

## ANN's Daily Aero-Tips (02.25.06): It's Baffling

Sat, 25 Feb '06

### Aero-Tips!

A good pilot is always learning -- how many times have you heard this old standard throughout your flying career? There is no truer statement in all of flying (well, with the possible exception of "there are no old, bold pilots.") It's part of what makes aviation so exciting for all of us... just when you think you've seen it all, along comes a scenario you've never imagined.



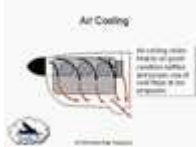
Aero-News has called upon the expertise of Thomas P. Turner, master CFI and all-around-good-guy, to bring our readers -- and us -- daily tips to improve our skills as aviators, and as representatives of the flying community. Some of them, you may have heard before... but for each of us, there will also be something we might never have considered before, or something that didn't "stick" the way it should have the first time we memorized it for the practical test.

It is our unabashed goal that "Aero-Tips" will help our readers become better, safer pilots -- as well as introducing our ground-bound readers to the concepts and principles that keep those strange aluminum-and-composite contraptions in the air... and allow them to soar magnificently through it.

Look for our daily Aero-Tips segments, coming each day to you through the Aero-News Network. Suggestions for future Aero-Tips are always welcome, as are additions or discussion of each day's tips. Remember... when it comes to being good pilots, we're all in this together.

### **Aero-Tips 02.25.06**

Cylinder Head Temperature (CHT) is the most critical engine indication, as far as longevity is concerned. Oil temperature control, on the other hand, is vital for both short- and long-term engine health. The most overlooked component to engine cylinder and oil temperature management is no secret—it's baffling.



Virtually all piston aircraft engines are air-cooled. Ambient air flow through the cowling is not sufficient to cool the engine at high power, however, and it cannot target "hot spots" like the aft side of cylinders or a rear-mounted oil cooler. To increase and direct air flow aircraft manufacturers design baffles that form a tight seal around the bottom and rear of the cylinders. Some installations include extra baffles in other areas of the compartment. Cooling air that flows into the cowling is now forced to follow a specific path, hitting the cylinder "hot spots" and the oil cooler.

### **This Installation Sucks**

Still, ram-air cooling is not sufficient. The volume of air must be increased. That's why you'll find a gap, or cutout, in the lower rear of engine compartments. All it takes is a little "lip" in the rim of the cutout to deflect slipstream air slightly—creating low air pressure at the cowling outlet. Many larger engines have cowl flaps in this area to increase the pressure reduction, and air flow, at low forward airspeeds. "Escape air" through the outlet sucks large volumes of cooling air into and through the engine compartment. An airtight seal created by the baffling makes air flow where it's needed.

*(Note: a few engines use "updraft cooling," with air flow from the bottom up. "Escape air" in these installations goes out through louvers on the upper cowling sides—like lots of little cowl flaps).*

**Aero-tip of the day:** Inspect the engine baffling carefully during walk-around and more thoroughly once a month or so. Have cracked, broken or missing sections of engine baffles repaired or replaced without delay.

