3/27/26

Fellow Members,

Here's the follow up to the assignment I gave out prior to the backcountry presentation. The results I came up with are shown below. There are probably some differences in your calculations to mine, however they should be close.

The point of this exercise is to see how well you perform according to the calculations. In most cases, probably not as well as the POH, because they were developed by test pilots when the plane was new and probably tweaked by marketing folks. It's hard to take into consideration all the factors, but you should get a good idea of how you and the airplane perform in several types of situations, especially if you plan to go into more challenging strips. There's an app called cloudahoy, that I forgot to mention that records a flight and will show the take-off and landing distances in most cases that you can use to compare actual to the calculations.

Go out and test the results that you came up with your calculations against the actual conditions you get in the airplane and airstrip you worked up the numbers for. It's important to know, especially in high density altitude and challenging airstrips.

This was the assignment.

One exercise is to determine the short field take-off distance from the POH and then see how you do in making the numbers. The MAF incorporates a "Speed Check" point in this exercise. After determining the POH short field takeoff distance apply the 50/70 rule; at 50% of the calculated takeoff distance, you should be at 70% of the takeoff rotate air speed. As you're taking off you should note the airspeed at the 50% mark. For example, if you calculate 1,000' short field take off distance from the POH for the conditions at the time you're taking off, then you should be at 70% IAS at 500'. If you're flying a C182Q at gross weight, that would be 49 KTS x 0.7 or 34 KTS at the 500' mark. He showed us a runway diagram (attached) with dimensions so that we could locate the 500' mark, or whatever distance you're looking for. Repeating this exercise several times will give you an idea on how well you and the aircraft compare to the POH numbers and understand the actual performance you're getting at the speed check point, and actual takeoff distance.

The homework.

Determine the following in the table from the POH at KMAN and U87 (Smiley Creek) the following conditions at each airport: No wind, Groos weight, Temp 70 deg, DewPoint 45 deg F, Pressure 30.07. Do the calculations for one or more of our aircraft; C182Q, C182P, C172M, C172N or C152.

Aircraft Type	KMAN	U87
Field Elevation	2537'	7206'
Pressure Altitude		
Density Altitude		
Short field take-off distance		
70% IAS at 50% mark of takeoff distance		
Rate of climb		
Landing Distance		

I did the calculations for all of our aircraft; in addition, I did the takeoff and rate of climb with the Sporty's take off calculator which I discussed in the presentation. This was no small task. Some of the landing tables do not go up to a high enough DA, so I had to extrapolate a little. It's also interesting that the older POH's have a different way to factor in grass strips. As always in these calculations, there's always some extrapolation between numbers listed in the tables. The results of my calculations are attached. I found a DA calculator https://wahiduddin.net/calc/calc_da.htm that takes into consideration dew point, so my DA numbers may be a little different than yours, most of the apps E6B apps do not consider dew point. There is another app "AutoDens" that is pretty cool in which you can input an airport, and it will calculate DA at the current conditions, or you can input the numbers for any conditions.

my presentation and link to the power point presentation are as follows. The files are also available on the club website under Recourses > Past Presentations tab.

https://www.t-craft.org/documents/zoom/2026.BC.video.mp4

https://www.t-craft.org/documents/reference/2026.BC.pptx

Jim Manley's WLASSO presentation:

https://www.t-craft.org/documents/zoom/jim_manley.wlasso.3.28.24.mp4

You can request the membership and board meeting video links or meeting minutes from our club secretary, Jim Manley

Fly Safe, Have Fun, and Don't do anything Stupid

Cheers,

Jim

Take Off – Landing – Rate of Climb results 3/25/25 Jim Hudson

Airport Conditions: No wind, Gross weight, Temp 70 deg, Dew Point 45 deg F, Pressure 30.07.

KMAN Elevation 2537' 5,000' L x 75' W

	89E	93S	121M-STC	686/64R	93F-STC	375
Aircraft Type	C182P	C182Q	C182Q	C172M	C172N	C152
Field Elevation	2537'	2537'	2537'	2537'	2537'	2537'
Pressure Altitude	2387'	2387'	2387'	2387'	2387'	2387'
Density Altitude	3797'	3797'	3797'	3797'	3797'	3797'
TOC – Takeoff Dist	1000	830	675	1400	1500	1150
SF Takeoff Dist.	913'	902'	600'	1123'	1243'	946'
50% TO Dist	456'	451'	300'	562'	622'	473'
Vr	60 Mph	49 Kts	44Kts	65 Mph	48 Kts	50Kts
70% IAS at 50%	42 Mph	35Kts	31Kts	46 Mph	34 Kts	35Kts
TOC – Rate of climb	695	790	790	560	490	515
Rate of climb	710	800	800	662	594	614
Landing Distance	664'	655	600	583'	640'	528

U87 Smiley Cr. Grass Strip Elevation 7206' 4,900' L x 100' W

	89E	93S	121M-STC	686/64R	93F-STC	375
Aircraft Type	C182P	C182Q	C182Q	C172M	C172N	C152
Field Elevation	7206'	7206'	7206'	7206'	7206'	7206'
Pressure Altitude	7056'	7056'	7056'	7056'	7056'	7056'
Density Altitude	9511'	9511'	9511'	9511'	9511'	9511'
TOC – Takeoff Dist	1800	1450	1200	2450	2800	2050
SF Takeoff Dist.	1636'	1615'	1080	2114	2268'	1733'
50% TO Dist	818'	807'	540	1057'	1134'	866'
Vr	60 Mph	49 Kts	44Kts	65 Mph	48Kts	50Kts
70% IAS at 50%	42 Mph	35Kts	31Kts	46 Mph	34Kts	35Kts
TOC – Rate of climb	365	415	415	310	275	290
Rate of climb	467	488	488	438'	413'	419
Landing Distance	1137'	1096	1080	996'	1106'	911'

Sea Level – Standard Temp – Gross Weight Used for the Sporty's Take Off Calculator

	89E	93S	121M-STC	686/64R	93F-STC	93F-STC	C172N	375
Gross Wt.	2950	2950	2950	2300	2550	2400	2300	1670
SF Takeoff Dist	705	575	470	865	960	835	805	725
Clr 50' Dist	1350	1100	885	1525	1690	1465	1450	1340
Rate of climb	890	1010	1010	775	680	760	770	715
Landing-Gnd Roll	590	590	405	520	575	530	520	475
Landing-Clr 50'	1350	1350	920	1250	1335	1250	1250	1200