

Leadplane Training Lesson Plan

Bank Angle

07-03-N9065-HO

Objective:

To familiarize the student with factors affecting bank angle during the leadplane profile (Phase 1).

To develop the students proficiency in bank angle control in a training environment (Phase 2).

Content:

Why does an airplane stall? The maximum angle of attack has been exceeded. Technically, it doesn't matter whether the airspeed is high or low, or whether the bank angle is zero or 90 degrees. However, practically speaking, airspeed and bank angle have a lot to do with stalling an airplane.

As bank angles increases the load factor will increase on the aircraft and thus the stall speed is increased. Bank angles of 60 degrees produce a 2 G load factor.

All turns must be coordinated. If the bank angle used during the leadplane profile produces a condition where the aircraft will over shoot final, the run should be discontinued. Trying to salvage a run by over banking or using excessive rudder in the direction of the turn is unacceptable. These situations could cause the aircraft to stall/spin at a low altitude and be unrecoverable.

When leading airtankers, shallow to medium banked turns no greater than 30 degrees should be used. On occasion, the possibility may exist where terrain or conditions dictate maneuvering with bank angles greater than the standard 30 degrees. In such circumstances, angles of bank up to, but not exceeding, 45 degrees are acceptable. Inform the airtanker pilot ahead of time if bank angles in excess of 30 degrees are anticipated.

When leading tankers, slow to moderate roll rates should be used. Larger aircraft tend to have slower roll rates than the leadplane aircraft.

If able, patterns should be planned so that a constant bank angle can be held from downwind to final.

Caution should be used to avoid asymmetrical G loading. When an aircraft is maneuvered in two plains simultaneously, the aircraft is subjected to asymmetrical G loading. Asymmetrical G loading creates a differential in the loading of one wing relative

to the other. The wing on the outside of the turn is subjected to greater G forces than the wing on the inside of the turn. This can result in structural damage to the aircraft.

An airplane's asymmetrical G limit for any given weight is 2/3 of the symmetrical G load limit at the same weight for the same aircraft. Therefore an aircraft can be damaged when flying with asymmetrical G loads even if the aircraft is flown below the V_a speed for a given weight.

The primary goal of maneuvering the aircraft about one axis prior to another is to avoid asymmetrical G loading.

Completion Standards:

The lesson is complete when the student can demonstrate bank angle control, within the phase bank angle limitations. Standard bank angles will be 30 degrees unless briefed and then up to 45 degrees.

For Phase 1 (training environment): Target bank angle within ± 15 degrees in the FTA orbit, and within ± 15 degrees during the leadplane profile.

For Phase 2 (fire environment): Target bank angle within ± 10 degrees in the FTA orbit, and within ± 5 degrees during the leadplane profile.

Safety will never be in question and bank angle control will be accomplished without the reliance on the evaluator.