

The Pileup

Newsletter of the CDXA

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NV4A	John Forbus	Contest Mgr.
W3GQ	Paul Sturpe	W4 QSL Bureau Manager
WB4BXW	Wayne Setzer	Webmaster
WA2TGE	Mike Keziah	Editor

And the Winner of CDXA's DX King Contest for 2016 Is...

Actually, there are two winners: highest score and the raffle winner. First, the highest verified-by-CQ score was achieved by Ed Kubert, K5EK, with 279 countries and all 40 zones for a total score of 319. Ed was closely followed by Dennis, K7BV with 276/40/316. Worthy of note: Ed was #15 in the world in the Unlimited category, and Dennis was #17. Congratulations! Ed and Dennis aren't the only ones who did well. Cliff, W3ZL was #19 in the world and #5 in the US in the Formula Class. Not bad for attic antennas, Cliff! The top five finishers in each category (or all finishers if there were less than 5) will be receiving certificates. A couple of notes: Not everyone who competed during

the year in our DX King Contest is listed in the final results below. That's because a few of you didn't show up in the "official" CQ Marathon list, which says you apparently didn't send in your score, at least not on time. Another thing to note is that we all did very well in not losing any, or only a few points, for incorrect calls or zones. As CQ points out, the single biggest point loss is usually from people not double checking their US and Canadian contacts for correct zone. For example, I'm pretty sure that K7BV and K5EK are both actually in Zone 5!

And as for the other winner ...of the lottery for the \$100 Gift Card from Amazon: K8YC is back in form, and is the lucky winner of the Gift Card. Congratulations John.

Here are the final scores:

CallSign Categories Countries Zones Total

K5EV	Un	279	40	319
K7BV	Un	276	40	316
W3GQ	Un	255	39	294
W4HG	Un	245	40	285
K8YC	Un	185	35	220
W3ZL	For	161	33	194
W3OA	Un	162	37	199
NV4A	Un	156	33	189
KZ2I	Un	150	39	189
K3IRV	For	122	30	152
AA4SC	Un	89	24	113
W4WNT	For	94	22	116

CDXA PacketCluster & Other Communication Systems

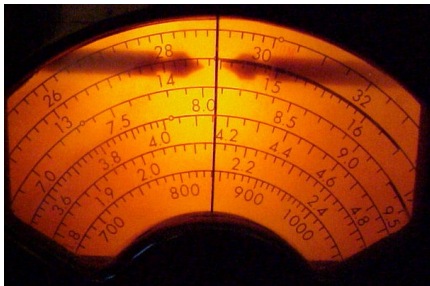
K4MD (AR Cluster via Telnet)	k4md.no-ip.com
W4DXA (AR Cluster via Telnet)	w4dx.no-ip.com
CDXA Repeater 147.18 MHz (+600)	W4DXA, Near Fort Mill, SC
World Wide Web Homepage	www.cdxa.org
Wednesday Luncheon (11:30 AM)	Skyland Family Restaurant, 4544 South Boulevard, Charlotte, NC

DX King News, July 2017

John Forbus, NV4A

Because I'll be on vacation WITHOUT internet service the first through the 15th of July, we'll all have to wait until August to see how the race is going through June, but here are the May numbers. So, stay tuned to this space for the next installment

Call	U/F	Countries	Zones	Total
K7BV	U	257	40	297
K5EK	U	248	40	288
W3GO	U	222	38	260
W1AJT	U	187	38	225
K8YC	U	137	33	170
W3ZL	F	139	28	167
W3OA	U	132	31	163
K4ESE	U	134	27	161



The Pileup

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The purpose of the association is to secure for the members the pleasures and benefits of the association of persons having a common interest in Amateur Radio.

Members of the CDXA shall adhere to "The Amateur's Code" as published from time to time in *The ARRL Handbook for Radio Amateurs*, and shall consist of those valid licensed amateur operators having an interest in promoting amateur radio. Long distance communications (DX) is of special interest to members of the association, but said interest is not a requirement of membership.

Yearly dues are \$25.00. A second licensed Amateur family member living in the same household can join for \$5.00 for a total family price of \$30.00 per year. The total price for 3 or more licensed family members living in the same household is only \$35.00 per year. All family members enjoy full member status. Dues are payable annually in December by check or through [the CDXA website](http://www.cdxa.com), to the Secretary/Treasurer:

Cliff Wagoner, W3ZL
P. O. Box 577
Davidson, NC 28036

Address, telephone, and email address changes should be directed to the Secretary/Treasurer at the above address or via email at: jcw53@cornell.edu.

CDXA Club Call W4DXA Active for 2017 Field Day

Paul (AD4IE) and Bill (W4GRW) participated in Field Day activating our club call, W4DXA, from the Red Cross building across from Toast, on Park Road. We figured it was about time to get the club back on the air and we had a lot of fun in the process.

Bill, bought an Icom IC-7300 at Dayton and he and Paul wanted to give it a good on the air test. The rig performed very well, was easy to use and we received great signal and audio reports, but, the factory DC cable was defective, it had an intermittent short in a fuse holder. (Icom is handling under warranty, yeah!)

Not wanting to pull an all-nighter, we operated from the 2PM kickoff until about dark, and on Sunday from 9:15 AM until noon, for a total of just over 10.5 hours.

We primarily stayed on 15 & 20 meters, with a brief time on 40M. Paul worked SSB and CW and Bill operated SSB.

We worked several CDXA members, and had 2 really fun contacts with the out of state Field day stations that Paul Sturpe W3GQ was working with in OH, and that Bill Par-ris AA4R was working with in MI.

We were able to work just over 650 Q's, in just over 10.5 hours of operating on a single radio, the IC-7300, for an average rate of about 61 Q's per hour, at one point attaining a rate of 106 Q's per hour.



Audio Digital Signal Processors

Mike Keziah, WA2TGE

With technology changing so quickly it is increasingly difficult to know what is available. Every now and then I come across something that demonstrates just how far out of touch I am with current technology. I have been using DSP on my transceiver for several years and while that does very well at reducing noise, I have always felt it should do a better job. While I claim no knowledge of DSP software I am of the opinion that more could be done. One of the problems for me is as I advance the DSP capability of my transceiver I find the signal is degraded more and more. As a result I can use the rig DSP in small amounts until I have a degraded signal and then I have to rely on the old ears. As I age, I am finding the ears aren't nearly as good as they once were. I began looking around to see if there were other DSP units that would work on the audio coming out of the transceiver. Well, there has been several of these devices on the market for several years now. I am just finding out about them.

The first of these I tried several years ago is sold by GAP antennas. It is called the *Hear It Dual Inline*. It is a dual channel noise canceling unit that serviced two radios and it worked. There were problems with the unit that made it difficult to use. First was its' size, weight and the fact it sat on the narrow edge of the container. I placed the unit on a shelf above the transceiver such that it was in a convenient place. It's weight would not counteract the number of wires from two separate radios and a headset and I found myself righting the unit frequently. This could easily be corrected with some type of stabilization lash-up. Secondly, the filtering is controlled from an eight position switch. It, like the DSP unit in the transceiver, would only filter at certain pre-selected positions and it, like my transceiver, degraded the signal as you approached the upper filter levels. The positives for this unit are that it would service two radios. It also can be switched in and out of line with a single switch. I used this unit for about six months and disposed of it at the Shelby hamfest. The biggest complaint was its' lack of stability and the pre-selected filtering options.

About a year ago I found another audio DSP unit. It is sold by West Mountain Radio and is called the *CLRdsp*, part of the Clear Speech family of prod-

ucts. This unit services only one radio as compared to the multiple radios of the *Hear It Dual Inline*. It uses only three cables (power, audio in and audio out) and solves the righting issue caused by multiple cables being attached to the other unit. It is also mounted on the large side of the metal container so from a stability perspective, the unit seems to stay where I put it. The big positive for this unit is the filtering capacity. It is relatively infinite (oxymoron?) Rather than having a multiple position switch to set the filtering it uses something similar to a rig volume control. It can be adjusted to any point between the stops where I think it sounds best. As I approach the upper limits, the signal is degraded but not to the same extent of the other unit and my rig. In addition, this unit has a tone control. I am surprised how effective that can be when used with the DSP capabilities to pull signals out of the noise. I have been using this device for about two years now and it is a regular part of the bring-up of my station when I go into the shack. The unit works well on CW as well (if your dah is less than two seconds). After two seconds it removes any carriers from the signals as well.

Maybe all of you have the capacity for audio DSP built into you rigs. If you are operating rigs without audio DSP you might take a little time to investigate what is on the market. You might be pleasantly surprised.

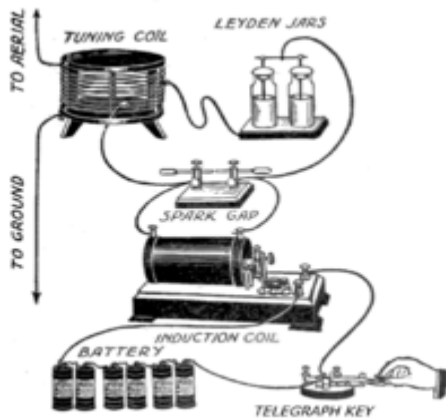
The Times – They are a Changin'

Mike Keziah, WA2TGE

Looking back I am amazed at the changes. In my own lifetime I can see tremendous change everywhere I look, especially in technology. Everyone is impacted. Many of these changes are an important part of our everyday lives. We are the recipients of new and marvelous ideas we thought not possible just a few year ago.

In Amateur radio, what happened to terms like Leyden Jars, tuning coil, crystals, and spark gaps. They are probably around but are not considered the technological breakthroughs of times past. I am not certain a spark gap transmitter would even be legal

these days. If it were you would certainly make ene-



mies quickly.

As technology continues to pack and more circuitry into smaller spaces and software continues to replace hardware, we get the benefit of newer capabilities. Moving from the vacuum tube to the transistor to various levels of circuit integration, the sophistication of the modern ham transceiver could not have been imagined 50 years ago. I am certain we all remember the old *boat anchors shacks of the past*, those 50 to 100 pound rigs of yesteryear, discrete components scattered on top of the desks, alligator clips bridging broken connections that we were “fixing tomorrow”, capacitors electrically connected and placed in a cardboard box underneath the operating table and one or two Heathkits occupying space and only partially assembled. Oh yes, I nearly forgot the ARC-5 that we were converting to the ham bands. How distant that all seems as we enjoy the benefits of changing technology.

How about the old power supplies. Many rigs had built-in power supplies. There were a few off the shelf power supplies but most of the people I knew built them from their junk boxes. They were a far cry from the single voltage rigs of today. The Heathkit radios were very popular and required an octal socket to provide all the power connections. Let’s see why, there were: 820 vdc, 350 vdc, -130 vdc, -40 to -80 vdc, 6.3 vac, 12.6 vac, and ground. In all fairness, this power supply was the basic power supply for vacuum tube rigs. It is a far cry from the generic, less-than-five-pounds, single-voltage, switching supplies of today.

In the late 40s Bell Labs introduce the transistor. Soon it was being used in industrial applications replacing the vacuum tubes. While the transistor was

predated by the vacuum-tube computer, it began to solve many problems of vacuum tube computers. The first vacuum tube computers used something like 18,000 vacuum tubes and had a footprint of 1,800 square feet. It produced immense amounts of heat. Programming was accomplished using plugged cables that required re-plugging each time there was a programming change. The transistor was physically smaller, took less power to operate and produced much less heat than did the vacuum tube. Over time the cost of transistor became more affordable and we began to see them in ham rigs.

I remember my first all solid state rig. Sixty-five watts of unbridled power but it was ready to operate in an instant. I no longer had to wait on the radio to *warm-up*. Just enough power to drive my 4-1000 homebrew linear (which had two mercury vapor rectifiers and which took “two days” to warm up - had to re-vaporize the mercury if the tubes had been inactive for an extended period). It took a while before the technology made affordable power transistors available for hams. Solid state amplifiers were a thing of the future. Today, it's a reality. Flip a couple of switches and you are instantly on the air at full power.

Gordon Moore, the co-founder of Fairchild and Intel semiconductors, made a prediction that the number of transistors per unit of measure would double every year for the next decade. This was in the late 60s. He was ridiculed for his statement. Most engineers thought that rate of growth was not sustainable. But even today in 2017, there is still truth in his prediction. Currently the density of components is not doubled *every* year but does double somewhere between 18 and 24 months. The introduction of the transistor, large scale integration and the logarithmic growth in circuit density made possible the recently announced Intel I-9 computer chip which offers 18 64-bit processors on a single chip.

Certainly you remember the “micro-computer”. They were introduced and shortly there after we had the Commodore 64, TRS-80 and other computers the average family could afford. How long did it take until some enterprising ham had found a use for the computer in his hobby? I recall a flood of logbooks as the initial offering. Some of these were very complex, some were unreliable and others were both complex and unreliable. Over a period of time per-

sons with programming skills began to look at the logbook issue and today we have some very sophisticated logbooks. In reality, the definition of a software logbook has been expanded dramatically to include many functions impossible with paper logs.

With the very large scale integration continuing in the electronics industry, more sophisticated rigs are joining the market. These rigs have new and advanced functionality. In an effort to keep the user interface of the rigs simple, the amateur rig met *men-us*. Now the complexity of the rig *changed* to multi-function buttons and switches. There had to be some way to control all those new functions. At the same time it became possible to put software into the rig to replace some of the expensive hardware. Rigs were coming out with RS-232 interfaces so manufacturers could update the software as required. Pretty soon enterprising individuals were investigating this interface and found they could modify menu choices and change menu values from this RS-232 interface. Enter Computer Aided Transceiver (CAT). Pretty soon programmers began building applications to control the rig through the CAT interface from a computer. Applications like Simon Browns *Ham Radio Deluxe* and other programs were offered to hams world wide over the internet phenomenon. The “computer-control-transceiver” applications attempted to move the rig controls from the front-panel of the rig, with all of the multi-function machinations, to a computer screen that was modifiable by each user putting the functions they use in an easy to find place. For many hams this solved the “*memory*” requirements for remembering where a particular menu function was and what key combination was required to find it and what keys to use to change the value. It was a great step forward for those interested in simplifying access to their rigs new capabilities.

With the computer being used to control rigs it was a short trip to the digital modes. We began to see these new modes coming out of the digital world that require very little power and added to the capabilities of the ham radio experience. Today the number of digital modes is only exceeded by the number of stars in the heavens. I remember the first time I worked Australia on 20 watts on PSK-31. I was blown away by the ease of use and the quality of the transmission.

The internet has had an important impact on ham radio too. How many of us have a subscription to

QRZ.com to fill in the blanks in a log entry. Today, once the call is entered in the log or application, the remainder of the log entry can be captured from information online, your computer and the rig-control application currently in control. Logbook of the World was introduced by the ARRL and provide a single repository for logbooks from all over the world reducing the expense associated with mailing QSL cards for confirmation of contacts. EQSL.com is another application running on the internet that does the same thing but in a more relaxed environment. Sales of ham radio “Stuff” over the internet has reduced hamfests from “swap meets” to just “social gatherings” with very few vendors displaying their wares. A multitude of ham internet sites are available from software collections, equipment reviews, “how-to”, news and rig sales. The internet is a very important part of amateur radio today.

The introduction of DSP (digital signal processing – a software capability) capabilities into ham rigs has brought about a relatively new phenomenon, Software Defined Radio. Currently technology doesn't support a 100 percent software defined radio. It is my understanding that the detector and Analog to Digital conversion is still done in hardware but the remainder of the operation takes place in software running on a generic hardware platform. With computers already in the shack it is a simple matter (and inexpensive too) to add a software defined receiver to your shack. A simple dongle ordered from Amazon and a SDR application from the internet are all that is required. Free Software Defined Radio applications exist on the internet with up to eight receivers that can be active simultaneously, wonderful filtering, and they can be linked to your transceiver to match the frequency through the CAT interface. Of course there are commercially available models as well.

Maybe it is a function growing older but it seems that the changes in technology we are experiencing are beyond my wildest imaginations. Who would have thought in 1941 (when I was born) that someday in the future I would be wearing on my wrist a device that was even more powerful, more functional and a part of the everyday experience of so many people, than the old Dick Tracy wrist radio. The times --- they are 'a changin'.