Prefix Locator

By Eugene Morgan (WB7RLX)

I first got interested in computers not long after I got interested in ham radio and for some reason I always felt like at some point the two technologies would ultimately come together. Not long after I got my ham license back in 1977 we started seeing some signs of that convergence. In fact one of the very first OARC club meeting I attended was a presentation of an IMSAI 8080. It's fair to say that it was this presentation that pointed me in the direction that my life's work would go in.

Figure 1: IMSAI 8080 Released in December of 1978

Being a young man with limited funds and a new wife with two young boys it took us several years to scrap together enough money to buy my first computer, a Commodore VIC 20 with an incredible 3.5K of memory. Not long after I was able to add an additional 24K of memory. It was on that machine that I started down the path of writing software.
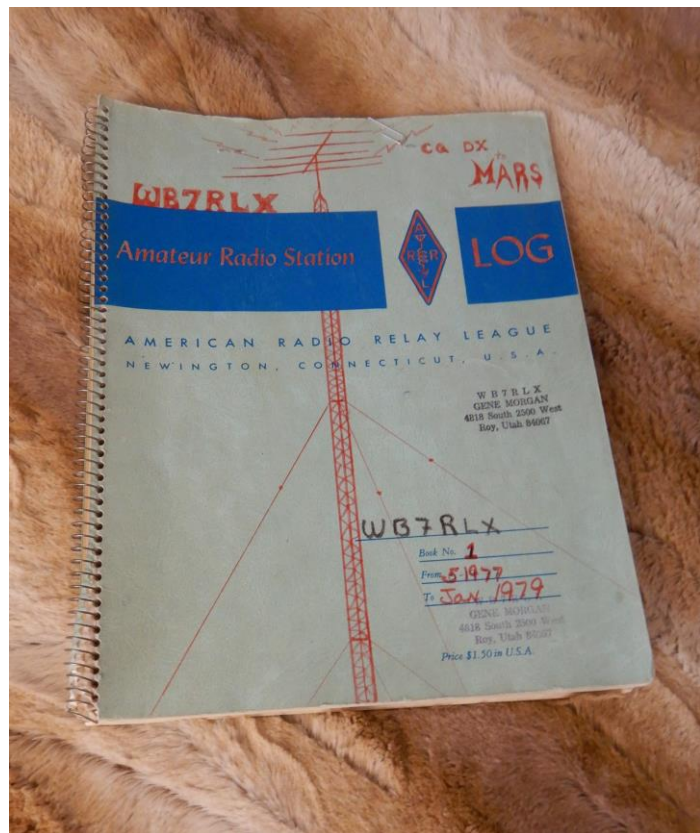
I was also very much into ham radio. At that time the sun spot cycle was peaking and signals from all over the world were being received by my home brew 6 element 10 meter monster yagi. It was a wonderful time for ham radio and a wonderful time for me, with the emphsis on "wonder". Back then there was no Internet as we know it today and what Internet there was was limited to universities and the government. The World Wide WEB would not be invented for several more years, 1989. Consequently looking up prefixes was done using the paper ARRL log book which included a DXCC list in the back. One day as I was sitting there logging QSO's and looking up prefixes I decided that I would write a program that would simplify the process for me so I set about writing one my my very first, what I will call, "useful programs". After getting the prefix lookup program done I thought it would be cool to also have it tell me what direction to aim my yagi and how far away the station was. As all programmers know a program is never really done. After it's "done" someone invariably wants to start adding features.

Using an algorithm I found in a book called, "*The Giant Book of Computer Software*" published by the editors of 73 magazine I was able to translate distance and bearing algorithm into Commodore (Microsoft) BASIC, and lo and behold it worked! I remember several evenings sitting at my computer while my wife sat with this huge atlas looking up lat/longs for the various DXCC countries around the world.

Once again following the montra that a program is never really done I thought it would be cool to add a Maximum Usable Frequency (MUF) feature along with sunrise and sunset times. At that point I really felt I was done. All and all I thought it was a pretty cool program. One day my wife suggested I send it to 73 magazine and see if they might be interested in publishing it. At that time all the magazines were looking for type-ins which were always a big hits with the readers at that time. They were interested and published the article in the Feburary 1984 issue of 73 magazine. The article was called, "*Put the DX*

World on a Screen" (see: [73 Magazine (February 1984) : Free Download, Borrow, and Streaming : Internet Archive](#)).   As time went on I wrote a few other programs that were also published. The next article was a code practice utility for the VIC 20 that was published in July 1984 (See: [73 Magazine (July 1984) : Free Download, Borrow, and Streaming : Internet Archive](#)). That was followed by another program about Yagi Antenna design. The program would design a Yagi Antenna based on the research done by Peter P. Viezbicke and published in the National Bureau of Standards Technical Note 688. It can be found on the internet at: https://archive.org/details/yagiantennadesig688viez/page/n1/mode/2up.

I felt that I had found my true calling in life – computers. From there I went on to work for several local computer reatilers in the Ogden area. Which later brought me to the attention of Microsoft. I went to work for Microsoft in 1996 and after 21 years there I retired.   I think it's fair to say – it all started for me at an OARC club meeting some time in the late 70's where I first came face to face with these wonderful, perplexing and fascinating wonders of the modern age.

Figure 3: My first log book and a page showing when I got my General Class license.

Now I want to turn the clock to more recent times. After I retired I was starting to feel like my brain was turning to mush. My Job at Microsoft required me to write a lot of scripts that could interface to what Microsoft called, "Active Directory". It addition I was also asked to write a lot of different "batch files" and scripts for our customers. Later I started writing some pretty sophisticated Excel spreadsheets that my teams used to manage large programs and projects budgets for managing the financials. I enjoyed these kinds of projects because they took me back to my first love, coding. After retiring I decided to start writing my own software for running my ham station even though there were a number of very good programs used for QSO logging. One of my first endeavors was to write my own logging programs. It was during this effort were I learned the ins and outs of writing CAT control algorithms for my radios and the details of the Amateur Data Interchange Format ADIF standards. I was now able to not only control my radios through software but also pull data from my radio such as frequency and mode settings. I was also able to export and import my logs to QRZ using the ADIF standard. Over time I wrote a number of programs that I use every day in my station. That now brings us to the primary topic of this article, the Prefix Locator utility.

The current version of the Prefix Locator utility is a much simpler version of the program I wrote back in 1983 with a much larger database. The data base includes all of the 2020 DXCC entities. If you enter in a prefix it will return the possible countries or DXCC entities associated with that prefix. It does not give you latitude, longitude, distance, bearing, MUF or sunrise and sunset times as my first version did. You will note however that the prefix.txt data file does include the latitude and longitude along with DXCC Code, the ITU Code and the CQ Zone number for each prefix. I decided to leave that data there for possible use later if I decide to update program. In this version of the program I decided to leave all of that out given that it is readily available on the internet. Perhaps one of the best prefix locator programs I've found on the internet is the one on QRZ, DX Atlas by QRZ Ham Radio. The intention of this

little utility was to do one thing, provide the DXCC entity name for each prefix and to do it very quickly, simplicity was my primary functional requirement. I also wanted it to be able to run it with no dependency on the internet so it could be used as a part of a mobile operation.

The program can be downloaded from the OARC web site. Once you download it unzip the file. From there the read me file will tell you how to install it. To run it just launch it, type in a prefix at the prompt and it will respond with a list of possible countries. If the country list is terminate by three periods that means there were too many entities to list. See the example below. This is a lookup for the prefix **UA**. As you can see there are a lot of DXCC entities that use the UA prefix. You can get a bit more specific by typing in a longer prefix, usually not more than three character, UA0 for example which will return Asiatic Russia. If you type in a longer prefix the utility will perform a lookup, if it finds nothing it will chop off the last character and do another search. It will keep doing that until it finds a match or is down to only one character. After doing a lookup you can do another lookup by typing in another prefix or just press the enter key to terminate the program. The program will terminate if the search value is empty.
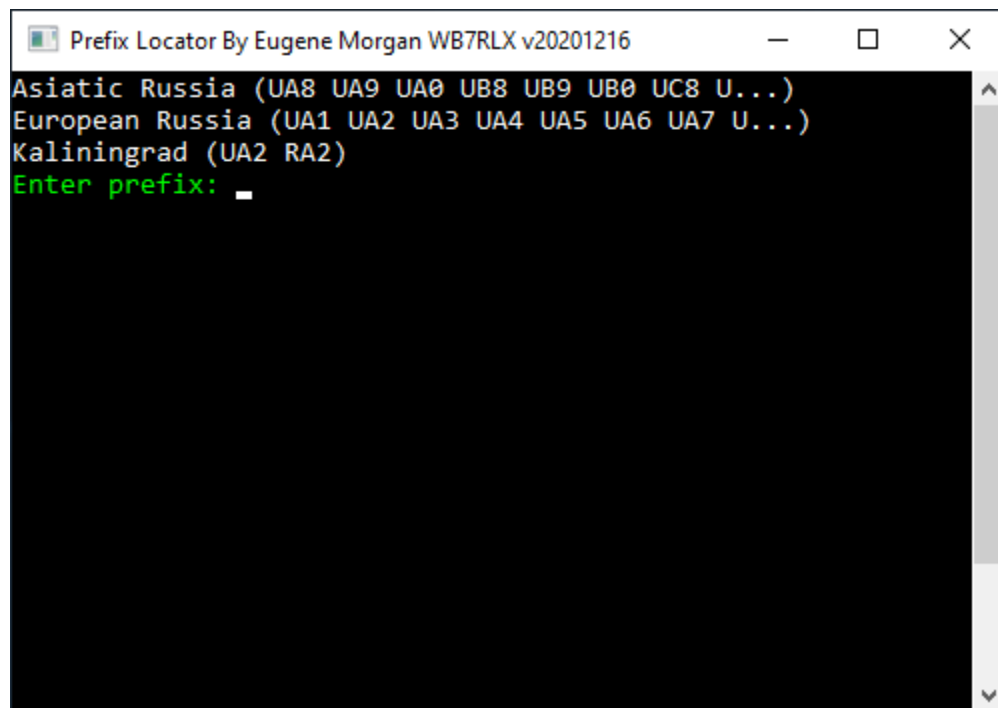

Figure 4: Prefix lookup for UA

I like to leave this little utility up and running when I'm on the air and if I hear a prefix that I don't recognize. I can just type it into the utility to find out where the CQ is coming from. Right now with the sun spot cycle being what it is we are not hearing a lot of DX. But as cycle 25 continues to progress toward maximum this little utility may come in handy.

I'm working on a future version of this utility that will look up and entire call sign using the QRZ database and will provide information about the station including distance and bearing. If it can't find the call sign in the QRZ database it will at least look up the prefix and tell you what direction to point your antenna and how far away the prefix entity is.

I hope you enjoy using my little utility. If you have any questions about it please drop me a note or give me a call on the Mt Ogden 448.6 repeater.

73, Gene

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