

Takeoffs are Voluntary; Landings are Mandatory!

Once a pilot completes his or her training and passes the flight test, take-offs and landings rarely account for more than 10% of the pilot's total flight time. Yet this very phase of flight is responsible for almost 50% of all General Aviation accidents and incidents. Of course it is only natural that takeoffs and landings carry a greater risk than the enroute portion of any flight. Flying straight and level provides very little challenge!

However, when we find ourselves low and slow, especially with high power settings during takeoff (but even with low power on approach) things can go bad in a hurry. The point is, altitude and speed give us choices, even in an emergency.

On the other hand, when the engine quits making noise close to the ground, we have very little time to react! So, what are some things we can do to keep ourselves out of harm's way at the beginning and end of our journey?

In our last issue, we discussed using performance charts to predict required take-off distance. This time we will discuss landing performance since the number of landings should always equal the number of take-offs (unless you're a skydiver).

Let's start with a question similar to the one asked last time. How many of you actually work a performance chart before every landing? Not many, I bet. That's OK. Neither do I. If you are making the same flight you have made many times before under the same conditions, you already know what the outcome will be.

But if this is the same trip we discussed last time, we don't know what the outcome will be! We still have the three big NFL linebackers riding along, with their golf clubs, and it's a hot summer day with a density altitude approaching 9,000 feet, and the grass runway has not been mowed in a month.



These circumstances have been chosen to make a point. But before you write off the example, check out the photo to the right; the result of failing to know what the outcome was destined to be!

Every year, hundreds of GA pilots unknowingly "push the envelope" attempting to overcome the laws of physics (professional pilots know better, usually). Physics always wins; often with tragic consequence for pilot, passengers, and loved ones. All of these accidents could have been prevented.

Performance charts allow us to predict the outcome resulting from any set of circumstances. Why would anyone not take advantage of this amazing ability to see into the future and thereby avoid catastrophe? If the Pilot-in-Command of the aircraft in the photo knew the length of the runway on which he (or she) was attempting to land, and had worked the performance chart below, the conclusion would surely have been to divert to a field with a longer runway (or lower field elevation). The amazing thing about airports on mountain tops is that they are always near airports in valleys!

LANDING DISTANCE

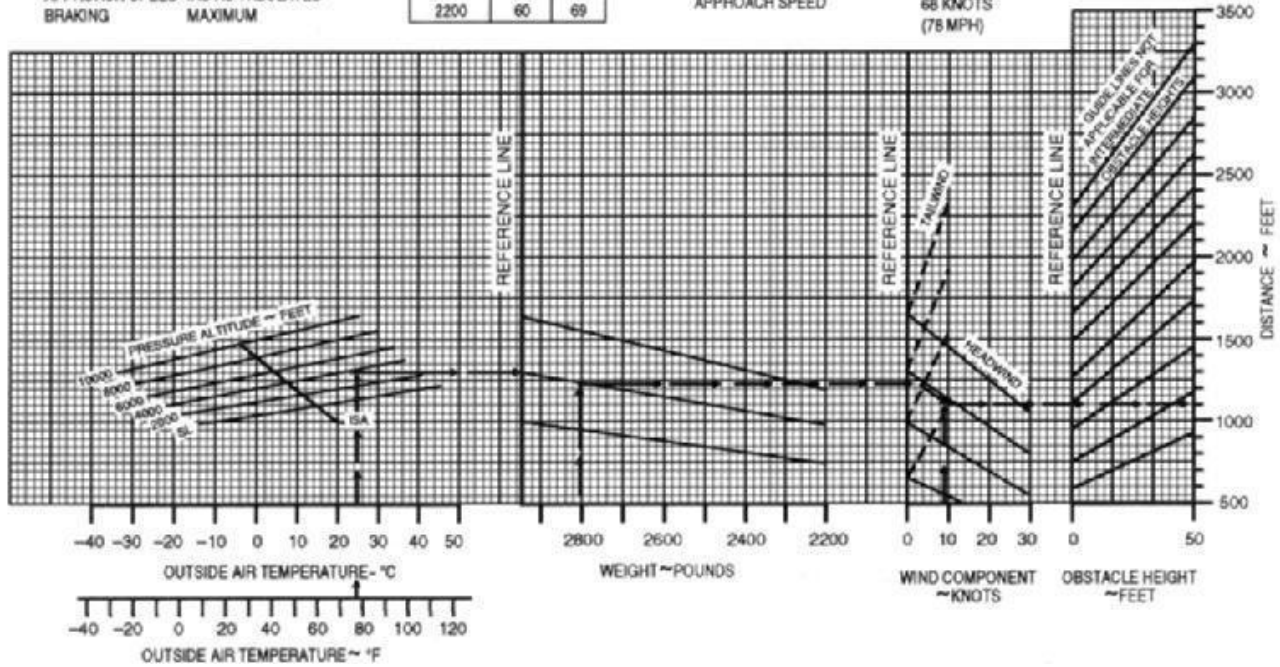
ASSOCIATED CONDITIONS:

POWER RETARDED TO MAINTAIN 900 FT/on FINAL APPROACH
 FLAPS DOWN
 LANDING GEAR DOWN
 RUNWAY PAVED, LEVEL, DRY SURFACE
 APPROACH SPEED IAS AS TABULATED
 BRAKING MAXIMUM

WEIGHT ~ POUNDS	SPEED AT 50 FT	
	KNOTS	MPH
2950	70	80
2800	68	78
2600	65	75
2400	63	72
2200	60	69

EXAMPLE:

OAT 25 °C (77 °F)
 PRESSURE ALTITUDE 3965 FT
 WEIGHT 2814 LB
 WIND COMPONENT 9.0 KNOTS (+HEADWIND)
 GROUND ROLL 1080 FT
 TOTAL OVER 50 FT OBSTACLE 1700 FT
 APPROACH SPEED 68 KNOTS (78 MPH)



Stay out of harm's way. Predict the future and use superior knowledge to avoid situations requiring superior flying skills. Work your chart and use a runway at least 50% longer than the distance indicated. Remember, just like the takeoff chart studied in the previous issue, these charts were developed based on numbers obtained by a professional test pilot in a brand new aircraft with brand new brakes and tires. We are not likely to enjoy the same level of performance.

Now, I know what you are thinking (is that not a scary thought?). You are going to tell me you do not have time to work a landing chart while flying the aircraft. And you are absolutely correct. If you are not looking out for traffic, a midair collision could negate the need to determine landing distances. These charts are *not* meant to be used in-flight. They are to be used during your pre-flight planning in the comfort of your home or motel (or under a bridge, if need be). The FARs (Federal Aviation Regulations) even spell out that the preflight planning must include determining the length of runways intended to be used and the landing distance required under the anticipated conditions.

But choosing adequate airports is only part of the equation. Always, always plan on going around! The landing should be a surprise (unless you're a glider pilot - intentionally or unintentionally).

Many landing accidents are the result of a pilot trying to force the aircraft onto the ground from an approach that is not working out very well. No one, not even Chuck Yeager, can make a good landing from a crummy approach (well, maybe he could). Complete the landing, if and only if, every little thing is as it should be. If not, go around and go-around early to insure success. One final note: You can help insure a successful go-around by not loading the aircraft to its maximum take-off weight. If you want to carry 3 big people, use a 6 place aircraft. There is no such thing as a risk free endeavor. But a good pilot will do everything possible to

mitigate the risks inherent in any flight. You have a lot to think about at your kitchen table before every flight. But always remember, a safe flight is no accident! Your loved ones and passengers are counting on you. Don't let them down! Keep sharp and stay safe.

Fred Abrams
Abrams Aviation Seminars

Comments and Suggestions

This spot is reserved for you, our reader! Here is your opportunity to sound off. Send us an email or give us a call (in the US) 209 588-0711 and tell us what you really think (about aviation in general; pilot training in particular). Tell us what we can do to help you become a safer pilot. Share your insights with us and our readers. We are looking forward to hearing from you.

By the way, you may have noticed that we did not discuss the mechanics involved in working the landing chart above. We left that out in the interest of brevity and because the chart provides an example to demonstrate its use. Having said that, let us know if you would like us to walk you through a solution to a landing situation. You may want to suggest a question from an FAA exam you wish to take. We are here for you!

Too Busy to Study for your FAA Knowledge Exam?

Pass your test with flying colors after only 18 hours (or less) of 1 on 1 training with Abrams Aviation Seminars quality individual tutoring. You choose the location, date, and time. We come to you!

Pilots often put off studying for their FAA exam because it just seems too difficult. But the level of difficulty you face is determined by the quality of training you receive. A dedicated and experienced instructor can make a complicated task seem simple. And the best instructors can even make it fun! That is what we do at Abrams Aviation Seminars. Pilot training is the only thing we do and we do it well and we make it fun. Everyone knows a little sugar helps the medicine go down.

Many training programs merely have you memorize the correct answer to the test items. Flight instructors often criticize this approach as not helping students learn. We agree. It is important for students to be able to apply their training rather than just pass a test. For this reason, we teach why the appropriate answer is correct and provide real world examples enabling you to determine the correct answer without resorting to rote memorization.

It has been said the most important safety device in any aircraft is a well-trained pilot. Abrams Aviation Seminars, in cooperation with your flight school and CFI, can help you become that well trained pilot.

Isn't it time you got your test behind you? Let us help you so you and your CFI can concentrate on the important (and fun part); actually flying the aircraft! Call today!

(209) 588-0711 or email fred@abramsaviation.com.

