

QRZ NEWS

A MONTHLY PUBLICATION OF
SOUTHERN PENNSYLVANIA AMATEUR RADIO CLUB, INC
PO BOX 422- Mount Joy, PA 17552

(Founded June 1960)

AN AFFILIATED SPECIAL SERVICE CLUB OF THE ARRL, INC.

"Public Service through Communication"

Website: WWW. K3IR.org

Email address: k3ir@arrl.net

Repeaters: 145.230 - 449.975 - Packet 145.030 - ATV 923.250, FN10se

Club site 1715 Breneman Road, Rapho Twp. (Manheim P.O. 17545 NO DELIVERY)

May 2015

President's Message

We Are Everywhere.

Some of you know I had the opportunity to visit a supplier I work with, in Italy. This is not a pity plea, the trip and area was quite impressive. Everything went great with all our requests being met.

One of the Italians I met there, Ilario IU2AKM, later looked me up on Facebook. There he saw my affiliation with our fair club. In an email to me he divulges that he too is a ham.

We switched modes completely. We went on about how he got into amateur radio and why, we both share similar reasons, we both wanted to learn circuits, electronics, and build things. We wax on about the blessings and curse of Chinese radios. We discussed the repeaters in the area around him in Northern Italy. From the high point near where he lives he can hit France, Switzerland and most of upper Italy from his 5w Wouxun handheld.

When we did finish our call I hung up and was taken aback in the realization that we are everywhere. We are in all walks of life, all places around the world, and travel around the world like our members Gerry Wagner and Paul Herr. No matter where you go there are Hams. We sometimes get too comfortable with the hams we know. Ours is sometimes a solitary interest, yet we specialize in communicating with others.

I am encouraged and inspired to make known our skills to the world, let the call sign hang on our figurative sleeve. We should embrace those of neighboring clubs, states, and countries. Learn what makes amateur radio thrive in counties and countries.

From the US to Italy, Nepal and beyond we stand as a group ready, as a group linked in a common goal to link. We need to take all the opportunities to explain what we do, why we do, and how others can do.

Next time I travel I will bring my handheld and see what I can reach and who I reach while out and about. Most important is to get to know the others who enjoy amateur radio.

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Lake Maggiore looking North toward
Switzerland

Your President

Kevin Lampo
K3LLC

Coming Events

Tuesday, 26 May 2015, 7:00PM SPARC meeting at the SPARC club site 1715 Breneman Rd(Manheim P.O. 17545 for GPS). In the event of inclement weather, the meeting will be at the Rapho Twp. Municipal building.

The meeting topic will be Field Day prep and knots.

Monthly Breakfast

The second Saturday of every month at 0800 is a SPARC breakfast at Gus's Keystone Restaurant, 1050 W. Main St, Mt Joy, PA. Contact [Gerry Wagner, KB3SSZ](mailto:Gerry.Wagner@KB3SSZ), for more details. Everyone interested in Amateur Radio is invited to attend. See <http://guskeystone.com/> for restaurant details.

Saturday 13 June to Monday 15 June 2015 ARRL June VHF Contest. Begins 1800 UTC Saturday, runs through 0259 UTC Monday on all authorized frequencies from 50MHz up.

For full contest rules see <http://www.arrl.org/june-vhf>.

Note that all modes including FM simplex are included. One exception is the 2M national calling frequency of 146.52MHz should not be used for contest contacts. This restriction does not apply on higher bands such as 223.500MHz.

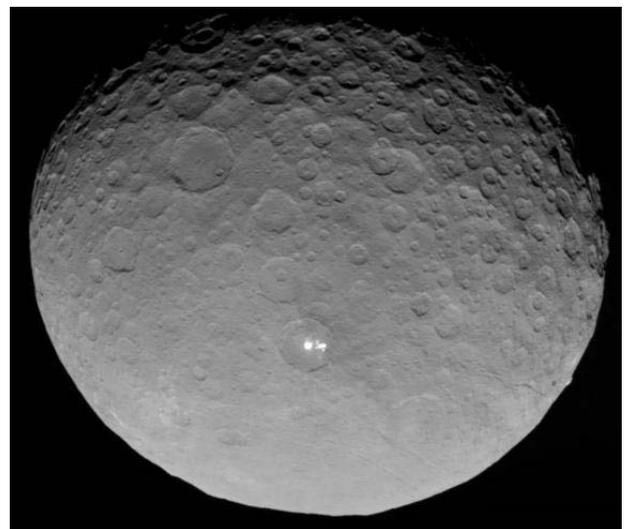
This a very good chance to get on the air and test the simplex capability of your home or mobile station. Log submission is encouraged but not required.

Saturday-Sunday June 27-28 Field Day

SPARC will participate as usual from our club site in Rapho Twp. Come out and join the fun. This months meeting is the major planning session.

Other Events

Monday, 4 May 2015 NASA's The Dawn spacecraft has obtained the best views yet of the mysterious bright spots, capturing them from a distance of just 8,400 miles (13,600 kilometers) in a series of images that mission team members combined to make a [new video of the bright spots on Ceres](#).



Monday, 6 July 2015, 15:00EDT Aphelion, the Earth's greatest distance from the Sun and the approximate peak of the Summer Es season. See QRZ News, March, 2009, page 6 for more information on why this is the peak.

Editor's Notes

The request for donations for a new operating building featured in the April issue paid off with great support from members and friends of SPARC. The new building is on order! The inside work comes next.

The June ARRL VHF contest is the weekend of June 13-14. For a historic review of ARRL VHF contests, see page 9 of the June 2015 issue of QST. Dave Sumner, K1ZZ, has written an editorial on the status over the years. I was surprised to learn that the all time high for participation was the VHF Sweepstakes in January 1961. I've lost my logbook for that time period so I cannot report on my activity.

I was living at 858 Eden Rd., Lancaster, PA at that time. The elevation was higher than my present location and my antennas were much larger with the exception of 1296MHz. There wasn't much commercial VHF gear for VHF/UHF in 1961. My station was home built with the exception of my Hammarlund HQ129x receiver.

See Jim Ibaugh's review of his early HF gear on page 6 of this newsletter. There was a lot of home building in those days.

73, George, W3FEY

Six Meter DX Report

12 May 2015

George:

I've been super busy with winter damage also. Band has been very quiet here. Some single hop but to my knowledge no trans-Atlantic E prop yet. There was an opening reported today between JA and Ukraine. This is first of year. Other than that NADA.

73, Chris W3CMP

ARES/RACES



As part of the SPARC commitment to emergency communications, the SPARC repeater system is maintained as available for linking with other area repeaters.

Lancaster County RACES VHF Net is held on the first Tuesday of the month at 2030 hours local time on the 145.310 MHz repeater in Rawlinsville.

The Lancaster County primary ARES/RACES repeater is on 145.310 MHz with minus offset and 118.8 PL.

Pennsylvania RACES HF Nets are held at 3993.5 kHz LSB on all Sundays except holidays.

The statewide net is on the first Sunday of the month at 0800 hours local time.

The Central Area (including Lancaster County) net is at 08:30 local time.

EPA NBEMS Net, Tuesday, 7:30pm local EST, 3.5920mhz Mode: Olivia 8/500 1khz, Net Mgr: WA3WSJ@arrl.net

SPARC Nets

SPARC holds nets every Tuesday at 2100

local time on 145.230 MHz minus offset and PL of 118.8. The [449.975MHz](#) repeater is linked to the 2m repeater for the net.

Club Officers

President Kevin Lampo – [K3LLC](#)
Vice President Scott Lithgow – [KN3A](#)
Secretary – Peg Hamm – [KB3SCA](#)
Treasurer – David St. Pierre - [AB3VJ](#)
Repeater Trustee - Dave Payne - [N3LOM](#)

NEW

Membership Info Update Request

Please send all changes of address, email, and ham status to me for the MDB to Gerry Wagner at 1309 Willow Creek Drive, Mount Joy, PA 17552 or

Gerry.Wagner@ComCast.Net, Cell=[717-344-1427](tel:717-344-1427),

Home Phone=[717-653-0659](tel:717-653-0659) (Fax Opt); Skype

Thanks Gerry Wagner KB3SSZ

Nearby Nets of Local Interest

If you need information on access tones etc, the referenced web sites below will usually provide the information needed. For more information, see <http://arcc-inc.org/arc-fdbas.html>

Monday [Ephrata Area Repeater Society](#) Net

9:00 PM on 145.450MHz.

Monday [Keystone VHF Club](#)

Combined Club & ARES/RACES Net 8:30PM on 146.970MHz.

Monday [South Mountain Radio Amateurs](#)

SMRA Club Net 9:00PM on [145.430MHz](#)

SSB net 9:00PM on 146.210MHz. May be slightly delayed by SMRA club net.

Tuesday [Digital Net](#) 8:00 PM on the York 146.970MHz Repeater -- This is a busy digital data training net for beginners and advanced users. The primary mode used is MT63-2k. Other experimental modes are also used.

Morse Code Net Tuesday, 2000 local time (8:00p). [SMRA](#) repeater 145.430- (67.0 Hz) with alternate frequency of 146.460+ (1,000 kHz offset, tone 67.0 Hz)

Wednesday York County SSB Net 7:45PM on 50.135MHz. Informal net getting started. Contact Steve Cruse, K3WHC, for more information.

Wednesday [Pottstown Area Amateur Radio Club](#) 8:30PM 50.130MHz Contact [Leonard, WV3P](#) for more information.

Wednesday [Red Rose Repeater Association Net](#) 8:30 PM on 147.015MHz. This is an experiment to see if net attendance improves by starting a half-hour earlier.

Wednesday [QCWA Net](#) 9:00PM on 146.97MHz.

Thursday [Lancaster Radio Transmitting Society Net](#) 9:00 PM on 145.390MHz

Friday Lebanon County Digital Roundup Net 8:PM on the EARS 145.450MHz (tone 100.0Hz) repeater.

I cover all types of digital/data modes, training on computer/radio interfacing and message handling.

The primary focus is with Fldigi and Flmsg and lots of SSTV, using MMSSTV. The nets are always very informal and have sometimes lasted for 2 or more hours to cover all the evening's interest.

73,

[Bob Sanborn/AB3GF](#)

Sunday Info Net

On the N3TUQ 900MHz repeater: 8:30PM
Output: 927.5875MHz Input: 902.5875MHz
(-25MHz) PL 114.8Hz.

The N3TUQ 900MHz repeater is located on the [LVSRA tower on Cornwall Mountain](#).

Net control: Bob Howard, [KB3QAO](#)

For more information visit
<http://www.n3tuq.com/repeater.aspx>

NEW Times and days

PACKRAT VHF/UHF NETS

Visit the Mt Airy VHF Radio Club at:
<http://packratvhf.com/airtimes.htm> for the latest information on VHF/UHF nets.

NTS Eastern Area Phone net

3.917 at 4:00 PM daily for traffic going to EPA, MDC, WPA and Maryland. We have a callup, pass any traffic, after that a round of comments. Traffic manager is WA3QPX. Net could use more checkins from EPA as we normally only get one checkin from EPA and sometimes none. This is where the Fone traffic for EPA net normally comes from. Any questions I will be on 3.917 at 4:00 PM.

73 , [Paul, WA3QPX](#)



Two EPA Nets Now Accessible via Echolink
Posted By: [egroups_n3sw](#) [egroups_n3sw](#)
Mon Aug 27, 2012 11:40 pm

<>The EPA AA3RG and Echolink Traffic Net (EAETN) has been accessible since its inception via Echolink at node AA3RG-R (#149493). See the group Calendar for more information. [*Thursday 8:00PM*]

<>Now the Capital Area Traffic Net (CATN) is also accessible via Echolink at node N3TWT-R (#743026). See the group Calendar for more information. All (*licensed hams*) are welcome to join in on these nets.
73 -Scott N3SW EPA STM-

<>AA3C note: To visit our group on the web, go to NTS-EPA Group web site:
<http://groups.yahoo.com/group/nts-epa/>
Both nets will utilize the 146.640(tx-) MHz.
Transmit access tone: 82.5 Hz.
AA3RG Repeater. <http://www.aa3rg.org/>

QRZ News Publication

QRZ News is published monthly. The deadline for submission of items for publication is 11 days before the regular membership meeting on the fourth Tuesday of each month. If material is not copy and paste ready for publication, more lead time is required.

We operate on an exchange basis with other not for profit publications. Articles printed in QRZ

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CQ de KN3ITG

By James L. Ibaugh SK
[AA3C, ex-KN3ITG, ex-K3ITG](#)

I had taken the novice exam in late 1956 when I was still 12 years old. I had plenty of tutoring from my maternal grandfather Elias, who was a master electrician and my paternal grandfather Albert Ibaugh Sr. Albert was a former railroad telegrapher, retired engineer and Columbia Rail Yard Master. Albert Sr. was also a signals sergeant in the Army Signal Corps and learned all about high powered high speed rotary spark gap wireless communications systems while at war in France during WWI. He started to build a receiving and transmitting setup as soon as he got home from the Army. Albert took time out to have two sons and two daughters while working as an engineer for Pennsylvania Rail Road.

It was Albert Sr who introduced me to shortwave radio in the early 1950's with his big Hallicrafters SX-42 SWL receiver. He had given up spark transmitting in the 1920's and there after concentrated on the art and science of receiving signals from far away places. He sat next to me as I very slowly tuned the big



dial of the **model 1947 Hallicrafters SX-42.**

When I would tune in an interesting signal, he would tell me what it was and from where it was coming. When I tuned in a fast code station, he would pick up a pencil, write very fast and quickly fill a tablet page with code copy. I told grandfather that I wanted to learn how to do code. He dug out of his closet a little battery powered code buzzer kit with an old **US**



Army J-41A

telegraph straight key. Right then and there he taught me: .--- J .. I -- M. "Jim" in Morse code. By the end of my visit with grandfather Albert, I had learned half of the alphabet. Granddad gave me an old dog eared copy of the 1950 ARRL Amateur Radio Handbook in which there was a page with the whole alphabet, numbers and many other special code signals. "Please learn it all."

On my next visit, with my code kit in hand, I was eager to have granddad test my code (CW) proficiency. I did well with all except Q --.- and Y --.- but punctuation and special signals were still not mastered. On that visit, granddad gave me an Allied Radio catalog which had a section on radio kits. He pointed out a multi-band shortwave radio Knight Kit called the "Ocean Hopper". He gave me a \$5 bill and told me to put it toward my "Ocean Hopper Acquisition Fund".

I was raised on a farm called the "Stone Mill Farm" on Route 441 and had farm work that my father Albert Jr. paid well for work completed. It was only three months later that I had enough money to send off for the Ocean Hopper". It only took two weeks for the Knight Kit to arrive.



Long, Medium & Short Wave "Ocean Hopper"

I had to do all my farm chores and school home work before I was allowed to touch the kit. Then I had to do all the soldering outside of the house. I had anticipated mother's order, so I had setup a work station in one corner of the large farm workshop already located on the second floor of the huge stone grist mill. Bench, chair, lights, electricity and a small electric heater were adequate for my work in my kit building corner of the workshop. Before I started assembling the kit my father Albert Jr. needed to inspect my work station. He found only one discrepancy, there was no fire extinguisher in the work shop. He just snapped his fingers and disappeared down the steps to the first floor where I knew there were two extinguishers. He stomped up the stairs with a large bright red CO2 unit. I told my dad that I wasn't using a blow torch to put the kit together. He smiled and said softly, "This is for when you test out your radio." He said he wanted to inspect my work before I turned the radio on. I gratefully agreed because I knew that he did inspections in his job as a Strategic Systems Expediter for the USAF's Air Material Command at Olmstead AFB.

One week later I informed dad that my kit was ready for pre-flight inspection . He put on

his special inspection glasses, with two eye loops for extra close work. Dad only found two cold solder joints and no wiring errors. I quickly redid the two bad connections and when I turned around my dad was standing there with a pair of shop goggles and hard hat on, holding the big red CO2 unit and grinning. "OK dad, watch for sparks and smoke", I said as I plugged the Hopper 's power cord into a power strip. No sparks and no smoke. I had the head phones plugged in and an antenna of about 64 feet of insulated copper wire strung around the shop with the last 30 feet dangling out one of the windows.

I had the BCB coil (from left #2 coil in photo) plugged in, which covers about 520 KHz to about

1500KHz. Even with the phones laying on the bench I could hear music from WSBA 910KHz.

Dad sat the CO2 unit down and patted me on the back and then shook my hand. "Good Job."said he. The "Ocean Hopper" had a prominent place

on my study desk in the corner of my bedroom. While I did my school work I listened to either the BBC from London or Deutche Welle from Germany. After my home work was completed, I switched coils and did my code copy practice on either 80 M or 40 M. After a month or so,

I started to copy two way QSO's, slower speeds of course. I started to think that I could participate in those round table QSO's if I had a transmitter and a novice ham radio license.

I developed a plan. I had a source of cheap radio parts that practically no one knew about. From our farm on the River Road on the eastern shore of Minqua's River and only a seven mile bike ride was my depot, Snyder & Baker's War Surplus and Military Parts Depot! There were building after building, full to overflowing, of salvageable USAF obsolete/retired electronic and radio equipment of every type and description.

There was all kinds of aviation refuse from the Olmstead AFB only 5 or 6 miles from S & B's salvage yard. **“Watch out for the copper heads**

boys!” Mr. Snyder would say when we checked into his office before we went digging into piles of surplus. We were only 2 miles from the river.

I found a partially cannibalized PA audio amplifier with two of the four 6L6-Metal enveloped tubes still in their sockets. It had a nice built in power supply with a 5U4 rectifier tube still in its socket! The chassis had plenty of room to build a transmitter section on it. I drug it back to Mr. Snyder's office and he glanced at it and said “50 cents, not a penny less”. I had \$2 with me and was tempted to go back for more after I paid my 50 cents. As it was, I had to tie the 50¢

chassis across my bike's handle bars and do a balancing act seven miles back to the farm.

When I tried to smuggle the chassis up to my bedroom my mother caught me. **“Not in this house, put that dirty thing in the mill's shop!”**

It did need a bit of a cleanup with the build up of dust and dirt from the Korean war, judging from the moisture and fungus proofing label I found under the first layer of dust which had a 1949 date. How could it get that dirty in eight years?

I joined the local ham radio club in E-town, north western Lancaster County. EARS's K3OKW clubhouse was an old WWII airplane spotters post high on the range of hills west of E-town on Pa. State hospital grounds. A super location for a ham QTH for HF, VHF or UHF work.

One of the K3OKW's club members got a new Ameco AT-1 novice transmitter kit and it sounded real good on the air. I asked if I could copy the diagram and he said sure, and asked if I was

going to build one. I said I would try a 6L6 version of the AT-1.

According to the ARRL's Radio Amateur Handbook vacuum tube reference tables in the rear section, the 6V6-GT pin out is identical to the two 6L6-MT's I got with the PA chassis. The power supply was intact with a 5U4 and looked very much like the 5U4-GT power supply diagrammed in the handbook. Could I be that lucky? By my estimate, I should get at least 10 watts RF out of the better 6L6-MT. I took all three tubes into the drug store (they all had tube testers in those days) and they all checked AOK.

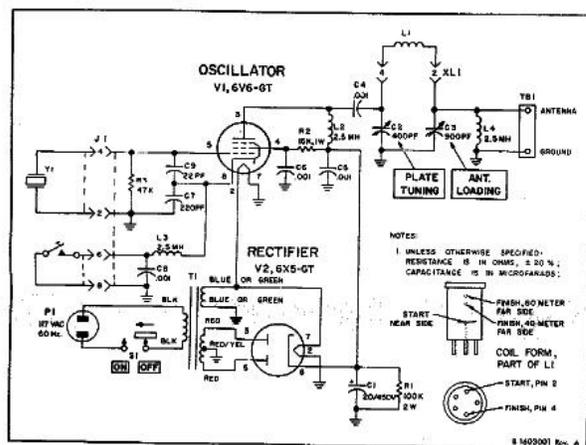
I knew that my 6L6 rig would not look as good as an **Ameco AT-1**, but it would have two tubes, a plate plug in coil and quartz frequency crystal.



I returned the AT-1 diagram and asked if I could measure the two coil forms supplied with the kit.

I found that the coils and the plug in crystals actually use standard tube sockets. What a break!

Factory made plastic coil forms went for \$1.25



each and novice band crystals cost \$2.00 each. So I sent off for four Xtals (2 for each band) and 2 coil forms. I got it all assembled and I asked the AT-1 owner to come out to our farm and test my new 6L6-MT rig on the air (he had a valid ham license). He used a 15 watt incandescent light bulb as a dummy load and it lit up to almost full brilliance, WOW! Tuning was quite simple, set the loading and peak the plate tuning for max output. When we keyed up the 6L6 the Ocean Hopper (OH-1) went **dead!** Unkey and the OH-1 would recover in four to five seconds, enough to receive the other station. I was using two antennas strung out at 180 degrees apart. I found that if I used a foot switch to disconnect the Hopper's antenna and short out the Hoppers antenna terminals, it helped the T to R recovery time. Recovery time was down to one to two seconds.

By late December of 1956 I had my speed up to over 10 words per minute (50 characters per min.). I contacted the president and trustee of the K3OKW E-town Club, Russ – W3MFW in

E-town, Lancaster County, PA, and made an appointment for a novice exam. I passed the paper 25 question test with no problem and the 5WPM was the easiest part of the novice exam.

The FCC license arrived one week after my 13th birthday. My novice license and call “KN3ITG” was valid for only one year, during that time I had to upgrade or quit ham radio! The FCC's ARO rules were much tougher back then.

I sat down at the radio operating table and turned everything on to let it warm up and stabilize. I tuned around my Xtal frequency and heard nothing local so I took a deep breath and sent “**CQ CQ CQ de KN3ITG KN3ITG K**”.

There were other stations calling CQ near my frequency but they were not calling me. I copied

the slowest and gave the KN8??? a long call and then waited till the “Hopper” recovered from the overload. My golly, he answered my call. I gave

him an RST 479 and he gave me an RST 367! I

ask if I had “hum” on my signal and I gave him a 5 second carrier. He said it was his first CW contact and he was 10 years old. That explained everything. I said thanks for the QSO and I sent my address for a QSL card. I sent “TNX 4 QSO

73's and gud luk .-.-. KN8??? de KN3ITG ...-.-”

In the next two weeks I had over 50 QSO's



given my limited time allowed for non-farm activities.

Knight Kit T-50 80, 40, 20, 15, and 10 Meters Three months later I had enough

money saved to

buy ready made equipment (almost). I put in an order for a Knight Kit T-50 80M thru 10 M 50W

Xtal control transmitter with an RCA 807 final. The T-50 kit went together easily and dad inspected it before I plugged it in and turned it on. No sparks and no smoke, etc.



One month later I found a real great deal on a **Hallicrafters S-38E** full four band superheterodyne with a stable BFO for all band AM, SSB, DSB and CW reception. I didn't have to fiddle with the regenerative control. The S-38E had a Beat Frequency Oscillator. I filled three log books with QSO's from 29 states and 12 foreign countries using this rig.

I upgraded my ham license at age 14 and got my drivers license at 16. Along with all that, we moved off the farm into Elizabethtown. There went my antenna farm, my 80 and 40 meter dipoles, my two 150ft long wires (one east and one south). I had to think vertical for both home QTH and mobile.

To support my habit, I got a 20 hour a week job at the Market Street IGA, bagging, stocking shelves and delivering groceries. Half of my income went to my college savings fund. Out of the other half came clothes, rent and incidentals. I guess the radio gear was part of the incidentals. During summers, I added two more jobs to up my hours per week to 50 or more. My plans were modified to upgrade the K3ITG station. Receiver came first. Good deal on a **National HRO-60**.



I had full 7 plug-in band changing coil set. This was my first triple conversion superhet. Wow, what a difference that makes working CW DX!



Hamfests are great places to pickup good deals, only if you expect to repair, rework and fix the equipment you buy. Ergo **Heath DX100B&SB10**.

It was a great start to my sophomore year in 1959. However, there was a **redhead YL** who sat in front of me in my college prep classes, who didn't think much of my hobby. We will see.... ..

Ed Note: This is an old article not previously published. Now you know how Jim got started in Amateur Radio.

Live Streaming Audio with a Raspberry Pi

Jon Rudy – K3QF
11 April 2015

My brother has a farm in Kansas where the wind never stops blowing. He bought a wind harp to put on his property to make music as the wind caresses the harp strings. My brother said he would like to be able to hear this harp away from home. As a composer and musician he would like to have this sound available for performances and share the beauty of the wind powered melody with others who are interested in hearing it.



I suggested that he live stream it on the internet. The harp, which is set up away from his house, is within range of his wifi router signal. I began to brainstorm about what electronics would be needed to accomplish live streaming over the internet. It would, I decided, have to be solar powered design and have a hermetically sealed box to protect the delicate electronics from the ravages of the volatile Kansas weather.

My first thoughts were to use Bluetooth as the wireless connection between audio pickup at the harp and the internet inside his home. The distance from harp to house was at the very extreme of possible range for Bluetooth. I thought a wifi signal would work better. I ran across an article about how to use a [Raspberry Pi](#) (or RasPi or just Pi) single board computer as an audio streaming server.



I chose the model B+ which runs an A6 ARM Cortex processor at 700 Mhz and has half a gig of RAM. Once the microSD card is loaded with the operating system, the Pi boots on its own in seconds. Having 4 USB ports, an HDMI video port, this diminutive computer consumes a very low current at 5 volts. It was perfect for a remote streaming project. This little computer, once set up, can run “headless” meaning it needs no monitor, keyboard and mouse of its own but you can program it easily through a remote SSH client like [Putty](#) working from the command prompt or [Tight VNC](#) through the actual Debian Wheezy desktop.

I found a [great article](#) about how to configure the operating system and two audio streaming clients (Dark Ice and IceCast2) to stream live audio. Live is a bit of a misnomer because there is a buffered 2-5 seconds depending on the quality of the internet connection. The author of this article used it for a baby monitor. I made sure that the Pi would reboot to streaming mode if the power was ever cycled.

The first task was to get the Pi to live stream audio. Once all the software was installed, configured and running, an image build was frozen and saved on my computer. I want to make sure to be able to reload the image should I have to



replace the SD card, Raspberry Pi computer or any other things that may happen to a remote installation such as this.

Once the RasPi was streaming, I needed to think about the microphone and that necessitated building a junk box preamp to power and amplify the condenser mic I had lying around. While the RasPi has a built in sound card it is only for playback not record. I found a USB sound card dongle in my drawer that fit the bill for initial testing but I noted some cyclical digital hash impressed on the streamed audio. I ordered a better USB sound dongle and the hash cleared up.

Having done the operating system build and audio pick-up side of things I needed to calculate the power budget, battery storage size and solar panels I would need for keeping the Pi going 24/7. The Raspberry Pi B+ takes 120ma at 5 volts. The preamp takes 1ma at 12volts. Since most small solar panels (5-20 watts) are meant for 12 volt installations, I bought a [buck converter to supply 5 volts](#). A buck converter reduces the voltage while increasing current instead of generating heat as a simple regulator will do. I chose a 5 Volt USB powered buck module off Amazon that was inexpensive, had built in volt meter and on/off switch. I calculated that a 12a/hr AGM battery should do the trick of keeping the RasPi going even through a few days of clouds. I did underestimate the solar charge however and initially bought only one 10 Watt solar panel which provided up to 700ma current in bright sun.



I assembled the whole unit and placed it outside near some wind chimes. The unit worked well during sunny days. During a cloudy stretch, however, I noted a rapid decline in battery voltage and secured another 10 watt panel. Now I am hopeful that the unit has enough charge capability and capacity to keep the unit going through some cloudy days. Kansas will have more sun than Pennsylvania so if I can keep it going here, it should work there.

As of this writing I have the setup streaming my own wind chimes behind my router and have one port opened up so that I can hear it in the outside world. I am not yet ready to open this up to the world while in beta testing mode.



There are a few unresolved issues. One is that if no one is connected to the streaming port, it times-out and must be pinged for several minutes before it reconnects. The issue of security on the open port is also worrying. How secure is it to have an open port? I do have a robust router and Raspberry Pi password but still question how secure is it if someone really wants to hack my Pi?

Streaming live audio has many uses. My thoughts are to stream the SPARC repeater, have my own wind chimes

streaming or even putting a web cam on this little box and live streaming video from my front yard.

I plan on installing this in Kansas sometime in June so stay posted for the link once it is permanently streaming the harmonious winds of Kansas.
