Cycle for Life

September 22, 2012

Have **YOU** signed up yet?

Scott ARES has been asked to provide communications support for a fundraising event benefiting the Cyctic Fibrosis Foundation of Minnesota.

The cycling event will take place over two routes across southern Scott County. There event will include a long course of 65 miles and a shorter lap of 32 miles. There are already approximately 50 riders registered. The riders will begin the course at 7:00 am with expected finish time around noon.

Scott ARES is planning a directed net linking the on-course rest stops with the stat/stop area. Additional communications points may be added depending on the number of communications volunteers.

This event will provide an opportunity for ARES member to put their emergency communications skills to good use supporting a worthwhile event in our community. ARES members, and other amateurs, who would like to participate should contact Bob, N0BHC, via email: n0bhc@arrl.net, or check in on the regular Monday evening training net at 7:00 pm on 146.535 mHz (simplex).

This should prove to be a fun event and the organizers hinted that there might be a tasty BBQ for volunteers at the conclusion of the event!

BREAK - OVER

The ARES COMMUNICATOR is published for the benefit of Amateur Radio Operators in Scott County and other interested individuals.
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 Reader submissions encouraged!

Minnesota Flood Of 2012 - Hams Respond

Northeast and north central Minnesota recently suffered one of its worst rain fall events in many years. As much as 10 inches of rain inundated this part of the state, and its effects will be felt for many years as recovery takes place.

A powerful low pressure area moved into the region from the Pacific Northwest on the heels of previous systems that had saturated the ground in the Upper Midwest. Along with another moisture laden front from the south, the stage for flooding was set. The National Weather Service had been warning of the potential for flash flooding in the days preceding the arrival of the system, and with the ground saturated, the potential became a reality as the area of low pressure moved slowly across the region on June 19 and 20. Torrential rainfall from severe thunderstorms that trained along the front caused havoc as many communities and counties were affected. Homes and businesses were flooded, and roads and bridges were either dangerously compromised or washed out by rushing flood waters.

Lake County Emergency Coordinator Jeff Nast, KCØMKS, reported that Northland SKYWARN was activated from 1800Z on June 19 until 0145Z on the next day. Lake County RACES/

ARES Activities
Weekly Net Monday 7 PM 146.535 mhz (s)
Breakfast Saturday, August 11th
Digital Monday, August 13th

ARES Nets

MN ARES Phone Net
 6:00PM Sunday Freq: 3.568 mhz
ARRL MN Phone Net
 12:00p, 4:30p CST Daily Freq: 3.568 mhz
ARRL MN CW Net
 6:30p, 9:50p CST Daily Freq: 3.568 mhz
NETS WITH OUR NEIGHBORS

North Dakota:	Daily 3.937 mhz	6:30pm
South Dakota:	Daily 3.870 mhz	6:00pm
Wisconsin:	Daily 3.985 mhz	5:30pm
Iowa:	Daily 3.970 mhz	12:30/

Minnesota Floods *- cont'd from page 1*

ARES was also activated on June 20 to provide emergency communications for a fiber cable failure at the Knife River expressway bridge.

Cook County officials requested disaster response communications for the hospital in Grand Marais. All communications were severed during the storm, and the hospital was without contact with the hospitals in Duluth. Pat Scully, NØWSI, made the request and a communications response resulted. "We were without phone, cell, Internet, and 911 service for approximately 12 hours," reported Jayne Fingerman-Johnson, NØUYQ, of the Cook County ARES Response Team (CCART). "We set up our Amateur Radio station at the Cook County Northshore Hospital to provide communications to the outside world."

Garry Hooghkirk, KDØDHB, Bob Schulz, KCØNFB, and Tom Kurtovich, KBØLSS, responded to the St. Louis County EOC in Pike Lake. Gary Hanson, KDØCVO, Dave Leslie, KC9MKJ, and Doug Nelson, AAØAW, activated the Douglas County, Wisconsin EOC to coordinate communications to Grand Marais as well as for net controls for a Duluth/Superior net to record road closure information to help travelers trying to get through the area. "We had people running net control from the Douglas County EOC, and St. Louis EOC was also manned," Nast reported. "We also had a presence at the NWS during the net."

cont'd col. 2

Nast activated the EOC in Two Harbors for Lake County. Bob Hoyt, KCØEIM and Grant Forsyth, KCØWUP went up to the radio desk at the National Weather Service office in Duluth to become real time providers of any weather information needed. Garry Hawkinson, WØELH, set up and monitored 7.250 MHz SSB as a back up.

Bill Fleischman, KCØZZL, located phone numbers for Life Flight to establish hard wire communications with them if needed. Ham communicators handled closure information and a doctor replacement issue. Dave Miller, WØNWO, was instrumental in coordinating many facets of the response. Several local amateur operators went mobile and called in damaged areas to the net.

A call for help came in from MPR (Minnesota Public Radio): One of their reporters had a relative living up the shore in Two Harbors, and hams were able to give her information so that her Dad's medical supply service could get supplies to him.

Regular communication services were restored to the Northshore communities and the amateur response was no longer required. Thanks to the active participation by many local ARES members, a ready and capable multifaceted response resulted. Thanks to all operators who took time from their own issues to make Amateur Radio work in this time of need. While the severity and widespread magnitude of the flooding exceeded expectations, the hams were still able to meet the challenge. Once again, Amateur Radio proved itself as being the one reliable means of communication in a real emergency when all else fails.

— KDØCI's Radio Newsletter, July 2012 issue; by Doug Nelson AAØAW, with contributions by Jayne Fingerman-Johnson NØUYQ, Kenny Broshofske KDØCI, and Jeff Nast, KCØMKS

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Savor the Season!

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"In my many years I have come to a conclusion that one useless man is a shame, two is a law firm and three or more is Congress."

Pres. John Adams

Test Your NIMS Knowledge

This month we will review some of the points from the course ICS-200b: ICS for Single Resources and Initial Action Incidents. Check your recall of the course material with these questions.

1. Which is the top priority within the ICS common leadership responsibilities?
 A. Establishing agency policies for future incidents
 B. Encouraging creativity and risk taking
 C. Enhancing partnerships with Agency Representatives
 D. Ensuring safe work practices

2. The information and intelligence function may be organized in one of the following ways:
 - Within the Command Staff
 - As a Unit Within the Planning Section
 - As a Branch Within the Operations Section
 - _____
 A. At a separate Incident Command Post
 B. Under the Communications Unit within Logistics
 C. As a separate General Staff Section
 D. Outside the command structure for security reasons

Check next month's ARES Communicator for the solution

July NIMS Knowledge Solution

1. A delegation of authority:
  A. May be needed when the incident scope is complex or beyond existing authorities

2. The Operational Period Briefing:
  B. Presents the Incident Action Plan (IAP) for the upcoming period to supervisory personnel

A flight deck shooter signals for the launch of a T-45 C Goshawk training aircraft attached to the Tigers of Training Squadron (VT) 9 aboard the aircraft carrier USS Harry S. Truman (CVN 75).

Harry S. Truman is underway conducting carrier qualifications.

Stationary Bike Power Generator

Well, IF you are a marathon athlete . . .

As people the world over continue to search for renewable energy sources, innovative and interesting ideas for generating power are constantly being devised. Those interested in keeping fit and producing power at the same time might be interested in this unique product – the Pedal-A-Watt. It converts your bicycle into a stationary bike and uses your pedal power to generate energy that can be stored in a power pack. An average rider can produce up to 200 watts – ride for an hour and you'll generate enough to power a 25 watt fluorescent light bulb for eight hours.

So how does it work? You simply attach your bicycle to the Pedal-A-Watt stand and start pedaling. The stand contains a generator which is spun by the movement of the bicycle's back wheel. The generator is made of a spinning magnet within a coil of wire, as the magnet spins, electricity flows through the coil. The energy you generate can be used straight away or can be stored in a battery in the power pack for use later. The bicycle can be clipped into the stand in less than 30 seconds without having to remove the rear tire, and if you want to do some road riding you simply pop your bike out of the stand. Too easy.

How much pedaling will you need to do to charge average household appliances? If you pedal for two hours then you should produce around 400 watt-hours of power. That's enough to power a 200 watt television for two hours, or a 100 watt light bulb for four hours. A 20 watt laptop PC could be charged for 20 hours and a 15 watt fluorescent bulb for almost 27 hours.

An average adult rider could produce from 100 to 320 watts of power depending on their physical strength, stronger and fitter adults could create between 225 to 320 watts or more. The stand is best suited to bicycles in reasonable condition with 26 or 27 inch wheels, but can also work with wheels greater than 10 inches. It weighs 23 lbs and optional extras such as the cigarette lighter plug and 12 foot cable are also available.

The Pedal-A-Watt package has a lifetime warranty and can be purchased for US$399. That includes the bicycle stand, generator, 20 amp blocking diode, adjustment knob and instructions. The power pack is sold separately for US$365.95 and is suitable for household appliances up to 400 watts.

BREAK - OVER

Tactical Callsign Ops

Key To Accurate, Efficient Communications

"Rest Three this is Starter" OVER
"This is Rest Three" OVER
"Rest Three when the SAG reaches your location, ask if they picked up Peter Peddler and his Schwinn Flyer. We had reports he had a flat tire. Starter", OVER
"ROGER, Rest Three, WB0SXR", OUT
"Starter, N0FEX", OUT

Tactical call signs, when used properly by well-trained and practiced operators, can prevent confusion, save a great amount of time, and also aid in making a net or operation run smoothly and efficiently. When used improperly, or with poorly-trained and inexperienced operators, they will usually cause delays and confusion.

Typically, "tactical call signs" are used during disaster or other emergency situations to identify *a specific location or a function*. They are especially helpful when multiple operators are being rotated (in shifts) at stations such as a shelter, a net control station, or for a certain job or function which may be a mobile unit.

Pro-words also make a great contribution to accuracy and efficiency in communications. The example above uses three of the most common pro-words: OVER, OUT, and ROGER. Note that when Rest Three replied to the request with the pro-word ROGER, Starter was confident his messages was received and understood. Rest Three did NOT repeat the request word-for-word or summarize the message. That is an unnecessary waste of time and a mark of an unskilled operator.

Station ID is another area procedure that can needlessly waste time. Back to the example above, note that each station IDs with their callsign just before the pro-word OUT. The stations send only their own callsign.

One common mistake is an operator identifying with the station's tactical call sign and then says his or her own call sign at the end of every transmission for example "Gravel Patch 4, KJ0ERK". *This is unnecessary and defeats the whole purpose.* Amateur operators only need to identify with their FCC-assigned call sign at the end of a transmission when they do not expect to transmit again within ten minutes and at the end of their shift assignment. (Ref. FCC part 97.119) ALSO, it is redundant and unnecessary to say, "for ID". Saying your call sign IS your "ID!" A similar timewaster is adding "Back to Net" to your transmission. In directed net the NECOS knows you have completed your communications when you end with the pro-word OUT. You do not have to tell the NECOS how to run the net.

BREAK - OVER

Antenna Analyzer?

Ed Note: The information below written as a response to the question, "What is the best antenna analyzer?" on the TowerTalk group at contesting.com. Great debate ensued until the following was posted. The post does provide an interesting summary of the various types of antenna measurement gear.

Warning: this has turned into something of a "Guide to Test Instruments", so proceed at your own risk.

There are three completely different categories of instruments here. You have to decide which category you are aiming for, and then pick the best model (best for your own specific needs) within that category.

1. Simple "SWR analyzers" like the original MFJ-259 and Autek RF-1. These are simply an RF signal source and an analog SWR bridge. (Other facilities such as digital synthesizer and SWR graphics make no difference to these basic RF capabilities.)

2. "Vector Lite" instruments like the MFJ-259B that can display resistance and reactance (R +/- jX) separately, but categorically do NOT have a facility for Open-Short-Load (OSL) calibration.

3. True Vector Network Analyzers that do offer - and indeed, require - OSL calibration at the exact location where the measurement is being made. The instrument then compensates for its own inaccuracies and presents the user with a much truer result. This is a defining feature of the true VNA that kicks it into a totally different league of accuracy.

(For example, there is almost no difference in accuracy between the home-built N2PK VNA and a high-end laboratory VNA. The only significant differences are in extremely difficult measurements where it is highly likely that both analyzers are wrong.)

Within each of these 3 categories there are many different instruments. Each one offers a different combination of cost, versatility, portability, operating convenience and accuracy. This is where consumer choice comes in, to pick the best combination of features for your own personal needs.

But even so, I know of no instrument that busts the boundaries between those three major categories:
* SWR only, or some attempt at Vector measurements; and within the Vector instruments
* OSL calibration and compensation, or only "Vector Lite".

BREAK - OVER

OSCAR

First Privately Built $68 Satellite

Oscar 1 (Orbiting Satellite Carrying Amateur Radio 1) was a curved box, about 12 × 10 × 5 in. The two approximately square surfaces were slightly curved, but were concentric with each other. One was slightly smaller than the other. A monopole transmitting antenna about 23.6 in long extended from the center of the convex surface of the larger square. Reflective striping was applied for temperature control. This satellite was made by volunteer effort of a group of amateur radio operators and was launched as ballast on an AF launch vehicle. The spacecraft was battery operated and had no attitude control system.

The first Oscar Phase I amateur satellite was launched piggy-back with Discover 36. A group of enthusiasts in California formed Project OSCAR and persuaded the United States Air Force to replace ballast on the Agena upper stage with the 10 lb OSCAR I package. The satellite was box shaped with a single monopole antenna and battery powered. The 140 mW transmitter onboard discharged its batteries after three weeks. 570 Amateurs in 28 countries reported receiving its simple 'HI-HI' morse code signals on the VHF 2 meter band (144.983 MHz) until January 1, 1962. The speed of the HI-HI message was controlled by a temperature sensor inside the spacecraft. OSCAR I re-entered the atmosphere January 31, 1962 after 312 revolutions.

The word "HI" was chosen over any particular call sign, since it was — and still is — is internationally recognized as a friendly greeting among radio amateurs.

The satellite was built, quite literally, in the basements and garages of the Project OSCAR team. It was the first satellite to be ejected as a secondary payload from a primary launch vehicle and then enter a separate orbit. This was accomplished using a very high technology and thermally balanced ejection system: a $1.15 spring from Sears. The total out-of-pocket cost (not including material donations) of OSCAR I: only $68.

Oscar 2 was nearly identical. Differences included (1) changing the surface thermal coatings to achieve a cooler internal spacecraft environment, (2) modifying the sensing system so the satellite temperature could be measured accurately as the batteries decayed, and (3) lowering the transmitter power output to 100 mW to extend the life of the onboard battery. OSCAR II lasted 18 days ceasing operation on June 20, 1962 and re-entered June 21, 1962.

A third Oscar was designed, built, and tested, but was never launched. Similar in design to Oscar 1 and 2, Oscar 3 contained a 250 mW beacon with phase-coherent keying. Oscar 3 was never launched as the workers decided to focus their efforts on the first relay satellite.

BREAK - OVER

Cyber Warfare

Hot – rockin' Iranians

A computer malware has allegedly attacked computer systems in Iran forcing them to play AC/DC's Thunderstruck at full volume in the middle of the night, according to a computer security researcher.
Mikko Hypponen, lead researcher at the Finnish computer security firm F-Secure, reported in his blog that a scientist working at the Atomic Energy Organisation of Iran (AEOI) sent him an e-mail about his systems getting hit by a cyber-attack.

"I am writing you to inform you that our nuclear program has once again been compromised and attacked by a new worm with exploits which have shut down our automation network at Natanz and another facility Fordo near Qom," reads the email.

"According to the email our cyber experts sent to our teams, they believe a hacker tool Metasploit was used," it continued. Metasploit, an open-source project used to find vulnerabilities in software, is reportedly very easy and cheap to develop.

"There was also some music playing randomly on several of the workstations during the middle of the night with the volume maxed out," the e-mail reads. "I believe it was playing 'Thunderstruck' by AC/DC."

Hypponen said he has verified the e-mail was sent from Iran's AEOI. It is not the first time the well-known computer virus hunter receives e-mails form Iranian authorities. During the Flame spyware case, he reported in Wired about how an Iranian computer security analyst had contacted him to notify him about the virus.

Hypponen maintained that a covert US government intelligence agency was behind Flame. Flame was discovered in June having gone undiscovered for at least two years, thanks to the sophistication of the software involved.

It has been described as one of the most complex pieces of malware ever discovered. Flame infected computers in the Middle East, in countries such as Iran, Israel and Sudan, with the majority of infected computers, according to Kaspersky's data, being in Iran.

Calling it the James Bond of the malware world, Hypponen admitted his company's was impotent against Flame. It allowed those who created it to search for and upload documents and files on a remote computer, watch and listen to what's taking place around the infected PC by turning on the camera or microphone, and even copy the address book from mobile phone within range of the computer.

Unlike Metasploit, Flame cost $10m to develop.

BREAK - OVER

Electrochemical Flow Capacitor

Hmmm, sounds like the flux capacitor from Back to the Future! No, this is legitimate energey storage research. Researchers at Drexel University are developing an electrochemical flow capacitor (EFC) that combines the storage capabilities of batteries with the much longer cycle life and power output of supercapacitors. The team's goal is to improve the stability of the energy grid and ease the integration of renewable energy sources.

Renewables such as wind and solar power are experiencing an exponential year-by-year growth, but integrating such an intermittent and unpredictable power source into the grid can be problematic as it calls for a highly flexible, cost-effective solution that can store vast amounts of energy and release it quickly whenever needed.

While batteries can store large amounts of energy, they cannot dispense it quickly and they can only survive about one thousand charge-discharge cycles. Conversely, supercapacitors can release energy in quick bursts and last for hundreds of thousands of cycles, but they can't store quite as much energy. Recent advances in both battery and capacitor technology have been working toward a perfect marriage of the two.

The EFCs developed at Drexel University are another step in this direction and are aimed at large scale usage. The device consists of a cell connected to two external reservoirs, each containing a mixture of electrolyte liquid and charge-carrying carbon particles. The uncharged slurry is

pumped from the reservoir tanks into the flow cell, where the stored energy is transferred to the carbon particles. Once charged, the slurry can be stored in large tanks until the energy is needed, at which time the entire process is reversed.

This conceptually simple approach promises to be both scalable and cost-effective: EFCs can survive hundreds of thousands of charge-discharge cycles, their power output is comparatively large - controlled by the size of the electrochemical cell - and their capacity is proportionate to the size of the tanks that contain the carbon-electrolyte slur.

A paper describing this energy storage concept was recently published in the journal *Advanced Energy Materials*. *BREAK - OVER*
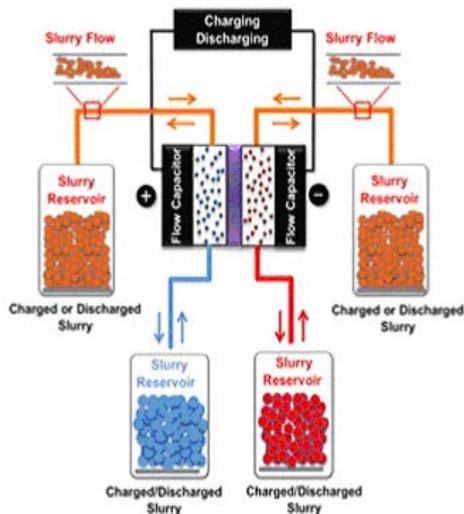
Huh? Memory Strategies?

By Dr. Anthony L. Komaroff

Most of us experience more forgetfulness as we get older. And most of us who become a little forgetful don't have, and never will have, Alzheimer's disease or another type of dementia.

Fortunately, there are plenty of behavioral strategies you can use to improve your memory. Many are simple things that you probably do already. But you still can benefit from doing them more regularly.

FOCUS. Enhance your focus and attention with some simple tricks. When someone is talking to you, look at the person and listen closely. If you miss something, ask the person to repeat it. To the maximum extent that life allows, avoid multitasking: Do one thing at a time. Avoid interruptions. You actually have more control over this than you think.

REPEAT. You will remember new information more effectively if you repeat it to yourself or out loud as soon as you can after learning it. Studies of brain function show that this practice helps to "hard-wire" new information into your memory.

ASK FOR CLARIFICATION. When someone says something you want to understand but don't, ask questions. It's natural to be reluctant to ask questions when you don't understand something; no one likes to look dumb. But if the information is interesting or important to you, say you don't understand and ask.

For one thing, you'll be surprised by how often others you ask are delighted by your question, because it shows you really are interested in what they have to say. Plus, now and then, you'll discover that the problem is not your brain. The problem is that they don't know what they're talking about.

MAKE A NOTE. When something significant occurs to you, write it down right away. The act of writing things down actually helps reinforce them in your mind.

PRACTICE SPACED REHEARSAL. If you have trouble retaining complicated information, try learning the information over time, rather than all at once. Write down the main points and then review your notes once or twice. Read them again the following day and then again the day after.

DO SMALL TASKS FIRST. It's only natural to turn your attention to the large, important tasks. But then the small tasks pile up and get forgotten. If you act on them quickly, you don't have to worry about remembering to do them later.

BE PATIENT. As you age, your brain processes information more slowly. Give yourself the time you need to absorb new information. *BREAK - OVER*
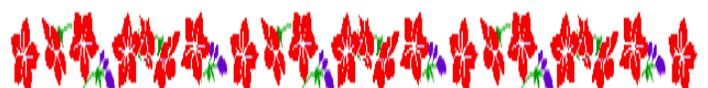
Tick Time

The spring and summer months are when you need to be most wary of deer ticks and the potential for Lyme disease. The two most important things you can do are to take steps to avoid tick bites, and to find and remove any ticks that do get on your body. If you remove a tick early, say within 36 hours of the time it attaches itself to you, your chances of getting Lyme disease are low (less than 1 in 100).

To protect yourself from Lyme disease:

Wear light-colored clothing. Light colors make ticks easier to spot.

Tuck your pants inside your socks. This creates a physical barrier against ticks.

Wear insect repellent. A repellent with a 30 percent to 40 percent concentration of DEET should keep ticks away. It should be sprayed on clothes, not on the skin.

Stay in the middle of the path. Avoid the kind of environment ticks live in: moist, often shady, wooded areas, with leaves, low-lying plants and shrubs.

Inspect yourself and your children, especially the legs and groin. Most ticks probably get picked up on the lower legs and then climb upward.

Remove gently. Use tweezers to grab the tick as close to the skin as possible. You can also use a needle to gently pry it off.

BREAK - OVER

"If you're doing your best, you won't have any time for failure."

Ella Quince

July General Pool Answer

1. Which of the following statements is true of SSB VOX operation?
  B. VOX allows "hands free" operation
NOTE: VOX operation is NOT recommended for emergency communications.

2. What does the expression "CQ DX" usually indicate?
  C. The caller is looking for any station outside their own country

Take a Dip in the General Pool

Time to test your knowledge of the information covered by the General Class license exam. Each month we'll take a look at a selection from the question pool. Here is this month's sample:

1. What is the first thing you should do if you are communicating with another amateur station and hear a station in distress break in?
  A. Continue your communication because you were on frequency first
  B. Acknowledge the station in distress and determine what assistance may be needed
  C. Change to a different frequency
  D. Immediately cease all transmissions

2. If propagation changes during your contact and you notice increasing interference from other activity on the same frequency, what should you do?
  A. Tell the interfering stations to change frequency
  B. Report the interference to your local Amateur Auxiliary Coordinator   .
  C. As a common courtesy, move your contact to another frequency
  D. Increase power to overcome interference

(Check next month's issue of the ARES Communicator for the answer.)

ARES Breakfast
Saturday August 11th
7:30AM
Perkins Restaurant
Savage, MN

NECOS Schedule August 2012

6 Aug	**KB0FH Bob**
13 Aug	**KC0YHH Tony**
20 Aug	**N0PI Dan**
27 Aug	**W0NFE Bob**
3 Sep	**KB0FH Bob**
10 Sep	**KC0YHH Tony**
17 Sep	**N0PI Dan**
21 Sep	**W0NFE Bob**