

OCEC/RACES SIGNALS

For the support of County Government during emergencies



Oswego County Emergency
Communicators/RACES
200 North 2nd Street
Fulton, NY 13069



OFFICERS

Radio Officer John K2QQY
ARO Admin. Tim KC2SKG
ARO Comms Jim N2MGU
ARO Logistics Mark KC2JNI
ARO Ops & Plan Bob WA2AFF
ARO EC ARES Tom W2TQF
Unit Ldr. Packet John N2MKH
Unit Ldr. IT Steve KC2QXE
Unit Ldr. Skywarn Judy KC2SUM

Oswego County Repeaters

147.150 MHz PL not req'd
146.850 MHz PL not req'd
442.350 MHz 103.5 PL

Other repeaters of interest

146.670 MHz PL 151.4 Syracuse
147.345 MHz No PL Phoenix

Packet FlexDigi User Ports

EOC Fulton 145.090 MHz K2QQY
Scriba 145.690 MHz KA2AON
Hannibal 145.770 MHz K1YHR

NETS

OCEC/RACES The 1st and 3rd Sunday
of the month at 2000 Hrs. 147.150 MHz

NYS RACES Net Every Sunday
Morning at 0900 local on 3993.50 kHz

WEB SITES

OCEC/RACES
www.oswegoraces.org

Fulton Amateur Radio Club
www.fultonhamradioclub.org

Go to our web page for more links to
interesting places.

*A monthly meeting is held in the
lower level of the County Building
on Route 481 North, Fulton,
across from Mimi's restaurant.
Access is through the west door
until the meeting starts. Door is
secured after that. Use the after
hours button if late. Someone will
come up and let you in. Meeting
sign in is at 1850 hours local.*

Up coming meetings:

August 19
Drill review
A completed Go Box

September 16
Prep for REPP drill

UPCOMING EVENTS

**August 19 REPP State
observed Drill**

**September 22 REPP Federal
observed drill.**

Announcement:



Tim DeMarais, KC2SKG has accepted the position of Alternate Radio Officer, Admin. Tim is a Systems Engineer with Lockheed Martin and holds a General class amateur radio license, residing on the Albion Crossing Road, Pulaski.

Hang on to your hats and get that Morse code key limbered up. Toshiba has put a new device out last year that is met to be the next texting unit. Released last year in Japan it uses Morse code as the method for texting. It has three keys, one for dots, one for dashes and one that is used to space between characters and words. They found that Morse was easily picked up by the users and is very efficient. For more on this visit World Radio Online found on the CQ home page. A great read.

APW Mock DWI Drill
May 6, 2009

APW Central Schools 2009, with assistance from the Oswego County Local Emergency Planning Committee (LEPC) Mock DWI. The purpose of this drill was to provide a sobering review of all aspects of a vehicle crash involving an intoxicated driver, his/her passengers, and innocent victims.

As members of the LEPC we were asked to provide support communications for the event. Our communications ranged from dispatch of emergency vehicles, to tracking victims taken to an offsite "hospital", to keeping the event directors up to date and relaying their messages and relaying information from the IC to the fire personnel at the roadblocks.

Thanks to the participants: Bob, WA2AFF; Tim, KC2SKG; Cathy, KC2FNM; Jim, N2MGU; Henry, KC2SUL; Ed, KC2SUJ; Redd, AI2N; Fred, KA2HPG; Judy, KC2SUM; John, N2MKH and John, K2QQY.



Fred, KA2HPG, John, N2MKH, Ed, KC2SKG, Redd, AI2N and Bob, WA2AFF hold highly technical conference awaiting rest of crew (where is the hot coffee?)



John, K2QQY; Tim, KC2SKG; Cathy, KC2FNM; John, N2MKH; Redd, AI2N; Bob, WA2AFF; Fred, KA2HPG and Ed, KC2SUJ getting last minute updates and assignment changes.



Redd, AI2N, Terry Bennett, EMO and John Kaminski in the red shirt, the moulage guy checking last minute details.



Narrator prepping the audience on the background of the accident before them.



EMS personnel have arrived and the deceased is covered while the others are attended to.



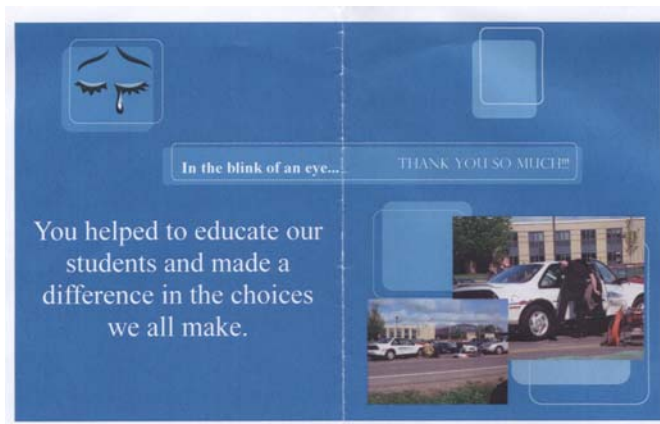
Extrication



Preparing patient for transport.



Last victim removed as the investigation winds down.



We were also complimented by the Parish Fire Chief with an “awesome job” by RACES.

Even though we work in the background, we are recognized for the image of professionalism that we put forth. Great work by the group.

A special thank you to Judy, KC2SUM for doing a yeoman’s job getting all the great pictures of the event.

June 26, 2009 New York State Department of Health Interoperable Communications Drill

From the plans packet.

“The U. S. Department of Health and Human Services (HHS) has identified **Interoperable Communications** as a priority **Level One sub capability** for the 2008-2009 project year”.

The purpose was to have regional hospitals talk to a regional hub, which would talk to the command center and for each hospital to talk to their EOC.

Again, from the packet, “The drill has been introduced to local Emergency Management Offices through a joint N SDOH - HEPP and NYSEMO letter”.

Our notification came from the Oswego Hospital to the EMO to us on June 15. On June 23 we received a draft copy of the drill that Mike Carl, KB2AUJ of Oneida tracked down. Mike and Jack Smith, W2QYT got the wide area VHF/UHF set up and ready for use on the 26th.

The morning of the 26th we got a final copy of the drill as it was beginning.

The following participated. Dave, N2PBK; Henry, KC2SUL; Ed, KC2SUJ and Mark, WB2PKO.

The work of amateur’s around the Region 4 area did a great job getting this drill going with such little information from the planners.

The following was the report given to the Oswego Hospital to confirm their part of the drill's interoperable amateur radio part.

Interoperable Communications Drill 2008 – 2009
NYSDOH Emergency Preparedness

Oswego County Communications

Oswego County Emergency Communicators/RACES responded to the request for radio operators to participate in this exercise on June 16, 2009.

Mark Chamberlin, WB23PKO and Ed Proto, KC2SUI reported to the Oswego Health Hospital and set up two amateur radio stations to communicate on both UHF and VHF frequencies.

Oswego Health was connected directly via amateur radio to a SEMO Region 4 radio network and the Oswego County Emergency Management Office in Fulton. The wide area network covered all of the hospitals and EMO's that were participating in Region 4.

Dave Robinson, N2PBK and Henry Loura, KC2SUL were at the EMO to receive traffic from Oswego and the area wide network. The NY State RACES Radio Officer, Ken Goetz, N2SQW was operating the SEMO RACES station, KC2FTD in Albany.

As RACES Coordinator for Region 4, I called for the starting of amateur radio communications within the network at 0900 local.

At 0950 the EMO received message logged as number 1 from Oswego Hospital.

At 0955 the EMO received message logged as number 2 from Oswego Hospital.

At 1102 the EMO received message logged as number 3 from Oswego Hospital.

At 1219 the exercise was declared completed and stations at both locations dismantled.

A short debriefing was held at the EMO resulting in a discussion about message forms and authorities. The conclusion is that all messages are considered to be formal, which requires the use of a message form. This eliminates any loss of data due to memory loss. The information for passing over the radio is written down and rather than a piece of scrap paper that will get lost, it is just as easy to write the information down on the new standard memo type message form. Another subject was what to record as the authority. The conclusion that in cases where they are working this close with the person in charge that they can fill in the space on the message form for authority with that the person's name. If it was someone that they were not intimately familiar with, then the message needs to be authorized before sending it. Being able to track all actions is required from radio operators.

Copies of messages and log sheets are on the following pages. We used Oswego County standard forms for in county communications. There were no inter county messages passed.

Respectfully submitted

John Darling K2QQY
Oswego County RACES Radio Officer
NY SEMO Region 4 RACES Coordinator

John:

I can't thank you enough for RACES participation in today's exercise.

It's a great feeling to know that we can count on you (your organization) to connect us with the "outside world" when other modes of communication may not be an option.

Please thank Mark and Ed for their help. They were very professional, well prepared and again a great resource. We could not have done it without them.

Thank you Pat for your ongoing support and assistance. We learned some things today that will help us get better and that's what it is all about.

Paul

Paul A. Vandish, CPHQ

Director of Quality and Risk Management, Oswego Hospital, 110 West Sixth Street, Oswego, New York 13126



Henry, KC2SUL and Dave, WD4EKB at work clearing the "lawn" at the Scriba tower site August 1st.



Mark, KC2JNI getting the paint ready to spread.



Mark still with the paint, Henry taking on more tall grass and Tim whacking the remainder.



Nice paint job.

While the painting and mowing were going on, Ed, N2PBK, Ed, KC2SUJ and Mark, WB2PKO worked in the van reinstalling the HF radio, installing a multi-drawer tool chest and doing some general tidying up.

We also picked up the equipment donated to us by the Border Patrol. The duplexers, antenna and hard line will be put to good use.



Part of the crew. Mark, KC2JNI; Ed, KC2SUJ; Mark, WB2PKO,; John, N2MKH and Tim, KC2SKG.

Absent from this picture are Ed, N2PBK; Dave,

Tech Notes for Ham License

By Dave Anthony WD4EKB

Brushing up on some of the technical aspects of ham radio

Studying "The ARRL Extra Class License Manual for Ham Radio" knocked out some cobwebs that had formed over some basic concepts of electrical and electronic theory. Although there are a lot of places where you can "memorize the test questions", I thought it would be interesting to go over the theory behind these questions. A lot of things looked familiar, but the memory got clouded with the advances in technology like complete radios being crammed onto one chip requiring little knowledge as to how to make it a finished product. The first few topics to be covered will be "Pre" Extra class theory, but will be of help getting up to speed in electrical/electronic theory. ~Dave

Inductors, which can be as simple as a single piece of wire, are another device that have a wide number of applications in electronics. Like Capacitors they also store energy, however this is done in a Magnetic Field that is created by a current passing thru the inductor. When current flows thru a wire a magnetic field is created around the wire at right angles to the flow of current. This magnetic field is comprised of "invisible" lines of force called Flux lines, the density of these lines represent the intensity of the magnetic field and is proportional to the current flowing thru the inductor. The ability to store this magnetic energy is called Inductance and is expressed in Henries.

Although a straight piece of wire can be useful as an inductor at extremely high frequencies we usually find them in the shape of a coil. The two most common shapes being a straight coil or a toroidal (doughnut shaped) coil. These coils are often wound around an iron (ferrite) core concentrating its flux density which results in an increase in its inductance.

A few additional points concerning the coil and core that make up an inductor:

The core can be made up of several types of material which can consist of powdered iron mixed with other types of magnetic material, the choice being engineered for optimum performance at a given frequency. These mixes are shaped and often held together with a non magnetic epoxy. Different core materials result in a different core permeability which significantly affects the strength of the magnetic field within the core compared to that of the same coil with an air core. Cores with a higher permeability will have a higher inductance than a core with a lower permeability. The core materials permeability and the number of turns on the core determines the inductance of the inductor.

Shown below are schematic symbols of several types of coils you may come across: The Fixed-value and Iron-core are your basic inductors with either an air core or an iron core. The Variable would be like that used in an antenna tuner, where you can change the inductance. The Variac is a transformer but with only one winding where, for example, you would have 120 VAC input and a variable AC voltage output. This is often used for testing devices at their upper and lower voltage limits. And the Tapped coil would be one with a selection of inductance chosen by switch operation or hard wiring.

Fixed-value



Iron core



Variable



Variac



Tapped



Tech Notes

If you were to take a coil and apply an increasing current thru it a Magnetic Field would build up in this coil - as the current increases the field would increase. This would continue until you reach maximum current flow, at that time the field would remain constant, it would not increase or decrease.

A device which we are all familiar with will help to understand the interaction of the flux lines in relation to a pair of inductors. This device would be a simple transformer comprised of two windings, a primary winding and a secondary winding. (Two inductors in close proximity to each other). The primary winding would be considered the active winding and the secondary winding would be considered passive:

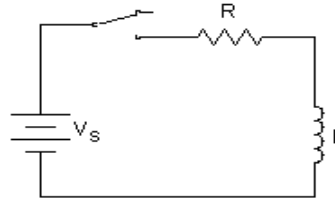
With current increasing in the primary winding a magnetic field (flux field) would build up around this winding. Since the two windings of the transformer are very close together this field will be felt by the secondary winding. As long as the field is changing, and changing is the key, a current will be induced into the secondary winding of the transformer. The term associated with this action is mutual inductance. Since the key word is "changing " transformers and inductors are not made to be used with DC current but with AC current, which is changing at all times.

In a simple inductor comprised of one coil, the increasing current will cause an increasing (changing) magnetic field to build up around this coil. This changing field will cause mutual inductance to occur just as it did in a transformer however it will be acting upon itself and attempt to cause a current to flow in the opposite direction of the primary current. This action, opposing a change in current flow, is an important characteristic of an inductor. This action is referred to as back EMF (Electromotive Force)

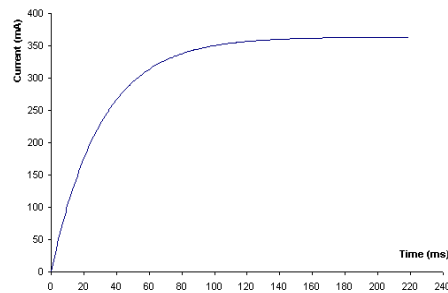
This back EMF current will be overtaken by the primary supply current and the flux field will build to its maximum and remain as long as the supply current is present.

When the primary supply current is removed (ie opening switch) the primary supply current will attempt to change from maximum to zero. This is another change in current thru the coil even though it's a change from maximum to minimum (zero). As the current decreases the field will start to collapse inducing a back EMF in the opposite direction. Again it will attempt to oppose the change in current trying to keep it flowing in the same direction as before the switch was opened.

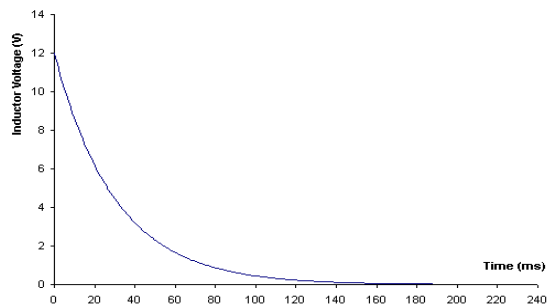
Shown below is a simple DC circuit consisting of a battery, an open switch, an inductor and a current limiting resistor. The values at this point are not important.



When we close the switch current will attempt to flow thru the circuit, however this increase in current will be opposed by the induced current in the opposite direction due to back EMF. The resulting waveforms would be as shown:



This is a plot of the current thru the inductor. You can see that initially the current is zero because of the back EMF. Eventually this back EMF will be overcome by the supply and the current flow will build to the maximum allowed by the limiting resistor (and other internal circuit resistances which are minimal). Current is increasing at an exponential rate.



This is a plot of the voltage across the inductor. Initially the inductor will appear as an open circuit, no current flow thru it, and the total supply voltage will appear across the inductor. Voltage is decreasing at an exponential rate.

Tech Notes

The term associated with the above drawing is RL Time Constant and is expressed by the formula, T (Time in Seconds) = L (Inductance in Henries) divided by R (Resistance in Ohms). $T = L / R$. Note that this is very similar to the time constant for Resistive Capacitive circuits where we used the formula $T = RC$. In RC circuits we found that it took 5 time constants for the voltage to reach maximum across the capacitor, in RL circuits we found that it takes 5 time constants to reach maximum current flow thru the inductor.

Using the above equation we can calculate one time constant for a circuit containing a 100 mh inductor and a 1 K ohm resistor: $T(\text{time}) = .100 / 1000 = .1 \text{ ms}$ (or .0001 Second)

As in the discussion on capacitors, we can calculate these values using natural logarithms or we can remember that after one time constant the current will have increased to 62.3% of the total value, after the second time constant the current will increase by another 62.3% of the remaining current and will continue with this sequence until the maximum current is flowing, after 5 time constants. (in theory you will never reach full current however 5 time constants is considered 100%).

Similarly the voltage across the inductor will decrease by 62.3% of the total value after one time constant and continue to decrease by 62.3% of the remaining voltage for each additional time constant until the voltage across the inductor reaches zero. (Same sequence as for current but decreasing).

If you do not want to use the 62.3% of the decreasing value given above, you can use the percentages below:

After 1 time constant: 62.3% (increase in current flow, decrease of voltage across inductor)

After 2 time constants: 86.5% (increase in current flow, decrease of voltage across inductor)

After 3 time constants: 95.0% (increase in current flow, decrease of voltage across inductor)

After 4 time constants: 98.2% (increase in current flow, decrease of voltage across inductor)

After 5 time constants: 99.3% (increase in current flow, decrease of voltage across inductor)

Using the above circuit: We will use an inductor of 100 mh, and a resistor of 1 K ohm. One time constant would be

.1 ms (.0001 second). We will use a 10 VDC supply and a current of 10 ma.

After 1 time constant: Current thru the circuit would be 6.32 ma Voltage across inductor would be 3.68V

After 2 time constants: Current thru the circuit would be 8.65 ma Voltage across the inductor would be 1.35 V

After 3 time constants: Current thru the circuit would be 9.50 ma Voltage across the inductor would be 0.50 V

After 4 time constants: Current thru the circuit would be 9.82 ma Voltage across the inductor would be 0.17 V

After 5 time constants: Current thru the circuit would be 9.93 ma Voltage across the inductor would be 0.07 V

After 5 time constants the current is considered as maximum and the voltage is considered minimum.

In a circuit consisting of several inductors in series or in parallel, the total inductance in the circuit is calculated the same way you would calculate total resistance in a series or parallel resistive circuit:

In Series: L_t (total inductance) = $L_1 + L_2 + L_3$ and so on.

In Parallel: L_t (total inductance) = L_1 times L_2 divided by $L_1 + L_2$ Or in circuits containing more than two inductors : $L_{\text{total}} =$

$$\frac{1}{\frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3} + \dots + \frac{1}{L_n}}$$

This concludes the lesson on inductors. It may be helpful to review the last lesson on capacitors, you will be able to see that the exponential curves are similar and complimentary to each other. This will help in the next lesson when we consider what happens when a capacitor, inductor and resistor are used in different configurations in a circuit when an ac signal is applied.

In RACES and the Fulton Amateur Radio Club we have Engineers and a large number of experienced Technicians. Because of this I have no idea if these lessons are of value to anyone. Please drop me an e mail and let me know if this material is of any help or if changes need to be made. Thanks. Wd4ekb@gmail.net