November 1999

The Pileup

Newsletter of the CDXA W4DXA

Carolina DX Association

N4PQX	Bob Burton	President
W4WNT	Bill Turner	Vice-President
K4MQG	Gary Dixon	Sec.-Treasurer
K4ZA	Don Daso	Editor

CDXA PacketCluster & other communications systems		
W4DXA Young Mountain	144.93 (1200 baud) & 441.00 (9600 baud)	
K4MD Charlotte, NC	144.91 (1200 baud) & 441.075 (9600 baud)	
digi-peater near Wingate, NC	DXWIN	144.91
repeater 147.18 (+600) near Fort Mill, SC		
homepage <www.cdxa.org>		

PRESIDENTIAL PONDERINGS

This is the last *Pileup* of the year and of the 20th century. This year has been full of good DX, improving conditions, and surprises. The largest surprise was the short operation from North Korea by Martii Lane which made a few very happy and a multitude hungry for a large scale DXpedition from P5. This year has also had sad news, like the passing of King Hussein, JY1. A new century will be starting soon which will likely bring many changes to our hobby. There will probably be some type of license restructuring, some band allocation changes (more bands, not less, we hope), and now there's talk of even tighter restrictions on emissions from consumer products. Anyone who's had RFI/EMI problems will welcome this. This next century should prove exciting with new opportunities for all of us.

I've received some feedback on the CQWW phone contest. Obviously many of you had a great time! Conditions were excellent, as the high scores prove. Be sure to submit your scores to Ted, W4VHF, for our intra-club competitions. And don't forget to send your score to CQ magazine to add to our club total. Don't forget CQWW CW at the end of the month. You'll need to get your scores to Ted immediately after the CW contest for our intra-club competition since the CDXA Christmas Party's on Thursday, December 2nd. Because of this close timing, these CQWW CW scores need to be turned in to Ted by the first part of the week.

CDXA's annual Christmas Party will be held on Thursday, December 2nd. This year's event will be at AA4SC's Branding Iron restaurant in Rock Hill, SC. Most of you know it's located just north of the Catawba River bridge on US 21. Plan to arrive around 6-6:30 PM to enjoy some social time before dinner. We'll begin ordering around 7:00 PM. There will be the usual "talk in" on 147.18, if you need detailed directions. Or contact a club officer for further help. Menu choices: Prime Rib, Chicken, or Flounder & Shrimp, at $16.65/person, including tax and tip. Please RSVP to Bill, W4WNT if you plan to attend, with the number in your party and menu choice. After dinner, we'll present the intra-club awards for the CQWW, and follow that with our annual election. Nominations may be made from the floor; current officers have agreed to run for re-election. The plaque for the 10M Contest *(The Last Gun Fight of the 20th Century)* will be on display to inspire everyone. I look forward to seeing you there!

73, Bob N4PQX

RAMBLINGS
An editorial

Steven Segal is beating the•. out of someone on TV. In real life, this guy should look like ground chuck at Winn-Dixie, but the only noticeable effect is his shirt's pulled out of his pants. (The bad guy, that is, Steven still looks pretty slicked-back.) It's the day after (okay, it's the late night after, really) our annual BVQ BBQ. This year's event was well attended and enjoyed by all. Frank's 2-el 40M beam must hold the record for "being-busted-in-the-air" time, some kind of credit to Cushcraft. At least 23 people offered to fix it. Having consulted the coleslaw leftovers, my swami predicts this will be the year we repair it, once and for all.

The Pileup got put together and passed around. It was odd for me to wander about the yard and watch people actually sitting there reading it. KA8FSM even remarked about a column from two years ago! I was pleased. His wife had sewn a nifty CDXA logo on a denim shirt, which John was sporting, making us all jealous. She was somewhat overwhelmed when the club tried to order 300 copies. Note: buy sewing machine for Marti.

High-tech solutions solve high-tech problems. Most of the time. Often, though, the high-tech stuff just digs the hole a little deeper. Nowhere is this more evident than in my business—where computer-based editing takes longer *(I don't care WHAT they say)* than the old, taped-based analog times. The list goes on. I found myself rambling like this just the other day--faced with the troublesome task of laying out as well as guaranteeing level and plumb three anchor bases for a self-supporting Aermotor tower. Having looked into lasers, which is what today's professionals apparently use for this daunting task, Sparky has jumped backward toward the Neolithic era, and decided to use a WATER LEVEL. Following that old scientific principle (water seeks its own level), and armed with a few feet of clear tubing and some water, you can determine when things are level. Elegant and simple, once one remembers it. The plumb part we'll reserve for a trusty old Craftsman mason's level. Note: call Bob Vila.

One part of the Big Bang Theory, which bothers me, is that my universe is supposed to be expanding. Some of the stuff in and around my place is expanding, all right, but the house is still the same size as it was when I moved. Note: call Stephen Hawking.

Just last week, I was cruising the Internet, when I realized it's a lot like cruising drive-ins back in high school. Not that I did a lot of that, cruising, that is. It's hard to be cool when you're driving an F-100 pickup. (Well, it was hard back in 1965, before pickups became "cool," anyway.) Today, in order to be noticed, you post something on some topic on some newsgroup, then sit back and wait to see how many folks agree with you or suddenly hate you. I got sucked into this and wrote a review of the MFJ Analyzer. (It was easy—I recycled the review I wrote for *The Pileup*.) Boy, did I get letters! Sort of like those rejections at the malt shop, in fact. Okay, my town didn't have a malt shop, but you get the idea. Not only didn't the girl in the sweater like my ideas about the MFJ; the pimply-faced soda jerk didn't either, so wax poetic for a moment.

But, I digress, and find as election time approaches, I'm reminded of the old cartoon and comedy routines. "A chicken in every pot and a car in every driveway" was once a standard campaign refrain. Everyone has a car in the driveway, and there's a Kentucky Fried Chicken on every corner, so obviously, something else will have to be promised nowadays. Note: re-read "Checkers" speech.

And, finally, it's probably a money-deal, but one of those weight-loss chains has promised dollars to our former intern for every pound she loses. Something like this could be used to get folks over this code hurdle—a few dollars for every completed CW QSO, and soon enough, people will actually KNOW the code, instead of arguing for NO CODE. Where's corporate America? Note: call Wayne Green.

--K4ZA

A Few More Words On Using WWV

Effect of high A K numbers on worldwide propagation

Last month, I presented information on the propagation data sent by WWV at 18 minutes past the hour. Remember, you generally want a high solar flux and a low A or K index. This month, I'll cover the effect higher K and A indices have on worldwide communications. This data should be used as a guide. The ionosphere, and it's relation to the sun, is far too complex to tell you when a band will be open to a certain country at a certain time on a certain frequency.

Higher solar flux values cause particles in the ionosphere to charge with clouds of negative ions. The more dense these clouds, the higher the frequency which will bounce off them. As soon as the sun comes over the horizon, it starts to build this more dense ionization, causing higher and higher Maximum Useable Frequencies (MUFs) as the day goes on.

I found, after a few years on the air, that MUFs were higher in the winter than in the summer. Why, I wondered, if the sun causes higher MUFs, did it not cause a higher MUF in the summer when it was more overhead in the northern hemisphere? The answer is that the sun does indeed make more ionization in the summer in the northern hemisphere. But, the more northerly sun also heats the ionosphere more, which forces these charged particles farther apart. So, while there are more charged particles, they are farther apart, making their density lower. And it's the density of these particles which causes the higher MUF. But, since there are more charged particles made in the summer, it does takes longer for all of them to dissipate, which gives us higher night time MUFs during those summer months.

Solar flares and corona holes often go hand-in-hand with sunspots. These solar flares and corona holes send out blasts of positive protons. Since the charged ions in the ionosphere are negative, a blast of positive protons from the sun can neutralize their charge and make the ionosphere less reflective. These waves of protons can be so intense that they trigger an event called a geomagnetic storm. Remember, the earth is like a giant magnet. As these charged protons come zinging toward earth from the sun, they are deflected by the earth's magnetic poles. The magnetic poles cause these protons to pour into the earth's ionosphere at the poles. The magnetic poles are not at the geographic poles. For instance, the magnetic north pole is in far northern Canada.

There are always some protons that come to the earth from the sun. They cause a doughnut of energy around the magnetic pole. Low proton emissions mean a smaller doughnut of energy. As the sun pours out more protons, as indicated by higher A and K indices, this energy ring grows. This brings out the famous "northern lights" or aurora. As a boy, I would often watch the aurora in the northern sky. You'd see it change colors and pulsate like a gossamer veil. It's very rare to be able to see aurora this far south, but it was very common in Michigamm where you might see 15-20 displays per year.

In general, the first thing you will notice as these indices start to climb is that signals which must pass through the ring of energy will have more and more QSB. We tend to call this polar flutter. As the ionospheric storm gets worse, the flutter can be so bad you can't understand what the DX station is saying. The pulsating aurora curtain is part of the reason for the polar flutter. Since the curtain is plusating at an audio rate, it causes a doppler shift in the signal which breaks up the audio.

As long as the K is below 2, most paths will be open. Paths over the pole such as JA, UA0, and OH will be gone when the K gets up to 4 or higher. East/West paths, like Africa to the east or Australia to the west, will show little degradation with a K of 4. But if the K climbs to 6 or higher, these east/west paths will also disappear. In all but the most major of storms, the north/south path to South America will remain open. Signals may get weaker, but only the most intense solar storms will wipe out the South American path. Indeed, north/south paths often improve at the start of a solar storm.

In general, as the K gets higher due to solar storms, the first paths to drop out will be paths to more northern latitudes. Using Europe and Africa as an example, as the K climbs, the first to drop out is northern Europe, such as Russia and Scandinavia. As the K indices continues up, the next path to go is central Europe. Last to go are the Mediterranean countries, like Italy and Spain. At times, Sicily will be the only thing you can hear from Europe. If the K climbs even higher, the North Africans will be gone. It will take a very major storm to wipe out all of Africa and/or South America.

Again, this data can only be used as a guide, not an exact plan as to where the band will be open. As long as the K is 2 or less, you can count on pretty good worldwide conditions. When it climbs to 4, forget any path that crosses near the pole. When the K is 6, it means there's no reason to point your beam north of an east/west line. When it gets up to 9, pull out a good book.

Experts say we are now within a year of this solar peak. Remember, the average cycle takes four years on the up side and seven years to go back down to the bottom. It goes up fast and comes down slow, with a broad peak at the top. Meaning band conditions will get better and not return to the present level for about three more years. Enjoy!

--N4ZC

PacketCluster News

Bt now, I'm sure you've all seen the increase in spots flowing through our system. CDXA is now sharing spots with DXers around the world via the Internet. I have access here at the K4MD node, and we have backup access from K4QC. All in all, it seems to be going well.

I realize some users prefer not to see spots from locations mutually exclusive to local propagation, or "garden variety" spots. Our PacketCluster has a feature called Filter, which allows user to customize their displayed spots without restricting access by others who DO seek that information. Each user who wants to set up a filter for his/her station should use the following syntax to set up this filter with their respective home node. And do it ONLY ONCE! It will not change until you change it. The syntax IS critical, so PLEASE be careful and pay close attention before hitting the ENTER key to send it to your node.

DX spot filtering may be done by mode (CW or SSB) and by band (160, 80, 40, 30, 20, 17, 15, 12, 10, 6, and 2 meters). The keyword ALL can be used for the band specification and for the DXCC prefix specification. Here's the proper syntax to use:

To filter out CW on all bands:
SET/FILTER/CW/BANDS=(ALL) ALL

To filter out all spots for 6 and 2 meters:
SET/FILTER/BAND=(6 2) ALL

To filter out common garden variety spots:
SET/FILTER/BANDS=(ALL) G,F,C6,6Y,KP4,EA

And remember--the syntax is critical! Don't add spaces where there are none. If the mode is not specified in your command, it will default to include both CW and SSB. When you've completed your input to the node, try it out by typing in: SH/FILTER followed by the prefix you wish to check.

Other PacketCluster items:
W4DXA is back on the air. The power supply failed on the 13th of November. Restoring power to the radios and TNCs brought the node back on-line. With Internet access, an increase of spots IS the future. Why not consider asking Santa for 9600 baud TNCs and 440 data radios? You'll love the difference! And, I've heard some of you talking about your packet gear--saying YOU have a good path to the node. But remember, the basic issue is "How well can the OTHER USERS hear your signal?" If other users can't hear you, all you're doing is adding to the sluggishness of our system by making packet collisions at the node. In packet collisions, no information survives! So, get those verticals up HIGH and run the MOST power you have available. It's that simple. Then the TNCs can do what they were designed to do--communicate, without collisions.

As always, if you have questions or comments, please let me know. I prefer e-mail, since my flying schedule can politely be called "variable" these days. Just use <K4MD@carolina.rr.com> and I'll get back to you. No e-mail? Just leave a note on the PacketCluster. No PacketCluster? What the heck are you reading this column for? Okay, I'm in the book; I think everyone has a phone....

--K4MD

The Back Page

In chatting up KA8FSM at the BVQ BBQ, John indicated he'd like to know more about "gray-line" propagation, even propagation in general. So, N4ZC's two articles should help. And keeping in mind many folks like to learn at their own pace, and like to do things on their own, I've collected a few relevant websites for further perusal—all solar-data-related. Enjoy.

http://www.sunspotcycle.com/
Movies and animations. Data and more data, but in easy-to-understand language.

http://users.otenet.gr/~sv1cns/propagation.html
One of the largest collections of links to other propagation sites, pure and simple.

http://www.sel.noaa.gov/forecast.html
Previously mentioned by N4UH.

http://www.sec.noaa.gov/info/index.html
You know you're in luck when you find articles written for "teachers," which this site has.

http://hyperion.advanced.org/15215/
Again, a page written for school teachers. But swell pictures, virtual models, & a wealth of factual data, even if it is written for sixth graders.

http://www.buck.com/tm11-666/1-10.htm
This site contains a military training manual on radio waves and propagation. Your tax dollars at work. Take a look.

http://www.fourmilab.ch/cgi-bin/uncgi/Earth/action?opt=-p
It's a real-time gray line map, with click & zoom features. Just in case you don't have a GEOCHRON clock or even a DX-Edge in your shack.

http://solar.uleth.ca/solar/www/fof2.html
Up-dated every 30 minutes, the site shows a recent high-resolution global map of F2-layer critical frequencies, which corresponds to the maximum radio frequency that can be reflected by the F2-region.

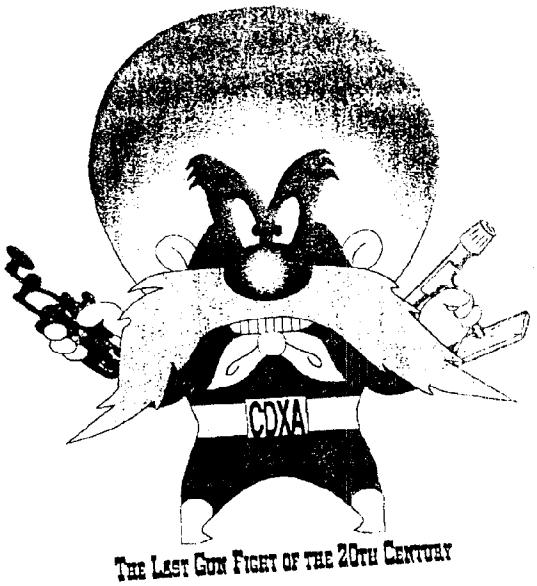
http://www.arrl.net/tis/bibs/prop.html
Surely there's already been a ton of articles on this topic? Here's a QST bibliography.

http://www.best.com/~swl/naswa/issues/199903/tech199903.html
A sample of what a short wave listener's club can do—they're only listening, not talking! Their archives contain the rest of the article.

Finally, if this sort of thing interests you, let the editor know. If you can't wait or don't want to wade through tons of material, here's a super-simple summary. Gray-line propagation refers to propagation along "the terminator," that "gray" area between daylight and darkness. It's this transition period between day and night that's so attractive and special to propagation. One reason is the D-layer disappears quickly on the night side, and has not yet built up on the day side. Real DXers know the best times to be on are sunrise and sunset.

Hey gang, it's contest season. Fast-paced communication through pileups, spanning continents & cultures. A veritable feast of fun. Treats & delights for the heart & soul of hams everywhere. Don't miss these up-coming events.

CQ Worldwide DX Contest CW **November 27-28**
ARRL 160-Meter Contest **December 3-5**



ARRL 10-Meter Contest **December 11-12**

Don't miss your chance at CDXA's award for the last big contest of this century!