is a summary of conversations:

MARK KETTERING (AEROMOMENTUM, INC)

Mr. Kettering stated that the airplane did not have a design or instructions for a cowling. He stated that Aeromomentum did provide a recommendation that the differential of air pressure over the engine could not be more than 5 inches of water pressure. This was a conservative estimate as they have tested it at 3 inches with normal function. He stated that the normal methodology for testing the differential is to use a standard manometer loop consisting of tubing that connects a piccolo tube in the front of the radiator to a piccolo to behind the radiator. He stated that because of the design of the airplane, specifically with slats on the leading edge, it had an unusually high angle of attack. With such a high angle of attack, the bottom of the airplane would have a high air pressure at the firewall. With no aft venting, the air pressure behind the radiator would likely build to be equivalent to that of the ram air. This would result in overheating and the engine would subsequently experience detonation.

The AeroMomentum installation manual stated that:

The radiator must be mounted so that there is a minimum of 3 inches of H₂O differential air pressure between the front and back. If you do not have this differential air pressure there will not be adequate airflow for cooling. You can use a water manometer to verify this required pressure and airflow. In general, the inlet should have ram air and the outlet should be in a low-pressure area. The inlet area must be no less than 40% the area of the radiator (more for slower aircraft) and the outlet should be about twice the total inlet area. Keep in mind aerodynamics and how they affect the airflow both in and out of the cowling. Sharp corners at the lower edge of the firewall can have a profoundly reduce the exit airflow. High pressure at the bottom of the aircraft especially during climb can reduce the exit airflow. Obstructions like the tailpipe can reduce the exit area and airflow.

High engine temperatures can also cause preignition, detonation and knocking that will reduce power and can cause catastrophic engine failure.

WILLIAM SOTO (PILOT)

Mr. Soto stated that he built the cowling with no plans and did not do any tests after the install.

Zoë Keliher
Air Safety Investigator
Western Pacific Region