

Chapter Five

starting an engine in excessively cold weather takes its toll on engine life. This is one area where synthetic oils, with their very low temperature flowability, have a significant impact on engine longevity. It is worth noting that even during summer months, engine oil still needs some warm-up time before flight.

It is important to change oil and filter at or before recommended times. The dirtier the atmosphere in which you operate, the more frequent the changes should be. There are two considerations that determine when to change oil: engine time and calendar time. It is common for operators to change engine oil every 25 or 50 hours, depending on manufacturer's recommendations. That's fine for aircraft that are frequently flown; however, many aircraft may not fly 50 hours a year. If an aircraft is an infrequent flier, you should consider calendar time. Oil should be changed at least three times per year regardless of engine hours. Oil in low-use aircraft will have a difficult time lubricating the engine because of fuel dilution and condensation.

Oil leaks shouldn't be taken for granted. Most pilots have come to accept oil stains on the underside of an airplane, but engines aren't supposed to leak oil. If there is a puddle under your airplane, or a long wet streak on the fuselage, find out why. If it isn't easily traceable, consult your mechanic. Don't ignore oil leaks; they don't go away by themselves. Knowing your airplane is one of the most important preventive maintenance tips. Every pilot should be familiar with the oil system's normal operating pressure and temperature; significant deviations are symptomatic of a problem and should not go unheeded. Similarly, never continue engine operation if either temperature or pressure exceeds red line; extensive engine damage follows closely behind! It is a very rare occasion when an engine fails without warning!

Another area where oil may show up inappropriately is on the spark plugs. During routine maintenance it is a good idea to check spark plugs for oil deposits. Oil isn't supposed to be able to get to that part of the engine, so you know you have a problem if there is more than just a trace. Bad piston rings are a likely culprit; they may be cracked or worn. This may not necessarily show up on a compression check either. If the compression rings are good, the check will be satisfactory, but the other rings may be bad, allowing oil to leak past. The only other route for oil to get to the plugs would be through worn valve guides.

An often-misunderstood principle is that engines that get little or no use have shorter life spans than engines that are used frequently. That may sound contrary to logic, but it is an established fact. And if you do start an engine, don't just start it; run it for a few minutes and shut it down! The engine case heats up, but before the oil really gets hot enough to boil out water and acid, the engine is shut down. As a result, moisture condenses on the inside of the engine, which leads to corrosion and rust. If you expect your engine to be inactive for a month or more, the engine should be pickled according to manufacturer's recommendations.

When changing oil, remove the filter and cut it open. Inspect the filter element for any contamination. A visible trace of metal in the filter is not always reason for concern. Some occasional metal flecks are normal, but excessive metal particles can indicate impending engine failure and should be taken seriously. Any traces of metal visually found