Squelch Tales

Newsletter from the Merrymeeting Amateur Radio Association for August 2014

KH6KAH Six Meter Magnetic Loop

By Bruce Randall, W1ZE

This past winter while surfing the web out in w6-land I came across an article by Harold Kaul, KH6HAK in Honolulu Hawaii titled *Small Antennas for HF.* It was about his fondness for Magnetic loop antennas, since he is an apartment dweller with no room for full sized antennas. In this article he described his experience building loop antennas and especially one for six meters

I have a magnet loop antenna built from a QST article by Dick Stroud, W9ST titled, "Six Meters from Your Easy Chair" which is a six meter halo magnetic loop. It is mounted on the side of my tower and I use it for monitoring six meters and as a backup antenna when my big multi-band SteppIR Yagi is being used on other bands. It has worked well over the years but is tricky to tune while located at 40-feet, so Harold's antenna got my attention. What makes my Halo very tedious to tune is that its capacitor is made from two 2.5-inch aluminum discs at the center of the loop that resonates it. Since the antenna has such a high-Q I had to employ a fine tuning set screw. When I rotate the screw a half turn the antenna resonant frequency moves 10 KHz. With the capacitor plates being exposed to the weather the resonant point will change with just moisture on the plates.

Harold loops like many HF type loops uses a high voltage vacuum variable capacitor to resonate the loop and being enclosed in a weather sealed box in lieu of exposed capacitor plates would help keep the antenna from moving around in frequency due to moisture and accumulated winter snow and ice.

In Harold's article he said he had a few small vacuum caps he would be willing to sell so I quickly emailed him at kh6hak@attl.net to see if I could buy one, and he said sure. I sent him a check to cover cost of the cap and shipping and a little over a week the capacitor was delivered in the mail.

Around Field Day this year I made a run to Rogers ACE Hardware store in Bath and started collecting the PVC and copper pipe, elbows, end caps and PVC unions needed to assemble the little antenna. I was going to deviate from Harold's design just a bit to facilitate motorizing the tunable vacuum capacitor but I remembered that I only really wanted it to work from about 50.08 to 50.30 MHz for CW and SSB so I put that plan in the '*maybe later*' file.

To get my dimensions correct I went to a loop calculation site recommended by Harold: http://www.66pacific.com/calculators/small_dx_loop_calc.aspx. That calculator program indicated that if I used ¾-inch copper pipe with a diameter of 4.5-feet I should expect an antenna efficiency of 92%, in Mainer speak

that is 'wicked good'. So, that is where I started.

In the following photo you can see that the antenna is fed by 50-ohm coax via a one turn three inch diameter coupling loop mounted about ¼-inch from top dead center of the antenna loop. This small loop coupled the RF energy from your transceiver into the entire magnetic loop antenna.

I housed the tuning cap in a 3.5 x 6" Radio Shack plastic project box and sealed it up with silicone caulk to keep it weather tight

This plumber's dream antenna will replace my old aluminum folding chair squalo loop on the side of my tower sometime this summer/fall. It will be mounted horizontally for omnidirectional performance, as was the old squalo. It could be mounted vertically but the radiation pattern would be in the shape of a figure eight, like a dipole.

If you would like to read and see Harold's original article, go to:

http://kh6hak.tripod.com/mag-loops.html

73, Bruce W1ZE

Results for the KS1R Field Day Team Effort

By Don Wakeman, KA1WAL, Field Day Chairman

Here is the web submission of the points obtained. Thank you all for the hard work that you put into this.

I am putting together the documentation, and should be able to mail it in in early July. Total Score I am coming up with is 1230 (bonus points) + 2,524(QSOs) **= 3,754** ***73. Don KA1WAL***

ARRL Field Day Entry Form

Datestamp: 2014-07-04 15:29:33 PDT
Confirmation: 08b853bc60cbd058
Call Used: KS1R GOTA Station Call: N1TRC
ARRL/RAC Section: ME Class: 2F
Participants: **27**
Club/Group Name: Merrymeeting Amateur Radio Association (MARA)
Power Source(s): Generator, Commercial Power
Multiplier: 2X
Bonus Points: 100% Emergency power 200
Media Publicity 100
Set-up in Public Place 100
Information Booth 100
NTS message to ARRL SM/SEC 100
W1AW Field Day Message 100
Formal NTS messages handled(10) 100
Site Visit by elected official 100
Site Visit by served agency official 100
Youth participation 40
Youth operators = 2

Youth participants = 2
GOTA Bonus 40
Submitted via the Web 50
Educational activity 100
Total Bonus Points **1,230**

Score Summary:

	CW	Digital	Phone	Total	
Total QSOs	442	115	148		
Total Points	884	230	148	1262	Claimed Score = **2,524**

Submitted by: Donald Wakeman, KA1WAL
P.O Box 283 Lisbon Falls ME 04252
E-mail: ka1wal.dsw@gmail.com

Band/Mode QSO Breakdown:

	CW		Digital		Phone	
	QSOs	Pwr(W)	QSOs	Pwr(W)	QSOs	Pwr(W)
160m	-	-	-	-	-	
80m	122	100	-	-		
40m	142	100	148	100		
20m	73	100	59	30		
15m	104	100	-	-		
10m	1	100	-	-		
6m	-	-	-	-		
2m	-	-	-	-		
1.25	-	-	-	-		
Other	-	-	-	-		
Satellite	-	-	-	-		
GOTA			56	30		
TOTAL	**442**		**115**	**148**		

GOTA Bonus: GOTA Coach - Double Bonus Points

Name/Call	QSOs	Bonus Points
William Thorton, KB1UFG	7	0
Richard Thorton, K1RLT	33	40
Matt Plocinski, KC2YOP	16	0

Supporting documentation for Bonus Points will be sent via mail to:
Field Day, ARRL, 225 Main St., Newington, CT 06111 USA

HAM TRIVIA QUESTION

Which one of these Royal Highnesses was NOT an amateur radio operator?

[ ] Queen Elizabeth II (United Kingdom)
[ ] King Juan Carlos de Borbon (Spain)
[ ] Queen Noor of Jordan
[ ] Prince Talal bin Abdulaziz Al Saud of Saudi Arabia
[ ] King Bhumibol Adulyadej of Thailand
[ ] King Hussain of Jordan (sk)

Answer on last page

W1NH cross linked

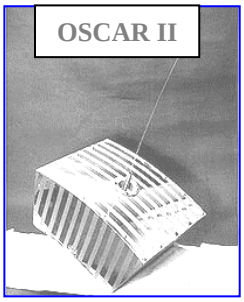
For those of you not familuar with the VHF and UHF repeaters on Mount Washington, New Hampshire, we just wanted to inform you that the two W1NH repeaters are linked together. The two meter repeater is on 146.655 MHz with a PL of 100.0 Hz and the 70cM repeater on 448.975 MHz with a PL of 141.3 Hz.

Both repeaters are accessable from the Bath-Brunswick area and many can access them with an HT if in a good location.

Paul Albergini, W1IMD has a stand-alone 224.86 MHz repeater there also that can be easily accessed from the mid coast area.

Ham Radio Satellites

Non-hams are usually pretty surprised when you tell them about Amateur Radio satellites. The first Ham satellite, OSCAR-1 (which stood for Orbiting Satellite Carrying Amateur Radio), was built by American hams and went into orbit in 1961, just a couple of years after the Russians launched the Sputnik satellite, igniting the space race. Today, hams have quite a number of satellites with missions ranging from digital mailboxes to repeaters to scientific experiments.



Satellite basics: Most amateur radio satellites are located in near-circular Low Earth Orbit, or LEO, circling the earth a number of times each day. A few have non-circular "Molniya" orbits that take them high above the earth where they are visible for hours at a time. (Molniya is "lightning" in Russian and is the name given to their

fleet of communications satellites that travel in elliptical orbits.) For practical and regulatory reasons, satellite transmissions are restricted to the bands on 10-meters; on the 2-meter, 70-cm; and microwave bands at 1296 MHz and higher. The ionosphere usually does not pass signals at lower frequencies and satellite antennas need to be small, requiring shorter wavelength.

The input frequencies are called the uplink and the output frequencies are called the downlink. The numbers that describe a satellite's orbit (and allow software to determine where it is) are called the orbital or Keplerian elements. These pieces of information allow you to operate using a satellite! You find three common types of satellites.

Transponder: These satellites listen on a range of frequencies on one band, translate those signals to a different band, and then retransmit them in real time.

Repeater: These satellites act just like terrestrial repeaters, listening and receiving on a specific pair of channels. Satellite repeaters are crossband, meaning their input and output frequencies are on different bands.

Digital: Digital satellites can act as bulletin boards (BBS) or as store-and forward systems. You can access both types of digital satellites using regular packet radio protocols and equipment. The International Space Station (ISS) and Space Shuttle (STS) both have digital BBS systems available to hams on the ground. The ISS also has an APRS digipeater onboard! Store-and-forward satellites act as message gateways, accepting messages and downloading them to a few control stations around the world. The control stations also pass messages back up to the satellites that are downloaded by ground-based users. Digital satellites are very useful to hams at sea or in remote locations.

Accessing the satellites: The best place to go to find out which satellites are active and in what mode is the AMSAT home page (www.amsat.org). Click the Satellite Frequencies and Status link to get the complete set of information on what each satellite does and its current operational status.

By Dave Anderson, K4SV

The W4DXCC DX and Contest Convention is the South East's largest and best attended ham radio event for 10 years running. Located at the Main Stay Suites in Pigeon Forge, Tennessee on the 26-27th of September. A full schedule of popular presenters speak on DX and Contest subjects throughout the main convention with prize drawings between presenters, drinks and snacks included. Major equipment manufacturers are on hand to demonstrate new products and answer your equipment questions face to face. A banquet rounds out the day where the grand prizes are drawn.

A full range of shopping for the family is located nearby along with water parks, go cart tracks and Dollywood for the kids. Bring the family for a wonderful weekend full of Fun.

Check out the WEB site for more details, filling fast, book early www.W4DXCC.com

We look forward to seeing you attend this year.

Dave Anderson, K4SV
W4DXCC by SEDCO Inc
www.W4DXCC.com
828-777-5088

Simple Lightning Arrester for 450-ohm window line

By Bruce Randall, W1ZE

In the last issue of Squelch Tales I had a column on the advantages of ladder or window balanced transmission line. In the column there was a reference to lightning arrestors for this type of transmission line. I advised that if anyone wanted the plans to build a simple arrestor to let me know and I would send it to them. Well, I changed my mind and decided to reprint the article for all of you. So hear it is.

Hams are starting to discover and use balanced transmission lines again. Up until WWII that was about the only transmission lines used by hams. The stuff goes by different names such as: Tuned feeders, window line, ladder line and twin-lead. The most commonly used line by hams today is the 450-ohm window line which is two parallel conductors separated about an inch apart by a poly material with rectangular windows in it to reduce weight, wind resistance and other factors.

Like a lot of you, I have a Doublet, a 132-foot long dipole fed with 450-ohm balanced window line. I use it primarily on 80 and 40 meters with the aid of a transmatch that has a 4:1 balum with balanced output. With the transmatch I can make the antenna play on all the HF bands plus six meters.

Living along the Kennebec river it seems like we have our fair share of lightning and thunder events that can do serious damage to your fancy $2000 rice-box transceiver if things start to arc and spark around the QTH.

The best protection is to disconnect all your antenna and power lines when one of these events is on it's way to your house. You do not need a direct strike to do damage to your equipment; just being in the neighborhood can induce thousands of volts on your antennas. A *split second* can describe the time it takes to see a flash of lightning and all the semiconductors in your radio are fried.

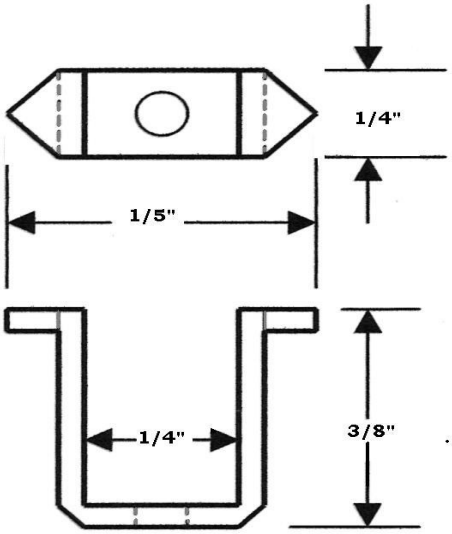
You cannot always be aware when a lightning event is going to happen, so it is a good idea to install lightning arresters in your transmission lines. Several firms make coaxial arresters but they are not giving those little jewels away. They make them for balanced line also but it too is in the $50+ range.

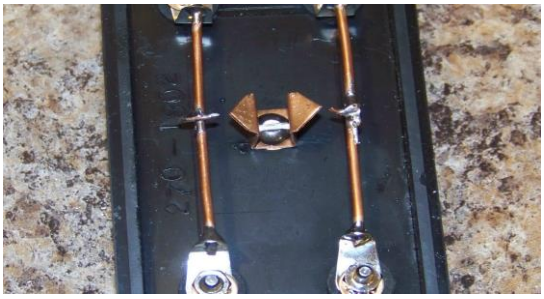
I wanted one for my doublet transmission line but fifty bucks would by a tank of gas, so why not build one. I remembered several methods described over the years in the ARRL handbooks and Antenna books. Years ago in Hints-n-Kinks a cheap arresters was made out of two gas engine spark plugs. Armed with the info from the ARRL pubs I set out to build one for myself using available parts from Radio Shack and the hardware store.

The little arrester I came up with is easy to build for a few bucks even if you purchased everything new at the Shack or online.

The basic circuit is a spark-gap for each conductor to ground just like the one in the old ARRL Handbook accept this one is built to facilitate 450-ohm line. You can see in this photo that there is a ground lug in the middle of the plastic box to attach the device directly to your radio system earth ground.

The spark–gap cathode is made from a small quarter inch wide by 1.25-inches long piece of copper flashing.

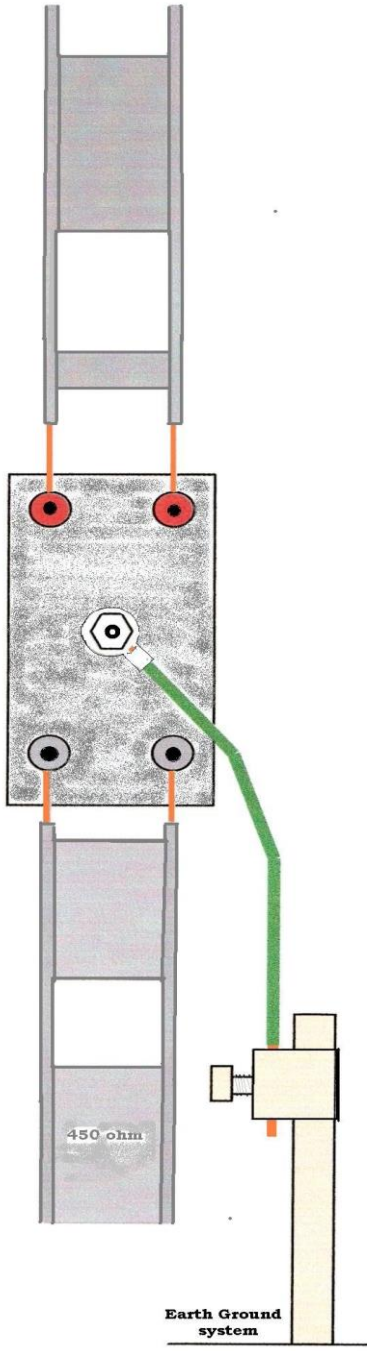




In the above snapshot you can see a small cat's whisker wires soldered on the through conductor on each side next to the cathode. They facilitate an easy point to point arc path. I used solid #20 for the cat's whiskers.

<u>The parts list is short</u>:

1 each plastic project box
(RS 270-1802 or equal)
4 each binding posts (Mouser, All Electronics, HSC, Radio Shack, etc.)
10 inches of solid #12 (cut out of scrap Romex electrical wire)
1" square copper flashing



The arrester should be placed within a few feet of the ground rod (+ bonded ground system). The ground lead (made from #10 or larger copper wire or solid copper strapping) and should be as close to a straight line as possible.

Happy building, **W1ZE**

Rocket Radio, a nostalga trip

By W1ZE

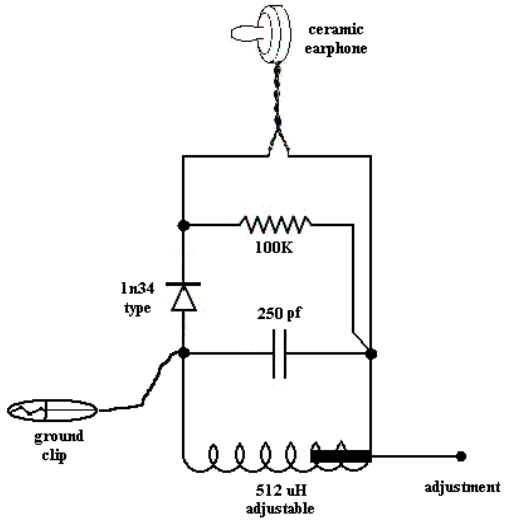
In the summer of 1955 one Saturday morning I had mowed and raked the yard good enough so my dad gave me 50 cents to go to the movies. It cost 25 cents to get in, 15 cents for a box of popcorn and 10 cents for a soda. As I started my walk home after spending a that afternoon at the local movie house watching two feature films and 5 cartoons, I passed by the Army-Navy store, they were very populat in the 1950s, so I walked in to check out the army helmets, mess kits, tent stakes, etc.. At the front of the store at the cash register area was a glass case with fancy stuff in it like compasses, watches, military insignia and other goodies. On top of the cabinet was a display of a thing called a Rocket Radio that announced that I could listen to my local radio stations without batteries or plugging it into the wall and you listened to it with an attached crystal earphone. Now I was interested. The drawback was it cost two whole dollars and at fifty cents a week and no movies it would take me a month to save up.

Over dinner that evening I told my dad about this nifty radio I saw at the Army-Navy store and how much fun I could have with something like that, BUT - I needed two dollars to buy it. I further explained the time and funding problem I had with only fifty cents a week. My dad looked at me with a serious face and said, said, “son, if you want to work for that radio you can add washing my new 1955 Ford Fairlane one night during the week and do the evening dishes for your mom and grandma I’ll increase my contribution.” However he did not say how many weeks I would have to do that.

Two weeks went by and the yard was looking well groomed and my dads Ford was sparkling almost all week long, plus Mom and Grandma didn’t have to nag me about the dinner dishes either. That Friday evening when my dad drove into the driveway after work he said, “son you have stepped up and taken on all those chores and without complaint so I gather you really want that gadget radio.” To which I replied, “you bet.” With that he opened the car trunk and took out a brown paper lunch bag and handed it to

me with the words, "Here is your radio son." I was very excited over that event.

That evening I hooked it up by clipping the ground wire to the heater gas piping in my bedroom and I could hear a few weak stations, with KFI about the only station that I could make out what they were saying (KFI was only ten miles from our house). My dad said, "I think your fancy radio needs an external antenna." The the next morning after my lawn mowing, I passed on going to the movies with my restored fifty cents, so I could help my dad string up a long wire to act as the antenna for my Rocket Radio. My dad took the radio apart and attaches a small jumper wite to the junction of the capacitor and coil and then attached the jumper to the wire antenna. Darn if the radio stations I could tune in were louder and comfortable to listen to with the little earphone.



A few years back I was surfing the net and typed in the words "Rocket Radio" and darn if I didn't find a site that was making them again and selling them on line.
http://www.crystalradio.net/misc/rocket/

I had to get one. I found a source and ordered one and within a few weeks it arrived. I hooked it up to my station ground as recommended on the package but all I could hear was WJTO in west Bath, shades of 1955. I did a simular mod that my dad 64 years ago but this time I reversed the ground and antenna clips and got a stronger signals when connected to half of my doublet dipole.

http://www.radiomuseum.org/r/imaginar_rocket_radio_crystal_set.html

I don't know if there is still a source for the Rocket (crystal) Radios But the original radios are going for $50 or more on Ebay. The good old days of my youth that started my love affair with all things radio.

W1ZE

PREZ SEZ

Thanks to all of our members who have participated recently in club activities. That includes the great antenna caper at the old Brunswick Police Station, Field Day, the L.L. Bean 10k race, and the Parkview Classic. It is a trite truism about helping others, but it is still a valid concept as you have proved.

On another note, if this gets published and sent out before the July meeting on the 31st, I did contact the lady from OSHA to see if she would be our guest speaker at the July meeting. She didn't know if she would be able to make it. I'm to call her later in the month to see if she is available.

73,
Daniel Lindsley, N5AGG

Ham Radio Trivia answer from page 3

Queen Elizabeth II (United Kingdom)