



# TAKE FIVE...

**for safety**  
Five minutes reading  
could save your life!

## ***Thunderbolts and Thunderstorms***

### ***Thunderbolts:***

Seen as the most spectacular part of a thunderstorm, thunderbolts do not pose a serious risk to aeronautics: "in a metal airplane, the crew is sheltered from the direct effects of an electrical discharge:"

- A flash of lightning can temporarily blind the pilot.
- The radios and electronic equipment can be damaged, and the thunderbolt's "tracks" can be left on the aircraft's fuselage.
- Serious accidents caused by lightning are extremely rare.
- However, lightning is a good indication of the force of the thunderstorm.
- The more frequent the flashes of lightning, the more violent the thunderstorm may be, and therefore should be avoided.
- Conversely, when the frequency of the flashes of lightning decreases, the thunderstorm is starting to dissipate.

### ***Thunderstorms:***

There are certain requirements for a violent thunderstorm to occur:

- unstable air from the surface to high altitude;
  - high relative humidity at low levels;
  - dry air at high altitude;
  - a lifting factor such as a mountain or cold front.
- "A thunderstorm can contain all the dangerous meteorological conditions known to aviation:"
- low ceilings and poor visibility;
  - hail, icing;
  - wind, wind gusts, microbursts (wind shear effects);

- turbulence;
- squall lines;
- tornadoes;
- thunderbolts (lightning).

### ***Recommendations when there is a thunderstorm:***

- Do not takeoff or land: turbulence may cause a loss of control.
- Flying under a thunderstorm, even with good visibility, is dangerous because of the effects caused by wind shears and turbulence.
- If a thunderstorm covers more than half of a region, by pass it visually or with a radar.
- Frequent lightning flashes indicate a violent thunderstorm.

### ***In a thunderstorm (when it cannot be avoided):***

- Fasten your seat belt and secure all loose objects in the cabin.
- Plan your route so that you spend the least amount of time possible in the thunderstorm.
- To avoid the worst icing conditions, determine a path where the temperature is below  $-15^{\circ}\text{C}$ .
- The carburetor and Pitot tube heating must be activated.
- Turn on the lights in the cockpit to reduce temporary blindness by the lightning flashes.
- Concentrate on the aircraft instruments.
- Do not modify the instrument adjustments; maintain a reduced cruising speed.
- Avoid any unnecessary manoeuvring through turbulence; corrections will only increase the strain on the structure of the aircraft.
- Never turn around once you have entered a thunderstorm.

