

How Far From Van Sant Airport Can You Safely Be in a Glider?

As you will see on p. 37 of the Soaring Tigers Handbook, for planning purposes we assume an effective L/D for the Schweizer 2-33 of 11.5:1, which is 50% of the nominal L/D. This reduction provides a margin of safety and takes into account estimated inefficiencies created by changes to the aircraft's performance over time, indicated airspeed error, as well as less than perfect piloting technique (i.e., every pilot's technique).

Using this more conservative and realistic effective L/D, and given an actual flight altitude, we can calculate the maximum distance we can be from the IP for the Van Sant glider pattern (1500' MSL over the center of Runway 7-25) that will, using good pilot judgment and decision-making, allow safe arrival at the IP and avoid an out-landing. For these calculations, we will use 1700' MSL as the IP altitude, since, for an additional margin of safety and the ability better to assess winds and traffic, we should always arrive at the IP with enough altitude to fly at least one circle before starting the crosswind leg.

Maximum safe distance in statute miles (SM) = [(actual flight altitude - 1700) * (effective L/D)] / 5280

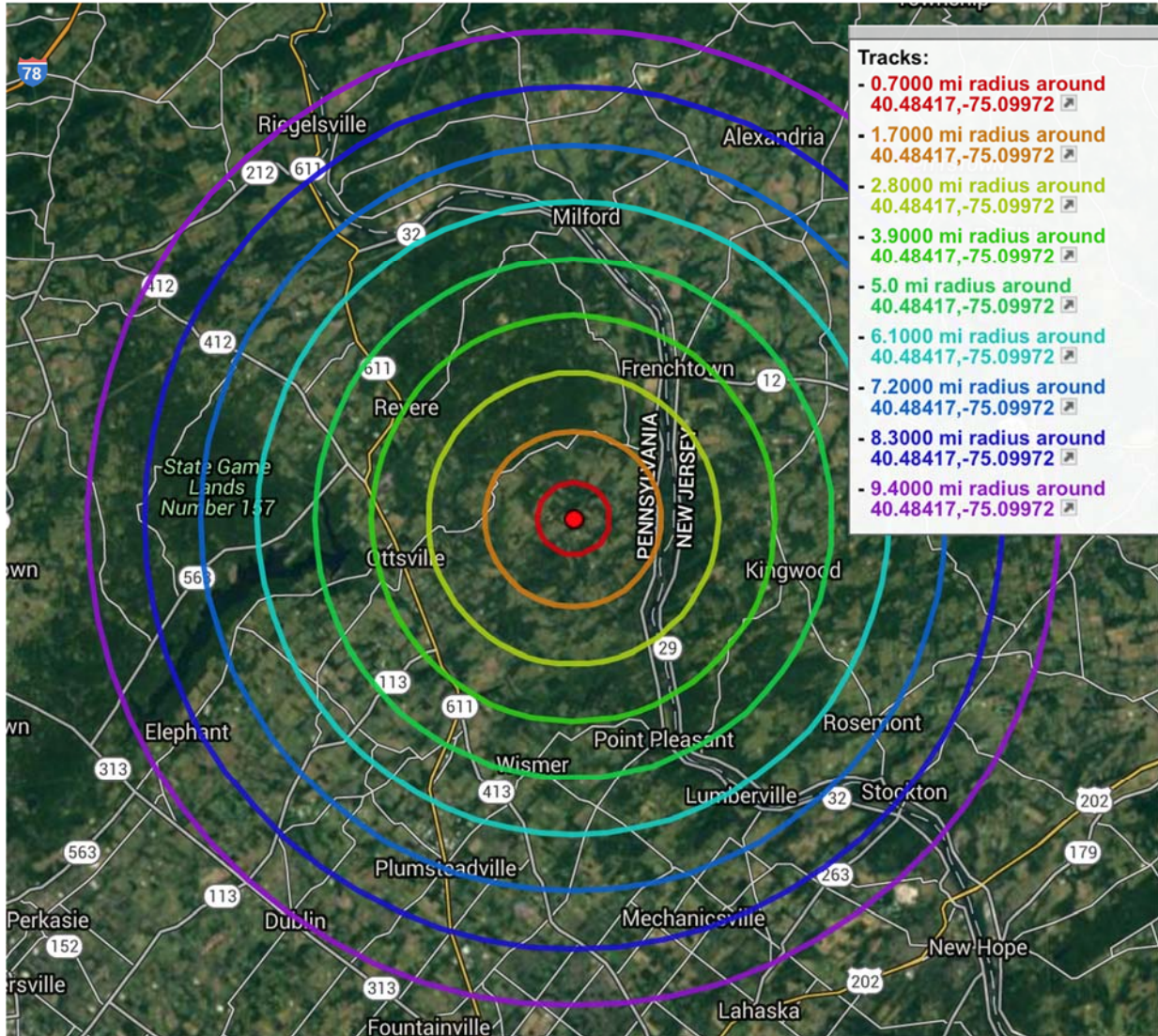
For example, given an actual altitude of 3000' MSL, the maximum safe distance from the IP = [(3000-1700) * 11.5] / 5280 = 2.8 sm (rounded to the nearest tenth of a mile). Note: if you prefer, these calculations can be done using nautical miles by dividing by 6076 ft/nm rather than 5280 ft/sm as shown above. However, each respective safe distance ring will be drawn exactly the same - just with different units.

Each maximum safe distance can be expressed as the radius of a circle centered at the IP. The table below shows the calculated safe radius at 500' intervals from flight altitudes of 2000' to 6000' MSL:

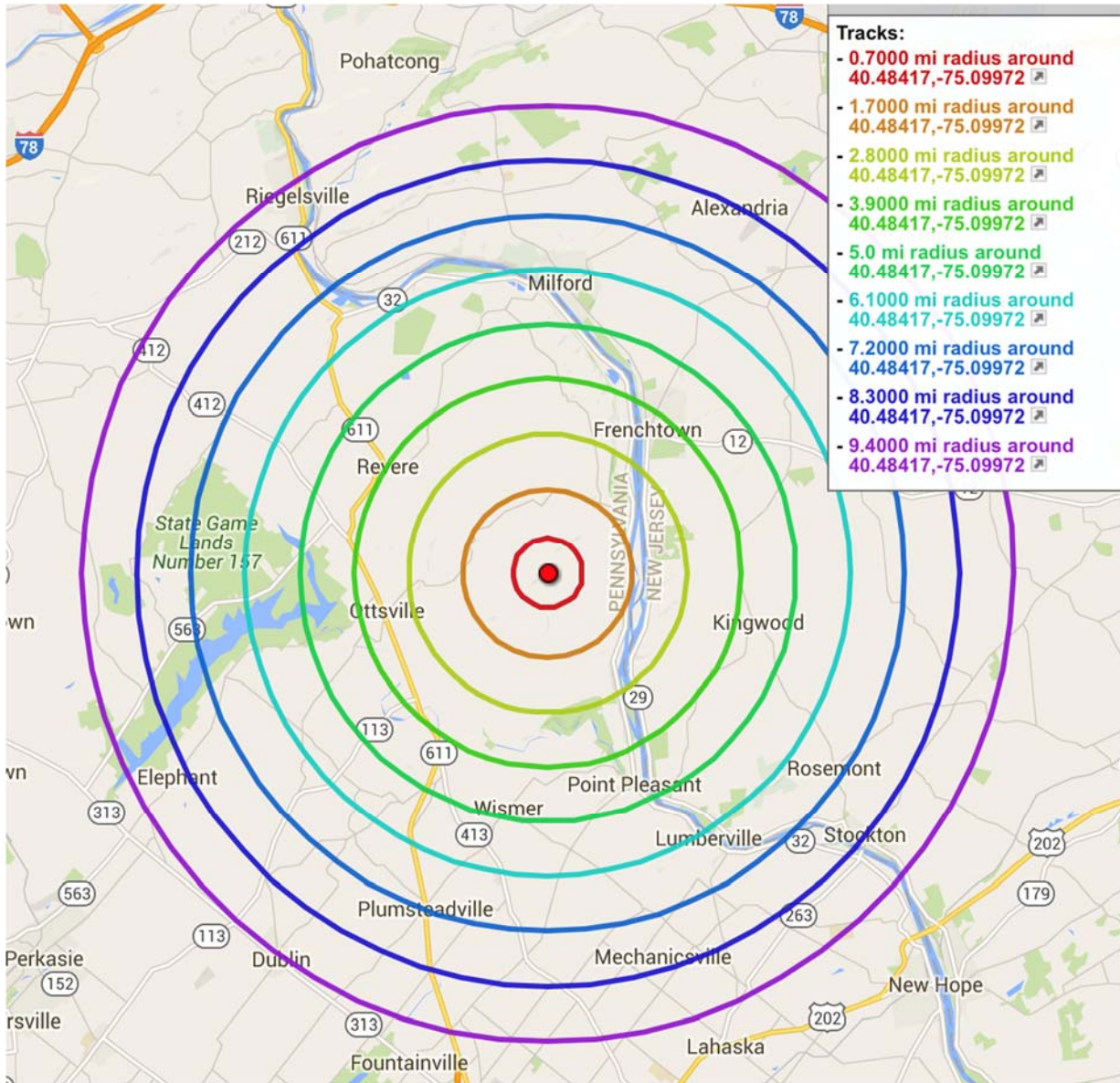
Altitude, MSL	Safe Radius from IP, sm
2000	0.7
2500	1.7
3000	2.8
3500	3.9
4000	5.0
4500	6.1
5000	7.2
5500	8.3
6000	9.4

Knowing these calculated radii is one thing, but relating them in a practical way to the area around Van Sant is another. To display this data more effectively, I have drawn each circle of the radius calculated above using Google Earth (both satellite hybrid and map displays). This will give 2-33 pilots a better visual indication of the maximum safe distance from the IP at Van Sant at each of these altitudes. For example, you can see that if you are over that portion of Lake Nockamixon closest to Van Sant, you should be at 3500' MSL or above.

PLEASE NOTE: YOU SHOULD ALWAYS REMAIN WELL INSIDE EACH RESPECTIVE SAFE DISTANCE CIRCLE SINCE THESE CALCULATIONS ASSUME A STRAIGHT-LINE FLIGHT FROM EACH CIRCLE TO THE IP, FLOWN IN ZERO WIND CONDITIONS, AT THE OPTIMUM L/D SPEED, AND WITH NO TURNS OR OTHER MANEUVERS. WINDS ALOFT AND/OR ANY MANEUVERING CAN **SIGNIFICANTLY** REDUCE THIS MAXIMUM SAFE DISTANCE.



BE SURE TO ALSO REVIEW THIS NEXT PAGE →



Please become familiar with these calculations, data, and displays. If you have any questions, let our club CFGI. I will be including questions about them as part of every solo and practical test endorsement and 61.56 Flight Review. Those pilots transitioning to the 1-26 or 1-34 should perform these calculations and create similar graphical displays based on 50% of the nominal L/D for those gliders. These tools will become especially critical in planning cross-country flights when the club embarks on that activity.