



The KLARION

Newsletter of the Keuka Lake Amateur Radio Association
Spring 2015

License Replacement

or

“Oh No, I Washed My Wallet, Now What?”

At least in terms of your Amateur Radio license, don't worry, it's not that bad! (For your driver's license, health insurance cards, credit cards, etc. you are on your own. May God have mercy on your soul!)

Here is a current (12/2014) set of instructions on how to order a duplicate license:

To replace your license, go to the [Universal Licensing System](#), select Online Filing, and do the following:

1. Login with your FRN and Password. Note: TINs (Tax Payer Identification Numbers) may no longer be used for logging into ULS, effective December 14, 2003.
2. Choose Request Duplicate from the Work on This License menu on the right hand side of your License At A Glance screen.
Note: For additional help with this process, click on the Common Questions that appear on most pages of ULS License Manager, or click the Help link at the top right of each page.
3. On the Select Updates page, review the license information displayed beneath the table of information displayed for your license. If any of the information is missing or out of date, you must update the information. Click on the box to the left of the Licensee Information heading to insert a checkbox and select it.
4. When ready click Continue.
5. Answer the questions on the Applicant Questions page. Then click Continue.
6. On the licensee page, update your licensee address and any other relevant information by typing your information into the text boxes provided. When ready, click Continue.
7. On the Summary page review the information you have entered. If you wish to make additional changes, click the Edit button next to the section of your application you wish to Edit. You will be able to return to that page of the application. Make the desired change and select the Return to Summary button.
8. When ready to submit your update to the Commission, choose the Continue to Certify button.

9. After reading the certification, enter your first and last names and title if appropriate in the boxes at the bottom of the page. You MUST sign the application. When finished choose the Submit Application button.
10. From the ULS Confirmation screen, we recommend you print a copy of your application and/or the Confirmation screen itself from your web browser.

It usually takes about a week for your request for duplicate to be acted on, and another week for the license to arrive in your hands.

Note that the FCC no longer prints “official copies” of a license on FCC watermarked stock. Your duplicate license will arrive as an inkjet printed copy on typing paper. However, you do have a copy.

It is also possible to print a “reference copy” of your license from a variety of websites, such as: <http://www.ae7q.com/misc/>. This is basically much simpler ... you just specify your call sign and then print the resulting file.

Simplex Repeater

I have had a number of questions recently on what a simplex repeater is and how it works.

Most of us are fairly familiar with a duplex repeater, where a separate transmitter and receiver operate at the same time, listening on one frequency and transmitting on another. This type of installation is bulky and fairly expensive due to the elaborate filters required.

A simplex repeater usually uses a single transceiver and a short duration voice recorder ... usually a digital voice recorder, as they tend to be a bit quicker and more robust than the older tape types.

Basically, the voice recorder records what the transceiver receives and then plays back the recording on the same frequency. The old timers in the hobby also call this a “parrot repeater”.

These types of systems are commonly used in areas where regular repeater coverage is sparse to non-existent, but coverage is required for a special or public service event.

There are some limitations:

1. The voice recorder does have a limit on how much traffic it can record. Generally, it will not go much over 30 seconds per transmission (although on the newer models this is programmable).
2. It will not work very well with a data stream (probably won't work at all).
3. You do need to listen for a fair period of time to assure your chosen frequency is not in use. This get easier if you stay away from regular coordinated frequency pairs.

4. Watch the duty cycle. An average amateur transceiver is not built to transmit 100% of the time, and you can approach this in certain high traffic situations.
5. This type of repeater uses twice as much airtime to carry out a conversation as compared to a duplex repeater.

There are also some positives:

1. This type of equipment is very small. Everything needed for this type of repeater (including a modest sized AGM battery, and sections of mast for the antenna) can be carried in a medium sized gym bag.
2. It is very possible to use nothing more than a handheld as your transceiver. As long as you can get to the top of a high hill (or have access to another way to elevate your equipment ... think about the roof of a tall building), this will work very well.
3. The simplicity and low cost of this type of equipment makes it ideal for temporary and emergency use. This type of arrangement is also good for areas where the traffic is light enough to make justifying a conventional duplex repeater difficult.
4. Because you are using a voice recorder you will probably have access to a “say again” feature. By keying in a specific DTMF sequence from the radio key pad you will probably be able to repeat the last transmission and do a variety of other tasks while remote from the repeater.
5. For most of us, a duplex repeater is a major investment. We can't afford, even spreading the cost over an entire club, to have an extra “on the shelf” for emergency use. Simplex repeaters are inexpensive enough (current price is about \$95) to be considered personal gear, making them much more likely to be available and deployed during an emergency.

So there you have it ... the simplex repeater!

Tone Squelch and Digital Tone Squelch

We have heard a lot about these two items over the last several months. What do they really mean? Let's start at the beginning:

1. **Squelch** – Remember this from your Technician exam? Squelch is a circuit which functions to suppress the audio output of a receiver in the absence of a sufficiently strong desired input signal. We usually talk about squelch in regard to FM radios, although squelch circuits can be and are designed for nearly any mode.
2. **Continuous Tone Coded Squelch System or CTCSS** -
 1. Usually spoken of in reference to a repeater, CTCSS superimposes (or encodes) one of fifty sub-audible tones on the transmission. The receiver portion of the repeater will not open without receiving this tone. Previously our repeater system needed a tone of 110.9Hz to open the receive section of the repeater. When this was the case we were using one half of the CTCS system.
 2. In tone squelch, not only does the repeater require a tone to open, but your radio must receive a tone back from the repeater for *your* receiver section to open. In this case not only does the sub-audible tone have to be *encoded* but it is also required to *decode* a received transmission. Some radios refer to tone squelch as encode / decode. Thus our repeater system is currently using both halves of the CTCS system by requiring the use of a sub-audible tone in both directions.
3. **Digital Coded Squelch** – In this case, rather than a tone, a coded word or group of letters is sent along with the transmission. This is usually encoded (and decoded) as a 134.4 bps data stream. The word or group of letters is usually 12 bits long, with the last three data bits fixed as “001”. This leaves 9 data bits available (or 512 possible combinations). These bits are usually represented as a 3 digit octal number. Please remember from high school math class that octal numbers are in the base 8 numbering system (numerals 0 to 7). To give an example the number 74 in base 10 translates to 112 as an octal number.

Either see me for more explanation or do a Google search for “octal numbers” if you really need a better explanation (and the Google search is probably preferable ... I'll just confuse you even further).

It's not really necessary to understand octal numbers to be able to use Digital Coded Squelch (it just makes things a bit more fun). **All you really need is the three digit number to enter in the “DCS” slot when you program your radio!**

The other item to remember is that when using either “tone squelch” or “DCS” the squelch knob on your radio has been rendered obsolete ... it doesn't matter where the squelch knob is set (or what preset level you've used, if your radio operates that way). Unless the proper sub-audible tone, or word, is transmitted the receiver section of your transceiver will not open!

Why did we need this? One word **interference**! In spite of some very smart and very hard work by the repeater committee the precise source and nature of the interference was never clear. However, the addition of tone squelch did the trick. We now have a very quiet system!

Words you don't hear anymore

These are for the car folks in the crowd!

Fender Skirts – are you old enough to remember these?

Curb Feelers – boing! There's the curb!

Continental Kit – a spare tire cover and a bumper extension ... made every car as cool as a Lincoln! (riiight ... that Econoline van was never going to be cool ... I don't care what you did to it!)

Floor Feed – that's the long skinny pedal next to the brake

Clutch Pedal – from the days before the automatic transmission became ubiquitous ...

Choke – this wasn't always automatic either ... used to be a button on the dash right next to the

Hand Throttle – same as the floor feed, but up on the dash

Dimmer Switch – wasn't always in the turn signal stalk ... used to be on the floor where you could mash it with your left toe to dim the brights.

Starter Pedal – this was on the floor too ... you pulled out the choke, pushed in the clutch, turned the key, then hit the starter pedal and cranked 'er over, hoping to heaven that the 6 volts under the hood was enough to get her going.

Running Boards – remember waiting at the end of the farm lane for Dad to come home from work so you could ride on up to the the house on the running board ... probably holding onto the frame for the West Coast Mirror?



20 – 40 – 80 Dipole

Commercial dipole antennas for amateur radio use are not particularly expensive. Many cost no more than the materials which go into them.

However, they do not provide the amateur the same grounding in antenna technology that building their own could provide. With this in mind, I offer the following plans for a “fan” dipole, with legs cut for 20, 40, and 80 meters.

Calculate the length of each leg using the formula you learned for the length of a dipole in your technician class:

$$234 / \text{freq in MHz} = \text{length of each leg}$$

<u>Band</u>	<u>Freq.</u>	<u>Length of Leg</u>
80 meters	3.900	60.00 ft
40 meters	7.150	32.72 ft
20 meters	14.150	16.53 ft

The legs should be constructed of 12 ga THHN stranded, insulated wire. You'll need about 230 feet. Leave the legs just a bit long to allow for “pruning” to resonance. Don't forget to use the necessary wire end insulators. You may wish to use pipe spacers to maintain the distance between the various legs.

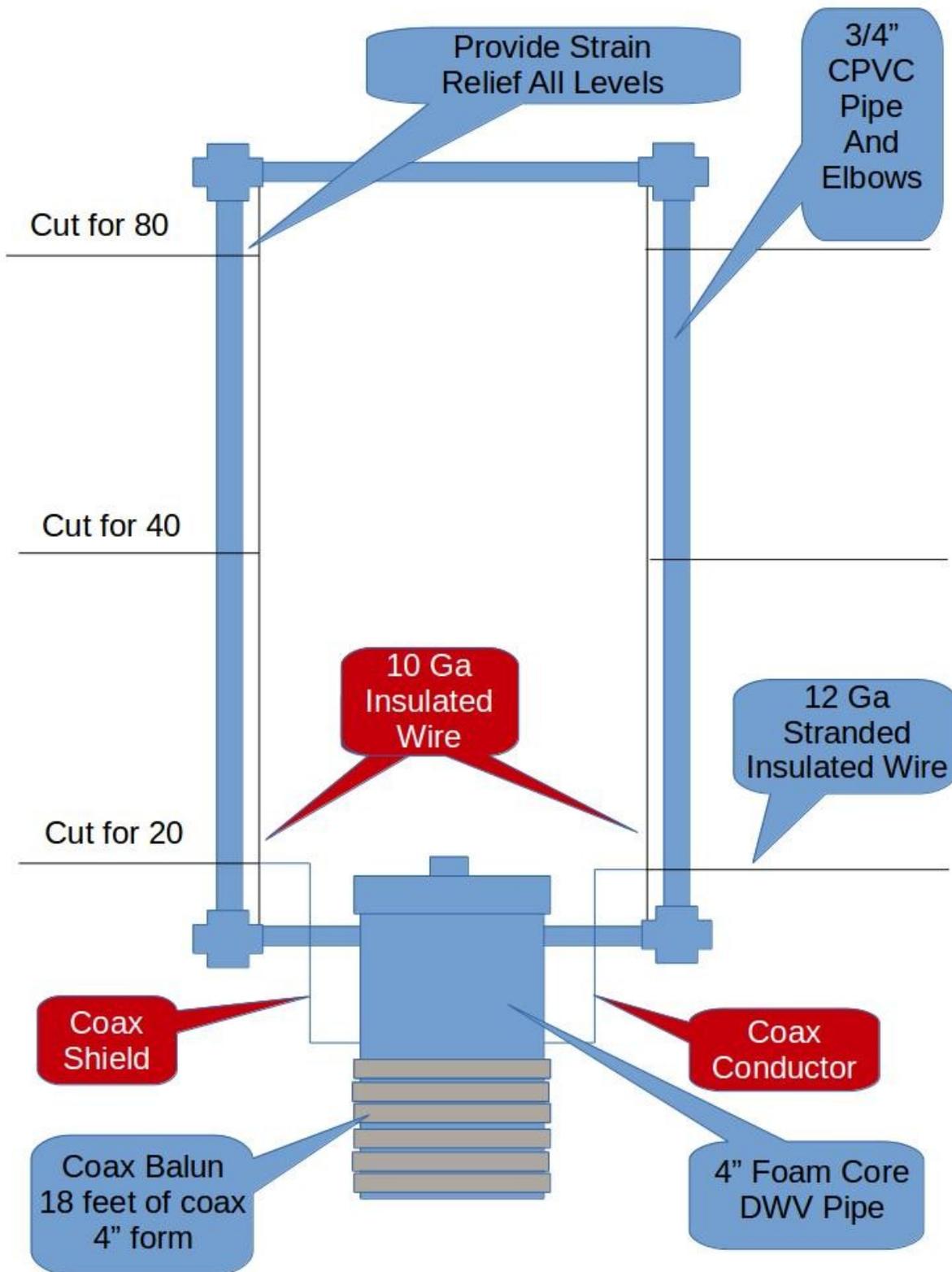
10 ga. THHN stranded, insulated, wire can be used to serve as the “distribution line” between the various legs of the dipoles. Leave 6” or so between each leg, then split the coax and solder the shield to one side and the center conductor to the other.

Construct an “ugly balun” on the 4” DWV pipe as a form. You'll need about 18' of coax wound in tight coils. Don't worry about the number of coils, but get the length correct. Be careful, you don't want to crush the interior insulator.

It works well to attach the coils to the pipe form with a zip ties (drill small holes in the pipe to pass them through). Attach a PL-259 to the far end of the coax.

Ideally, the center of this antenna should be hung at about 74 feet above ground. This conforms to the common rule that any antenna should hang just about 20 feet above the maximum height you are able to accomplish!

I would then attach my antenna analyzer and dial in the proper frequency to check the SWR. I would prune the top legs (80 meters) first, and then proceed down to 40 meters, and then 20 meters. I would not be picky about the SWR, just prune enough to get close, then use your wide range tuner.



Next Time

My apologies for the brevity of this newsletter, and for all the items I have left out. The last few months have been a little bit of a rough patch for my family and I, with a death in the family and reconstructive knee surgery.

I hope to have your next newsletter for you at, or close to, the July meeting. Closing date for articles will be June 28th. Please consider writing an article about activities during April, May, and June.

Spring is almost here.

Hang In There



and Remember

Be a HAM Radio Ambassador!