



## Squaw Island Amateur Radio Club

Since October 7, 1953



# Smoke Signal

April 2018

[www.siarc.us](http://www.siarc.us)

April is not coming like a lamb, but not like a lion either. At least most of the snow has melted.

Our next meeting will be Wednesday, April 11, 2018 and will be at a different location. We will be meeting at the **FLCC Library, 3325 Marvin Sands Blvd, Canandaigua in the MAKER SPACE area**. Come and learn what the library has to offer and where they hope to take this space. We will meet at 7:30pm and be done by 9pm as that is when the library closes. All are welcome. I will plan on monitoring the 146.820 repeater for talk in.

### Past Events

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Due to the weather, the March meeting was cancelled. Be sure to check your emails before leaving for a meeting, just in case there is a cancellation.

### Upcoming Events

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I would like to propose that we have a special event station to commemorate the **65<sup>th</sup> anniversary** of the club and I will host it at my home in Victor. The date will be **Saturday, August 4**. This will be a daylong event, where we set up one or more HF stations and activate them to contact as many station as we can to help us celebrate. This will be in place of our annual picnic. I am looking for volunteers to help me organize this day. We will need some radio and antenna equipment, maybe some tables and chairs and a canopy tent, and a food menu, of course. These are usually publicized in QST, so the date and bands need to be set about 3 months in advance. Contact me if you would like to help.

Our **next VE Session** will be held at 6:30pm, on May 9, 2018, and Russ N2IZV is always looking for Volunteer Examiners. This session will be before the regular SIARC meeting at the Safety Training Center. Contact Russ at [rcharris@msn.com](mailto:rcharris@msn.com) if you can help.

These sessions have been very successful and are a great way to introduce prospective members to our club and RACES organization. They occur during odd months and Russ needs at least 3 other examiners (extra class preferable) to be present. The Drumlins ARC offers VE sessions on the even months. Contact WD2STK at [wd2stk@yahoo.com](mailto:wd2stk@yahoo.com) for testing or to help as a VE.

The **next breakfast will be Saturday, May 19** at 8am at the Villager Restaurant, 245 S. Main St, Canandaigua. All are welcome. Let me know by May 11 if you know you will attend. If unsure, come anyway.

Upcoming Contests and Special Events this month include: Florida, Mississippi, Missouri, Texas State Parks on the Air, New Mexico, North Dakota, Georgia, Nebraska, Michigan, Ontario, Florida State Parks on the Air, ARRL Rookie Roundup, and many others. See the April QST pages 84 and 96 and the WA7BNM website <http://hornucopia.com/contestcal/> for more information. These events are a great way to build up your DXCC, WAS and other scores for stations worked. And they are fun! Many state events this month.

The ARRL Rookie Roundup will be held April 15 and is targeted to get those first licensed from 2016 and later onto HF. On the ARRL website, enter Rookie Roundup in the Key Word search and follow the link.

Upcoming events for 2018 include:

Drumlins Hamfest, Palmyra, April 21—SIARC will have a table for members

Wild Water Derby, Shortsville, April 28

RARA Hamfest, Hilton, June 2

Tour De Cure for Diabetes, Webster and Wayne County, June 9—see

[www.rochesterham.org](http://www.rochesterham.org)

Field Day, Varick Fire Dept, Seneca County, June 23 and 24—W2S on the ARRL Field Day Locator---check it out!!

Musselman Triathlon, Geneva, July 14 and 15---see [www.musselmantri.com](http://www.musselmantri.com)

Multiple Sclerosis Roc the Ride, Rochester, August 25---see [www.rochesterham.org](http://www.rochesterham.org)

Mary Gooley Hemophilia Center Finger Lakes Triathlon, Canandaigua, September 9—See Tom to sign up

Wineglass Marathon, Bath to Corning, September 30—See Tom if interested  
Pumpkin Patrol, Ontario and Wayne Counties, October 30 and 31—See Dave, KB2KBY, if interested.

As I get more information, I will post it here.

## RACES and ARES

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Also, I encourage all of you to check into our weekly RACES/ARES net (you are invited to check into any other net also) and practice those skills that someday you may be called upon to use. We are also looking for additional stations to practice being Net Control and Assistant Net Control. In the event we are called out, having some experience as Net Control will be very beneficial. If you have ANY questions, feel free to contact me with [kb2nci@arrl.net](mailto:kb2nci@arrl.net) or 585-924-0752.

Monitor the 145.450 repeater in times of severe weather or area wide power outages.

We will be starting up the organizational meetings again. All are welcome and I will send out the notices and publicize them in the newsletter.

## Odd and Ends

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I will begin taking orders for Field Day shirts and apparel (see [www.arrl.org](http://www.arrl.org) for what is available) at the April meeting. I will take the final orders at the May meeting, order them and have them for the June meeting. Payment will be required at pick up. We can discuss a club subsidy at the April meeting.

Dave, N2EZY, and I are still waiting to receive more questions spurred by the survey. Keep them coming.

The following is on the ARRL website and can answer some questions (maybe spark some interest) in VHF DX chasing. It is a little lengthy, but very interesting.

## Where am I?

An alternative title for this month's column might be: *Everything You've Always Wanted to Know About Coordinates and Grid Squares But Were Afraid to Ask.*

*As more hams explore the worlds of VHF, UHF, microwave and satellite operating, we receive an increasing number of questions about grid squares in particular and geographical coordinates in general. Mike Gruber, WAISVF, ARRL Laboratory Engineer, walks you through this maze and helps you discover where you are - geographically, if not metaphysically! -WB8IMY*

**Q: I'm interested in trying my luck in an upcoming ARRL VHF/UHF or 10-GHz contest because I'm gunning for my VHF/ UHF Century Club award. They say that grid squares are usually exchanged during these contests, but I'm not sure what a grid square is. How do I determine my own grid square?**

A: Before we get into grid squares, let's take a quick look at one of the more common methods used to define locations. If you have a globe handy, get it now. If not, just about any map will do.

As you look at your globe or map, notice the lines that run north to south as well as east to west. These lines divide our entire planet into a system of coordinates. Any point on the globe can be defined by the intersection of two ordinate lines.

**Q: I seem to recall this from my fifth-grade geography class. My apologies to Mr Conlin, an excellent teacher, but it really has been a few years for me. Can you refresh my memory?**

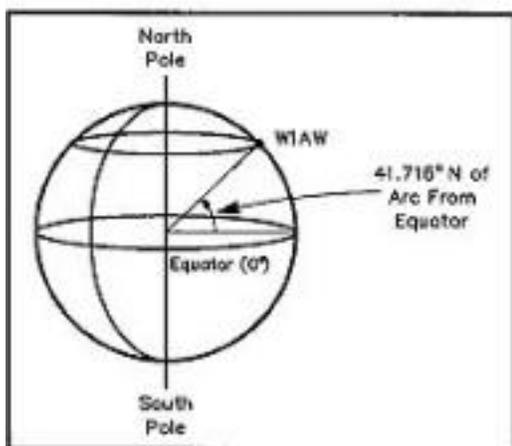


Figure 1—Latitude lines circle the Earth at positions north and south of the Equator. The latitude of station W1AW is  $41^{\circ} 42' 57''$  N (or  $41.716^{\circ}$  N).

A: Certainly - but first take a look at Figure 1. The latitude lines, sometimes called parallels, are the ones that run parallel to the Equator. They are defined by their position north or south of the Equator in degrees. The Equator is defined as  $0^{\circ}$  latitude and each pole is at  $90^{\circ}$  latitude. The north pole is  $+90^{\circ}$  and the south pole is  $-90^{\circ}$ . Longitude lines, sometimes called meridians, are shown in Figure 2. Notice that they run from pole to pole perpendicular to the latitude lines. They are similarly expressed in degrees relative to the famous reference prime meridian ( $0^{\circ}$ ) running through the Royal

Observatory in Greenwich,

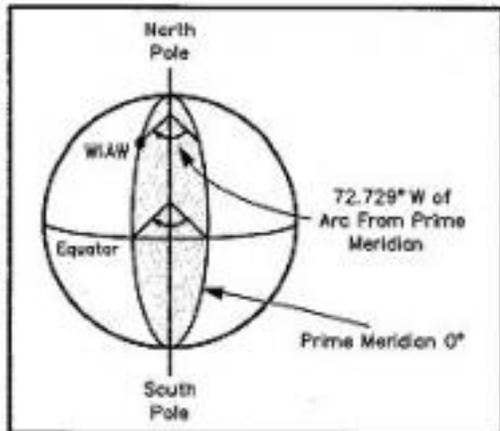


Figure 2—Longitude lines run north and south from pole to pole. Zero degrees longitude is known as the *prime meridian*. The longitude of W1AW is 72° 43' 43" W (or 72.729° W).

England. (The prime meridian was established in 1884 by the International Meridian Conference held in Washington, DC.) Longitude lines are positioned in degrees east and west of the prime meridian to the 180° point on the opposite side of the globe. This is the approximate location of the International Dateline. Notice that while longitude runs from 0 to 180° east or west, latitude lines run only from 0 to 90° north or south. Two systems are commonly used to express a part, or fraction, of a degree. Take care not to confuse them. The easiest system to understand is the decimal method in which each degree is divided into tenths, hundredths, thousandths, and so on. It's similar to the way a dollar bill is divided into tenths (dimes) and hundredths (pennies). The decimal system is easy to calculate with a standard electronic calculator. The second method divides the degree into minutes and seconds of arc. Each minute is one-sixtieth of a degree and a second is one-sixtieth of a minute (or one-three thousand six hundredths of a degree!). One not-so-obvious advantage of this more traditional system is compatibility with the nautical mile. Each nautical mile is equal to one minute of latitude, or approximately 6076.1 feet. One knot, by the way, a unit commonly used to express wind speeds, is equal to one nautical mile per hour. (Be sure not to express speed, or velocity, in "knots per hour." I've even heard my local TV weatherman commit this faux pas!) Coordinates by the way, are very handy to know. They can be used to determine Great Circle headings and distances for beam orientation, and may also be required for many types of ham radio software, including satellite tracking and propagation prediction programs.

**Q: Great Circle headings? Great Scott! Now what are you talking about? Mr. Conlin never told me about those.**

**A:** A Great Circle path is the shortest distance between two points on the globe.

Because of the spherical shape of our Earth, Great Circle headings and distances cannot be readily determined by ordinary flat maps. Several peculiar and surprising phenomena are associated with Great Circle headings. For example, the Great Circle heading from your location to some other arbitrary location is probably not 180° different from the return heading to you from that location! The best way to fully appreciate Great Circle paths is with a globe and a piece of string. Notice that if you stretch the string between two distant points on the 45th parallel, the string does not simply follow the path of the latitude line. Instead, the center of the string deviates northward. The string is following the Great Circle path. Experiment a bit with other points. Notice that the heading from true north of one point is not always 180° from the return path at the other point.

Equations for Great Circle headings can be found in Chapter 4 of the fourth edition of the ARRL Operating Manual, along with a list of coordinates for many cities around the world. Other related computer pro-grams are also available; I'll be sure to include sources for them before we finish.

**Q: Okay. I'm with you so far. But now that we've covered coordinates, how can I determine the coordinates for my specific location? My backyard doesn't have all those black lines painted on it!**

A: Well, presently there are three common methods available to you. Let's cover them one-by-one.

*Maps and Charts:* Although there are numerous maps and charts that amateurs can use to determine coordinates, the most useful are the US Geological Survey (USGS) topographical maps, or *topos* as they are often called. The USGS produced the first such map in 1879. Today they've become a standard for both accuracy and content. Their most striking feature is the presence of contour lines that define elevation above sea level.

The best USGS topographical maps for determining coordinates cover 7 1/2 minutes latitude by 7 1/2 minutes longitude in areas called quadrangles. Each quadrangle is usually defined by a reference code and a prominent feature located within its area. These maps have a typical scale of 1:24,000 (1 inch = 24,000 inches = 2,000 feet), but some quadrangles, especially in some northeastern states, also have 1:25,000 maps that are more compatible with metric units (1 cm = 0.25 km) These maps will often show individual buildings and homes, making them excellent tools to pinpoint the coordinates of your particular residence. Contour lines are shown for 10-foot variations in elevation above sea level.

Topos usually display two different coordinate systems. The first is the one we just discussed. The second is called the *universal transverse mercator* (UTM) grid system. Its big advantage is that all horizontal and vertical lines form perfect squares one kilometer on each side. (Recall that in the system we discussed, one degree of longitude constitutes a greater distance on the Earth's surface at the Equator than it

does as we approach the poles.) It is important not to confuse the two systems when trying to determine your coordinates. Topo maps are excellent sources for information on local terrain, roads and trails, bodies of water and other land features.

The *angle of magnetic declination*, or difference between true north and magnetic north, as well as the map's grid north, is also given for each map. (Map grid north and true north do not always precisely agree because the map is really a projection of a curved surface onto a flat surface!) The angle of magnetic declination also changes with time. This is usually of little importance to hams, but it can be a problem if you need a precise angle and you're working from a very old map. For example, the declination here in Newington is currently about 14" but it increases at a rate of approximately 3 minutes per year. (The rate at which the declination changes is indicated on nautical charts.)

To order a topographical map, you need to know the reference code, map name and state. You'll find this information in the map index for your area. You can obtain further information on topo maps, such as pamphlets on map symbols, as well as a map index, by calling the Earth Science Information Center in Reston, Virginia, tel: (703) 648-5953 (9 AM to 5 PM Eastern Time).

You can also obtain a map index, or order maps from:

USGS Map Distribution

Building 8 10

Box 25286 | Denver Federal Center

Denver, Colorado 80225

tel: 303-236-7476

The cost is \$2.50 per map. Add \$1 for post-age and handling for orders of less than \$10. Topographical maps are also available from many local outdoor, sporting goods shops, camping supply dealers and book-stores. Other maps, including aviation charts and road maps, can also be used in some cases, but usually with reduced precision. Nautical charts are very useful if you are near a coastal environment.

*Loran-C*: The current version of long range navigation (loran) is loran-C. It works by comparing the synchronized signals from loran ground stations operating at 100 kHz. Accuracy is good to within about 100 meters. Loran-C can be affected by skywave interference and other local conditions. The portability of a loran receiver is limited by its antenna. Loran is nonetheless very popular with boaters and loran receivers can be purchased at marine supply dealers. You'll find used loran gear selling at bargain prices as GPS systems become more popular (see below).

*Global Positioning System (GPS)*: The satellite-based GPS system was originally conceived for military use. As such, it is a relatively recent innovation for civilian purposes.

The GPS operational system consists of 24 NavStar satellites. NavStars transmit on 1575 MHz, in an internationally assigned navigation band. Other intersystem UHF and

microwave links are also required. At the heart of each satellite is an atomic clock accurate to within one second in 300,000 years!

A GPS receiver determines your coordinates by comparing the reported time and location from each received satellite. You must receive signals from three satellites to determine your latitude and longitude. If you can pick up four satellites or more, your approximate elevation can be determined as well (something that Loran-C cannot provide).

To determine the status of the GPS system, you can contact the GPS Information Center (GPSIC) operated by the US Coast Guard in Alexandria, Virginia. You can listen to a taped GPS status announcement (updated daily) by calling 703-313-5900. Similar announcements can be heard on WWV at 14 and 15 minutes after every hour and on WWVH at 43 and 44 minutes after the hour.

Of particular interest to hams are portable hand-held GPS receivers. While prices vary, some are now selling for as little as \$100. They're similar in appearance to common calculators and can fit in a shirt pocket. The antenna is self contained. (See the review of the Trimble Navigation Scout GPS receiver in last month's QST).

**Q: Great! But you still haven't told me about grid squares. How can I determine my grid square once I know my coordinates?**

A: The Maidenhead Locator System was named after the village outside London where it was first conceived by a meeting of European VHF managers in 1980. Each grid square measures 1° latitude by 2° longitude and measures approximately 70 x 100 miles in the continental US. A grid square is indicated by two letters (the field) and two numbers (the square). Each subsquare is designated by the addition of two letters after the grid square. These more precise locators are used as part of the exchange in the 10-GHz contest. They measure 2.5 minutes latitude by 5 minutes longitude, roughly corresponding to 3 x 4 miles in the continental US.

The simplest way to determine a grid square is with a grid square map. If you're only interested in a grid square (not the subsquare), and are located some distance from the boundaries of the square, it is usually not necessary to determine the precise coordinates involved. A grid-square map and an atlas are available from the ARRL. (See the publications catalog elsewhere in this issue.)

If you know your precise coordinates, you can also determine your grid square manually. **See Tables 1 and 2 below** of this [1983 VUCC article](#). Another method of determining your grid square is to simply plug your coordinates into a computer program. This approach is certainly faster and easier. Depending on the software, it may also calculate Great Circle headings to target stations at the same time. This can be of considerable help during a contest. Several such programs are available via Internet.

Many Garmin GPS receivers will indicate your grid square automatically when set to the "Maidenhead" grid system. This is particularly handy for roving VHF/UHF

contesters. Lynn Burlingame, N7CFO has a web page on [receivers with grid squares](#). Note: Products and manufacturers are listed in this column for informational purposes only. No warranty or endorsement is expressed or implied.

We welcome your suggestions for topics to be discussed in Lab Notes, but we are unable to answer individual questions. Please send your comments or suggestions to: Lab Notes, ARRL, 225 Main St, Newington, CT 06111.

Remember the National Parks on the Air event? The ARRL is sponsoring another similar event called the International Grid Chase and the object is during 2018 to make contacts with as many Grid Squares around the world as possible. See the ARRL website for details.

How many Grid Squares have you contacted?

December 11 started off a yearlong operating event commemorating NASA, similar to the National Parks on the Air event in 2016. See [www.nasaontheair.wordpress.com](http://www.nasaontheair.wordpress.com) for details. Could be a fun event to participate in. Anybody done any of this?

The Amateur Radio Parity Act is back before congress. The bill to afford us reasonable accommodations for antennas in all living environments has passed the House of Representatives and is headed to the U.S. Senate as S.1534. See QST or the ARRL website for more details on how you can have your voice heard.

As a reminder, the Smoke Signals and meeting minutes are posted as soon as possible on the SIARC website. This is an easy way to keep up with the group if you miss a meeting. Thanks to Steve, KD2OM, for keeping the website up to date.

For local repeaters, you can go to [www.rochesterham.org](http://www.rochesterham.org) and select Ham Radio 101 to find a quick reference. You can also go to [www.unyrepco.org](http://www.unyrepco.org) and [www.wnysorc.org](http://www.wnysorc.org) for repeaters in western New York. Lots of information is available, and the councils are continually trying to keep it current. I

recommend becoming a member of UNYREPCO as that covers our immediate area.

If you travel, look at [www.repeaterbook.com](http://www.repeaterbook.com) for lots of repeater information. And for scanner listeners, go to [www.radioreference.com](http://www.radioreference.com) for nationwide information.

Dave W2ACC has repeaters up in Waterloo that can offer good coverage to our east. They are on 145.130- (pl 110.9) and 442.225+ (pl 82,5). Give them a try. His 220 repeater (on the Stanley tower) is now up and waiting to be used. The frequency is 224.26 (-1.6mHz offset and pl of 110.9). He is also working on a 900mHz repeater in Stanley. Stay tuned for more details.

**The Statewide UHF system** has a change at the Bristol site. The repeater frequency has changed to 444.550+ (110.9) and sponsored by W2HYP and W2COP. It is also linked to the 442.000+ (110.9) repeater in Wethersfield, which gives it good coverage into Buffalo and beyond. Many hours and dollars have been spent to get this system on the air and it is a fun and useful system to access and use along the NYS Thruway and I-81 corridors. See <http://www.upstateham.com/2012/12/uhf-ny-statewide-linked-repeaters.html> for more information. They are still updating the Bristol changes, but this gives you good information on the rest of the system.

This repeater system carries a Central New York Information and swap net on Wednesdays at 7pm. Stations check in from all up and down the thruway, so it is interesting. Check it out.

Check out [www.dstarusers.org](http://www.dstarusers.org) and [www.dstarinfo.com](http://www.dstarinfo.com) for lots of information on D-Star.

**Dues are payable in September** for the next year. They are \$10 for an individual, \$14 for a family and \$100 for Life membership. Please see Stan WM3D to pay.

Please be sure to inform Stan WM3D or Tom KB2NCI if you change your preferred email address and phone number, or other changes in your contact information. Having up to date information helps if we need to reach you quickly (e.g. cancelling the Holiday party).

**A reminder to renew your ARRL membership (you are a member aren't you?) through the club. We get a commission on each new and renewal if the club sends it**

**in. See Tom KB2NCI for details. I encourage you to support the ARRL and become or maintain membership. They may not be perfect, but they try hard to represent all of amateur radio.**

What projects are you working on or involved in? We would love to hear about them, either at the meeting or in the Smoke Signal. Let me know.

## Nets

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145.450- (110.9) W2ONT	Sundays 8pm Ontario County RACES/ARES training net
146.685- (71.9) WA2EMO	Sundays 8:35pm Wayne County RACES net
146.610- (110.9) N2MPE	Thursdays (except 4 <sup>th</sup> ) 9pm Monroe County RACES net
3993.5kHz LSB	New York State RACES net Sundays at 9am

## Club/RACES Repeaters

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K2BWK	146.820- (110.9) Canandaigua VA Hospital
K2BWK D-Star	147.375+ Honeoye
K2BWK D-Star	443.500+ Honeoye
W2ONT	145.450- (110.9) Gannett Hill
W2ONT	442.200+ (110.9) Gannett Hill—linked to 147.090
W2ONT	147.090+ (110.9) Geneva City Hall—linked to 442.200
KD2HVC D-Star	444.300+ Stanley
KD2HYJ D-Star	444.500 (no offset) Victor hot spot—very local coverage for now

## President's Thoughts

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You may have noticed that I added a bit more information on the upcoming events we can participate in. There are many local fund raising events that like to have hams provide communication support and it is quite gratifying to be part of their efforts. It is also fun to get outside and operate portable and mobile and with other hams. Playing radio is what we love to do. I have listed many of the events in our area, but if you are traveling and interested in helping out, there are events like these all over the country. Most events can

always use another operator, so don't hesitate to offer your time. It will be worth it and will help to spread the good vibes you have.

Have Fun and Talk Up Ham Radio and I hope to catch you on the radio!

73, Tom Sanders KB2NCI

[kb2nci@arrl.net](mailto:kb2nci@arrl.net)

585-924-0752

Ham Radio: Service, Science, Skill

The Amateur's Code Originally written by Paul M. Segal, W9EEA (1928) The Radio Amateur is:

**CONSIDERATE** Never knowingly operating in such a way as to lessen the pleasure of others.

**LOYAL** Offering loyalty, encouragement and support to other amateurs, local clubs and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally.

**PROGRESSIVE** With knowledge abreast of science, a well built and efficient station and operation beyond reproach.

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**FRIENDLY** With slow and patient operation when requested, friendly advice and counsel to the beginner, kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

**BALANCED** Radio is an avocation, never interfering with duties owed to family, job, school or community.

**PATRIOTIC** With station and skill always ready for service to country and community.