



SAR Command Assist

What is Probability of Area

An area's Probability of Area (POA) is the likelihood that the subject is there, rather than somewhere else. It is typically expressed as a percentage, e.g. there is a 22% chance the subject is in area A, and a 19.5% chance they're in area B.

What's a Region / Segment?

The process of determining POA starts with dividing the area into regions or segments. Each region represents an area of roughly equivalent probability, usually bounded by a change in terrain, vegetation, or a natural boundary.

For example, you might define one segment in cleared area with logging roads, another for the alpine above the tree line, and a third for the heavily wooded area between the two, bounded by a significant gully.

Typically, someone familiar with the area and the subject profile will draw the segments after some discussion with the rest of the incident management team.

How do you determine POA?

Once segments are drawn on the map, people with knowledge of the area and subject can each rate the areas on how likely they are, using a scale of 1-10. There are several specific ways to do this, but the method currently favoured in British Columbia is called a "Proportional Mattson Method (PMM)". In this method, everyone gives the segment they think is most likely a 10, and then values other segments relative to that one. Using the example above, you may decide that segment "B" in the alpine is the most likely, so you rate it 10. Segment A on the logging roads is about half as likely, so you rate it 5, and segment C in the bush is very unlikely so you rate it 1. At least one segment must be rated 10 in this method.

Once several people have each done this independently, the totals are tabulated and an average taken.

Luckily, computers can do the math part for you! See step 11-13 in the following page.

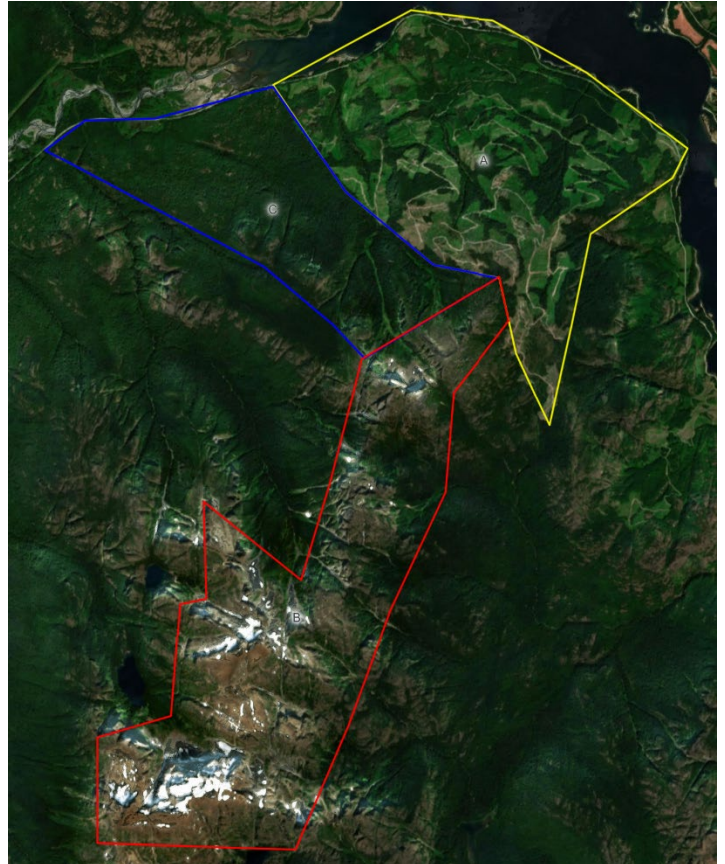
How is this used?

POA is used in search planning to prioritize resources. A relatively small area with a higher POA will typically get teams assigned to it ahead of areas with a lower POA.

If you want to get very fancy, you can use the size of the area, and its POA to calculate the Probability Density – the percentage change per square kilometer

Is there a quicker way?

Yes, if you're trained in Koester's Lost Person Behaviour, you can use the "Distance from IPP" range rings as a quick substitute. The 25% ring has a POA of 25%, the space outside the 25% and within the 50% ring has a POA of 25% etc.

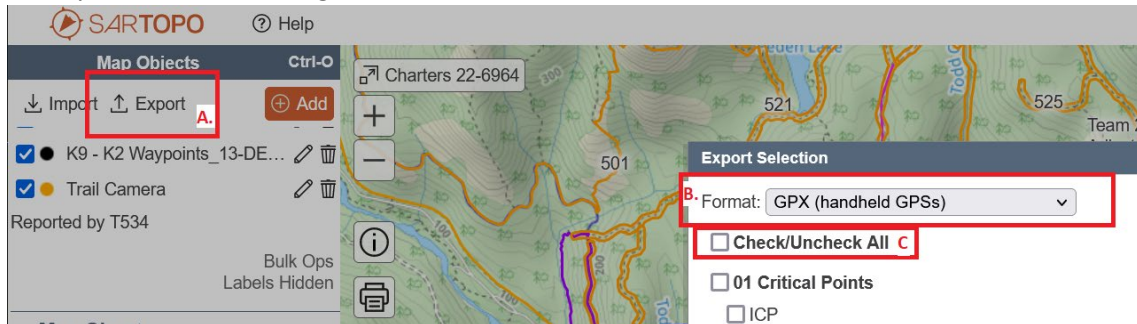




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Mattson Evaluations in SAR Command Assist + SARTopo

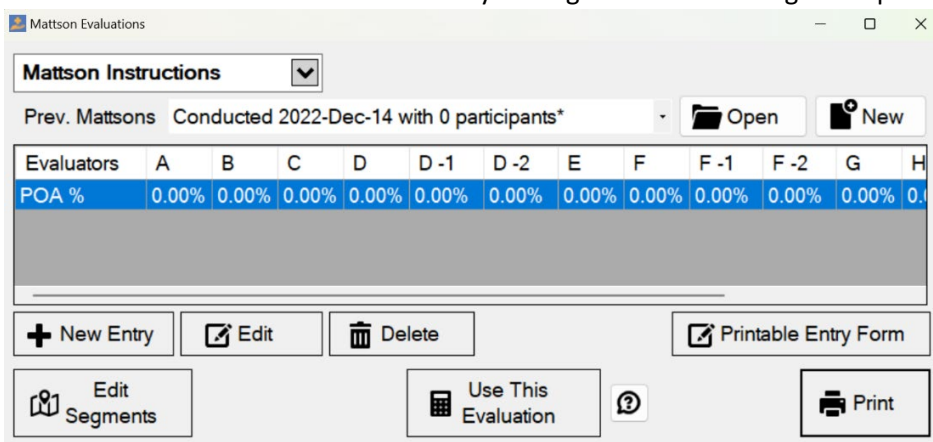
1. In sartopo, load the task map
2. Draw the search segments onto the map as Polygons. Give each a name, ideally A, B, C, etc.
3. Once you've drawn the segments:



- A. Click Export in the top left corner of Sartopo to load the export menu
 - B. At the top of the export menu, select "GPX (handheld GPSs)" in the Format menu
 - C. Uncheck All
 - D. Find the folder with your Segments and check it. It and its contents should be the only things checked.
 - E. Click the orange "Export" button to save the gpx file to your computer. By default, it will save in a Downloads folder.
4. Open SAR Command Assistant and load the current task.
 5. Go to Planning > Segmentation
 6. Click the "Import Segments from GPX" button at the top of the screen
 7. Browse to the file you exported in step 3 E.
 8. It will now load all of the segments found in that file. Either pick and choose the ones you want to import, or use the "Check All" button to select them all
 9. Click Import

You should now have all of the segments from sartopo listed in SAR Command Assist

10. From the main screen of SAR Command Assist, go to Planning > Mattson
11. You should now see a screen with all of your segments listed along the top.



12. Click "New Entry" and have one evaluator make their assessment of the segments, selecting 1-10 as appropriate
13. As evaluations are saved, the POA % line should automatically update.



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Once the Matton evaluations have been done, you can now view and make use of the POA.

14. From the main screen of SCA, go to Planning > Segmentation

15. You can now view a list of segments, their size, POA and Probability Density – or the percentage chance that each square kilometer in that area contains the subject.

Search Segmentation

Import Segments from GPX

Segment	Area (KM ²)	POA	Pden per KM ²	Assignments This Op	Total Assignments
A	13.26	31.250%	2.36%	0	0
B	15.64	62.500%	4.00%	0	0
C	7.98	6.250%	0.78%	0	0

+ Add Segment Edit Delete Mattson

16. You can use this information to manually prioritize your assignments as needed. Typically, you would assign resources first to those areas with the highest Probability Density (Pden).

Alternatively, you can use SAR Assist to help with this process

17. Create your assignments or import them from sartopo. Be sure to enter the area of the assignments if you're creating them manually.

18. On the main screen of SCA, go to Planning > Assignment Stats

19. Go through the assignments, assigning a Map Segment for each

20. If possible, also assign other values used for the stats such as range of detection, spacing, POD, number of members, and movement speed.

*hint: you can highlight several assignments at once and click "Edit Assignment Stats" to set the same values for all of the selected assignments

21. Once you have done this, you should have a grid like this one:

Team Assignment Statistics

Statistics Charts

Team	Map Segment	POD	Speed	Spacing	RD	POA	Area (KM ²)	Pden (KM ²)	POS	PSR / h	Priority
101	B	63.21%	1.6 KM/h	21.6	12	62.50%	2.0129	31.05%	39.51%	1.07%	0
102	B	63.21%	1.6 KM/h	21.6	12	62.50%	3.6575	17.09%	39.51%	0.59%	0
103	B	63.21%	1.6 KM/h	21.6	12	62.50%	4.4014	14.20%	39.51%	0.49%	0
104	B	63.21%	1.6 KM/h	21.6	12	62.50%	5.5628	11.24%	39.51%	0.39%	0
105	C	63.21%	1.6 KM/h	21.6	12	6.25%	13.2662	0.47%	3.95%	0.02%	0
199 Rapid Intervention Team		0.00%	0.0 KM/h	0	0	0.00%	0.0000	0.00%	0.00%	0.00%	0

22. Notice the system has calculated POS or Probability of Success for each assignment, as well as PSR/h. PSR/h is the Probability of Success Ratio per Hour – or simply, for every hour they're out there, how likely are they to find the subject. This is based on the duration of their assignment, the size, poa, pod, etc.

23. You can use the "Prioritize by POS" button at the bottom to automatically prioritize your assignments by PSR/h.