Air Accident Investigation Unit- (Belgium)
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INFORMATION NOTE 2010-1.rev1
Carbureted piston engine start in cold weather

Reason for this Note .

Several engine fires during start have happened during the winter season and drew the attention of flight instructors. During their analysis of the problem, they determined that many engine fires are caused by improper starting procedures.

Application: carbureted (as opposed to fuel-injected) piston engine.

An engine fire is a potential danger for the airplane and its occupants, and therefore must be avoided, and if it occurs, it must be recognized, handled with, and the damage must be assessed and dealt with before the next flight. Besides the immediate danger of an engine fire, the damage caused by a fire, or its extinction, if not corrected properly, constitute a potential hazard to further flights.

SAFETY PRECAUTION.

An engine fire may occur during start and remain unnoticed by the pilot. This mostly happens in cold weather when the engine is started without preheat, or when the engine is flooded.

It is therefore **highly recommended** that an **outside attendant be present**, preferably with an extinguisher at hand, **to monitor the engine start**, and be able to notify the pilot, and take appropriate action.

CORRECT STARTING PROCEDURE.

Proper cold weather starting procedures call for **conscientious application of the aircraft manufacturer's recommendations**.

The correct procedure is to be found in the airplane's flight manual under "normal procedure" under "engine start" and /or "cold weather operation". The **CAUTION NOTES** must be carefully understood and applied.

In particular, some engines are equipped with a manual priming system, for the purpose of easy starting in cold weather. The manual primer is actually a small pump that draws fuel and injects it into the cylinder or the engine manifold. ***This system is NOT to be confused with the throttle****. In some cases, pumping the throttle (more than is required) during start in lieu of using the priming system may lead to an engine fire due to accumulation of raw fuel in the intake air duct.*

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REACTING.

When an engine fire occurs during start, the pilot must be prepared to react immediately. This is not a good time to open the flight manual and start reading.

Before starting the starting sequence, the pilot must ensure he's thoroughly familiar with the procedure.

AFTER THE FIRE.

The fire may have caused damage to the air filter, and / or the external parts of the engine.

Also, the use of an extinguisher may have caused damage to the engine, for example clogging of the air filter.

After the fire, **always call a mechanic** to assess the potential damage, this to ensure the airplane remains airworthy.

MAKING SURE.

OK, you may be aware of the dangers of engine fire, and you know what to do, that's fine, but how do you know that the pilot who flew the airplane before you was as knowledgeable as you are?

A quick look at the engine cowling, the air intake and the engine itself for obvious signs of past fire can reassure you.