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# WHITE



# NOISE

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Palm Beach Packet Group, Inc.  
PO Box 16471  
West Palm Beach, Fl. 33416-6471  
<http://www.qsl.net/pbpg>  
email: pbpg@qsl.net

President Doug Welcker WB4KGY  
Secretary Burck Grosse KC4UEV  
Director John Green WB4MOZ

Vice President Dick Schofield AF4OR  
Treasurer Marvin Kaskawits KD2CK  
Editor Bill Manley KB4XE

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## WHEN AM RADIO WAS KING

Doug Welcker WB4KGY

In the last issue you got the inside scoop about the Dayton hamfest from Bill (KB4XE). Well this was my year to return to the home of the worlds largest hamfest after twenty-seven years plus or minus. Last time I was there not all of the rooms were in use by the hamfest but the swap area seems about the same. It is the kind of swap area where you just get lost for three days then you emerge with more stuff than you really wanted and can't remember where the stuff you really wanted was located. Any way I digress from where we really want to go with article.

Now lets go way back when radio was still new and exciting - yes, believe it or not way before my time. Say 1927 Cincinnati Ohio and your shinny new Western-Electric 50KW transmitter is on the air feeding a "longwire", running north to south, suspended between two 300 foot towers, 600 feet apart. Remember Powel Crosley the inventor/manufacture who made everything from radios to automobiles? Well this was his baby. His philosophy on radio was interesting as he figured he could make cheaper radios if his radio station was a powerhouse so he set out to make his mark in the AM Broadcast industry. His next goal was what makes this so fascinating - 500,000 Watts.

Now this is where things get interesting. My wife and I were invited to visit this famous transmitter, WLW, by Jim Johnson (W4JBZ) along with several others. [You may remember Jim provides us the APRS location in Clewiston on his AM tower.] The transmitter site was not actually in Cincinnati but up I-75 about twelve miles next door to the famous VOA transmitter site of Bethany, Ohio which closed down a few years back. So what is the first thing you look for when you go to a transmitter station - the antenna of course and your in for a surprise with this one. This antenna is a single, omnidirectional, double diamond-shaped halfwave tower 747 feet high. It weighs 135 tons and was built by Blaw-Knox in 1933. Now don't let this 135 tons fool you. When you add in the additional weight caused by the stress from the guy wires it adds up to 900,000 lbs on the double bell insulator at the base. This antenna looks like the diamond in the ARRL logo and has only one level of eight guy wires at midpoint. It is 35 feet wide at the midpoint where its illuminated letters " W L W " make a great site in the evening.

Now that we have found the transmitter site the tour begins with a quarter mile walk to the antenna. You follow a path along the original coax line which was home made and about ten inches in diameter. Remember this is pre 1933 and coax was almost unheard of as everyone use open wire transmission line. At the end of the line is a little building which contains the matching LC matching hardware. These capacitors and inductors had to match the 50 ohm line to the 260 ohms of the tower and not arc. Can you imagine a building for your HF match box?

It is getting toward dusk as we gather back at the transmitter building. Try and imagine this. It's the late 1920s - you approach the red brick building - walk up the wide steps to the ten foot double doors. This place kind of looks like an old court house that you would see in the center of town - like Arcadia or LaBelle here in Florida. The door opens and your instantly back in the early thirties. Ever have you wife drag you to one of those old antique stores - remember how the have that smell of OLD and you don't really want to touch anything because the dust is so thick you didn't want to disturb it? Well you have just walked into the operating museum of WLW. This building has five generations of transmitters on site. On your left stretching for 35 feet is the original 1927

model Western Electric 7a 50 kW transmitter. This is the original 50 kW transmitter that WLW put in operation in October 1928. This transmitter has been maintained through the years and on New Years Eve the transmitter was brought back on line to bring in the year 2000.

And ahead standing larger than life was what we all had come to see. 500,000 watts vintage 1933. The total height of the transmitter is 15 ft tall by 54 feet wide with a catwalk running the full length. Some controls and metering were below the catwalk while most of the metering was above the access doors along the catwalk. WLW began construction of this new, first-of-its-kind 500,000 watt facility with the approval of the FRC (Federal Radio Commission). A new \$400,000 RCA 500 KW transmitter. A 75 feet square, concrete lined pond was built in front of the building for transmitter cooling. Water was pumped through specially designed, water cooled tubes, through a heat exchanger then out through fountains which sprayed the water into the air and into the pond. On January 1, 1934 the FRC authorized WLW to use 500,000 watts on an experimental basis using the call W8XO. As this station operated under a STA from the FRC it was assigned an experimental call sign thus W8XO. On April 17, 1934 the FRC issued a license to operate at 500,000 watts during regular hours under the WLW call letters. Finally on May 2, 1934 WLW began experimental 500 KW broadcasting as Mrs. Franklin D. Roosevelt threw the switch at the White House desk in Washington D. C. Some saw the WLW call letters as signifying "Whatta Lotta Watts".

Some more interesting facts - there were 17 daytime technicians to keep the transmitter running. A note from the operators log on May 2, 1934 : PA voltage of 11.7 Kilovolts with a PA current of 65 Amperes, which yields a DC input power of 747.5 KW.

Antenna current was 72 Amperes. Starting in early 1938 WLW used the air slogan "The Nation's Station". (With power like that I would think so as it was the only AM broadcast station to operated above 50 KW). From the basement you can view the plumbing for the water cooling. There are hundreds of feet to glass tubing filled with distilled water used as an insulator from the high voltage. You really have to be there to appreciate the scope of this operation. But since I know not all of you can, check out the Web Site by Jim Hawkins, <http://hawkins.pair.com/wlw.shtml> for some incredible pictures not only from today but original photos and page through the original manual. Jim includes lots of history in detail on this station but has listed information on many of the famous and not so famous AM & FM stations around the country. Unfortunately all good things must end. On February 28, 1939 WLW reverted back to 50,000 watts of power, ending the superpower experiments, except for the W8XO experimental license, allowing 500 KW operation between 12 midnight until 1:00 AM, which remained in effect until December 29, 1942.

So what does this all have to do with Digital Communications. Well, during W.W.II this station had a modification made to it's reference oscillator to give the station a very narrow shift FSK capability. This was a very secret operation where many AM stations around the country would demodulate an adjacent stations FSK and rebroadcast. Talk about a set of digi-peaters. This gave the Army a backup nationwide communication system.

The officers of the PBPG with their packet address and phone numbers are:

Doug Welcker, President  
WB4KGY@WB4MOZ  
wb4kgy@bellsouth.net  
(561) 686-3747

Dick Schofield, Vice President  
AF4OR@WB4MOZ  
dijo@flite.net  
(561) 582-0617

Burck Grosse, Secretary  
KC4UEV@WB4MOZ  
burck@msn.com  
(561) 622-4655

Marvin Kaskawits, Treasurer  
KD2CK@WB4MOZ  
kd2ck@ibm.net  
(561) 683-2930

John Green, Director  
WB4MOZ@WB4MOZ  
wb4moz@maco.net  
(561) 793-6093

Bill Manley, Editor  
KB4XE@WB4TEM  
bmanley@gate.net  
(954) 752-3908

**Breaking News**

Doug WB4KGY

As of this afternoon, August 15th, the Palm Beach Packet Group has a new antenna and transmission line replacing the original equipment at the ADEPLHIA site on North Lake Boulevard. Check you S-Meters and let me know is the signal strength is better or worse. Check the next issue of White Noise for the full story.

***The Good Old Summer Time***

*It's summer time again and the key people charged with the responsibility to publish the White Noise have flown the coop again. Much of the copy for this issue was originated by President Doug WB4KGY while vacationing on the Pacific Coast. Copy for the White Noise is passed to key people between Broward and Palm Beach Counties through the internet. This time it was transcontinental.*

*For the rest of the summer those who perform the mechanical duties to publish the White Noise will be unavailable. We expect to product the next issue sometime around October.*

*In the meantime we wish all to have a happy and restful summer. And, if you travel please drive safely. - ed.*

**PBPG MINUTES****June 8, 2000****OPENING AND REPORTS**

The meeting was called to order by President Doug Welcker (WB4KGY) at 19:30 hrs. All attendees were acquainted one with another and needed no introductions.

The Treasurer's report was not submitted in time to catch this edition of "White Noise" as a result of Marvin's (KD2CK) being on vacation.

The Technical Committee report was given by Doug.

1. The Technical Committee has not needed to visit the local switch by reason of lack of need. The switch has not needed service in approximately 3 months.
2. Andy (KF4ATC) did the final installation and adjustment of the Veteran's Administration Packet Radio Equipment.
3. Andy has built radio harnesses for the Orlando Lans new MITREKs.
4. Andy has started looking into testing Motorola MOSTAR radio.

**OLD BUSINESS**

A check was cut and delivered to QSL.NET at the Dayton Hamfest to cover expenses incurred in creating and maintaining our web pages.

PBPG has six Packet books available from the lending library. Please see Burck.

Handout for SWITCHES & NODES are available at the web site - [www.qsl.net/pbpg](http://www.qsl.net/pbpg).

**NEWS & INFO**

“White Noise” is at the printers. Look for it in your mailbox within two weeks.

The Dayton Hamfest was fantastic. If you have never been, you really should give it a try sometime.

**NEW BUSINESS**

There will be a summer break for the meetings – no meetings for July, August and September. Many of our members will be gone much of that time.

Larry Lazar (KS4NB) of the Wellington Radio Club has invited the PBPG to participate in Field Day with Digital Modes.

If you would like to get involved with our club, we could certainly use your help. Please notify Doug or any of the officers.

Memberships are being accepted this evening by Burck in the absence of Treasurer Marv Kaskawits.

**ADJOURN/BREAK/WORKSHOP**

The workshop was photo identification by infrared of different types of antennas with emphasis on failure modes.

The next meeting will be held on Thursday, September 14th. The meeting was adjourned at 20:30 hrs.

Burck Grosse (KC4UEV)  
Secretary, PBPG

**Broward Amateur Radio Digital Society****June 17-July 15, 2000**

June 17th Art, N2EPI, gave us an excellent Solar Power presentation. He covered what is available in the way of panels and what to watch out for. He told us how to calculate our requirements to size a panel and what kinds of panels to use. The question and answer session was very interesting. Art proceeded to prove he knows what he is talking about by providing the solar power for field day contacts the following weekend.

July 15th Bill, KB4XE, gave a program on the Maxon antenna for 6 meters. This was an EZNEC simulation on the Field Day version described in the June QST. Bill bought WinSmith and EZNEC at the Dayton hamfest and used the two programs to learn about antennas. We got a look at the screens from both programs plus an insight into the design of a very easy to build gain antenna. EZNEC says this antenna will have about 10 dBi 10 feet over ground, about 5 in free space. The pattern is

interesting. Al, K4BVL, built a Maxon designed 2 meters from the January issue of QST and brought it for demo purposes. He says it is an excellent performing antenna.

The July meeting Q and A touched on some of Art's program about taking care of batteries used for emergency purposes. Batteries can generate internal gas that can push out fluid. We discussed various ways of preventing this. One solution provided by Seymour, KC4NMY, was a battery cap that replaced water. It is made by Hydro Cap in Miami, 305-696-2504.

In several meetings we have fumbled trying to use the LCD Panel with the Overhead Projector. We may have figured out how to use the panel to best advantage. This will help making future presentations easier and better for the attendees.

The August 19 program will be by Jesse, KG4GEG, about keeping your ham shack and mobile atmosphere healthy.

73, Bob, N4CU