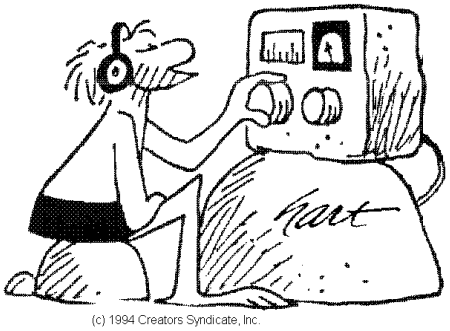

BARA Facts

Newsletter of the Binghamton Amateur Radio Association

February 2010

Website: http://w2ow.org OR http://www.wtsn.binghamton.edu/bara

The Presidents Corner

The holidays aren't too far behind us (I can tell because my neighbor's Christmas tree is still flashing away in the window, even though February's almost here), and I had a marvelous time – mainly because I had a nice stretch of days off, which afforded me the opportunity to get cranking on some projects.

One thing I did was update the BARA Pamphlets with the roster of new officers. Maybe you didn't know that BARA now has nice tri-fold pamphlets available. I designed these, and brought them to a few meetings for feedback, after which I finalized the design & started distributing them at hamfests I attend (also delivered a small handful to Unicorn Electronics the other day). This is all part of my effort to try to reach out to potential new members. You can help, too – if you know of any place where some BARA pamphlets could be useful, let me know, and I'll be happy to print some up for you!

The other thing I accomplished was finishing up some electronics projects I started. One was the ultrasonic receiving device I'd talked about before in this column. I didn't have high expectations for its performance, but WOW, does this thing work great! My wife and I listened to the ultrasonic emanations from her jewelry cleaner, our computers, even jangling keys (anyone got a dog whistle I can borrow?).

As I was heading out the door last Wednesday for the BARA General Meeting it occurred to me that I ought to bring it for "show-and-tell", because we didn't have a program scheduled. Turns out Tom Siglin (WA2LTD) had the same idea, and brought along an impressive cordless tool to demonstrate that he'd recently purchased. Our impromptu program seemed to be a hit – so much so that Paul Slocum (N2NCB) emailed me recommending we make it a regular feature of our meetings. I wholeheartedly concur with Paul! If you have anything (especially, but not necessarily, home-brewed) that you think may be of interest to your fellow hams to demonstrate, by all means bring it to a General Meeting. If there's no time for show-and-tell that night due to a scheduled program, we can always postpone it until the next meeting.

I also had time to bang out a coupla other little projects as well. If you have internet access and would like to see a few photos (as well as a short write-up on how I make the fancy face plates & labels I sometimes employ), check out www.lutins.org/projects.

73 de allen lutins KC2KLC
KC2KLC@LUTINS.ORG

Letter from the Editor
I would like to thank everyone for their kind emails supporting the newsletter and its content. I hope to continue to offer more helpful and interesting content throughout the entire year. I cannot do this without your input, so please keep sending me your articles! If you would like to see any particular articles, please feel free to contact either via phone or email. I look forward to hearing from you soon!
Thank You! 73's - de kb2sin William Jakaitis

Upcoming Hamfests

February 27th, 2010
29th Annual Winter Hamfest
Horseheads, NY – NYS Armory
Talk-In – 147.360+ (No Tone)

February 28th – LIMARC Indoor Hamfest
Hicksville, NY
Talk-In – 146.850- (PL-136.5)

Back to the Basics
In this article I would like to go over some basic questions, definitions and/or formulas. This will be old hat for most but for some, a refresher. I will split this up into Technician, General & the Extra class.

Technician Class
T1A03 – What classes of Amateur Radio Licenses may currently be earned by examination?

a) Novice, Technician, General, Advanced
b) Technician, General, Advanced
c) Technician, General, Extra
d) Technician, Tech Plus, General

General Class
G7A02 – What components are used in a power-supply filter network?

a) Diodes
b) Transformers & Transistors
c) Quartz Crystals
d) Capacitors & Inductors

Extra Class
E5D08 – What is the term for energy that is stored in an electromagnetic or electrostatic field?

a) Amperes - joules
b) Potential energy
c) Joules - coulombs
d) Kinetic energy

Answers to last month's "Back to the Basics"

Technician	**D**
General	**B**
Extra	**A**

Did You Know…..
The Following Famous People are also Amateur Radio Operators?

Phillip H Smith – Inv. Smith Chart – 1ANB
Peter Guber – Producer – K1ADJ
Walter Hunt – Mucisian – K1AYA (SK)
Robert Payne – Ret. Air Force Gen. K1FBG
Maj. Gen. Elmer Yates W1CCN
Earnest Wheatley – Oldest Ham W1UHI (SK)
Ted Ts'o – Linux Developer – N1ZSU
Frank Gunther – 1st 2-way Police Comm. W2ALS – (SK)

HAMFEST REMINDER

BARA Hamfest **– New Location**... Port Crane Fire Station, 844 Route 369 – Sunday April 18th. For reservation of tables, hamfest info or tickets, please contact:

Brian Adee – K2DLB – k2dlb@stny.rr.com – (607) 752-3230
Ford Drake – AB2HS – ab2hs@stny.rr.com – (607) 754-1214

Advance sale tickets available.
$6.00 at Door
$5.00 Advance

Contest Calendar
February 2010
(ARRL)

February 20 -21 - ARRL International DX Contest (CW)

---

911 – What's the address of your Emergency?

This is what you will hear when you dial 911 from either your home phone or your cell phone.
Whether you have a medical, law or fire emergency, the dispatcher on the other end will ask you numerous questions. PLEASE do **NOT** hang up! More importantly **"Stay Calm"** As a 911 Dispatcher, we empathize with whatever the situation is that you're experiencing, but, cannot help you if we cannot understand you, or if you hang up.
In order for us to get the proper help to you, you must provide us with the information we ask for.
Technology today allows us to see what phone number you're calling from, the address associated with that phone number and prior calls made from that phone number, so if you call 911 by mistake and hang up, you WILL be receiving a knock on your door from law enforcement asking you if everything is ok.
If you have a medical emergency, the dispatcher will ask you a series of questions to determine the level of care you will be receiving, either ALS (Advanced Life Support) or BLS (Basic Life Support). These questions, which may seem medial and unimportant at the time, may just SAVE your life.
If you have a Fire emergency, whether it be an actual fire or just smoke, it is very important for you and everyone in the same building to get out safely. **DON'T** ever try to fight the fire yourself! If possible, try to tell the dispatcher as much information as possible. Is it smoke you smell? Is there an actual fire? Where in the building is it? How many people are in the building? Then Do **NOT** hang up until the dispatcher does.
If you have a law enforcement emergency, whether it be someone trying to break into your house, a domestic incident or a car accident in front of your residence, tell the dispatcher everything in a calm voice! If possible stay on the phone with the dispatcher until a police officer arrives. If this is NOT possible, make sure you tell the dispatcher where in the building you are, what it is your wearing, what the perpetrator is wearing. Most important, Do **NOT** hang up till told to do so by the dispatcher. Our main concern is your safety and the safety of the police officer responding!

By: William Jakaitis Kb2sin – NY State Police Communications Specialist & Delaware County 911 Dispatcher.

The following was submitted by K2DLB – Brian Adee on Emergency Power. Taken from ARRL ARES E_Letter

Emergency Power: Q&A on Power for ARES Operators.

Emergency power is often the critical link in any ARES operation. The following Q&As on this subject were harvested from an article written by ARRL Lab staff.

Start by considering your power source. If a larger, sustained operation is indicated, consider a generator.

Q. Our ARES group has a small 600-watt generator available. Will that be enough for four transceivers?

A. Not if they're typical "100-watt" transceivers. That's only 400 watts, you say? Not exactly. You'll have to calculate the total power requirements for all equipment you intend to use, including the station lights and accessories. To determine how much generator power you need, start by making a list of the power consumption of your station equipment (which will be much more than its RF power output). If you're lucky, some of the equipment

may have its power consumption listed in the owner's manual or on the enclosure. If only current consumption is provided, multiply the current in amps by 120 volts to determine the power consumption in watts.

If there is no information available on the unit's power consumption, two rules of thumb may help: (1) A transmitter will usually operate at about 50% efficiency, so double the RF output to obtain the amount of power required. (2) The equipment fuse is usually rated at 150- to 200% of the actual current draw, so multiply the fuse value by 0.5 to 0.67 to calculate the approximate current consumption. Use one of these steps for all station equipment, including accessories and lighting.

Now, determine how much of this equipment will be operated simultaneously -- perhaps four transceivers, two 100-watt lights, and several accessory items such as CW keyers, voice keyers, etc. If you are going to use the generator to power a piece of non-station equipment, such as a coffee pot, you'll need to include it as well. Some equipment may require more power than you have calculated, so adding a few hundred watts to your estimate is a good idea. Let's look at a typical calculation based on using only one HF transceiver: Transceiver 400 watts, Laptop computer 40 watts, Lamp 60 watts, and Soldering iron 100 watts, for a total of 600 watts.

Some generators have a continuous power rating and an intermittent power rating. If you find that the total station requirement exceeds the available generator power, remember that transceivers draw full power only in transmit, and that they're not going to be in transmit 100% of the time. They could, however, all be in transmit simultaneously, so you need to make sure that the total possible power consumption doesn't exceed the intermittent power rating of the generator.

Check the output voltage and frequency, if possible. If the generator doesn't have a built-in over-voltage protector, make sure the voltage is correct before you use the generator to power your equipment.

Also, check the generator for radio noise. Some generators are not fully suppressed for ignition noise. You would rather find this out now than at the disaster site. If there is a problem, it may be possible to use resistor-type spark plugs or spark-plug wires. Check the owner's manual. You can also connect the generator to a good earth ground with a ground rod.

Q. ***We won't have generator capability at our disaster site. How about battery use?***

A. Keep in mind that an automotive lead-acid battery was designed for one task -- to deliver a lot of current for a brief period of time. Its output voltage does not remain constant during its discharge cycle, and it is not a good idea to discharge it completely. An automobile battery won't tolerate too many deep-discharge cycles before it's ruined!

A deep-discharge lead-acid battery is much better suited to your needs. It can be discharged repeatedly without damage, and will maintain full output voltage over much of its discharge cycle. You'll find this type of battery at automotive and marine parts supply outlets. They are not much more expensive than regular automobile batteries and are designed to deliver moderate current for long periods of time.

Q. Is it possible to operate using batteries with a 100-watt transceiver?

A. Yes, but you may find that a 100-watt station is a heavy drain on your battery. A car battery would probably last only a few hours--less if it's cold. (Cold batteries lose up to 70% of their capacity.) A deep-cycle battery has a typical capacity of 1000 watt-hours, but you may not be able to use all of this capacity with a transmitter or receiver: As the battery discharges, its output voltage drops. When it drops below 12 volts or so, most amateur equipment will not function properly.

Q. Well, I can recharge the battery, right?

A. Yes, from commercial mains or a gasoline-powered generator. Alternative sources of charging power, such as solar panels or wind-driven generators, can be used.

Q. Solar power sounds interesting. Is a solar panel difficult to use?

A. No. Solar panels have only two wires to connect to your battery or circuit - one positive, one negative. Some solar panels have a diode in series for polarity protection and to reduce current flow from the battery back through the solar panel. This is no longer the case with many modern panels, particularly the larger ones where

efficiency is important. Tests have shown the diode causes more energy loss during the day than the very small wattage dissipated in the solar panel at night.

Solar panels typically deliver 15 to 18 volts at 600 to 1500 mA in full sunlight. This will not damage a high-capacity battery, such as a deep-cycle unit. All you need do is hook up the battery, put the solar panel in full sunlight, and charge away. The battery will regulate the maximum voltage from the panel.

If you're going to use a solar panel to recharge a smaller battery, such as a Nickel-Cadmium (NiCd) battery or gelled-electrolyte lead-acid battery, you'll need to pay a bit more attention to detail. These types of batteries can suffer damage if charged too quickly, so a regulated charge is necessary. The *ARRL Handbook* has several solar-panel charging and regulator circuits.

Q. A large lead-acid battery sounds a bit heavy. Are there any other types of batteries that we can use?

A. It depends on how long you want to operate. If you're planning only a few hours of low-power operation, you might be able to get away with using dry cells, either standard carbon-zinc or alkaline. (Don't forget that a carbon-zinc or alkaline battery should not be recharged!) An alkaline cell can deliver quite a bit of current and will last a surprisingly long period of time. NiCd batteries are usually not suitable for sustained operation above a few watts, but if you are planning to recharge them from solar power, they may be good for quite a few hours. If you do use NiCd batteries, do not allow them to become fully discharged. This can cause permanent damage.

Medium capacity lead-acid batteries are made with a gelled electrolyte. These are commonly called gel cells. In most cases, they are completely sealed and can be operated in any position. They are available in a variety of sizes, ranging from 1 Ah to about 50 Ah. (A list of suppliers is found at the end of Chapter 35 of the *ARRL Handbook*, or go to http://www.arrl.org/tis/tisfind.html and search the keyword BATTERY). Gel cells are a good compromise between portability, capacity and ease of use. They must be charged properly, though. If you charge them too fast, bubbles can develop in the electrolyte, permanently damaging the battery. They should be charged at no more that about 10% of their output rating in ampere-hours.

Q. Someone told me that there is a device that will convert 12 volts from a battery to 120 volts ac. Why can't I use one of these?

A. You can! The device is known as a dc-ac converter, or inverter. It converts 12 volts to a square-wave ac output at approximately 60 Hz. Inverters are limited to about 100 to 400 watts, however, and some equipment (especially motors!) cannot be powered by a square wave. An inverter will run a few light bulbs or a small soldering iron and can be a useful addition to a battery-powered station. Some newer ones use switching technology and are quite lightweight. (Test them ahead of time, though. They may generate RF noise or run hot at full output.)

Q. Does the ARRL have any information about emergency power?

A. The *ARRL Handbook* discusses all types of emergency power, ranging from batteries, to solar power and solar-panel charger circuits, to ac generators. *QRP Classics* contains reprints of several *QST* articles about emergency power. See the ARRL publications catalog on the ARRL Web site for more information. Also see the rest of the Emergency/Alternative Power TIS Web page, also on the ARRL Web site. Consider purchasing *Emergency Power for Radio Communications*, by Michael Bryce, WB8VGE, published by ARRL

Susquehanna Valley Amateur Repeater Association Linked 2 Meter System

The linked system utilizes three repeaters and a number of remote receivers to accomplish coverage of the entire Broome County area.

All input frequencies require a PL tone of 146.2. The repeaters with the output in the 146.xxx range requires an input frequency 600 kc below (referred to as minus)the output frequency. The repeater with the 147.xxx output requires an input frequency which is 600 kc higher (referred to as plus)than the output frequency.

When activating the repeater system it is suggested that you push and hold the push to talk (PTT) switch on the microphone and wait about two seconds and then proceed with your transmission. The reason for doing this is that is takes a few seconds for all the

electronics at the different sites to interconnect and engage all three repeaters. If you're a bit quick, the first couple of syllables or words will be lost. Remember to do this for each transmission.

Repeater frequency and general coverage area.

146.865 (-600) Binghamton West to Corning; I81 North to Hoxie Gorge (Cortland); South to Gibson; East to Windsor; NE to I88 Exit 3 Port Crane.

146.820 (-600) Port Crane to Bainbridge on Rt I88; West Windsor to I86 exit 81 (E. Boskett Rd)(Tuscarora Mt); Rt 79 from I88 (Rt17) to I 88 through Harpursville.

147.345 (+600) I86 Exit 81 to East Branch including Deposit.

Notes:
The complete system is backed up with battery power which can sustain the system operation for at least 24 hours. Extracted from a hand written description by AB2HS dated Apr 09 Jack WB2GHH SVARA 2M.odt

---

2010 Club Officers

President	**Allen Lutins**	**K2KLC**	**729-4817**
Vice President	**James Lawson**	**KC2JED**	**761-5595**
Secretary	**Andrew Rudy**	**KC2QYA**	
Treasurer	**Paul Slocum**	**N2NCB**	**687-2057**
Directors	**Warren Marks**	**KC2NGR**	**648-6840**
	Bill Jaker	**WB8RAE**	**785-5361**
	John Rudy	**WB2FQZ**	**669-4308**
	John Carrington	**WB2SGS**	**648-8364**
W2OW Trustee	**Mel Snitchler**	**WE2K**	**723-9612**
Editor	**William Jakaitis**	**KB2SIN**	**648-2112**

Next General Meeting

7:30 PM, Wednesday, February 17th

Town of Binghamton Town Hall, 279 Park Avenue, South of the Ross Park Entrance

Board Meeting

7:00 PM, Wednesday March 3rd

Conference Room, WSKG Studios, 501 Gates Road, Vestal

Exam Session

7:00 PM Monday, February 22nd

Vestal Public Library, Route 434 Vestal

BARA Dues

$18/year Single member; $27/year Family

Local Repeater Nets

146.73 (PL-100) MHz STAR Net (NTS Feeder) Every Evening at 6:30 PM Local Time

146.82 (PL 146.2) MHz BRAT Net (Informal BARA) Sunday Evening at 8:00 PM Local Time

BARA, The Binghamton Amateur Radio Association is an ARRL Affiliated Club

e-Mail Address: w2ow@arrl.net

UNICORN ELECTRONICS

Our Printing Sponsor: Unicorn Electronics, Valley Plaza Drive, Johnson City, NY