



ARES COMMUNICATOR

Information for Scott County Amateurs



May, 2015

Accurate, Reliable Emergency Communications for our Community

Volume 15, Number 5

Earthquake Comms in Nepal

News agencies report amateur radio has stepped in to fill communication gaps in Nepal, which is struggling with power outages and a flaky Internet after a devastating earthquake on April 25th killed over 5,000 people.

Amateur radio operators are working round-the-clock to help people get in touch with relatives, pass on information and alert about developing crises ever since the 7.8 magnitude earthquake hit about 80 kilometers from Nepal's capital city of Kathmandu.



Damage caused by the 7.9-magnitude quake, which destroyed buildings and killed more than 4,600 people.

The Hams can power their equipment from solar power or low-voltage batteries, which means that the radios can continue to work even after smartphones and laptops are discharged, said Jayu Bhide, National Coordinator for Disaster Communication at the Amateur Radio Society of India.

The electricity supply has improved in many parts of

Nepal *cont'd on page 2*

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!

Scott ARES
2015 ARRL FIELD DAY
HAM RADIO
June 27 - 28, 2015
Canterbury City Park
13398 Inglewood Ave
Savage, MN
Come Join the Fun!

Join the fun of Field Day with Scott ARES. Licensed hams have the opportunity to experience some exciting HF operating. Extra class control operators will be on hand to allow operation across the bands. If you are a Tech licensee and have never tried HF operation, this a great opportunity!



Final details – June Breakfast

ARES Activities

Weekly Net Monday 7 PM 146.535 mhz (s)

Breakfast Saturday, June 13th

Digital Monday, June 15th

ARES Nets

- MN ARES Phone Net
6:00PM Sunday Freq: 3.860 mhz
- ARRL MN Phone Net
12:00p, 5:30p CST Daily Freq: 3.860 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 3.860 mhz 6:00pm
- Wisconsin: Daily 3.985 mhz 5:30pm
- Iowa: Daily 3.970 mhz 12:30/5:30pm

Nepal - cont'd from page 1

Kathmandu, but when there were power outages, ham operators resorted to transmitting at low power, 15 to 20W, said Satish Kharel, a lawyer in Kathmandu, who uses the ham call signal 9N1AA. "When the power was out, I used to plug into my car battery," he said.

Ham operators in Nepal and India are working in shifts to keep communications going between them and hams in other parts of the world like Turkey, Australia and New Zealand, Bhide said.

Though 99 persons have ham licenses in Kathmandu, about eight use high-frequency (HF) radios that can transmit long distances, while another 30 have very high frequency and ultra high frequency sets for local traffic, Kharel said. In India, over 50 ham operators are helping out with the relief, according to Bhide.

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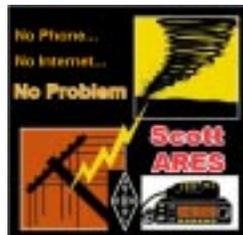
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Broadband-Hamnet Updates

Growing the Mesh

Broadband-Hamnet (BBHN) has released version 3.1.0 firmware for the Linksys WRT54G and Ubiquiti families of products. This firmware returns to the use of patch updates, while also supporting add-on tools such as HamChat created by VE3NKL and a tunneling solution optimized by K5DLQ. This firmware release continues support for emergency communications data networking in the 2.4 GHz, 5 GHz and 900 MHz bands using Ubiquiti equipment and in the 2.4 GHz band using Linksys equipment. By creating solutions with Commercial Off The Shelf (COTS) hardware and Broadband-Hamnet firmware, a high-speed IP network can be deployed in the time required to set it in place and power it on.

There have been many requests for tunneling capability to allow interaction between remote Broadband-Hamnet networks. While this has been done before, the resources and complexity were quite high. With the new VTUN capability this feature becomes feasible for all Broadband-Hamnet users.

The HamChat server is a real innovation that allows keyboard-to-keyboard chats between any connected users on the same mesh. By using your web browser instead of chat client software, the complexity is reduced and the speed to deploy is increased. The HamChat server is not installed but is a downloadable package option for the Broadband-Hamnet 3.1.0 firmware.

The organization hopes that hams interested in high-speed data networks will look at the new Broadband-Hamnet 3.1.0 firmware. For more information, click on the group's website: www.Broadband-Hamnet.org

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Asst. E.C.s Appointed

Welcome Tony and Chad!

Congratulations to Tony Lambertz, KC0YHH, and Chad Palm, KD0UWZ, who have each accepted appointment as Assistant Emergency Coordinator (AEC) for Scott ARES.

Tony and Chad, in their role of AECs are an important part of the Scott ARES leadership team. They contribute to planning and implementation of public service events and other activities. The AECs help identify training needs and activities.

The AECs serve as points of contact for Scott ARES with the various served agencies and maintain continuity in extended activations.

Please welcome Tony and Chad in their roles and offer you thanks for their willingness to contribute to the future of Scott ARES.

BREAK - OVER

Amateur Radio License Exam

Now that you have done the work to study for your upgrade, here is where to find a convenient exam session near you. There is a VE exam search engine at: http://www.arrl.org/exam_sessions/search

Walk-ins allowed at most sessions however it is always best to check the details at the specific session you are planning to attend.

Below is a list of scheduled sessions close to Scott County. Good Luck!

May 13 2015 Wednesday 7:00 PM

Lakeville, MN

Contact: James C. Rice

(612) 384-7709 jrice@danpatch.org

Perkins Restaurant & Bakery

17387 Kenyon Avenue

Lakeville MN 55044-4459

Walk-ins allowed.

May 16 2015 Saturday 9:00 AM

Contact: SEMARC

(651) 769-0358

Zion Luthern church

8500 Hillside Trail South

Cottage Grove MN 55016-3273

Walk-ins allowed

May 18 2015 Monday, 6:00 PM

Chanhassen MN

Contact: Dale A. Blomgren

(952) 402-2155 kd0b@arrl.net

Carver County Library

7711 Kerber Blvd

Pre-reg requested.

May 23 2015 Saturday 9:00 AM

Bloomington MN

Contact: Daniel J. Royer

(952) 888-9756 dan-arrl@droyer.org

City Hall-Police Department

1800 W Old Shakopee Rd

Walk-ins allowed



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.

Strap on your thinking cap and see what you can recall. Here is this month's sample:

1. What is a purpose of using Automatic Level Control (ALC) with a RF power amplifier?
 - A. To balance the transmitter audio frequency response
 - B. To reduce harmonic radiation
 - C. To reduce distortion due to excessive drive
 - D. To increase overall efficiency
2. Why is a time delay sometimes included in a transmitter keying circuit?
 - A. To prevent stations from talking over each other
 - B. To allow the transmitter power regulators to charge properly
 - C. To allow time for transmit-receive changeover operations to complete properly before RF output is allowed
 - D. To allow time for a warning signal to be sent to other stations
3. What problem can occur when making measurements on an antenna system with an antenna analyzer?
 - A. SWR readings may be incorrect if the antenna is too close to the Earth
 - B. Strong signals from nearby transmitters can affect the accuracy of measurements
 - C. The analyzer can be damaged if measurements outside the ham bands are attempted
 - D. Connecting the analyzer to an antenna can cause it to absorb harmonics

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

April General Pool Answers

1. Why are HF scatter signals in the skip zone usually weak?
 - A. Only a small part of the signal energy is scattered into the skip zone
2. What type of radio wave propagation allows a signal to be detected at a distance too far for ground wave propagation but too near for normal sky-wave propagation?
 - B. Scatter
3. What reading on the plate current meter of a vacuum tube RF power amplifier indicates correct adjustment of the plate tuning control?
 - B. A pronounced dip

CHICKEN DANCE DAY!

May 14th

Dance Like a Chicken Day is for those who like to do the "Chicken Dance". All ya gotta do is dance like a chicken. While any dance song will do, there's no dance like the Chicken dance.



It's tradition at every wedding reception to play and to dance the Chicken Dance. It gets people of all ages up dancing and mingling. It puts a smile on everyone's face. The Chicken Dance is not limited to weddings. It is also played at other social events where there is a band and dancing.

The Chicken Dance song. It was originally titled "Der Ententanz" (The Duck Dance). It was created by Swiss accordion player Werner Thomas of Davos, Switzerland. Thomas created it in the 1950's. Over the years, it quickly became popular, especially at weddings.

The only problem is that events are way too rare for a chicken dance lover. Therefore, today exists to provide you with another opportunity to dance like a chicken. So, don't pass up this priceless opportunity.

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NBEMS Current Versions

The current version of the Fldigi manual is available at NBEMS Info page at www.scottares.org. Look under the 'Help Sheets' heading.

Now is a good time to check to your digital software to make sure you are running the newest versions. You can find the most recent versions posted at both: www.w1hkj.com/download.html and <http://www.scottares.org/NBEMS.htm>

Here are the most recent releases as of April 2, 2015.

Software	Version
Fldigi	3.22.07
Flwrap	1.3.4
Flmsg	2.0.9
Flamp	2.2.01

The Monday evening training net is a great place to have your digi questions answered and problems solved! Join the Scott ARES group on 146.535 MHz simplex at 7:00pm on Monday evenings.

Test Your NIMS Knowledge

This month we will begin our review of ICS-800: National Response Framework. The purpose of the National Response Framework is to ensure that all response partners across the Nation understand domestic incident response roles, responsibilities, and relationships in order to respond more effectively to any type of incident. The Framework focuses on response and short-term recovery instead of all of the phases of incident management.

. Check your recall of the course material with this question.

The National Incident Management System (NIMS):

- A. Creates a comprehensive framework to protect critical infrastructure and key resources through developing partnerships with the private sector.
- B. Provides a proactive approach to ensuring that responders from across the country are organized, trained, and equipped in a manner that allows them to work together seamlessly.
- C. Establishes standardized methodology and terminology used for exercise design, development, conduct, evaluation, and improvement planning.
- D. Ensures consistent reporting methods across departments, agencies, and operations centers at the Federal, State, local, and private-sector levels.

Check next month's ARES Communicator for the solution



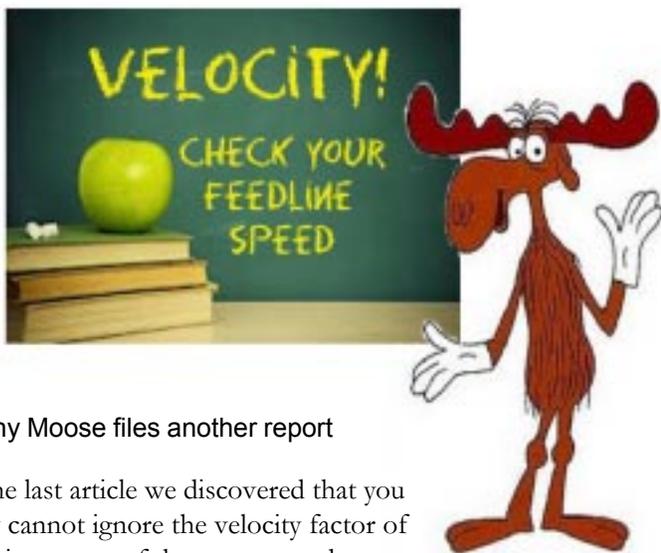
April NIMS Knowledge Solution

1. Exercises should:

- Include multidisciplinary, multijurisdictional incidents.
- Include participation of private-sector and nongovernmental organizations.
- Cover aspects of preparedness plans, including activating mutual aid and assistance agreements.
- _____.

A. Contain a mechanism for incorporating corrective actions.

BREAK - OVER



A. Nony Moose files another report

In the last article we discovered that you simply cannot ignore the velocity factor of the various parts of the antenna and expect to build something useful.

Let's agree that a useful antenna radiates more power into the ether than it uses to generate heat. It is dangerous but let's assume that the SWR ratio is a useful proxy for antenna efficiency. I can hear the Yeah Buts chattering. We are talking about a practical, reproducible antenna.

When you calculate the element lengths for a half-wave dipole using the standard formula, you generally end up shortening the elements to tune the antenna to the frequency you want to hit.

This is the effect of the velocity factor of the wire used for the element. The formula calculates the distance RF travels in free space. When we shove RF through a wire, it 'slows down'. You find you have to shorten the legs of that dipole by about 5% to hit the sweet spot. The RF half-wave covers about 95% of the distance in a wire that it covers in space. That concept tied this Moose's antlers in a knot before it made sense!

So, how do we know the velocity factor (VF) of a particular wire? Measure it. A. Nony Moose doesn't have a Mark V Series 1400 Velocity Meter so we do the next best thing, sneak up on the velocity factor.

The standard recipe, concerning feedlines, is to measure the resonant frequency of a known length of feedline and compare it to the calculated frequency for that length. The ratio of the lengths will be the VF. Sound good but how do you connect a piece of twinlead to a coax connector?

This is where reading the manual actually helped! The older version of the MFJ 259 manual issues the instruction, "For two wire (balanced) lines (a) 50 ohm resistor connects in series between the ground shell of the PL-259 and one conductor. The

Wavelength Formula

$468 / f \text{ (mHz)} = 1/2 \text{ wave (feet)}$

$234 / f \text{ (mHz)} = 1/4 \text{ wave (feet)}$

other conductor of the balanced line connects directly to the center pin of the connector." Then pretend you are working with coax.

How about an example for a 1/4 wave stub (our target is 146 mHz). Let's start with 17 1/2 inches of twinlead and strip the insulation from 1/2 inch on one end. The antenna analyzer shows a resonant frequency of 135mHz. The free space formula tells us we should have a wire 1.733 feet in length. We measured the twinlead at 17 inches or 1.417 feet. The ratio of measured length / calculated length is .81 or a VF of 81%.

Now we know our 1/4 wave stub at 146 mHz should be close to $234/146 \times .81 = 1.29$ feet or 15.5 inches.

Okay, let's build a 1/2 wave vertical antenna using a qtr wave twinlead matching transformer. We start with our 15.5 inches of twinlead. Short the two conductors at the bottom. Attach the coax to the twinlead about 1" from the shorted end. (The best 50 ohm match on various 1/4 wave stubs seems to be about 7% of the total length from the shorted end.)

Next let's solder a 36 1/2" piece of insulated wire to one of the twinlead conductors and hang the whole thing from a skyhook.

The antenna analyzer results show a 1/2 wave vertical antenna resonant at 146 mHz! Well, that's great but what if you don't happen to have a handy skyhook?

Velocity Factors		
Conductor	Space	PVC pipe
Twinlead	81%	78.34%
Str. wire	95%	92.96%

Let's see what happens when we slip this antenna inside some 3/4 inch PVC pipe.

Oh boy! How could things go SO wrong! Suddenly our nice, well behaved 146 mHz antenna is now made for about 143 mHz! All we did was hang it inside some 3/4 inch PVC pipe.

Back to the velocity factor calculations. The resonant point of the antenna appeared to move about 3 mHz lower when we hung in the PVC pipe. Let's assume the pipe effect will be the same on both twinlead and a single stranded wire. A few minutes with the calculator show the new 'PVC' velocity factors: Twinlead 78.34% and Stranded wire 92.96%.

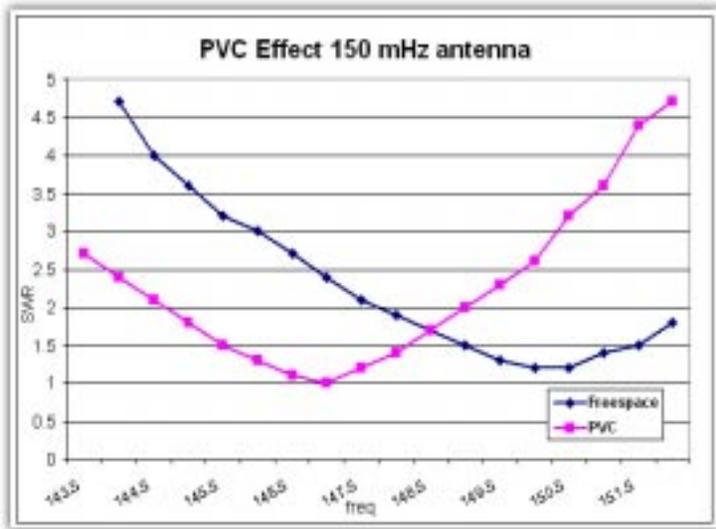
After a little cutting and soldering the new antenna is ready for some testing. The resonant frequency in free space is now 150 mHz. Slipping the antenna into the PVC pipe, the

Velocity - cont'd from page 5

resonant frequency is about 147 mHz. The range of 1.5 SWR points covers the 2M band (see chart).

It looks like we can calculate a good starting point for the antenna suspended in a PVC pipe. Amazing how much easier it is to put a half-wave vertical on top of a mast when it is enclosed in a plastic tube!

Now, what if we add a trap and another halfwave element and slip it into the pipe, could we have the collinear solution? Well, check back next time and we'll see.



The PVC effect is too large to be ignored when designing an antenna.

A.N.Moose can be reached at Moose at scottares.org

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New Ham Survey

Licensed since 2000?

Kentucky academic researcher Joel Shelton, N8XJ/A65BX, is seeking radio amateurs licensed since January 1, 2000, to take part in an online survey.

The survey is part of a research project. Shelton is focusing on newer hams because, he said, "I am interested in what attracts people to take up a century-old hobby for the first time in the 21st century." Shelton asked that if you fit this category to complete his online survey.

He said he plans to use the survey results to prepare articles — one for an academic journal — about the current state of Amateur Radio and what continues to attract newcomers. Contact Shelton at: joelshelton@yahoo.com for more information.

You can find the survey here: https://docs.google.com/forms/d/1ET5MPvbRCEG_vFbQQQEx43c3_PRC3aLYI1lnGnrEbAY/viewform

New Comms Technology Test

May 24th Washington D.C.

On May 24, 1844, over an experimental line from Washington, D.C., to Baltimore, inventor Samuel F.B. Morse sent the message said: "What hath God wrought?" The message was taken from the Bible, Numbers 23:23, and recorded on a paper tape, the phrase had been suggested to Morse by Annie Ellsworth, the young daughter of a friend.

Samuel Morse has submitted a patent for his device, which he called "The American Recording Electro-Magnetic Telegraph" in 1837. He appealed to the U.S. Government for funds to expand the use of the device.

The demonstration in 1844 was prepared to show Congress the capability of the device. The success of the experiment changed forever the national communication system. Congress did eventually provide funds to expand the line to other east-coast cities.



Original telegraph receiver, used in Baltimore for the receipt of the first telegraph message, May 24, 1844.

Once Morse's system was installed in the Capitol, Congress found the telegraph an indispensable tool. At first the telegraph connected only Washington, D.C. and Baltimore, MD; gradually lines were extended to other large east coast cities.

Western Union completed the first transcontinental telegraph line in 1861, dooming the Pony Express, but aiding forces in the Civil War. During the Civil War reports flashed from the battlefields assisted the federal government as it monitored and tracked troop developments. It was the first time that instant battle reports were provided to officials in Washington, D.C.

With the westward expansion of the country and the addition of new territories to the union, improved communication became a necessity. The telegraph revolutionized the way Congress corresponded with the nation. Telegraph lines later linked the Capitol building to the White House and reporters to their respective newspapers.

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In Flanders Fields

"In Flanders Fields" was composed on May 3, 1915 by Canadian physician Lieutenant Colonel John McCrae.

**In Flanders fields the poppies blow
Between the crosses, row on row,
That mark our place; and in the sky
The larks, still bravely singing, fly
Scarce heard amid the guns below.**

**We are the Dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders fields.**

**Take up our quarrel with the foe:
To you from failing hands we throw
The torch; be yours to hold it high.
If ye break faith with us who die
We shall not sleep, though poppies grow
In Flanders fields.**



Vehicle Radar Plays Nice

Don't Restrict Amateur Allocation

ARRL Letter April, 2015

In response to a February FCC Notice of Proposed Rulemaking and Reconsideration Order (NPRM&RO) in ET Docket 15-26, the ARRL has told the Commission that it should make no change in the Amateur Radio allocation at 76-81 GHz and impose no additional regulatory constraints on Amateur or Amateur-Satellite uses of the band. The League said the FCC should proceed with authorizing short-range radar (SRR) systems for automotive applications in the band under Part 15 rules, and that such applications are compatible with amateur operations in the band.

The ARRL said that no changes are necessary in the Amateur Radio domestic primary allocation at 77.5-78 GHz or in the secondary amateur allocation at 77-77.5 GHz or 78-81 GHz to accommodate automotive radar systems at 77-81 GHz. "Nor are any additional Part 97 rules necessary to accommodate compatible sharing of that band between radio amateurs and automotive radar systems," the League added. "Indeed, that is the position of the United States in anticipation of consideration of WRC-15 agenda item 1.18 later this year."

The League characterized as "both premature and poor spectrum management" the FCC's proposal to unilaterally permit unspecified fixed radar systems throughout the 76-81 GHz band "without the benefit of any completed, definitive studies relative to the compatibility of fixed radar systems with automotive radar, radioastronomy and/or Amateur Radio in this band."

Any consideration of fixed radars at 77-81 GHz, the League said, "should await the completion of conclusive, refereed compatibility studies that credibly establish compatibility with incumbent services."

The ARRL said should there be any "unjustified displacement" of the Amateur or Amateur-Satellite services from any portion of the 76-81 GHz band, the FCC should allocate "equivalent spectrum" for those services. As possibilities, the League suggested the bands 75.5-76 GHz and 81-81.5 GHz.

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"The democracy will cease to exist when you take away from those who are willing to work and give to those who would not."

Thomas Jefferson

What is DMR?

ARES Eletter April15,2015

Digital Mobile Radio (DMR) was developed by the European Telecommunications Standards Institute (ETSI) and is used worldwide by professional mobile radio users. Voice and data are supported.

There are three levels of involvement in DMR. The first is as a user, where you begin with a single radio, and later, possibly you'll add a second or third. The next level is as a repeater operator. You generally undertake this because there are no repeaters in your area or because you want better coverage. The third level of DMR participation is as a network operator — you purchase and manage your own c-Bridge™ and build regional networks that interconnect to the other DMR networks.

Amateurs are implementing Motorboats™ and Hytera infrastructure networks. These networks, from the end user standpoint, operate the same. Amateur Mototrbo™ networks are much larger, cover many more areas, and most are interconnected. Not all the amateur DMR repeaters are connected to the wide area networks; some are standalone either because amateurs have yet to obtain an ISP connection at their repeater site or because they just want to use the repeater for local communications. Some standalone systems are operating in dual-mode (analog/digital).

Talk Groups (TG) are a way for groups of users to share a “time slot” (channel, one-to-many) without distracting and disrupting other users of the time slot. It should be noted that only one Talk Group can be using a time slot at a time. If your radio is not programmed to listen to a Talk Group, you will not hear that Talk Group's traffic.

There are many sources of new and used DMR radios. As of this date, you can't walk into an Amateur Radio store and buy a DMR radio, but that may soon change. Presently all DMR radios are professional (commercial) radios marketed primarily to commercial radio users. If you want to purchase a new DMR radio for ham use, you can easily find a dealer, and some dealers are “ham friendly” and will offer reasonable discounts to hams. Check with other DMR users or on DMR related websites for further information.

When you make an initial transmission to announce your availability, to place a call to another station, or to make a general call, you should also announce what Talk Group you are on because some users may be scanning or have radios without a display. When you are talking on one of the wide area Talk Groups, hundreds of repeaters will be tied up. If you are unable to move to a more localized Talk Group, be considerate of the other users on the network. Talk Groups share time slots. When one Talk Group is active; other Talk Groups on the same time slot will be blocked.

You can read more about DMR here: http://www.dmr-marc.net/media/Amateur_Radio_Guide_to_DMR.pdf

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Capacitors !

What are capacitors and how do they work?

Jameco Electronics

A capacitor is a passive electrical component that has two terminals. It's basically two conductors, typically having conduction plates, separated by an insulator known as a dielectric. It also has connection wires that are connected to the conducting plates. The dielectric is what determines the type of the capacitor. The dielectric material can vary, but it must be a poor conductor of electricity.

The purpose of a capacitor is to store energy. The negative terminal accepts electrons from a source of power, while the positive terminal loses electrons. The capacitor releases its stored energy when required. It works similarly to a battery but can release its entire charge in a fraction of a second.

Common types of capacitors are ceramic capacitors, paper or film capacitors and electrolytic capacitors. There is also a family of super capacitors which offer high capacitance.

Capacitor Applications:

Capacitors have an array of applications. They play a critical role in digital electronics as they protect microchips from noise on the power signal by decoupling. Since they can dump their entire charge so quickly, they are often used in flashes and lasers along with tuned circuit devices and capacitive sensing devices. Circuits with capacitors display frequency-dependent behavior so they can be used with circuits that selectively amplify certain frequencies.

Selecting a Capacitor:

Selecting a capacitor is largely dependent upon the electronic device you're working with and which current is being used (AC, DC, etc.). You should determine if you need a polarized or non-polarized capacitor. In order to do so, check the schematic of your project. If the capacitor is indicated with a plus sign (+), then a polarized capacitor is required.

Farads (F) are the amount of charge a capacitor can store. Since one farad is fairly large, most capacitors will have values marked in picofarads (pF) or microfarads (μF). A picofarad is 10^{-12} , or one trillionth of a farad, while a microfarad is 10^{-6} , or one millionth of a farad.

The voltage of a capacitor is proportional to the charge stored in the capacitor. They are capable of blocking DC signals while passing AC. Capacitors can also eliminate ripples. If a line carrying DC voltage has ripples a capacitor can even out the voltage by absorbing the peaks and filling in the valleys.

The voltage on a capacitor is not the rating, but rather how much voltage you can expose the capacitor to. For example, if your voltage source is 9 volts, you should choose a capacitor that is at least double the voltage, 18 volts or even 27 volts to be safe.

AC or bipolar electrolytic capacitors have two anodes connected in reverse polarity. DC electrolytic capacitors are polar-

2015 Hamfests

Compiled by Doug, N0NAS

Make your calendars! Here is a list of some of the scheduled Hamfests in the area. Time to refine your shopping list and get ready to comb the flea market tables.

May 15-16, 2015

RADIO DAZE 2015, St Louis Park, MN
Vintage radio auction and swap meet (not a general hamfest)
www.northlandantiqueradioclub.com/

June 6, 2015

TwinsLAN Tailgate Swapfest, Maplewood, MN (always the first Saturday of June)
www.twinslan.net

July 11, 2015

MAGIC Tailgater Yard Sale, Roseville, MN
www.magicrepeater.net/

July 11, 2015

51st International Hamfest
The Peace Garden, N. Dakota/Manitoba border
www.mts.net/~holderr/ihf.htm

July 18, 2015

CVARC Tail Gate Swap Fest, Chippewa Falls, WI
www.w9cva.org

Aug 2, 2015

CVARC Summerfest, Cedar Rapids, IA
www.cvarc.rf.org/2014Summerfest.pdf

Sept 19, 2015

SMARTFEST 2015, Henderson, MN (SW of Belle Plaine)
www.arrl.org/hamfests/smartfest-2015

BREAK - OVER



ARES Breakfast

Saturday June 13th
7:30AM
Perkins Restaurant
Savage, MN

"America was built on courage, on imagination and an unbeatable determination."

Harry Truman

Capacitors - cont'd from page 8

ized by the manufacturing process and therefore can only be operated with DC voltage. Voltages with reverse polarity, or voltage or ripple current higher than specified can destroy the dielectric and the capacitor. The destruction of electrolytic capacitors can have catastrophic consequences such as a fire or an explosion. If a polarized capacitor is installed incorrectly, the capacitor whistles then explodes. On the other hand, non-polarized capacitors are primarily used for filtering out harmonic noise in almost every circuit, are more friendly to handle.

"Some large, electrolytic capacitors can store a charge for a long time. Some can even self-charge to some extent," a Jameco Technical Support Engineer explained. "An electronic design engineer I used to work with was prototyping a power supply, tuning the circuit, testing parts, etc. As was his habit, he took a cap out of the circuit to replace it and without thinking stuck one of the leads in his mouth. The capacitor discharged its entire load more or less instantly and actually caused him to fall out of his chair. He was OK but it was scary. A few months later he had to have the tooth pulled right where the cap had discharged. He'd electrocuted that tooth."

Remember to work safely when handling capacitors and always follow the specifications for your device or project. A capacitor can be an essential component but it can also result in damaging and dangerous consequences if not used appropriately.

Want to see what happens when capacitors are used incorrectly? Check out this short video: www.youtube.com/watch?v=77ARIVt9RrE

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NECOS Schedule May 2015

The first Monday or the month the net is held on the WB0RMK repeater, Carver. You will find WB0RMK here: 147.165/765 PL 107.2

May 2015

May 4 KD0UWZ Chad

May 11 KC0YHH Tony

May 18 KB0FH Bob

May 25 WA0DGW John

June

Jun 1 KD0UWZ Chad

Jun 8 KC0YHH Tony

Jun 15 KB0FH Bob

Jun 22 WA0DGW John

Jun 29 KD0UWZ Chad