

Descents

The only direct control of the balloon the pilot has is vertical motion; the pilot can make the balloon go up by adding heat. Therefore, the pilot can make it come down by venting or not adding heat. For horizontal or lateral motion, a balloon pilot must rely on wind, which may or may not be going in the desired direction. A good pilot learns to control vertical motion precisely and variably for maximum lateral choice.

To start a descent from level flight, skip one burn, and then return to the level flight regimen to hold the descent at a constant rate. Alternatively, hot air balloons are equipped with a vent. When opened, the vent releases hot air from the envelope and draws cooler air in at the mouth, thus reducing the overall temperature and allowing the balloon to descend. A pilot should learn to calibrate the use of the vent, as well as the burners, and know how much air is being released in order to know what effect to expect. For predictability, time the vent openings and open the vent precisely. Parachute vent balloons usually have a manufacturer's limitation on how long the vent may be open. Use the vent sparingly; it should not be used instead of patience, unless a rapid change in altitude is needed.

A new pilot can learn the classic balloon flare by matching the vertical speed indicator (VSI) to the altimeter, i.e., descend 500 fpm from 500 feet above ground level (AGL), 400 fpm from 400 feet AGL. Below 200 feet, a pilot should not use instruments, but look below for obstacles, especially power lines. This maneuver is illustrated in *Figure 7-5*. Departing from the altitude indicated at "A," the pilot allows the balloon to start a descent. During the descent, the pilot maintains a reasonable rate of descent, slowing to a rate of 200 fpm at B. By the time the balloon reaches C, the pilot should have a rate of descent of 100 fpm, and by using one or two standard burns, should be able to level off ("round out") at the desired new altitude.

Rapid/Steep Descents

A rapid, or steep, descent in a balloon is a relative term. A 700 fpm descent started at 3,000 feet AGL is not necessarily rapid; however, if started at 300 feet AGL, it is rapid and may be critical. Rapid descents should be made with adequate ground clearance and distance from obstacles.

To execute a steep descent, the balloon pilot must be well aware of the balloon's response times and have sufficient altitude for the maneuver. In *Figure 7-6*, the pilot has initiated

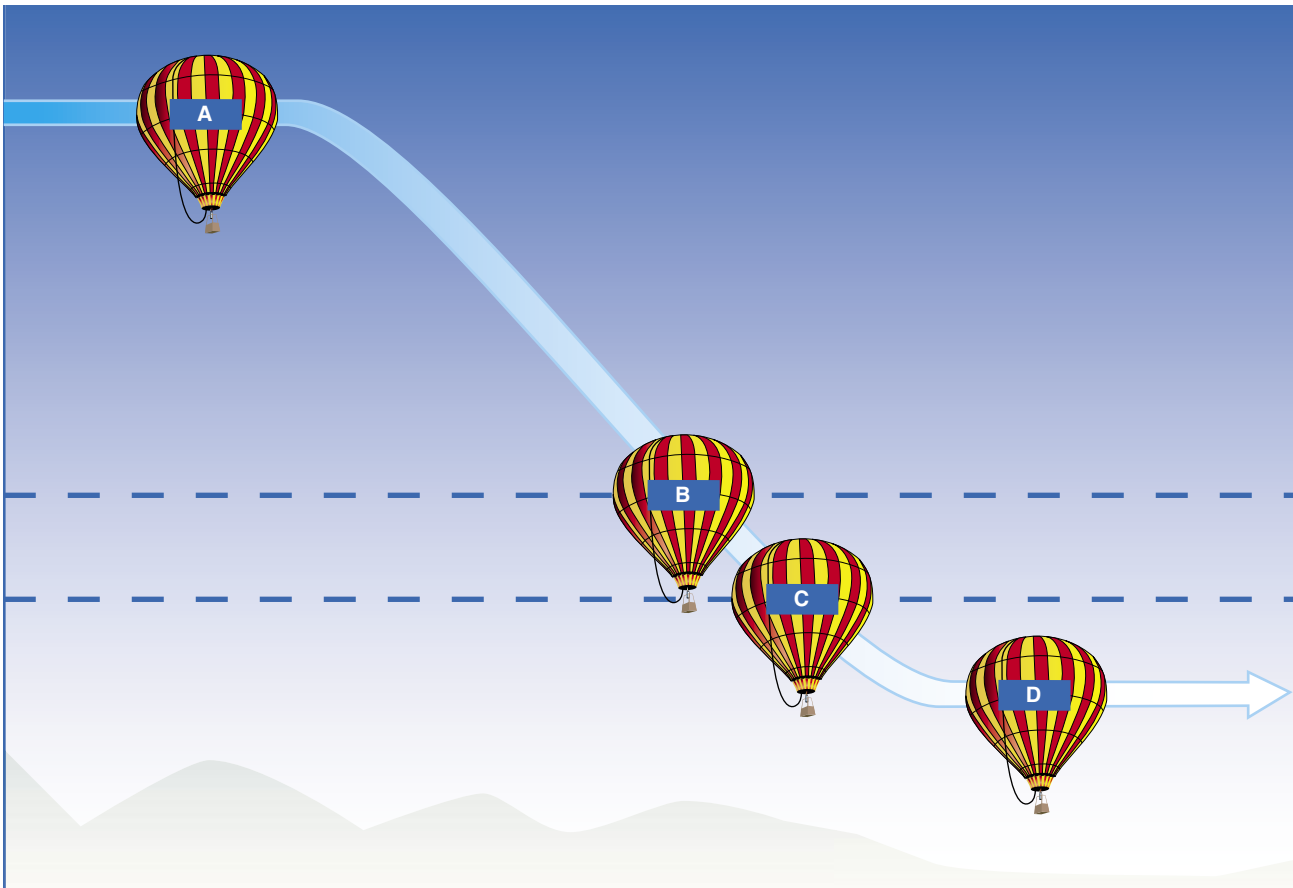


Figure 7-5. *Descent schematic.*

a steep descent at Point A. For this discussion, assume that altitude is 1,500' AGL. The descent may be initiated either through the use of the vent or by holding two or three burns. By the time the balloon reaches the point indicated at B, it may be descending in excess of 500 fpm; the pilot should make a standard burn at this point, as the air passing over the envelope fabric accelerates cooling. A standard burn ensures that the balloon maintains a temperature sufficient to keep it under control throughout the maneuver. This burn should not slow the descent.

At a point halfway between the ground and the previous burn [Figure 7-6, Point C], the pilot should make a long (twice standard length) burn; if there is no reaction from the balloon, then the pilot should do another burn. Immediately upon sensing a reaction from the balloon, the pilot should stop the burn and allow the balloon to descend to a proper pullout altitude. [Figure 7-6, Point D] If done properly, the deceleration burns stops the balloon's descent just above the desired altitude or the ground. This maneuver requires experience and practice; timing is critical.

During the initial stages of learning this maneuver, the pilot should set a "floor" (altitude lower limit) to practice with.

As the pilot gains more skill, as well as confidence, that "floor" may be lowered until the pilot is able to execute the maneuver to ground level.

Maneuvering

The art of controlling the horizontal (lateral) direction of a free balloon is the highest demonstration of ballooning skill. The balloon is officially a nonsteerable aircraft. Despite the fact that balloons are nonsteerable, some pilots seem to be able to steer their balloons better than others. Being knowledgeable of the wind at various altitudes, both before launch and during flight, is the key factor for maneuvering.

Maneuvering, or steering, comes indirectly from varying one's time at different altitudes and different wind directions. The pilot must have knowledge of the winds at different levels, as previously discussed in Chapter 3, Preflight Planning, as well as being able to determine the balloon's direction in flight.

Winds Below

When in flight, winds below can be observed in many ways. Observe smoke, trees, dust, flags, and especially ponds and lakes to see what the wind is doing on the ground. To

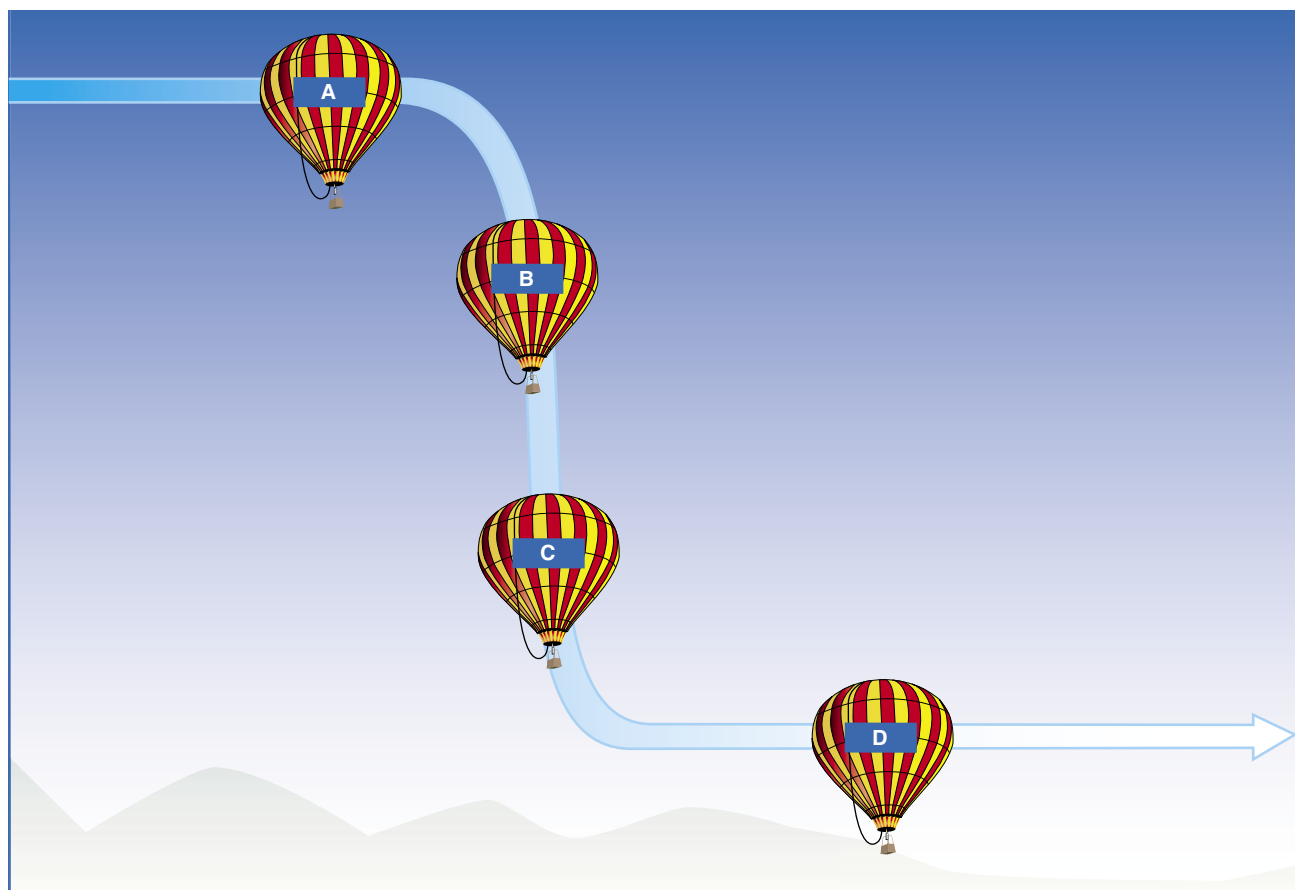


Figure 7-6. Steep descent schematic (not to scale).