

Roam

By T. P. Sullivan, W1AUV

Microwave enthusiasts look forward each year to August and September and the two weekend ARRL10 GHz and up Cumulative Contest. Its participants spend all year getting ready by enhancing old gear, building new gear and fixing what they broke the last time. They make plans for next year and evaluate what they did right and wrong. Some operate the contest to test what they build and others try to make a longer distance QSO than they did last year. Everyone has a different goal. The competition is, from my perspective, friendly but serious. We help each other when we can because nobody wants to see anyone lose a long distance contact. However, we all want to improve our score from last year and maybe have some bragging rights.

There are many possible strategies when operating in the 10 GHz and up Cumulative Contest. If you can find a good mountaintop in a strategic location, devoid of trees or tall vegetation, you can set up your gear and spend the day operating in one spot. Many hams will affirm that, if you stay alert after the sun goes down, you can make some interesting long distance contacts using enhancements.

Of course besides operating from a mountaintop many people operate from home stations for the entire contest. I have discovered that while there are certain advantages to staying in one spot for the contest there are distinct advantages if you move around. For example, if you move 10 miles (16 km) you can start all over making contacts with people you previously contacted. When the activity level slows down, I have waited hours to talk to someone new. When we hear that someone will be in a new location at such and such a time we wait eagerly. They will let out a call that they are setting up at the new location and everyone on the liaison frequency waits for their chance to pounce.

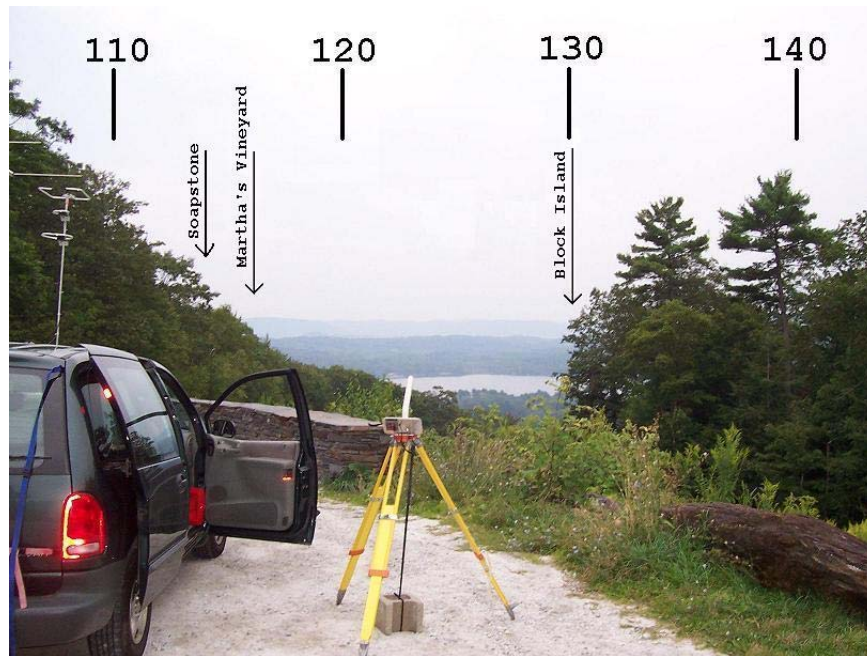


Figure 1 FN32hi - Olivia's Overlook, Stockbridge MA

One problem is that it is getting harder to find a mountain to use. Here in New England, many of the good mountains are becoming covered in trees which attenuate or altogether block microwave signals. Many mountains are also crowded with non-ham people sometimes making it hard to operate. Hard because you have to be careful not to point your antenna at a crowd of bird watchers (for example) and also because you are more likely to have to answer questions about what kind of activity you are engaged in. I don't mind explaining what

I am doing for the most part as it helps to increase awareness of and interest in ham radio. I have heard some hams complain about this; however, let's face it, tripods with parabolic reflectors mounted on them and Yagis on short, guyed masts along with wires, batteries and coax cable surely warrants an explanation. But this can slow you down.

Another problem with mountains is that some, like Mt. Greylock here in Berkshire County Massachusetts, have permit requirements in order to use the top of the mountain for our ham activities (and I understand there is a steep fee). Other mountains have gate times too. You may want to get up on top by sunrise but the gate may not open until 8 or 9 AM. Some mountains are hard to get up and may even require a hike or a ride on a chair lift. Even the bare minimum of equipment is heavy and/or cumbersome to transport.



Figure 2 FN32ii - behind Shadowbrook in Stockbridge MA

So I have learned to try and take the path “less travelled.” Yes I still visit mountaintops but I have discovered new locations to use. These locations are sometimes just a spot on the side of a road or a highway. They can also be scenic rest stops on Interstates. I use these new locations as filler between what might be called major locations. These filler locations usually have good access but somewhat limited visibility which is why they usually don't get a lot of attention. I choose to use them because of their view towards other popular or mountain locations where other hams may be. These locations can be lucrative even if only one or two other sites are ‘visible’.

For example, Olivia's Overlook near Stockbridge MA (Figure 1) provides a scenic view of Stockbridge Bowl (a lake) and serves as access to some hiking trails. It only has 15-18 degrees of clear horizon. But within that small window lies a clear shot at both Martha's Vineyard and Block Island. There are usually two or three hams operating on one or the other island. I remember that on one weekend during the contest there were two or three microwave equipped hams on both islands. With the points distance in kilometers at 236 and 192 kilometers respectively they are not long haul contacts like we see with the California hams. But I was able to collect a lot of points when I stopped there. It has easy access and I can set my equipment up fast. I have been in

and out of this location inside of 30-45 minutes on my way from one or two sites in New York State and my home. The points I earned for this stop would be like making one very long distant contact.



Figure 3 FN32qg - Scenic Rest stop on I-91

Another spot is just below Olivia's Overlook. It faces more to the south and I have made several very good contacts from there too (FN32ii04 – See Figure 2). I have to operate this site from across the road from the opening but again, I can pull in, set up, operate, tear down and get out fast.

Another site is a scenic rest stop along I-91 near Holyoke MA (Figure 3). From there I have worked Mount Wachusett near Leominster MA, Martha's Vineyard, Westboro Water Tower and Block Island. I just pull in the South Bound rest stop, do my thing and leave.

This new strategy has worked very well for me over the last few years. The general increase in my score since I have begun participating in the microwave contest has certainly reflected this. Over the past few years I have cataloged these new sites. I have taken photographs of the 'view' they provide and I have superimposed the degree headings right onto the photos along with the 6 and 8 digit Maidenhead although 6 or 8 make sense for the microwave contest. I have in some cases stitched individual photos together to create one panoramic photo. I post these on my web site: <http://tpsully.googlepages.com>.

After the contest a couple of years ago I realized that I needed a tool to help me in my contest planning. I had collected a lot of the data but I had no way to analyze it. What I wanted was a way to rank sites based on distance and visibility to other locations. I had a lot of information but no easy way to pull it all together. This led me to develop a computer program I call Roam¹.

Roam is a PC command line program that reads a text file as input and writes a text file as output. The input file is a list of lines containing comma separated values. Each line has four fields. The first field is location. The locations can be given in 2, 4, 6 or 8 digit Maidenhead although 6 or 8 make sense for the microwave contest. The second field contains the degree heading of the left-most edge of the horizon or window. The third field contains the degree heading of the right-most edge of the horizon or window. The last field is a text description of the location (with no commas). A sample input file is shown in Appendix A.

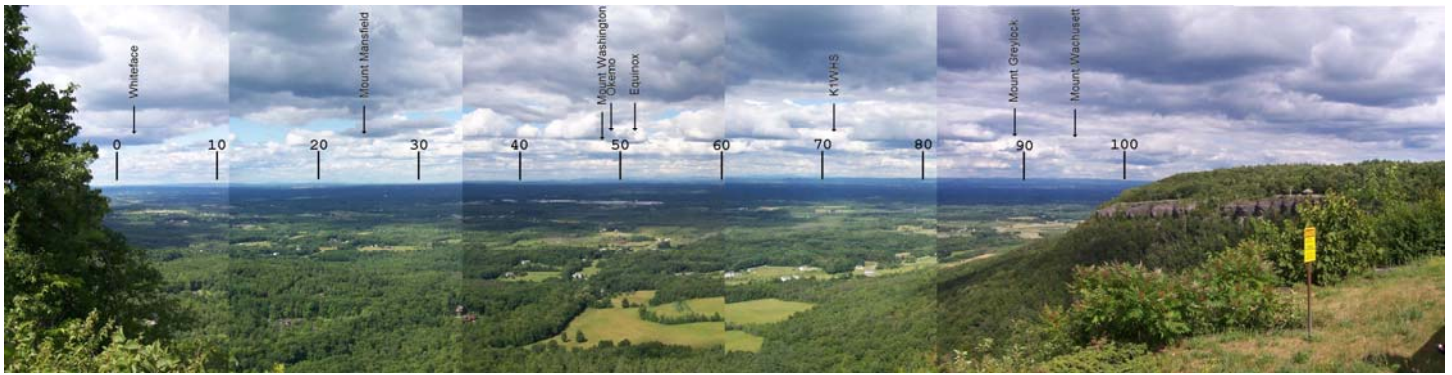
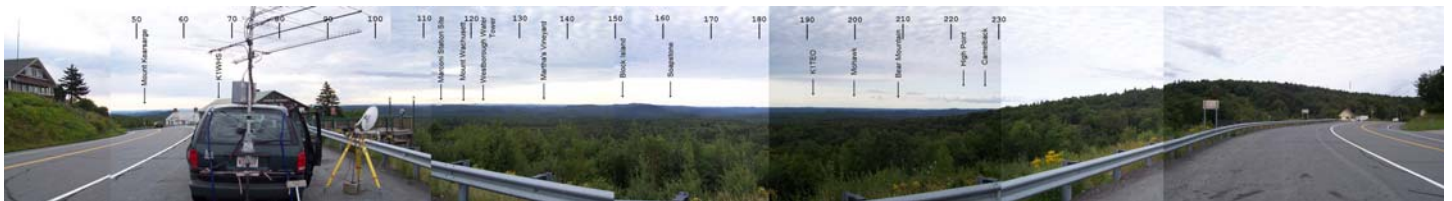


Figure 4 FN22xp - John Boyd Thatcher State Park Voorheesville, NY
(if you go call the park Superintendent first and let him know you'll be there)

Roam reads the input file and processes it to determine the distance and bearing between each of the location combinations. But this isn't just batch processing of distance and bearing although it could be used for that. By default, Roam only includes in the output those locations that are 'visible' to each other. This means that if one mountain location has no clear path to the south then the distance and bearing to a mountain to the south is not sent to the output file even if the mountain to the south has a clear shot to the mountain to the north.



Using Roam

The possible command line options are shown below:

ROAM V1.01 by W1AUV 2008

SYNTAX: ROAM Inputfile Outputfile [[/r][/e][/d#]

/r - Raw output (no valid path checking)
/e - Echo to console window
/d# - Maximum distance to display
e.g. /d240 (maximum distance 240 km)

The command line option /r for raw output will override the program's normal behavior and will compute the distance and bearing to all locations and write it to the output file regardless of visibility. This option is provided for hams who wish to generate tables of distance and bearing. The optional /e or echo option writes the computed output to the screen as well as the output file. The last command line option is /d or maximum Distance. If the maximum practical distance capability for your equipment (based on your experience) is 400 km then you may want to use the /d switch to set the maximum distance at 400km (or perhaps a little more if you are optimistic).

A sample run could look like this:

```
>roam sample.txt out.txt
```

ROAM V1.01 by W1AUV 2008

Read 20 lines from sample.txt.

There were 42 clear paths out of 380 possible

The results of this sample run on the input file in Appendix A are shown in Appendix B.

Ranking

A way to rank sites is by how many other sites are 'visible' to them. You can also use a weighting based on visibility and distance. This can just be by inspecting what good filler sites are close to or between other major sites.

Future Improvements

One thing that Roam does not take into account is terrain. I have considered adding this using SRTM data. It might be a fair amount of work though and other programs do a nice job at this already². I think that most people already know if locations they go to have a clear path to another location. Still, it may be something to look at.

Summary

I hope that others like Roam and find it useful in planning for our summer microwave contest. Remember, the next time you are out in the contest (or at other times), catalog locations like rest stops and parking lots that have some kind of a view. Record the location in Maidenhead and the left and right clear views in degrees. If you can, take a picture or pictures and put the degree headings on the photos. If you are really generous post them for others. I think it will help to get more people out there moving to new and prosperous locations. That can enhance score, and promote interest and fun.

Appendix A - Sample input file

```
FN31it47,340,20,Mohawk Mountain North Site
FN31it47,170,210,Mohawk Mountain South Site
FN32hi94,115,135,Olivia's Overlook
FN32ii03,170,225,Behind Shadowbrook
FN32jn42,180,230,Greylock Visitor's Center
FN32jp92,260,295,Greylock Loop Road Vista
FN32kp02,35,220,Greylock Overlook
FN32ou44,50,230,Hogback
FN32qg51,60,145,Rest Stop Holyoke 91 South
FN33kd47,45,100,Equinox - Bottom of Saddle East
FN33kd47,260,315,Equinox - Bottom of Saddle West
FN33kd48,80,220,Equinox - Top of the Saddle
FN33kd59,135,340,Equinox - South Edge of Hotel Porch
FN33kd59,350,60,Equinox - NE corner of parking lot
```

FN41ee,0,360,Block Island Site 1
FN41ni93,0,360,Gay Head Lighthouse Martha's Vineyard
FN42bl37,0,360,Mount Wachusett
FN42fg08,173,355,Westborough Water Tower
FN43bj60,90,245,Mount Kearsarge
FN44ig35,90,270,Mount Washington NH

Appendix B - Sample Output File

ROAM V1.01 by W1AUV 2008

Source	Target	Distance (km)	Bearing	Reverse	Description
FN31it47	FN32ii03	58.3	357.3	177.3	Mohawk Mountain North Site to Behind Shadowbrook
FN31it47	FN32jn42	81.2	4.8	184.9	Mohawk Mountain North Site to Greylock Visitor's Center
FN31it47	FN32kp02	90.8	6.9	187.0	Mohawk Mountain North Site to Greylock Overlook
FN31it47	FN32ou44	121.4	19.6	199.9	Mohawk Mountain North Site to Hogback
FN31it47	FN33kd48	149.1	5.2	185.3	Mohawk Mountain North Site to Equinox - Top of the Saddle
FN31it47	FN33kd59	149.6	5.4	185.6	Mohawk Mountain North Site to Equinox - South Edge of Hotel Porch
FN32hi94	FN41ee	192.3	131.8	312.9	Olivia's Overlook to Block Island Site 1
FN32hi94	FN41ni93	235.6	117.5	299.2	Olivia's Overlook to Gay Head Lighthouse Martha's Vineyard
FN32ii03	FN31it47	58.3	177.3	357.3	Behind Shadowbrook to Mohawk Mountain North Site
FN32jn42	FN31it47	81.2	184.9	4.8	Greylock Visitor's Center to Mohawk Mountain North Site
FN32kp02	FN31it47	90.8	187.0	6.9	Greylock Overlook to Mohawk Mountain North Site
FN32kp02	FN41ee	205.1	141.2	322.2	Greylock Overlook to Block Island Site 1
FN32kp02	FN41ni93	239.8	125.9	307.5	Greylock Overlook to Gay Head Lighthouse Martha's Vineyard
FN32kp02	FN42bl37	105.9	98.4	279.3	Greylock Overlook to Mount Wachusett
FN32kp02	FN42fg08	135.9	106.1	287.2	Greylock Overlook to Westborough Water Tower
FN32kp02	FN43bj60	134.2	51.6	232.5	Greylock Overlook to Mount Kearsarge
FN32kp02	FN44ig35	235.9	38.8	220.1	Greylock Overlook to Mount Washington NH
FN32ou44	FN31it47	121.4	199.9	19.6	Hogback to Mohawk Mountain North Site
FN32ou44	FN41ee	208.6	152.0	332.8	Hogback to Block Island Site 1
FN32ou44	FN41ni93	232.6	135.3	316.6	Hogback to Gay Head Lighthouse Martha's Vineyard
FN32ou44	FN42bl37	84.6	118.2	298.8	Hogback to Mount Wachusett
FN32ou44	FN42fg08	118.0	121.9	302.7	Hogback to Westborough Water Tower
FN32ou44	FN43bj60	95.7	52.1	232.7	Hogback to Mount Kearsarge
FN32qg51	FN41ee	144.7	144.9	325.5	Rest Stop Holyoke 91 South to Block Island Site 1
FN32qg51	FN41ni93	179.2	123.7	304.9	Rest Stop Holyoke 91 South to Gay Head Lighthouse Martha's Vineyard
FN32qg51	FN42bl37	65.7	66.5	246.9	Rest Stop Holyoke 91 South to Mount Wachusett
FN32qg51	FN42fg08	86.0	87.5	268.2	Rest Stop Holyoke 91 South to Westborough Water Tower
FN33kd47	FN44ig35	192.3	49.1	230.4	Equinox - Bottom of Saddle East to Mount Washington NH
FN33kd48	FN31it47	149.1	185.3	5.2	Equinox - Top of the Saddle to Mohawk Mountain North Site
FN33kd48	FN41ee	251.7	150.0	331.0	Equinox - Top of the Saddle to Block Island Site 1
FN33kd48	FN41ni93	276.1	136.1	317.7	Equinox - Top of the Saddle to Gay Head Lighthouse Martha's Vineyard
FN33kd48	FN42bl37	125.9	126.0	306.8	Equinox - Top of the Saddle to Mount Wachusett
FN33kd48	FN42fg08	159.8	127.0	308.1	Equinox - Top of the Saddle to Westborough Water Tower
FN33kd59	FN31it47	149.6	185.6	5.4	Equinox - South Edge of Hotel Porch to Mohawk Mountain North Site
FN33kd59	FN41ee	251.8	150.2	331.2	Equinox - South Edge of Hotel Porch to Block Island Site 1
FN33kd59	FN41ni93	275.9	136.3	317.8	Equinox - South Edge of Hotel Porch to Gay Head Lighthouse Martha's Vineyard
FN33kd59	FN44ig35	191.2	49.2	230.5	Equinox - NE corner of parking lot to Mount Washington NH
FN41ee	FN32hi94	191.4	314.0	132.9	Block Island Site 1 to Olivia's Overlook
FN41ee	FN32kp02	204.9	323.2	142.2	Block Island Site 1 to Greylock Overlook
FN41ee	FN32ou44	209.1	333.8	153.0	Block Island Site 1 to Hogback
FN41ee	FN33kd48	252.1	331.9	150.9	Block Island Site 1 to Equinox - Top of the Saddle
FN41ee	FN33kd59	252.1	332.0	151.1	Block Island Site 1 to Equinox - South Edge of Hotel Porch
FN41ee	FN41ni93	71.9	73.6	254.2	Block Island Site 1 to Gay Head Lighthouse Martha's Vineyard
FN41ee	FN42bl37	147.8	352.8	172.7	Block Island Site 1 to Mount Wachusett
FN41ee	FN42fg08	124.1	3.2	183.2	Block Island Site 1 to Westborough Water Tower
FN41ee	FN43bj60	245.6	356.2	176.1	Block Island Site 1 to Mount Kearsarge
FN41ee	FN44ig35	345.8	4.7	185.0	Block Island Site 1 to Mount Washington NH
FN41ni93	FN32hi94	235.6	299.2	117.5	Gay Head Lighthouse Martha's Vineyard to Olivia's Overlook
FN41ni93	FN32kp02	239.8	307.5	125.9	Gay Head Lighthouse Martha's Vineyard to Greylock Overlook
FN41ni93	FN32ou44	232.6	316.6	135.3	Gay Head Lighthouse Martha's Vineyard to Hogback
FN41ni93	FN32qg51	179.2	304.9	123.7	Gay Head Lighthouse Martha's Vineyard to Rest Stop Holyoke 91 South
FN41ni93	FN33kd48	276.1	317.7	136.1	Gay Head Lighthouse Martha's Vineyard to Equinox - Top of the Saddle
FN41ni93	FN33kd59	275.9	317.8	136.3	Gay Head Lighthouse Martha's Vineyard to Equinox - South Edge of Hotel Porch
FN41ni93	FN41ee	68.3	255.1	74.6	Gay Head Lighthouse Martha's Vineyard to Block Island Site 1
FN41ni93	FN42bl37	153.7	326.0	145.3	Gay Head Lighthouse Martha's Vineyard to Mount Wachusett
FN41ni93	FN43bj60	240.5	339.9	159.2	Gay Head Lighthouse Martha's Vineyard to Mount Kearsarge
FN41ni93	FN44ig35	326.9	353.5	173.2	Gay Head Lighthouse Martha's Vineyard to Mount Washington NH
FN42bl37	FN32kp02	105.9	279.3	98.4	Mount Wachusett to Greylock Overlook
FN42bl37	FN32ou44	84.6	298.8	118.2	Mount Wachusett to Hogback
FN42bl37	FN32qg51	65.7	246.9	66.5	Mount Wachusett to Rest Stop Holyoke 91 South
FN42bl37	FN33kd48	125.9	306.8	126.0	Mount Wachusett to Equinox - Top of the Saddle
FN42bl37	FN41ee	146.1	171.4	351.5	Mount Wachusett to Block Island Site 1
FN42bl37	FN41ni93	153.7	145.3	326.0	Mount Wachusett to Gay Head Lighthouse Martha's Vineyard
FN42bl37	FN42fg08	34.0	131.8	312.0	Mount Wachusett to Westborough Water Tower
FN42bl37	FN43bj60	98.5	1.2	181.2	Mount Wachusett to Mount Kearsarge
FN42bl37	FN44ig35	203.5	13.2	193.6	Mount Wachusett to Mount Washington NH
FN42fg08	FN32kp02	135.9	287.2	106.1	Westborough Water Tower to Greylock Overlook
FN42fg08	FN32ou44	118.0	302.7	121.9	Westborough Water Tower to Hogback
FN42fg08	FN32qg51	86.0	268.2	87.5	Westborough Water Tower to Rest Stop Holyoke 91 South
FN42fg08	FN33kd48	159.8	308.1	127.0	Westborough Water Tower to Equinox - Top of the Saddle
FN42fg08	FN41ee	121.9	181.8	1.8	Westborough Water Tower to Block Island Site 1
FN42fg08	FN42bl37	34.0	312.0	131.8	Westborough Water Tower to Mount Wachusett
FN42fg08	FN43bj60	123.4	349.3	169.1	Westborough Water Tower to Mount Kearsarge
FN43bj60	FN32kp02	134.2	232.5	51.6	Mount Kearsarge to Greylock Overlook
FN43bj60	FN32ou44	95.7	232.7	52.1	Mount Kearsarge to Hogback

FN43bj60, FN41ee,	243.8, 175.3, 355.5, Mount Kearsarge to Block Island Site 1
FN43bj60, FN41ni93,	240.5, 159.2, 339.9, Mount Kearsarge to Gay Head Lighthouse Martha's Vineyard
FN43bj60, FN42bl37,	98.5, 181.2, 1.2, Mount Kearsarge to Mount Wachusett
FN43bj60, FN42fg08,	123.4, 169.1, 349.3, Mount Kearsarge to Westborough Water Tower
FN44ig35, FN32kp02,	235.9, 220.1, 38.8, Mount Washington NH to Greylock Overlook
FN44ig35, FN33kd47,	192.3, 230.4, 49.1, Mount Washington NH to Equinox - Bottom of Saddle East
FN44ig35, FN33kd59,	191.2, 230.5, 49.2, Mount Washington NH to Equinox - NE corner of parking lot
FN44ig35, FN41ee,	343.4, 184.5, 4.3, Mount Washington NH to Block Island Site 1
FN44ig35, FN41ni93,	326.9, 173.2, 353.5, Mount Washington NH to Gay Head Lighthouse Martha's Vineyard
FN44ig35, FN42bl37,	203.5, 193.6, 13.2, Mount Washington NH to Mount Wachusett

¹ To download Roam go to <http://tpsully.googlepages.com>

² For example, Radio Mobile. Go to www.where_is_radio_mobile.com