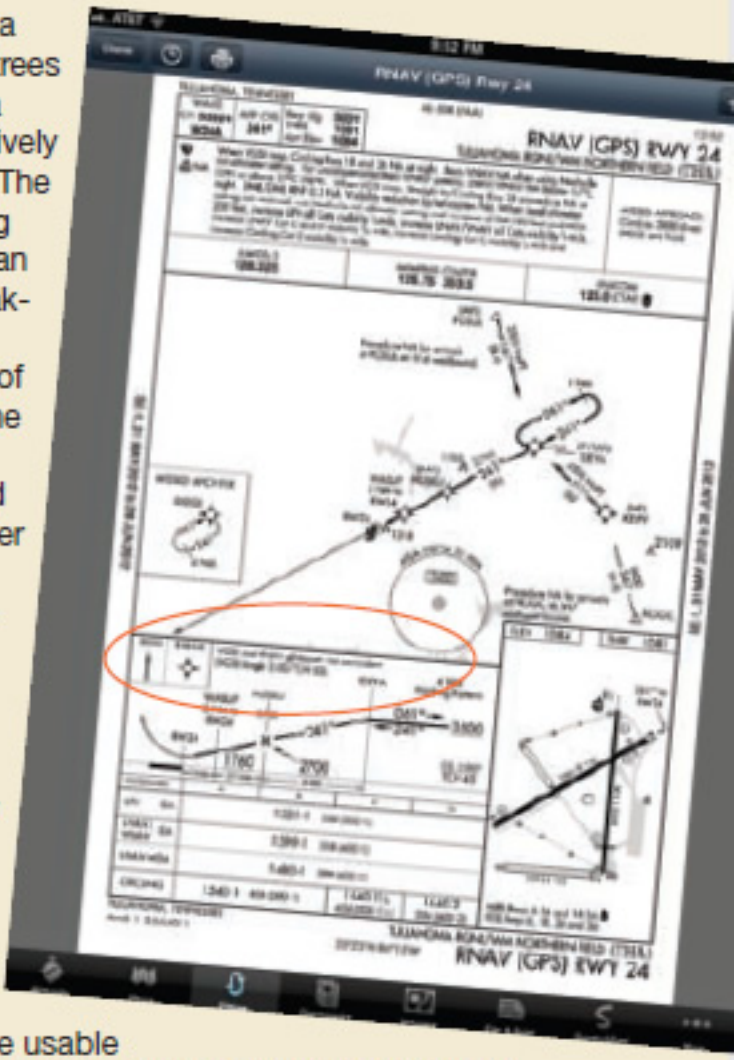
Virtual Vs. Visual Glideslopes



I recently heard the story of a Learjet crew that impacted trees short of the runway during a dark-night approach in relatively high instrument conditions. The corporate jet crew was flying the electronic glideslope of an RNAV (GPS) approach, breaking out a few hundred feet above minimums. Because of the dark-night conditions, the pilot flying elected to continue down the GPS-derived glidepath to the runway. Later investigation confirms the pilot was precisely on glidepath when the jet's landing gear and flaps clipped a tree. Luckily the pilot kept the airplane under control and landed without injury or further damage.

The pilot (and I) learned there is true validity to the warning we've heard for decades, that an electronic glideslope may not be usable below the decision height (DH) or decision altitude (DA). It's not that the signal is unreliable at the lowest altitudes (although that's possible, too). Instead, it's that the glide angle that takes you over obstacles to DH or DA may be different from the angle taking you over obstacles from there to the runway.

Take a look at the RNAV (GPS) 24 at Tullahoma, Tenn., above. The profile view of the approach contains a note: VGSI (Visual Glide Slope Indicator) and glidepath not coincident." The electronic glidepath aims the airplane foe a threshold crossing height (TCH) of 45 feet, while the visual indicator aims for a TCH of 50 feet. Not much, you might say, but the angular difference may mean the difference whether you clear trees or wires on a gloomy day.

I've flown some approaches where the electronic (advisory) glidepath reaches minimum descent altitude as much as 0.2 of a mile before a charted visual descent point (VDP). Continuing to descend with the electronic glidepath needles centered on such an approach might prove disastrous.

The trick, then, is to fly electronic guidance to DH, DA or MDA, as appropriate, but do not descend below the missed approach altitude until any visual glidepath is centered. This is especially important in times of darkness or other reduced visibility.

Airspeed and glidepath control are vital to a successful landing. Consciously check your aiming point, glidepath, airplane configuration, attitude, power setting and airspeed as you near the landing threshold. If any one is not managed so that the airplane will touch at a point where sufficient runway remains to stop, and at a speed where the airplane will not float excessively nor have excess energy that cannot be dissipated in time, then a go-around is not only advisable, it is mandatory.