



Short CIRCuits

August 2019

SERVING CENTRAL ILLINOIS AMATEUR RADIO SINCE 1921

IN THIS ISSUE

From The President

by Jim Baker WB9EDL

August has been a busy month for the club and its members. Saturday August, 3 several club members helped with the Hop on For help bicycle ride at Leroy II. Greg KC9WVR, Justin KD9JFF, Willis KC9RFR, Gary KD9F, Kyle KG9IW and Jim WB9EDL provided radio communication both fixed and mobile communications for the ride. More than 100 riders enjoyed the perfect weather for the ride.

Several hams have been working on antenna and tower projects. Ed KC9GF, Duane KC9PIM and Steve W9SNS have benefitted from expert help from club volunteers. It is good to be able to help others with our special skills.

The C.I.R.C. is proud to have Dhruv Rebba as a club member. He received the 2019 Bill Pasternak WA6ITF Memorial Amateur Radio

Newsline Young Ham of The year Prestigious Award. Congratulations to him on this great award.

Gary AB9M, Keith AC9S and Jeff KC9QQM have put the NgPE-2 APRS repeater back in operation. Contacts have been reported and it seems to be working fine.

Thanks to Justin KD9JFF for the severe storm weather alerts on the club reflector. It is good to know of these alerts and if our spotter network may be needed.

73 Jim WB9EDL



W9PE-2 Work

Article by Gary Huber AB9M Photos by Jeff Lovell KC9QQM



Project Julie

Article by Grant Zehr AA9LC

W9PE-2 Work

Article by Gary Huber AB9M & photos by Jeff Lovell KC9QQM

The equipment in E-PH and on E-tower antenna mounts are the evolution of an early attempt to provide a disaster recovery temporary "wireless network" for the Southern California region's Los Angeles area claims service centers in the late 1980s. A Special Temporary Authority was issued by the Federal Communications Commission to allow the use of AX.25 "packet" transmission on Commercial VHF Itinerant Frequencies. After the initial testing showed we needed to learn and understand more about the technology, the radios were re-crystaled to Amateur two meter (VHF) and one node was installed at E-tower. Another node was at my home at 9679 Heron Bay Road, in rural S.E. Bloomington.



The initial use on the amateur two meter band was with my amateur call sign, AB9M followed by a node number, (i.e. AB9M-1 .. AB9M-15) operating store and forward message delivery. Additional applications development was done in the OSI model (please see https://en.wikipedia.org/wiki/OSI_model) and we moved the frequency to support the the DX-Packet Cluster Network and connected "wirelessly" to a node in Champaign. At this point we were at layer seven of the OSI model with local (amateur) stations being able to connect to the node at E-Tower and then automatically be remote into the application at Champaign which

was receiving an internet connection from University of Illinois.

We later received a donated node computer from Champaign node operator Drew White (K9CW) which was connected to an internet connection provided by our Audio Visual department. (no connection to any SF or data processing networks). When AV moved to Corporate South, sometime after 2003, the SFRAAC VHF packet node frequency was changed to services not requiring an internet connection, namely the "connectionless" store and forward, Automatic Packet Reporting System (APRS).

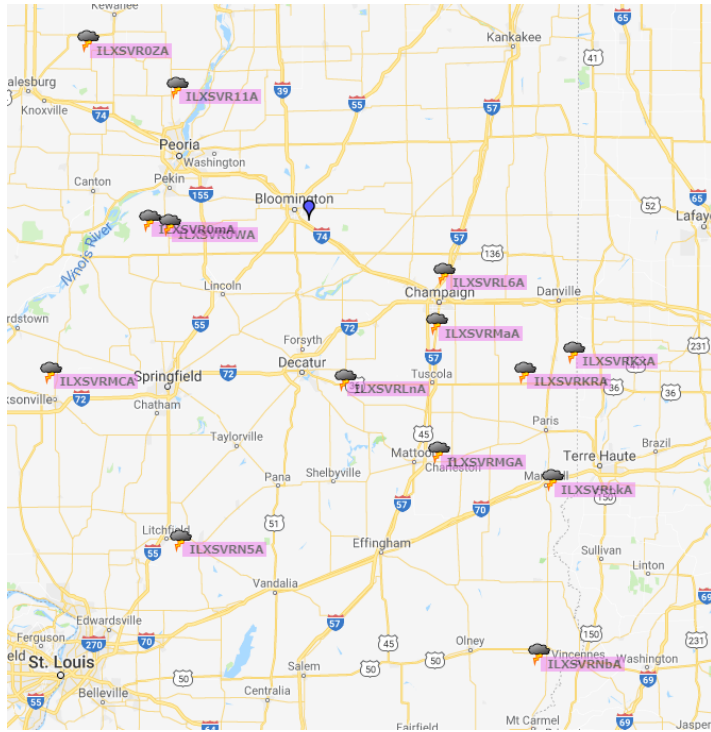


APRS operates with 1200 baud AX.25 packets, providing identification (Callsign), position, status, and other information. ASCII character combinations can be used to generate "icons" to identify stations, nodes, or even weather. I have attached three graphics to illustrate these icons.



The first graphic shows National Weather Station generated severe weather locations which can be shown on the front panels of common suitable amateur radio equipment with direction and

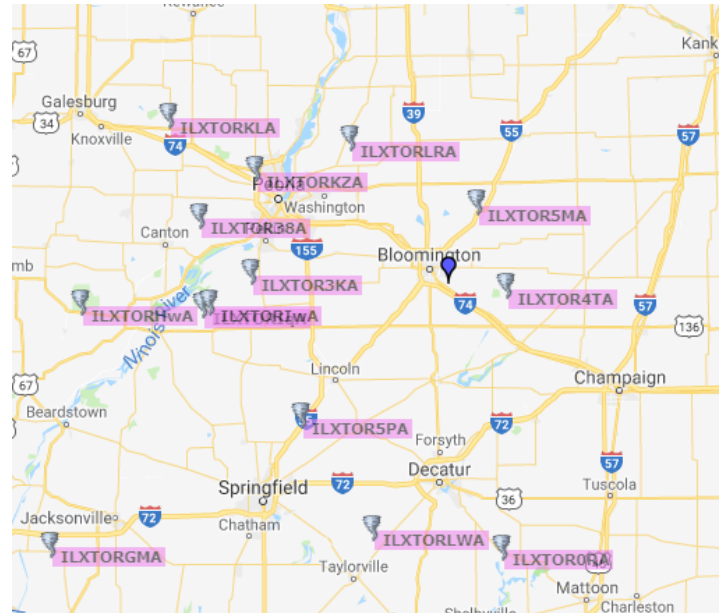
distance to the icon (or object) also shown, or those with an internet connection can connect to www.APRS.FI and see the objects as shown in the attachments.



The second attachment illustrates the stations and nodes up to about thirty miles of E-tower.

Stations near current position of N9PE-2					
callsign	distance	last heard - CDT	callsign	distance	last heard - CDT
N15F-2	50.1 yards 113°	2019-07-25 03:10:45	KD9JFF-10	418.2 yards 227°	2019-08-05 08:49:11
CW3379	1.5 miles 286°	2019-08-05 08:59:05	KC9UJS	2.8 miles 304°	2019-07-26 21:01:21
KD9EII-7	3.3 miles 328°	2019-07-29 22:34:35	KN4VMQ	4.0 miles 241°	2019-08-01 07:10:40
N9ZKS-5	5.3 miles 144°	2019-08-05 08:56:49	AC9S-1	5.3 miles 136°	2019-07-31 09:28:38
FW2710	6.9 miles 3°	2019-08-05 09:00:01	AB9QB-14	7.2 miles 146°	2019-08-05 08:59:39
EW7739	11.3 miles 183°	2019-08-05 08:57:01	DW9668	12.1 miles 287°	2019-08-05 08:45:47
K9UQF-9	12.2 miles 317°	2019-08-02 19:28:57	KC9VXX	12.7 miles 135°	2019-07-30 23:43:52
EW0890	12.7 miles 78°	2019-08-05 08:45:39	EW2538	14.3 miles 43°	2019-08-05 08:49:41
K9UQF	14.7 miles 328°	2019-08-05 07:56:50	DW9761	16.0 miles 196°	2019-08-05 08:47:16
DW9547	17.3 miles 97°	2019-08-05 08:46:46	DW7378	18.2 miles 351°	2019-08-05 08:48:07
DW8284	19.2 miles 299°	2019-08-05 08:47:11	FW5445	22.4 miles 298°	2019-08-05 08:55:03
N9IUA-N	22.4 miles 181°	2019-08-05 08:58:03	N9IUA	22.6 miles 181°	2019-07-10 18:43:18
KD9IEE-N	22.6 miles 181°	2019-07-21 02:45:06	KD9IEE B	22.6 miles 181°	2019-07-21 04:11:59
KD9IEE-B	22.6 miles 181°	2019-07-21 04:12:09	N9RYT	22.7 miles 180°	2019-08-02 05:04:52
NM9X-N	22.9 miles 181°	2019-08-05 07:42:14	K9NPX-N	23.0 miles 134°	2019-07-23 20:38:25
KA9KBG-5	23.9 miles 315°	2019-07-31 12:23:35	CW1740	24.1 miles 317°	2019-08-05 08:55:09
DW9554	24.4 miles 112°	2019-08-05 08:47:06	K9WRA-10	24.5 miles 327°	2019-08-05 08:49:10
DW4369	25.1 miles 168°	2019-08-05 08:50:32	147.255/R	25.1 miles 330°	2019-08-05 08:49:52
K9WRA-11	25.1 miles 330°	2019-08-05 09:00:08	444.750/R	25.1 miles 330°	2019-08-05 08:52:22
K9BDH-9	25.6 miles 311°	2019-07-28 21:12:42	NM9X	25.9 miles 176°	2019-07-15 17:06:07
K9VSK	26.6 miles 328°	2019-08-05 08:58:48	K9VMK	26.6 miles 328°	2019-07-31 03:44:35
442.200/R	26.7 miles 299°	2019-08-05 08:37:52	KB9GIG	27.1 miles 156°	2019-07-18 11:32:05
W6PC-14	27.4 miles 266°	2019-08-05 08:54:13	N9NDF-ios	27.8 miles 288°	2019-07-21 00:55:01
KC9HLL-9	28.2 miles 292°	2019-08-01 11:20:43	W9DWJ	28.4 miles 288°	2019-07-22 15:29:33
KC9ICF	28.6 miles 307°	2019-07-17 05:51:59	DW9550	29.3 miles 92°	2019-08-05 08:46:41
W9TAZ	29.9 miles 279°	2019-08-05 08:53:36	K9HRO-7	30.2 miles 290°	2019-08-03 19:12:40
EW4888	30.4 miles 306°	2019-08-05 08:51:23	KB9JD-9	30.5 miles 305°	2019-07-17 15:38:42
K9BDH	30.5 miles 315°	2019-08-05 08:39:50	Ar9DL-9	30.6 miles 301°	2019-07-27 09:22:57
AB9DL B	30.7 miles 304°	2019-08-05 08:50:59	AB9DL-B	30.7 miles 304°	2019-08-05 08:51:09
AB9DL	30.7 miles 304°	2019-07-31 14:08:28	AB9DL-9	30.8 miles 304°	2019-07-30 06:28:28
W9PIA-C	31.2 miles 286°	2019-08-05 08:49:59	W9PIA C	31.2 miles 286°	2019-08-05 08:50:14
W9PIA-B	31.2 miles 286°	2019-08-05 08:49:59	W9PIA B	31.2 miles 286°	2019-08-05 08:50:13
AE9DM-2	31.3 miles 299°	2019-08-03 10:00:08	444.550/R	31.4 miles 285°	2019-08-05 08:37:40
LOTSVRLq	31.4 miles 33°	2019-07-06 17:35:01	N9LOE-8	31.6 miles 30°	2019-08-02 03:01:03
CW7865	31.8 miles 256°	2019-08-05 08:53:26	KB9MXL	31.9 miles 316°	2019-08-05 09:00:02

The third graphic illustrates NWS generated tornado warnings in Central Illinois which were transmitted over APRS and the SFRAARC equipment, N9PE-2 (In Memoriam of Paul E Hammond, State Farm employee)



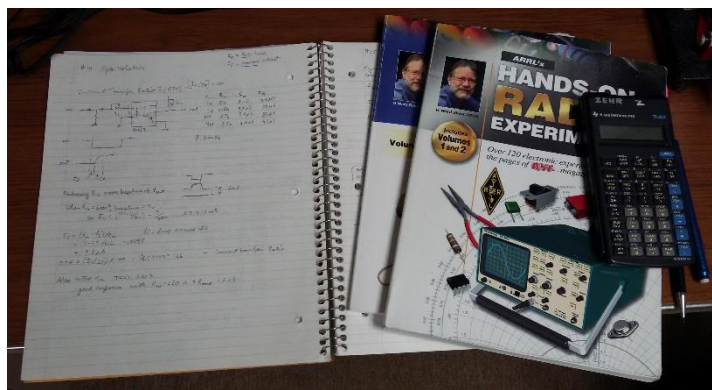
In the coming days we hope to re-install the antenna for N9PE-2. I hope this email provides you a better understanding of what we have at E-Tower, why the equipment is there, and the service it provides to storm and weather spotters, the traveling public, and emergency responders.

Project Julie

Article by Gary Huber AB9M & photos by Jeff Lovell KC9QQM

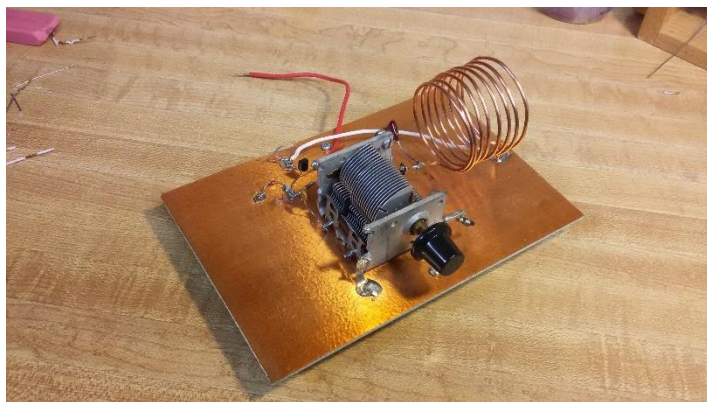
Last December I got a birthday greeting postcard from ARRL headquarters offering me a 10 % discount on any ARRL publication. I went on-line to check out the new ARRL publications but didn't see anything new that I really needed. There was, however, a special on the "Hands-On Radio" books. All three volumes were available for \$19.95

For many years the ARRL ran a monthly column by Ward Silver, NoAX entitled "Hands-On Radio" (HOR). Every month featured a new Experiment involving some aspect of radio and electronics. Like many of you I enjoyed the column and thought that someday I would work through those experiments. The series ended in 2017, but the columns have been bundled into a three-volume set with about 60 experiments in each volume (for a total of 179 experiments). So, I ordered the set and a few days later I had two nice fresh books on my shelf. But that was the problem, they were on the shelf and I didn't really have any idea where to start.



Then, just before the New Years holiday, the XYL and I decided to watch the 2009 movie "Julie & Julia", which is based on a true story about Julie Powell and Julia Childs. Julia Childs was the star of the old PBS TV series "The French Chef". She is perhaps even more famous for her landmark cookbook "Mastering the Art of French Cooking". In the movie Julie Powell challenges herself to prepare every dish in Julia Childs' French Cookbook (in one year) and to blog about her experience and how the dishes turn out. It's a true story and a pretty good movie.

So, I started thinking about it. If Julie could make 500+ new recipes in a year, maybe I could get through 179 HOR experiments in a year. That averages out to just over one experiment every two days for an entire year. I already have an oscilloscope, an antenna analyzer, a couple voltmeters, and most of the other instruments needed to do the experiments. And, thanks to years of tinkering, I have most of the parts I need squirreled away in boxes over the workbench. At least this would give me a reason to use all that gear that I've been accumulating for so many years! And maybe I could fill in some longstanding gaps in my radio knowledge.

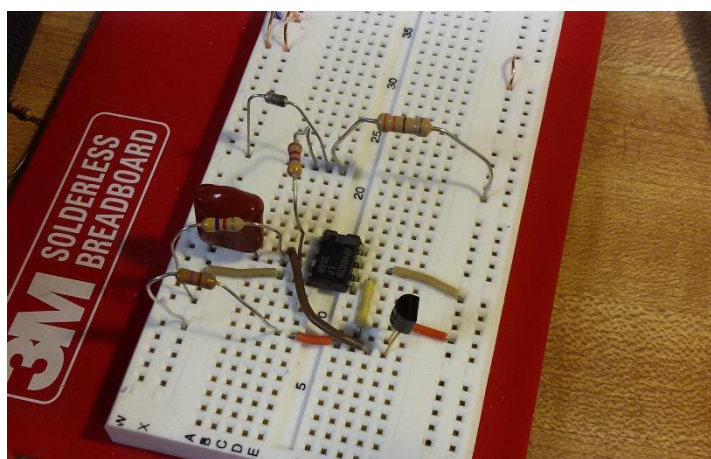


New Year's Day 2019 rolled around, the weather was terrible, and I didn't have much else going on, so I decided to dive in. I cracked open Volume 1 and turned to the first experiment "# 29: Kirchhoff's Laws". Wait a minute, what's #29 doing up front? It turns out the experiments are sorted into categories for the book version, which works well. It does make for a bit of confusion at times, since the author will occasionally refer to an experiment that I haven't gotten to yet. I worked through Experiment #29 and was on my way.

Now, Independence Day has come and gone, so how's the project going? Thanks to some pretty bad winter and spring weather it was initially easy to find time to spend at the workbench. Being retired, with more free time, helps a lot! I've now finished Hands on Radio: Volumes 1 and 2, so I'm roughly two thirds of the way and, with a little luck, I should be able to finish Volume 3 by the end of the year.

Interested in launching your own "Project Julie"? Here are some tips.

While you can learn a lot working with a DVM and some basic hand tools, the project is much more educational and fun if you have access to an oscilloscope and a function generator (or audio range signal generator). An antenna analyzer is also needed for many of the experiments. With these three tools, you are pretty much good to go. You will need some capacitors, resistors, transistors and IC's and a proto board to use for the experiments. The books give a list of the parts needed, and it's not hard to round them all up. If you need to buy everything new, you'll probably spend a couple hundred dollars, but much less if you have a "junk" box or a friend who has some of the parts on hand.



In addition to a workbench and a reasonable stash of parts, you'll need a calculator and a notebook. Ward takes you through the math and calculations needed to understand what is going on in each experiment. If you've had high school math you will be in good shape. If you do get stuck, just skip the calculations and complete the rest of the experiment. But I found it useful to work through as much of the math as I could. Start and keep up a notebook as you work through the experiments. I usually re-draw each circuit I build, indicating any changes or substitutions I have made. I find myself returning to the completed experiments to refresh my memory regarding work I've already done.

So, what's the payoff?

Well, it turns out I had more gaps in my radio knowledge than I realized! I have learned more than I expected, and that is after being licensed for 50 years and building lots of projects over the years. Many of those projects would have gone more smoothly if I had

been through the HOR series first. On the other hand, all the projects I did before made it easier for me to understand and work through the HOR experiments. You can learn a lot from the HOR series whether you are a beginner or an "old-timer".

I find that I understand technical writing (such as you find in the ARRL Handbook) better after working through the HOR books. While the author writes in a casual, almost 'folksy' style, he does use correct technical language and I find that I am gradually more comfortable with the engineering terminology needed to describe what is really going on inside the gear at my station.

Along with the radio theory I'm getting a lot of practical experience using my test equipment. I'm now more comfortable and confident when I measure voltages, currents, and waveforms while working on other projects. The HOR projects show you how to use your test equipment in a variety of ways, some of which were new to me. I've not been to Engineering School, but I think it's fair to say that completing the HOR series is comparable to taking an introductory college level course in Electrical Engineering.

I think any radio amateur can learn a lot from the HOR series. Depending on your background, some of the experiments may be a review or they may all be new territory. Either way you're sure to learn something new with each experiment. And you'll get a lot of experience at the bench using your test gear. Getting through all the experiments in twelve months is a challenge but should be possible if you have a little extra time available. A more realistic goal might be to complete five experiments each month. That would be only a bit more than one experiment per week and would allow you to finish the series in three years. Or pick and choose. Just visit the ARRL Hands-On Radio web site (<http://www.arrl.org/hands-on-radio>). As an ARRL member you can download any of the experiments that look interesting.

Find one that looks good and try it out!

Bon Appetit!

AREA NETS

Tuesday 8:30 P.M. 28.450
CIRC Open 10 meter Net

Tuesday 9:00 P.M. 146.940 (103.5PL)
CIRC Open Net

Thursday 8:00 P.M. 28.450
Vertical polarization is encouraged but not required

Sunday 08:15 A.M. 1.915
Open 160 meter AM net

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If you are wondering where all the nets are, it was brought to my attention that many of these are no longer in operation. I have left the ones the CIRC handles directly.

If you want another net listed, please send me an email directly and please verify it is a current net and I will add it to the list.

Jeff KC9QQM

Kc9qqm@gmail.com

AREA EXAM DATES

Following is the schedule for W5YI-VEC Amateur Radio exams for the year 2018. At the Community Room of the Bloomington Public Library located at the intersection of E. Olive St. and S. East ST. Entrance off of S. East St.

Please bring two forms of identification. You must have an FCC issued FCC Registration Number (FRN) or Social Security Number. We cannot administer a test without your FRN or SSN. You will need a copy of your Current license plus any CSCE you want to apply.

2019 dates;

Nov. 9 TBD

Exams' in Morton are held at the Morton Public Library, 315 West Pershing at 12:00 Noon the third Saturday of even numbered months and. Sep 21 (Superfest),

CIRC Meeting
Fourth Wednesdays of the month at 7:00 p.m. at the
American Red Cross
1 Westport Dr.
Bloomington, IL 61704

Regular Calendar of Events

Daily Coffee Klatch Monday thru Friday
9:00 a.m. at Dairy Queen Veterans at Cub's
XYL's Join the OM's Monday and Friday

Weekly 10 Meter Net
Every Tuesday evening at 28.450 MHz- at 8:30 p.m.

Weekly 2 Meter Net
Every Tuesday evening on the 146.940-repeater at 9:00 p.m.

Weekly 6 Meter Net
Every Thursday evening at 50.135 MHz at 7:00 P.M.

Weekly 160 Meter AM Net
Every Sunday morning at 1.915 MHz at 8:15 A.M.

CENTRAL ILLINOIS RADIO CLUB
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WEB PAGE
[HTTP://WWW.QSL.NET/W9AML/](http://WWW.QSL.NET/W9AML/)

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(AC9S)
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(KC9WVR)
Newsletter Editor: Jeff Lovell (KC9QQM)*

The CIRC is a not-for-profit ARRL special service club whose purpose is to advance the service of Amateur Radio. Located in Central Illinois, the CIRC and its members welcome all to use the 146.94 repeater and to attend club meetings.

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Short CIRCuits

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