Leadplane Training Course

Leadplane Training Course

The Basic Lead Profile

The Basic Show Me Profile

The Basic Chase Profile

Leadplane Training Course

This is the visualized location for the retardant drop in this basic lead profile example.

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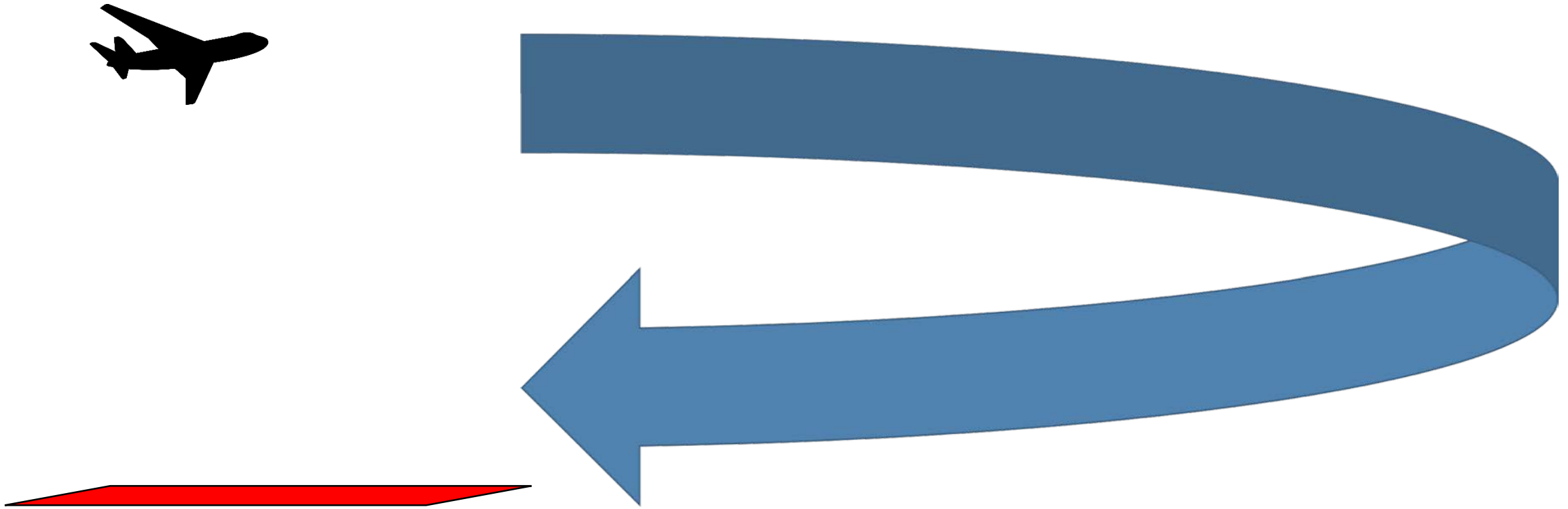

Downwind

140 knots or appropriate airspeed for the tanker.

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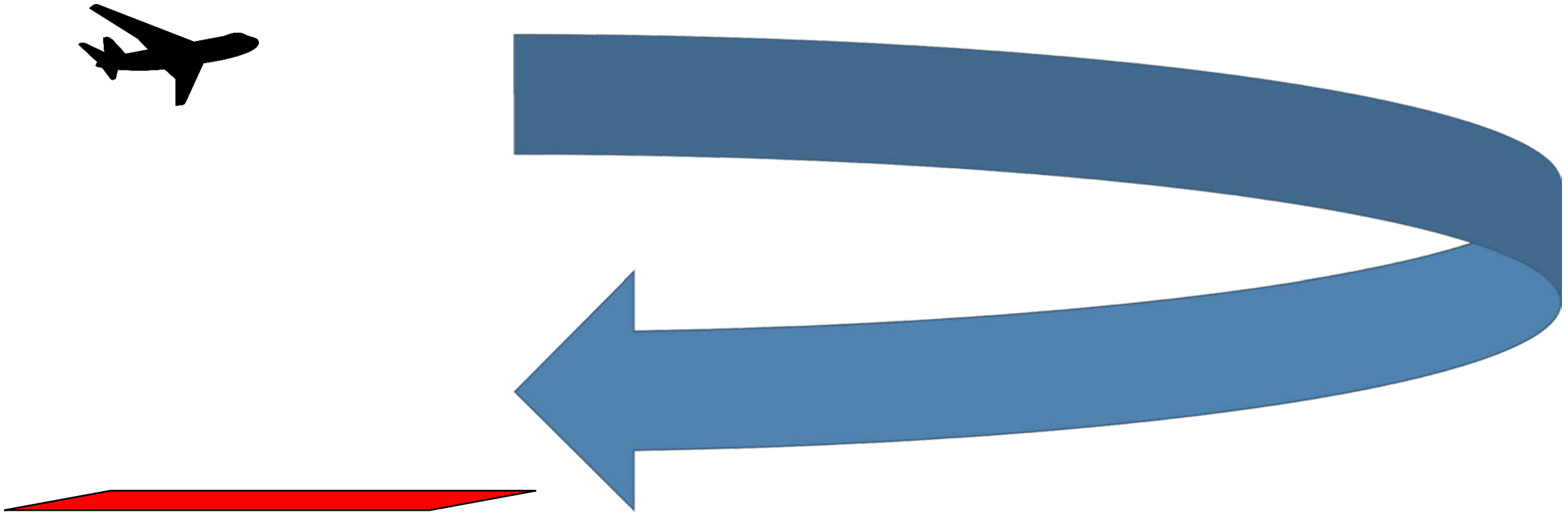

Downwind

Flaps approach or as appropriate for lead aircraft.

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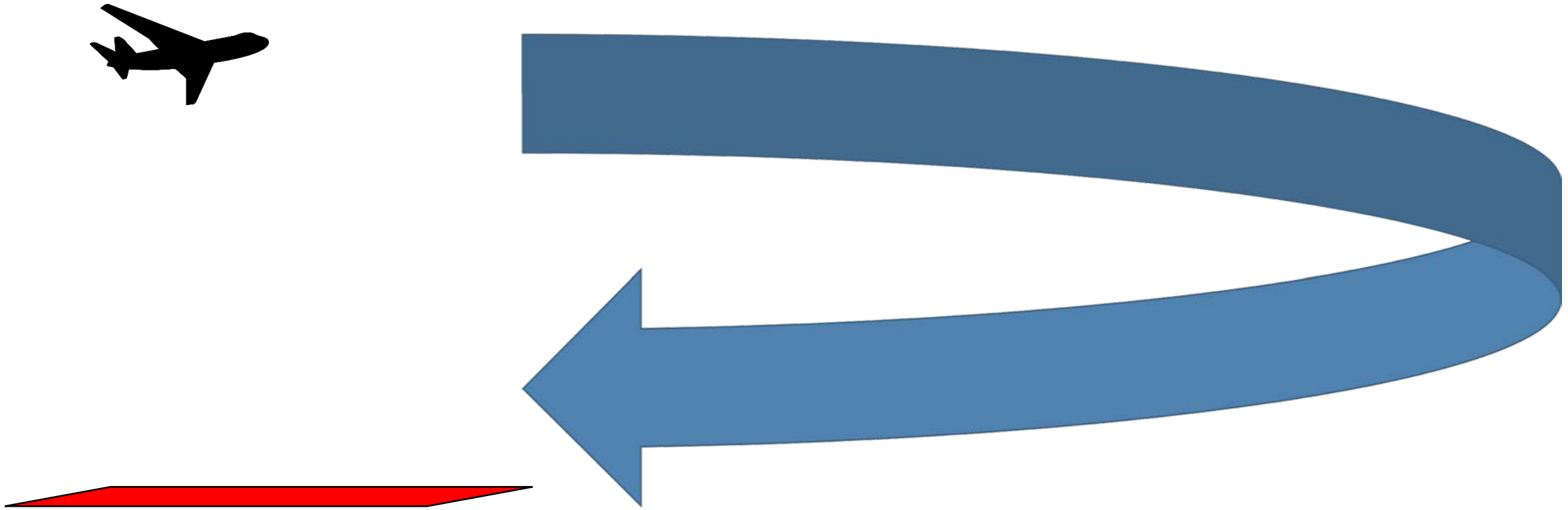

Downwind

Props max or climb setting as appropriate.

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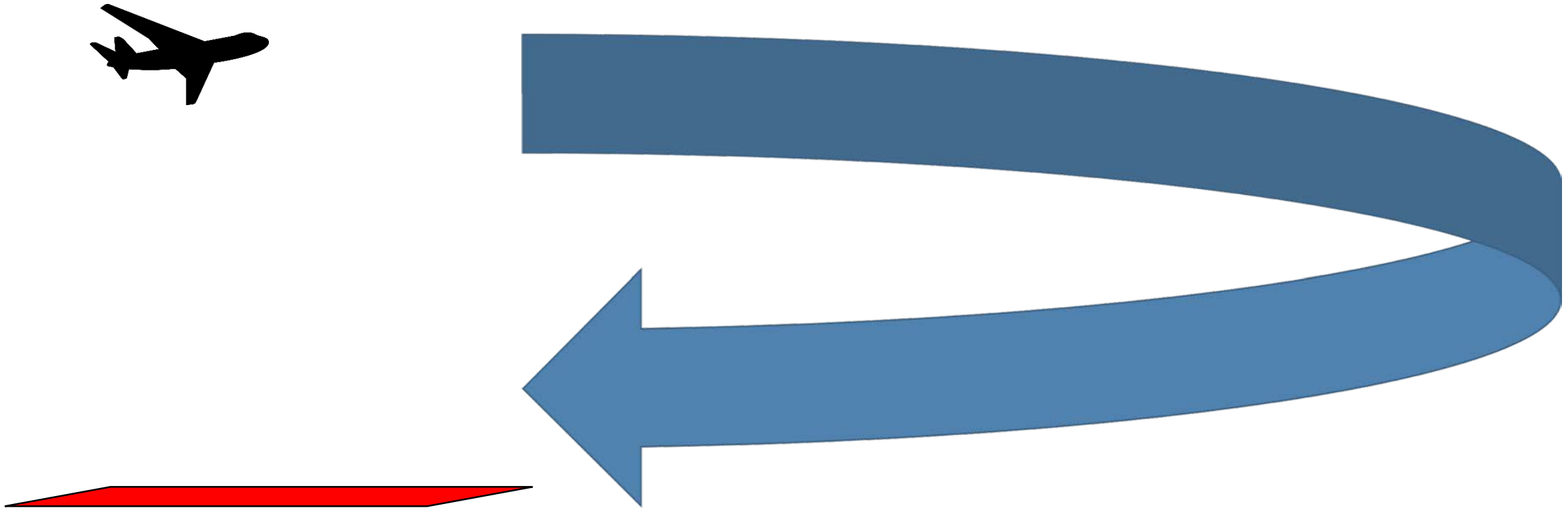

Downwind

800 to 1000 above the drop altitude.

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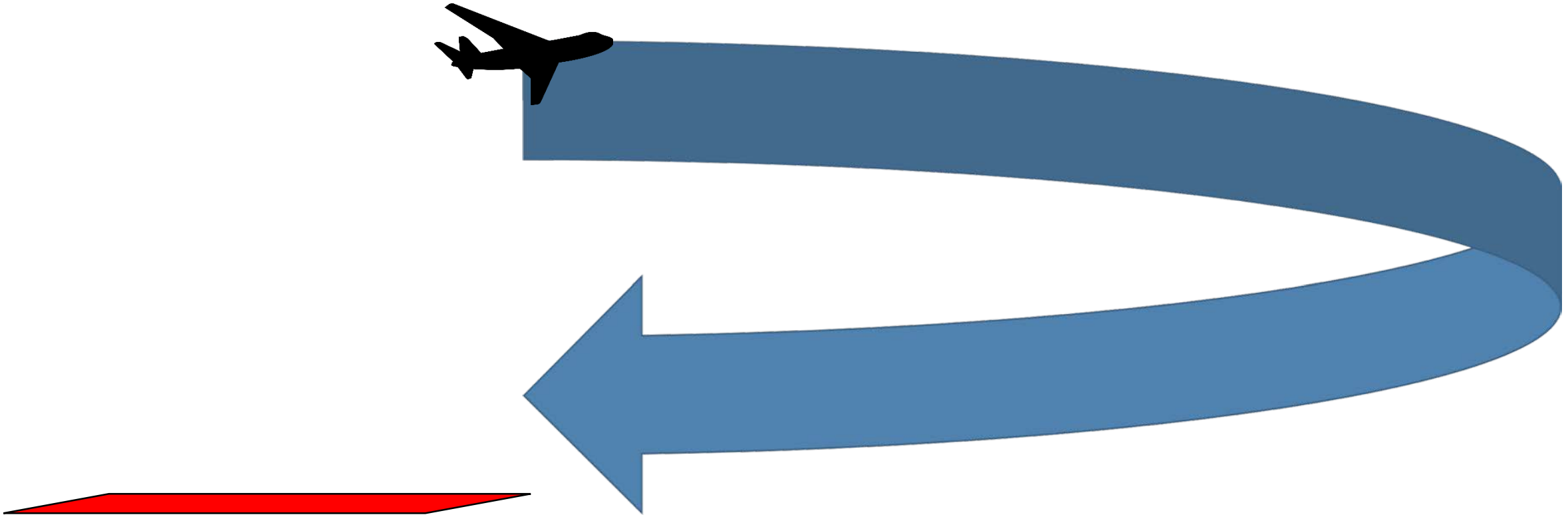

Abeam the start point, establish a 500 foot per minute descent.

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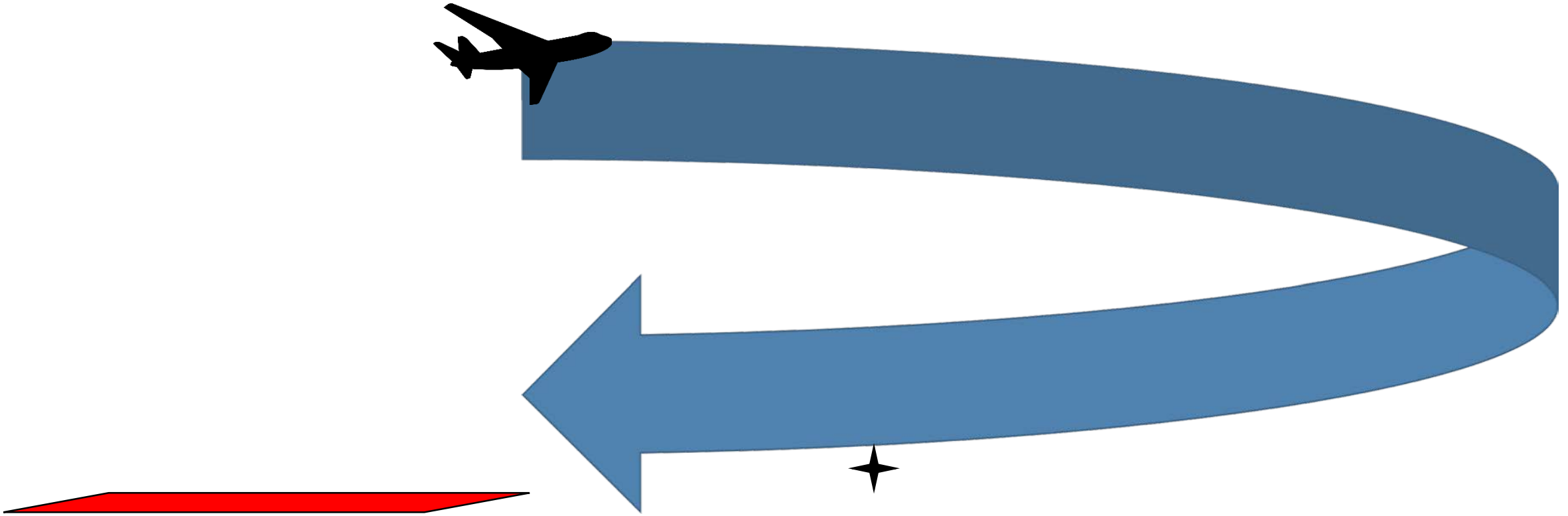

Visualize a point on the extended centerline of the drop where the aircraft will be wings level on final.

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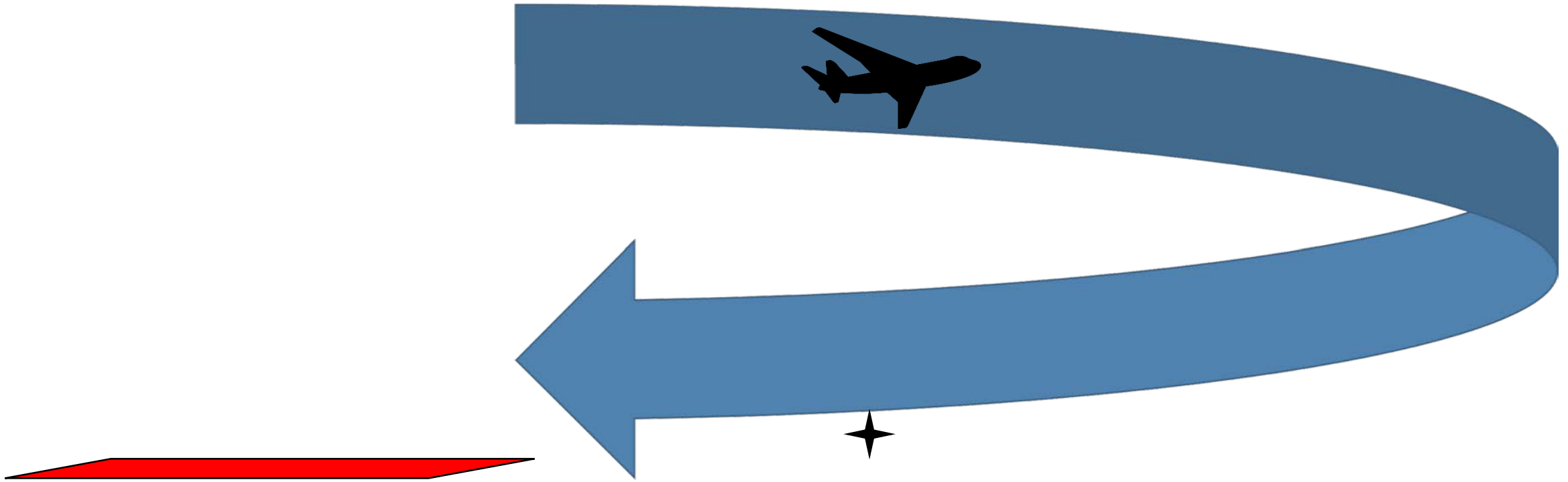

The aircraft will have descended approximately 200 feet when abeam the wings level on final point. Start a turn to base and continue the 500 foot per minute descent.

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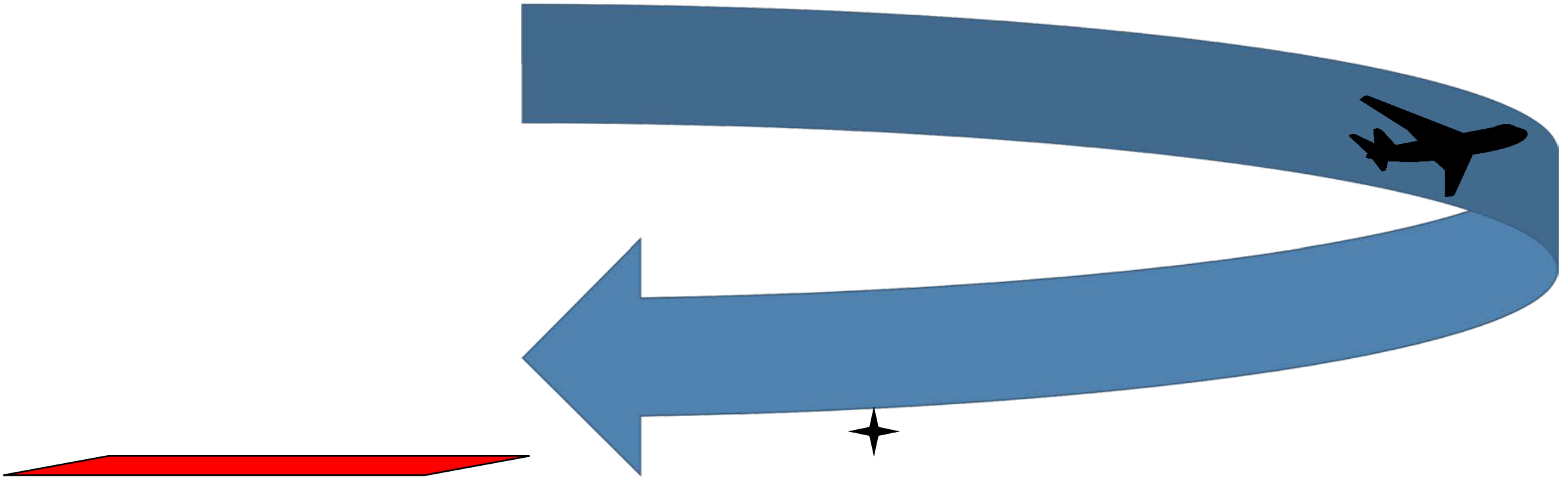

The base turn should be a continuous descent to final.

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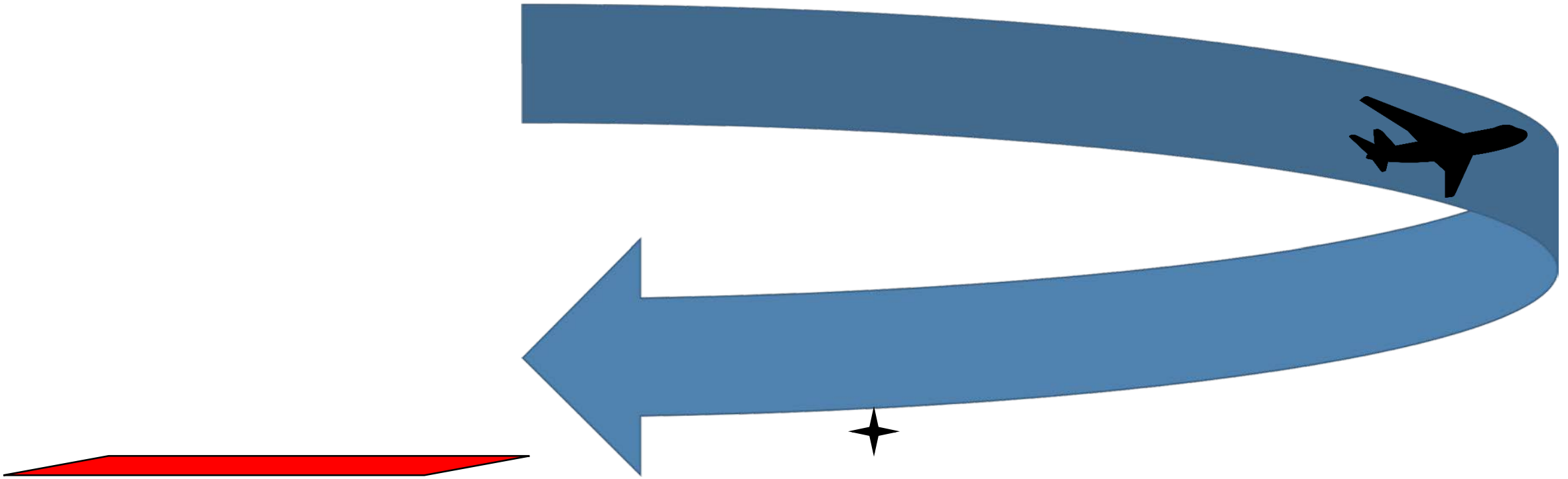

Adjust bank angle for winds, terrain and pattern size.

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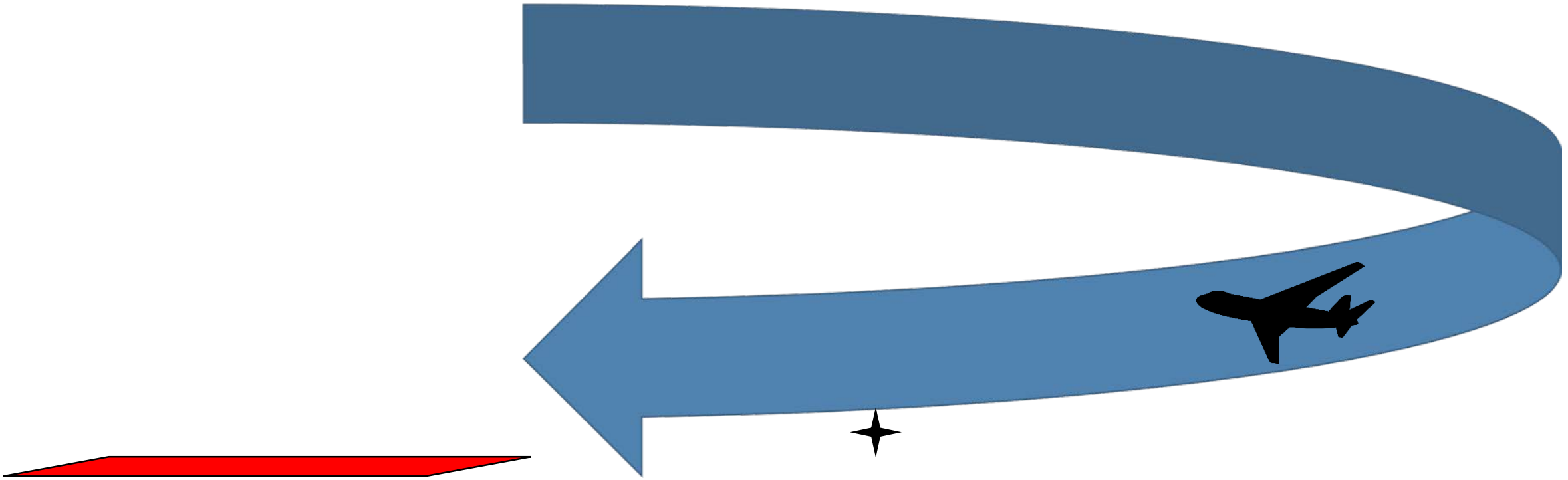

Adjust pitch and power to maintain airspeed and descent rate.

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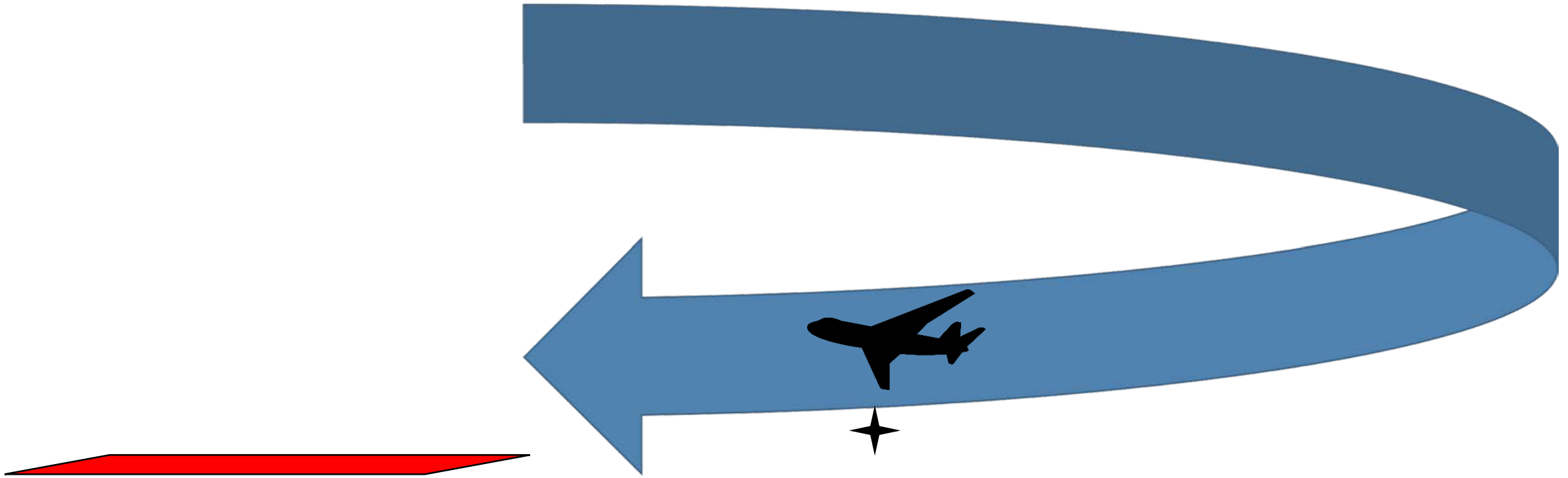

When wings level on final, the aircraft should be on heading at an appropriate distance from the start point for the type of tanker. The aircraft will have descended approximately 700 feet.

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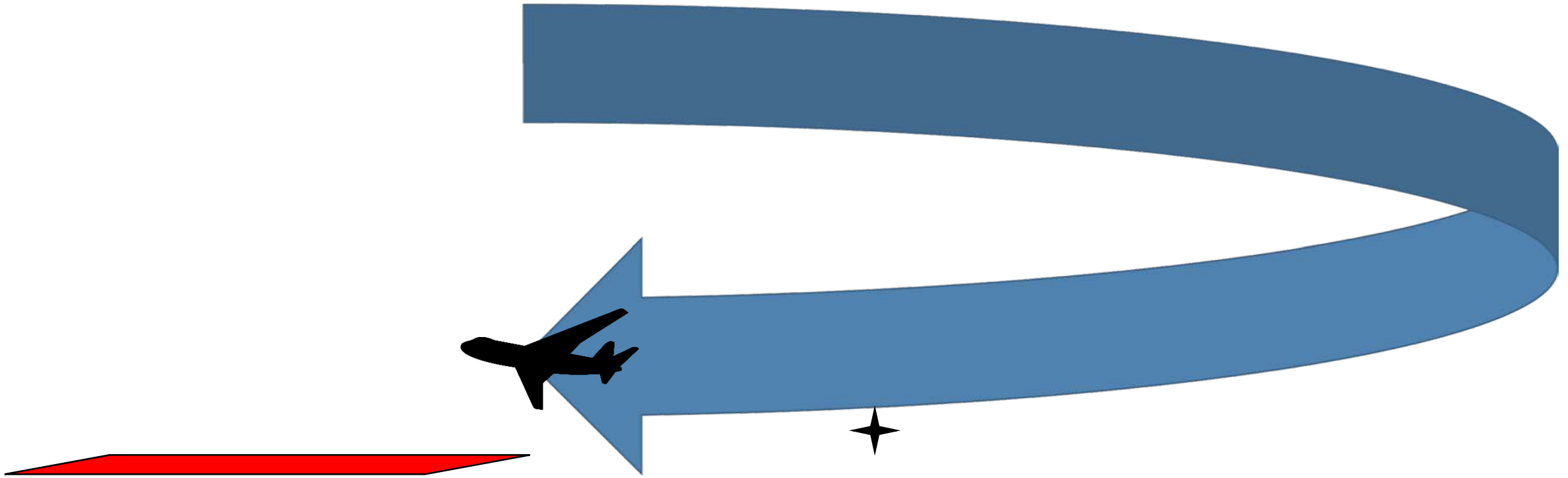

Continue the stabilized descent to the drop altitude. The aircraft will have descended approximately another 200 feet.

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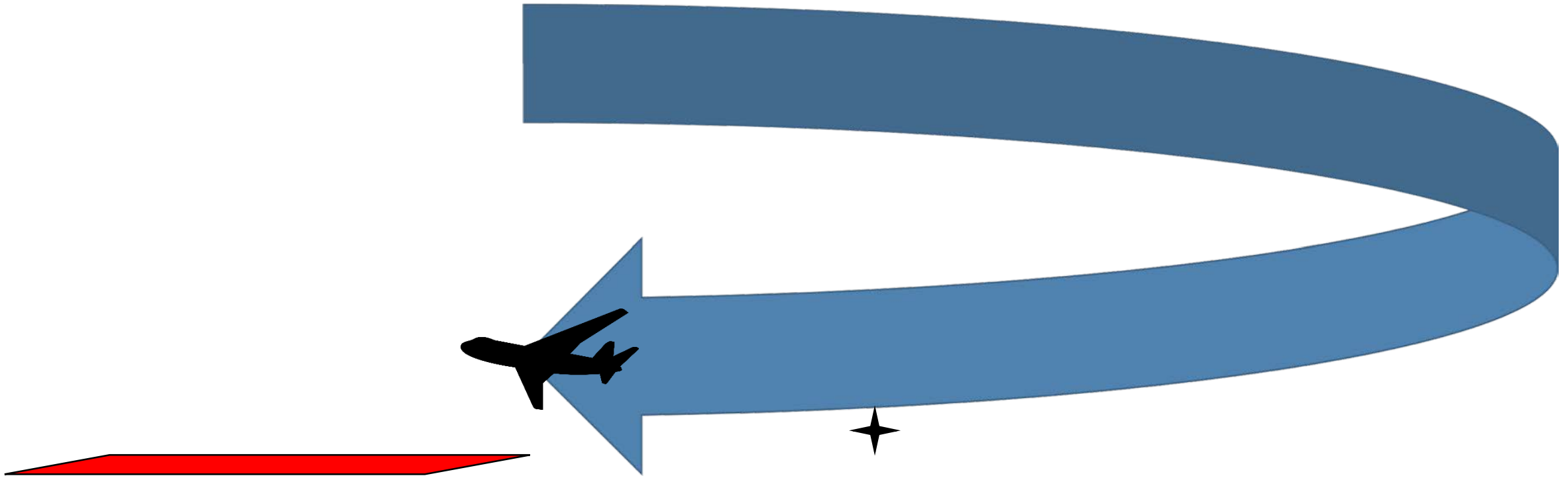

It is a common error to increase the descent rate when wings level on final. Maintain the consistent descent rate throughout the maneuver.

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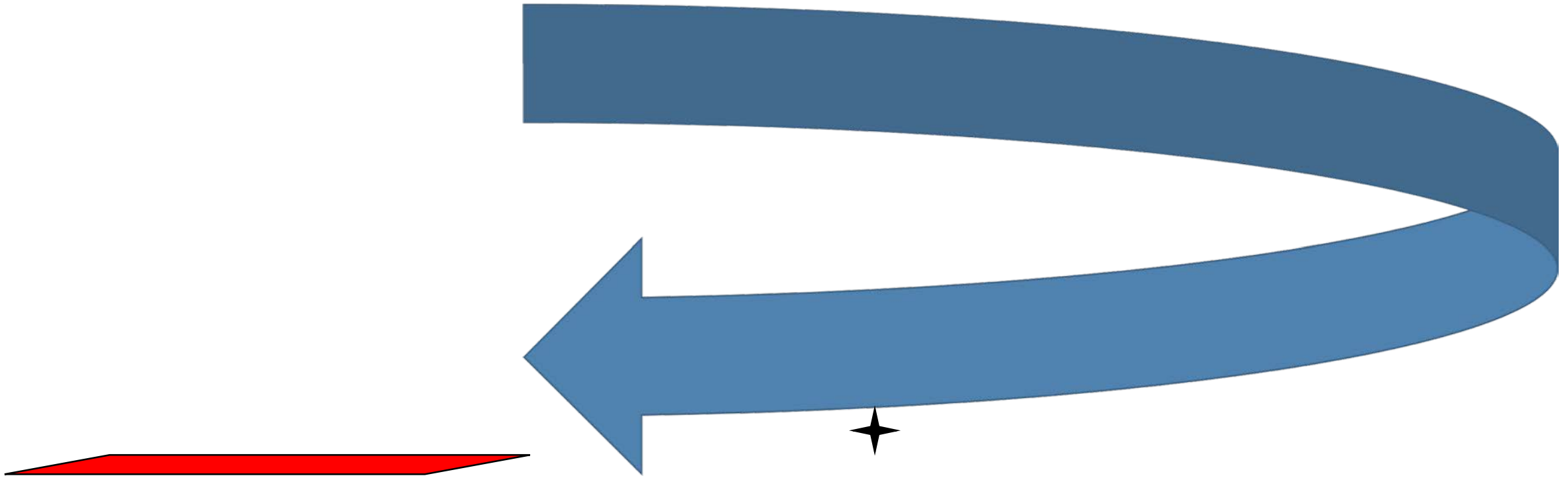

The distance from the start point to the wings level on final point will be the length of the final.

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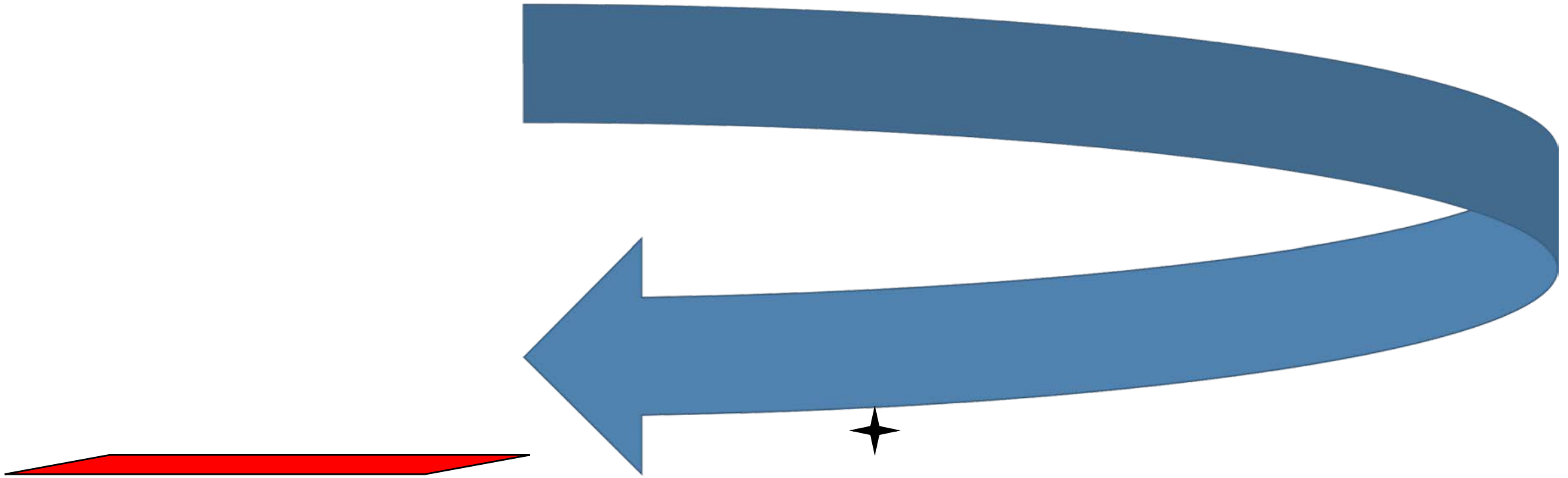
The Basic Lead Profile

The Basic Show Me Profile

The Basic Chase Profile

Leadplane Training Course



The show me profile is the same as the lead profile except:

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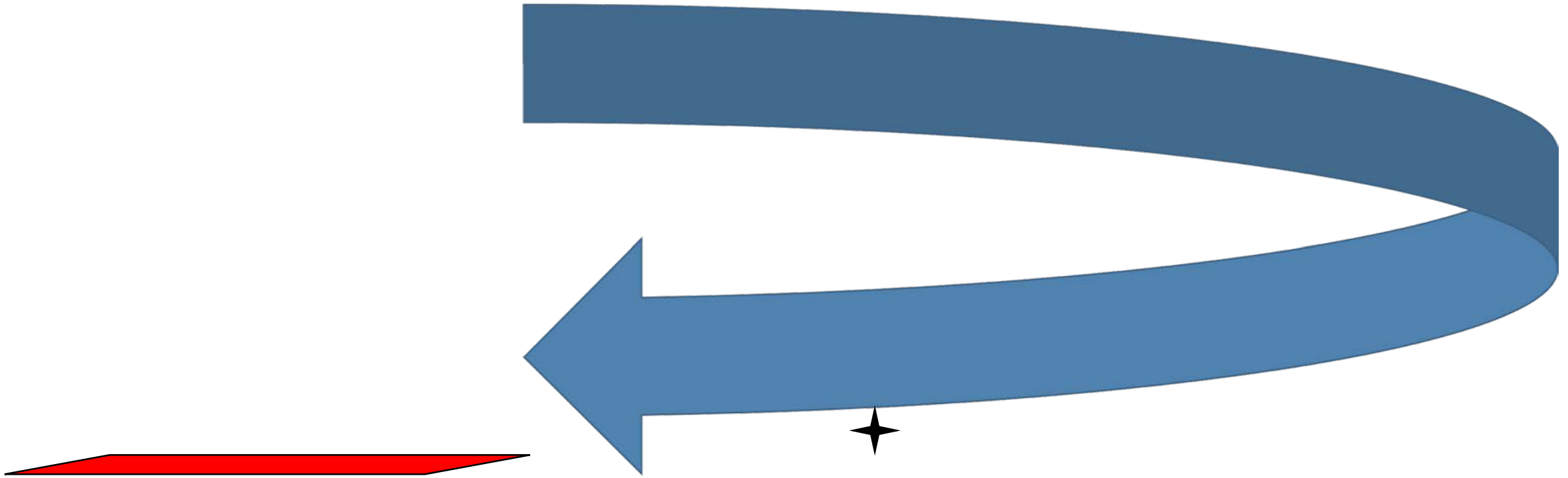

Flaps are not generally used during the show me profile.

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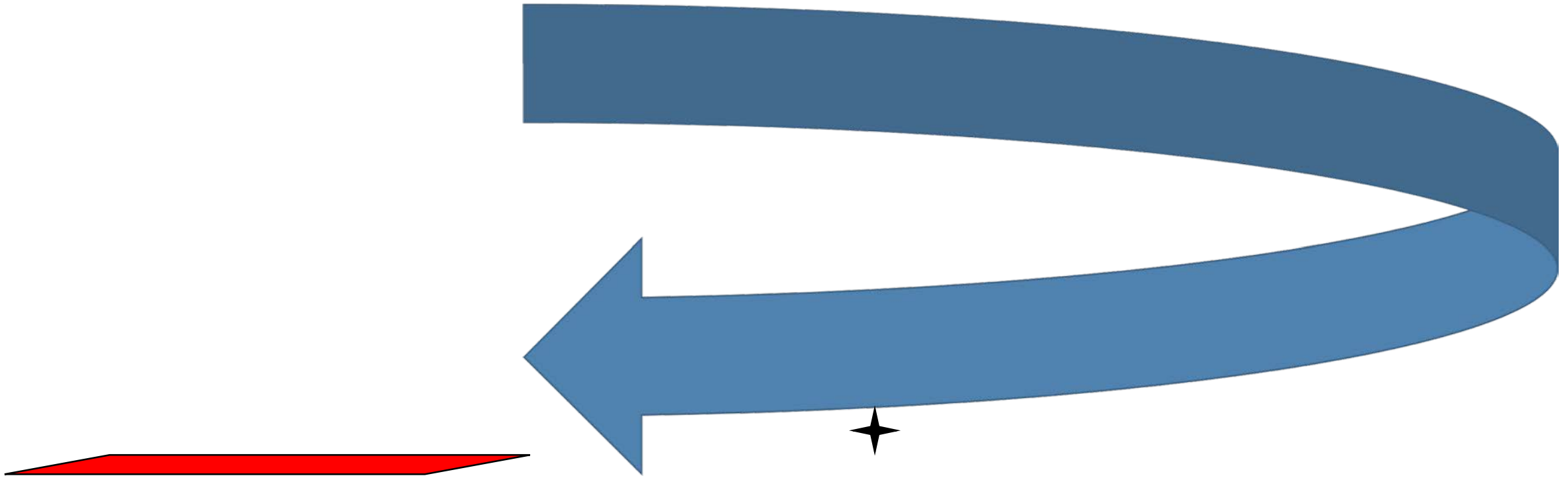

And,

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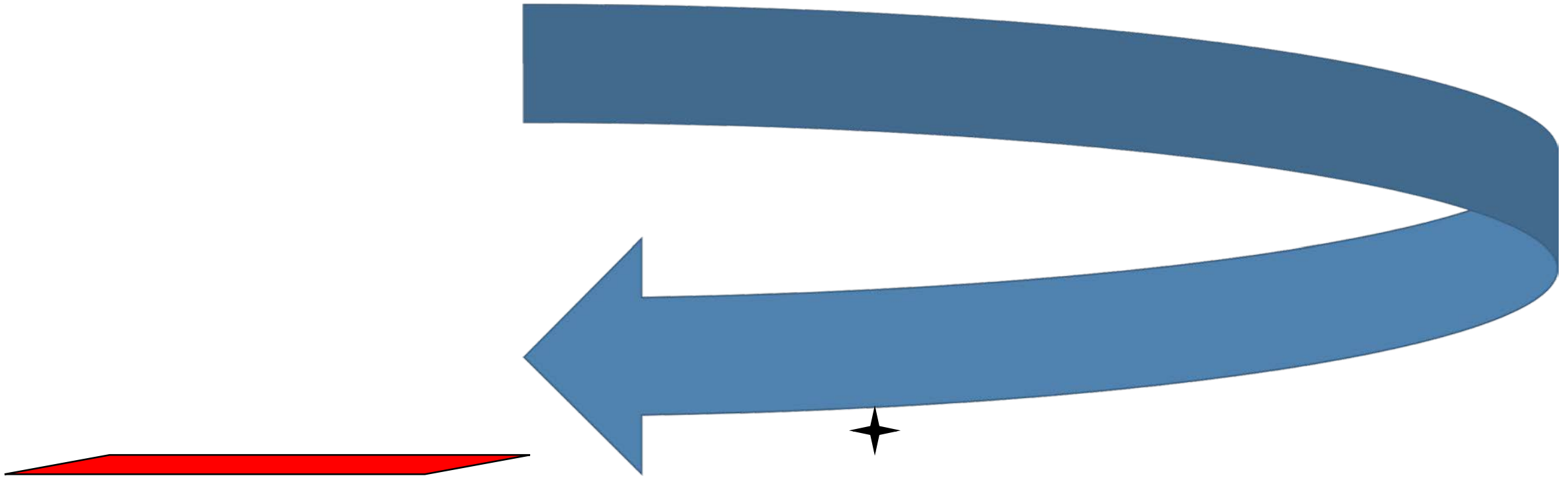

The aircraft will be maneuvered over the drop area, not accounting for the drift, which will minimize parallax for the tanker pilot flying overhead.

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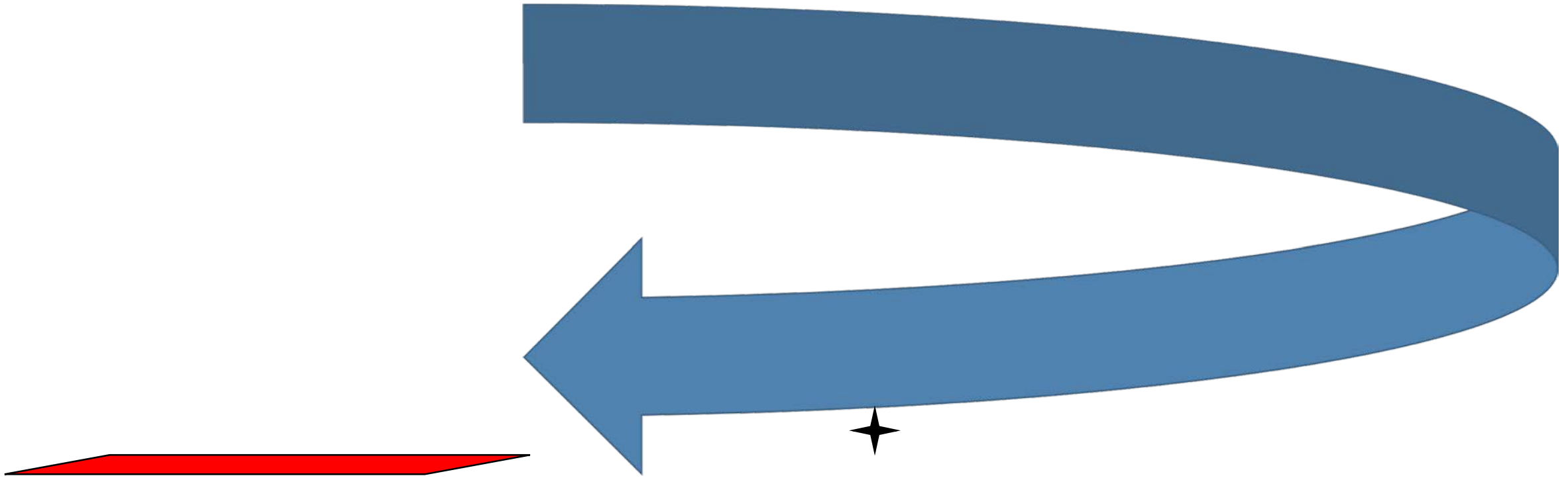


During the live run with a tanker, the aircraft will be maneuvered for the drop and off set from the show me profile to account for wind drift.

Leadplane Training Course

The Basic Lead Profile

The Basic Show Me Profile

The Basic Chase Profile

Leadplane Training Course

Following a Tanker

The leadplane positions its self behind and above the other aircraft while staying slightly outside the other aircrafts path. The intent is to be able to observe the other aircrafts pattern and its line on final.

Leadplane Training Course

Following a Tanker

The leadplane can verbally confirm or adjust the position of the other aircraft when on final and will be in position to evaluate the drop.

Leadplane Training Course

Following a Tanker

The leadplane adjusts airspeed and pattern to match the other aircraft. A proper distance should be kept so that the leadplane is back far enough to allow the retardant to reach the ground prior to the leadplane passing off to the side of the drop area.

Leadplane Training Course

Following Another Leadplane

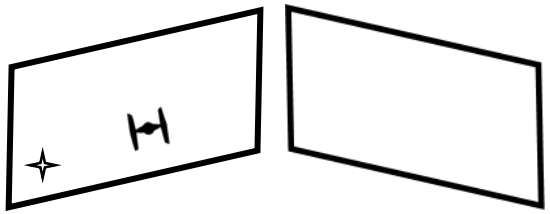
During the chase profile, the relief leadplane positions itself behind and above the other aircraft while staying slightly outside the other aircrafts path. The intent is to be able to observe the other aircraft, its pattern and observe any target descriptions being given.

Leadplane Training Course

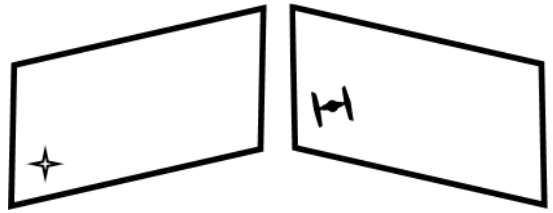
Following Another Leadplane

If the relief leadplane is directly behind the other aircraft or inside its path, the relief leadplane cannot keep the other aircraft and any ground references in sight at the same time.

✦ = Ground reference being described.



Slightly outside the other aircrafts path (left hand turn).



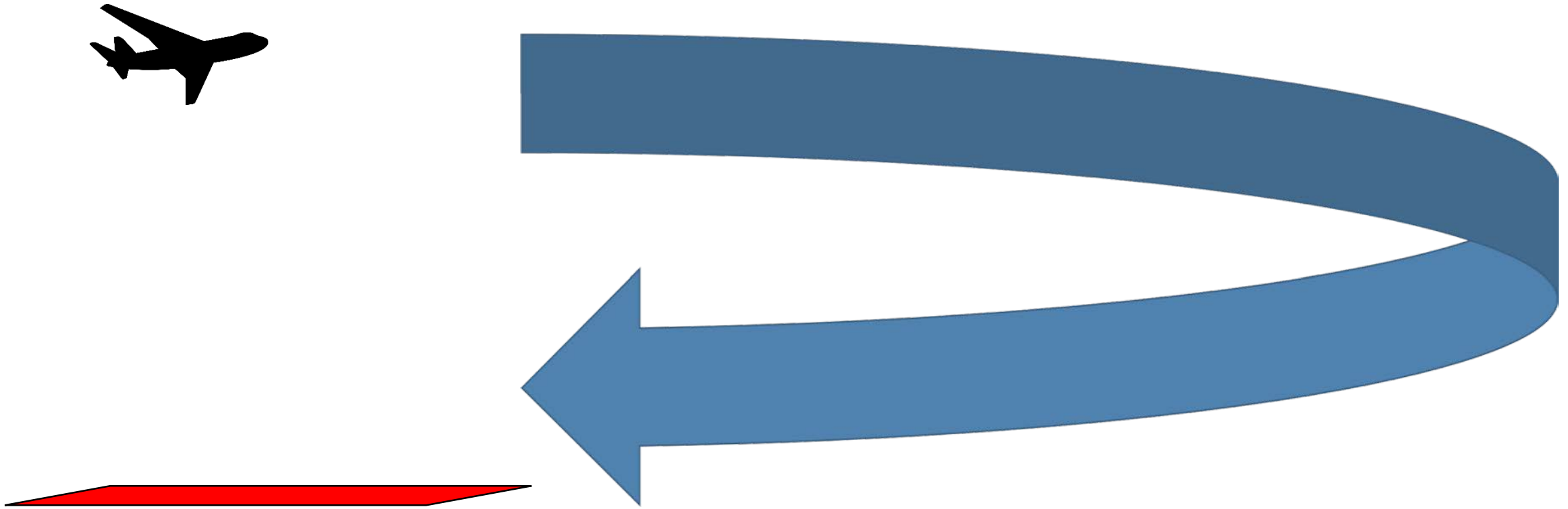
Behind or slightly inside the other aircrafts path (left hand turn).

Leadplane Training Course

Linking Power Settings to the Pattern

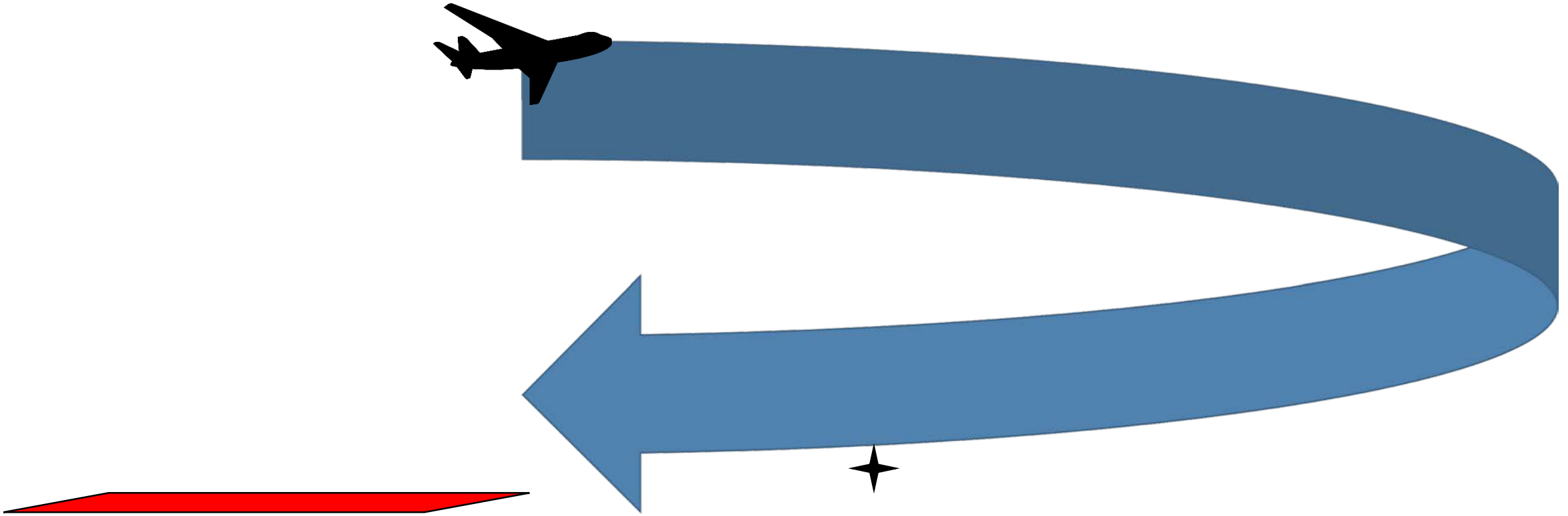
Assuming a constant target airspeed throughout the pattern.

Leadplane Training Course



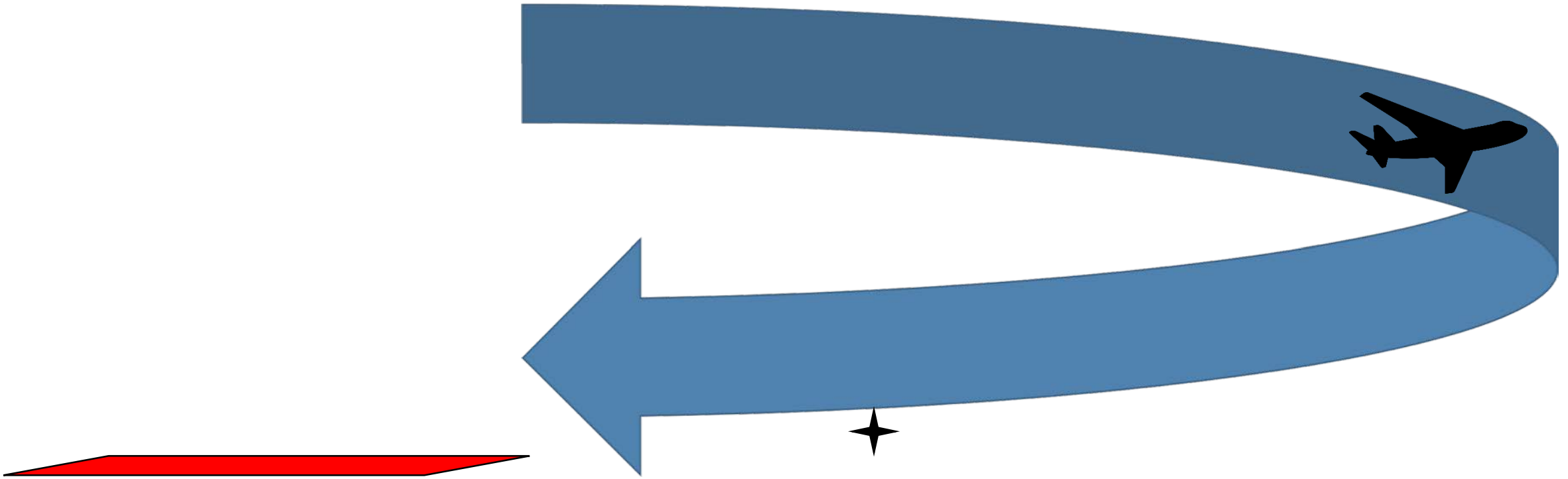
Power is set for target airspeed in straight and level flight with flaps set for the lead profile.

Leadplane Training Course



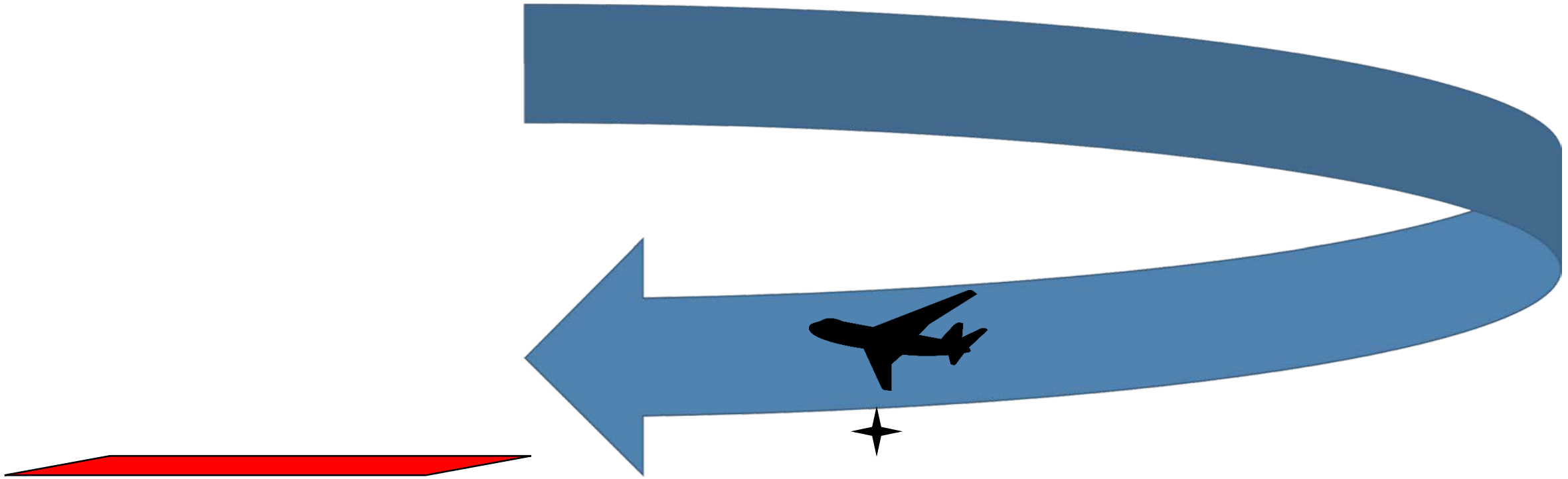
Power is reduced prior to initiating a descent anticipating a higher airspeed as the aircraft descends.

Leadplane Training Course



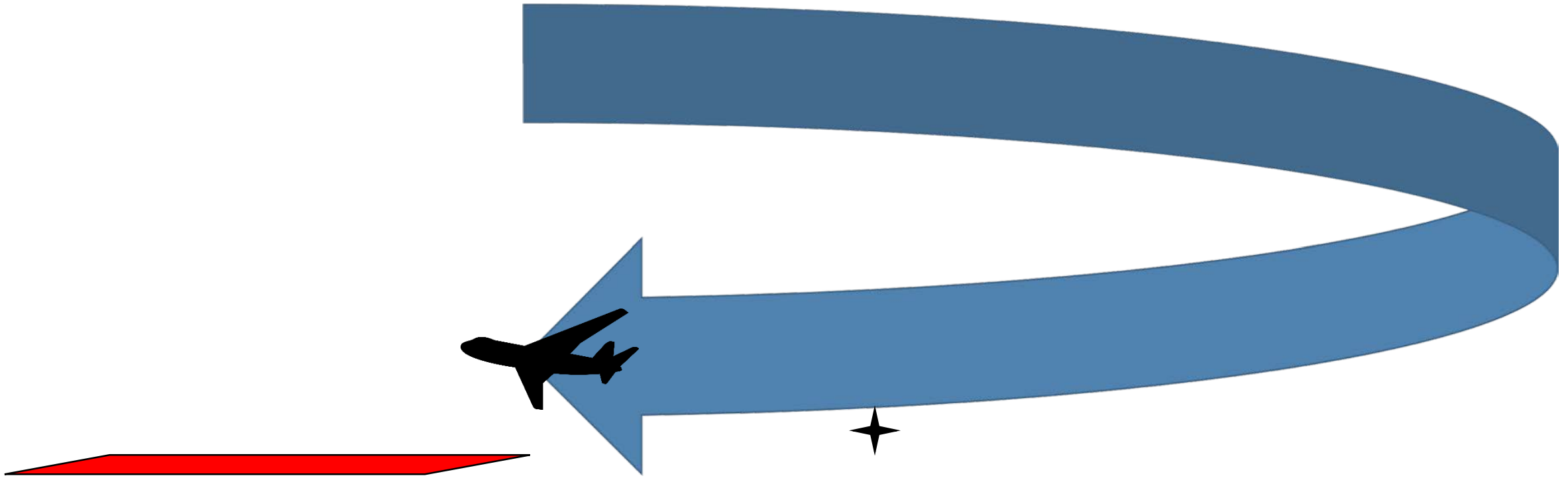
Power is added to account for a reduced vertical component of lift when the aircraft is placed in a bank. If pitch is increased to maintain a consistent descent rate, airspeed will decrease.

Leadplane Training Course



Power is reduced prior to rolling wings level.

Leadplane Training Course



Power is added prior to the start point. This will allow for an increase in airspeed. This extra energy will be used during the exit maneuver to climb away from the ground.

Leadplane Training Course

Linking Power Settings to the Pattern

If different airspeeds are used throughout the pattern, power settings in conjunction with pitch, will need to be adjusted for the changing target airspeeds.

Leadplane Training Course

Linking Flap Settings to the Pattern

Flaps are generally lowered on the downwind leg.

Flaps are generally raised during the exit maneuver after a climb has been established and climb power has been set.

Leadplane Training Course

Exit Profile

Leadplane Training Course

During the exit maneuver smoothly roll in to a 30 degree bank and then initiate a climb. The flaps, if they were used, can be raised and the power adjusted. The objective of the exit maneuver is to get out of the tankers way and to climb away from the terrain. The climb can be initiated first and then the bank if terrain dictates.

Leadplane Training Course

Avoid the desire to look back at the retardant drop. Seeing the drop will not affect the outcome. It is critical that your attention is focused on managing your aircraft while climbing away from the ground and accelerating. The environment in front of the leadplane is far more important to pay attention to than the environment that is behind the aircraft.

Leadplane Training Course

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.

Leadplane Training Course

Asymmetrical G loading

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Asymmetrical G loading

Review Maneuvering Speed, Va.

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Asymmetrical G loading

Review Maneuvering Speed, Va.

Review the basic concept of asymmetrical G’s.

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Maneuvering Speed, Va

Multiple inputs in one axis are not considered,

Leadplane Training Course

Maneuvering Speed, Va

Multiple inputs in one axis are not considered,

And,

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Maneuvering Speed, Va

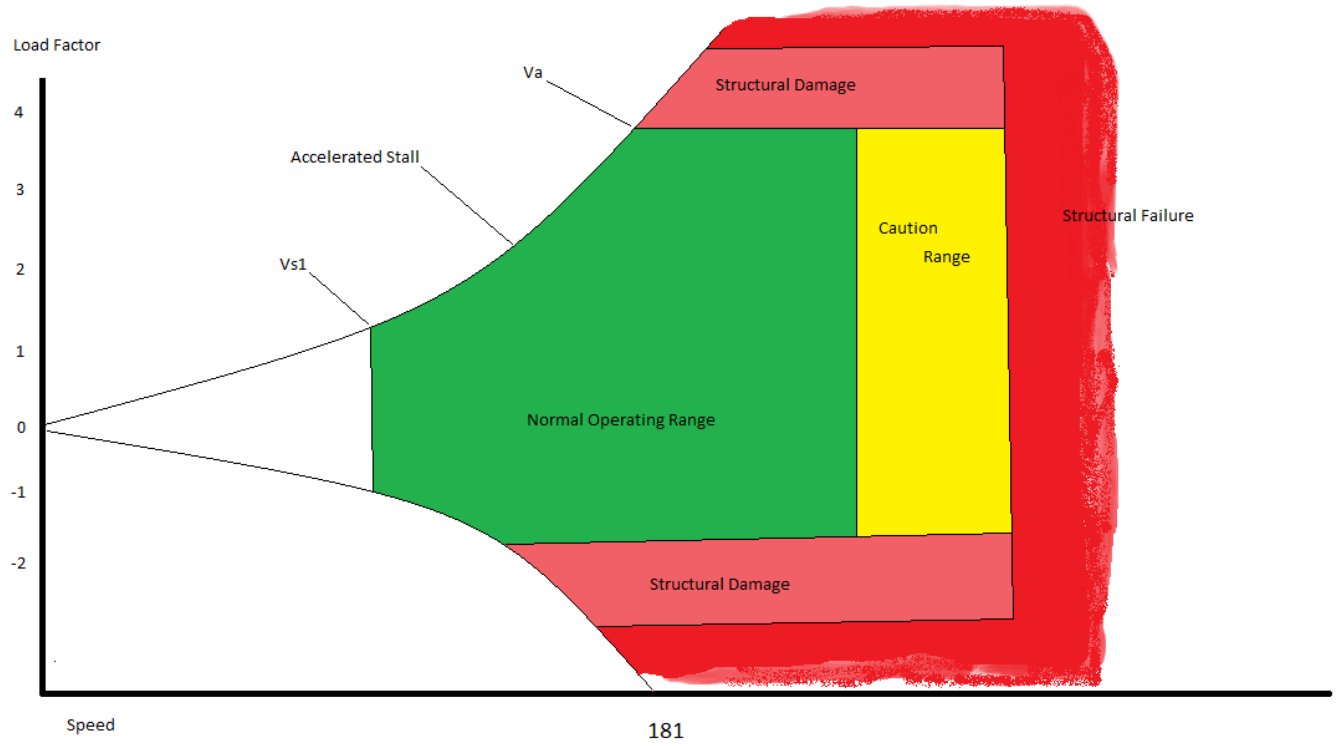
Multiple inputs in one axis are not considered,

And,

Va does not account for full inputs in more than one axis at the same time.

Leadplane Training Course

Vg Diagram



Leadplane Training Course

Determining Va

$$\sqrt{\frac{Current\ Weight}{Max\ Gross\ Weight}} * V_A \text{ at Max Gross Weight}$$

The flight manual lists Va for gross weight. As fuel is burned and the weight of the aircraft is reduced, Va becomes slower than the speed listed in the flight manual.

Leadplane Training Course

Determining Va

King Air B200

Va	Weight
181	12,500
175	11,700
170	11,100
165	10,500
161	9,900

Leadplane Training Course

Asymmetrical G’s

Changing bank angle while simultaneously changing G load creates a differential in the loading of one wing relative to the other. This in turn applies a twisting force on the attach points that will be much more powerful than if the G load is applied symmetrically on the airframe.

Leadplane Training Course

Asymmetrical G’s

FAR 23 defines an airplane’s unsymmetrical flight G limit for any given weight to be 2/3 of the symmetrical G load at the same weight for the same aircraft.

FAR 23.349(2)(b)

Leadplane Training Course

Asymmetrical G’s

Positive G Load Limits

King Air B200

Flaps Up	3.17
Flaps Extended	2.00

2/3 of normal G loading

Flaps Up	2.11
Flaps Extended	1.33

Leadplane Training Course

Asymmetrical G’s

The Lazy 8 Maneuver

The key to flying the Lazy 8 to practical test standards is to make continuous, but very small, changes in bank and pitch….. although you are continually changing both pitch and bank throughout the maneuver, you are intentionally changing them extremely slowly.

Leadplane Training Course

Asymmetrical G’s

The Lazy 8 Maneuver

“There’s no rapid, big change in a properly flown Lazy 8… in part to teach us to avoid asymmetrical G’s.”

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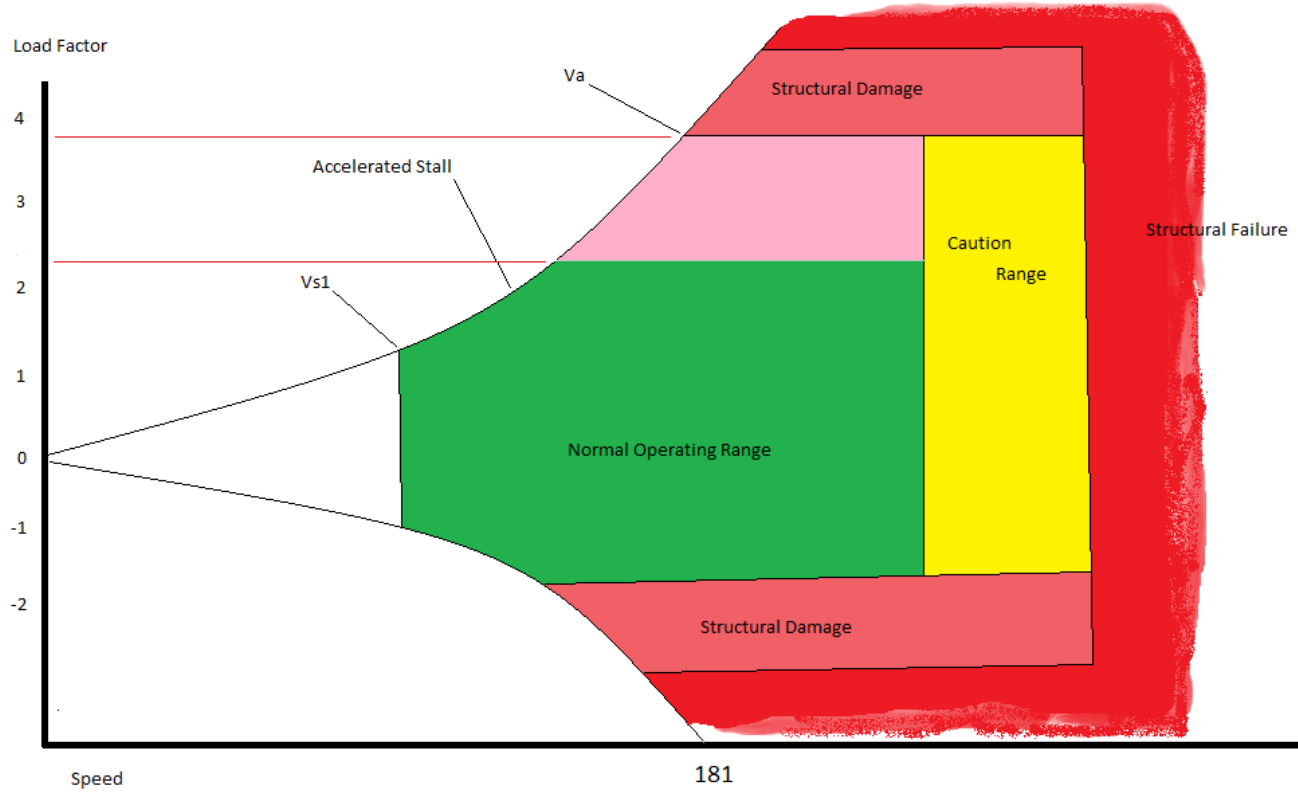
With a asymmetrical G situation you could be below Va and cause damage to the aircraft.



Leadplane Training Course

Asymmetrical G’s

Be cognizant of changing Va throughout duration of the flight. Especially near the end of a longer shift and flying with tankers that require higher pattern speeds.

Leadplane Training Course

Asymmetrical G’s

Be cognizant of changing Va throughout duration of the flight. Especially near the end of a longer shift and flying with tankers that require higher pattern speeds.

While banking the aircraft be cognizant of the G load and apply inputs slowly or in one axis at a time.

Leadplane Training Course

Asymmetrical G’s

Be cognizant of changing Va throughout duration of the flight. Especially near the end of a longer shift and flying with tankers that require higher pattern speeds.

While banking the aircraft be cognizant of the G load and apply inputs slowly or in one axis at a time.

Be cognizant of environmental factors that increase G loading.