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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](mailto:pbpg@qsl.net)

President Doug Welcker WB4KGY  
Secretary Richard Schofield AF4OR  
Registered Agent John Green WB4MOZ

Vice President Burck Grosse KC4UEV  
Treasurer Marvin Kaskawits KD2CK

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## A Brief History of NIST Radio Broadcasts of Time and Frequency Signals

(Abstracted from <http://www.boulder.nist.gov/timefreq/general/museum/wwwtran.htm>)

(The National Institute of Standards and Technology)



Transmitting building of WWV used for the broadcasting of standard frequencies from December 1932 until destroyed by fire on November 6, 1940. This and other buildings of the NBS Radio Section were located on the Experimental Farm of the Department of Agriculture, Beltsville, Maryland, northeast of Washington. Antennas and transmission-line feeders can be seen in the photograph. Picture taken from Achievement in Radio, W.F. Snyder and C.L. Bragaw (US Gov. Printing Office, 1986).

December 1922, preliminary transmissions of standard frequencies in the shortwave band were made from the NBS Washington site to about 30 observers within 1000 miles of Washington. The WWV call letters were assigned in 1919.

March 1923, WWV began transmitting signals on a regular schedule from Washington.

January 1931, standard WWV frequency transmissions were begun from a new location at College Park, Maryland.

December 1932, the College Park WWV transmitter was moved to a 25 acre site at the Experimental Farm of the Department of Agriculture at Beltsville, Md.

November 1940, station WWV was almost entirely destroyed by fire of an undetermined origin. With salvaged and additional equipment, the station was back on the air in five days and continued operation from that site for several years.

January 1943, WWV was moved to a new site in Greenbelt, Maryland about three miles south of the Beltsville Research Station.

November 1948, NBS initiated standard frequency broadcasts in the shortwave band from WWVH located at Kihei on the island of Maui, Territory of Hawaii.

July 1956, experimental station KK2XEI (later WWVB) began standard frequency broadcasts in the LF region (60 kHz) from the NBS Boulder site.

April 1960, scheduled operation began on the 20 kHz standard frequency station WWVL at an interim site at Sunset in Four Mile Canyon near Boulder.

July 1963, station WWVB was moved to a site just north of Fort Collins, Colorado.

August 1963, station WWVL moved from Sunset to the site near Fort Collins.

December 1966, station WWV ceased operation at its Maryland site and began broadcasting from the site near Fort Collins.

July 1971, WWVH was relocated from the island of Maui to the island of Kauai (also in Hawaii). The station had been severely damaged by a hurricane in 1970.

July 1972, broadcasts from station WWVL were discontinued.

Broadcasts continue today from Colorado and Kauai. Shortwave broadcasts are at 2.5, 5, 10, and 15 MHz for both WWV and WWVH and at 20 MHz for WWV only. Aside from standard frequencies, WWV and WWVH broadcasts now include time of day (both voice and digital code), astronomical time corrections, marine weather alerts, geophysical alerts, and status information for GPS and Omega systems. The low frequency broadcasts of WWVB at 60 kHz involve only a digital time code, but the carrier frequency is referenced to the NIST frequency standard.

## **A PIONEER PASSES**

By Doug Welcker (WB4KGY)

This is about a fellow amateur you probably have never heard of but use some of his innovations every day. He is credited with inventing mobile radio, pagers, and cell phones. And you thought all the accolades went to Fred Link or Motorola or? Al Gross got into amateur radio at the ripe old age of twelve when he turned his parents' basement into an amateur radio station prior to WWII. He was one of the pioneers before the war concentrating on frequencies above 100 MHz. His specialty was the development of miniaturized components and built a number of hand-held transceivers some operating up to 300 MHz with ranges to 30 miles.

During WWII the office of Strategic Services (OSS) invited him to work with them. His assignment was to develop communications with the OSS agents working in occupied Europe without them being detected. Al developed a two way radio system that was code named "Joan and Eleanor" that allowed agents to transmit a signal up to high-flying aircraft in a narrow beam. Since this signal had no ground wave the Nazis were not able to triangulate to locate the agents location. Interestingly enough this system was kept secret till 1976 when the documents were declassified.

In 1949 he developed the pager and in 1950 the wireless mobile telephone but was told the world was not ready for such devices. That didn't stop his ideas from becoming popular. And who remembers Chester Could – that's right – he was the cartoonist of Dick Tracey. He asked Al for permission to use the concept of a wristwatch transmitter in his long running cartoon series and the rest is history.

Again this shows just how important it is to get the youth involved in Amateur Radio which could light some future spark and create the next new idea that we can't even imagine. Al passed on December 21, 2000 at the age of 82.

## From the Internet

Ray Ortgiesen, WF1B, has changed the way his RTTY contest software is distributed. From now on, RTTY by WF1B will be available free via the Internet. Users will pay a fee for support, however. WF1B is making the program's source code available and is soliciting suggested changes from programmers. For details, visit the RTTY by WF1B Web page, <http://www.wf1b.com/>.

## BOARD OF DIRECTORS MEETING MINUTES

PALM BEACH PACKET GROUP

JANUARY 6, 2001

The meeting was called to order by President Doug Welcker (WB4KGY) at the home of Marvin Kaskawitz (KD2CK) at 1:30 P.M. Present were Doug Welcker (WB4KGY), Marvin Kaskawitz (KD2CK), Burke Grosse (KC4UEV), Dick Schofield, (AF4OR), Andy Czermann (KF4ATC), Bill Manley (KB4XE), Joe Kuntz (WB4TEM), and John Green (WB4MOZ).

- 1) Yearly Treasurer's Report for year 2000  
Marvin's report indicated that treasury was effectively unchanged from 1999 meaning memberships and expensed were nearly even.
  - 2) ARRL Equipment Insurance  
After discussion it was decided that it would not benefit the club to purchase insurance. We have not incurred a lot of replacement costs.
  - 3) Disposal of Old Documents  
Marvin indicated a need to purge club records and destroy unnecessary paperwork. Doug will go through paperwork with Marvin and accomplish this task.
  - 4) How to Collect Dues  
After discussion it was decided that Doug & John will purge member lists for delinquent members and people who receive the White Noise without joining/ rejoining the club. John will supply Dick a list of delinquent dues paying members. Dick has volunteered to call these people.
  - 5) Future of the White Noise  
Much discussion was spent on this subject. Joe Kuntz suggested a web page for all members to access the White Noise. Bill Manley suggested a password for members only to access the White Noise website. Further discussion led to approaching other clubs for to see if they would be willing to combine their news letters with the White Noise and /or exchange articles with other clubs newsletters as a lot of good articles don't get a chance circulate outside of their respective clubs. It was voted that Dick and Marvin will approach the WPBARC Board for their input. John will approach the WRC and Joe Kuntz will approach BRARC.
  - 6) Level of Support from the PBPG  
It was voted and approved that the PBPG would continue to support Switches, APRS, and Backbones outside of the direct PBPG control.
  - 7) How Can We Interface Better With Other Amateur Radio Clubs  
This was discussed under number 5.
  - 8) Purchase of Equipment/Antennas
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After a short discussion the technical committee has been authorized to continue purchases as necessary.

- 9) Club Vision for the Future  
Several items were presented including expanding dissemination of information on digital modes that use computer sound cards.
- 10) Expansion of the Web Site  
Joe Kuntz has volunteered to work on expanding the web site.
- 11) The FADCA Connection  
Doug will investigate the status of FADCA.
- 12) Contribution to QRZ.Net?  
Bill indicated that the operator of QRZ.Net has not requested donations since last year. No contribution will be considered at this time.
- 13) Non Profit Corporation Annual Report  
Marvin will be forwarding this report to the State with the appropriate fee.
- 14) Disposal of Old Assets  
Bill Manley will forward a copy of the current inventory to Doug and Doug will dispose of old assets and update the inventory accordingly.

The meeting was adjourned at 4:10 P.M.

Respectfully

Secretary Dick Schofield (AF4OR)

## **P.B.P.G. MEETING**

JAN. 11, 2001

### Directors Present:

President	Doug Welcker (WB4KGY)
V President	Burck Grosse (KC4UEV)
Secretary	Dick Schofield (AF4OR)
Treasurer	Marvin Kaskawits (KD2CK)
Registered Agent	John Green (WB4MOZ)

President Doug Welcker convened the meeting at 7:30 P.M.

The treasurer's report was given by Marvin and presented later in this report.

Dick gave PBPG board meeting results. This report is listed in this issue.

Doug thanked Mike Michaels for his past assistance as vice president and as a board member for the past year.

Under technical items: Doug reported that the SWITCH developed a problem. John stopped by the SWITCH and found the computer dead. He took the computer home and found the power supply dead and replaced it with one donated previously from BillyBob (KE4GUM). The SWITCH was returned to operation the following day. Doug also reported that there is a problem with the BOCA SWITCH. This problem does not allow for forwarding to the Ft. Lauderdale BBS (W4HHP) or connection to the HWD node. This problem is being investigated.

Construction of our future site in western Palm Beach County has not yet begun. The official site will be known as Lake Harbor. In regard to the upgrading of the Clewiston APRS site, moving into the new building is expected to take place in the next few weeks.

Marvin reported he would talk to Bob Pasquale (WD9ATM) about writing an obituary for Larry Lazar (W4BKX).

Doug reports he has been scheduled to give a talk and demonstration on PSK31 at the WPBARA meeting on Jan 23<sup>rd</sup>.

Information on PSK31 was handed out which was followed with a short discussion on the operation of this new mode.

The meeting was closed at 8:30 PM.

Respectfully Submitted  
Richard Schofield Secretary

## **PALM BEACH PACKET GROUP MINUTES**

February 2001

The meeting was called to order by President Doug Welcker (WB4KGY) at 1930 Hrs. President Doug welcomed all and Jaha Tnomela (KF4HJT) was introduced as a new guest. Secretary Dick Schofield (AF4OR) was absent as he was in transit to a wedding.

Marvin (KD2CK) presented the treasurer's report and mentioned that several people had paid their dues since the last issue of White Noise was published. A copy of the treasurer's report is published in the issue. (Please look at your mailing label for your dues renewal date)

The Technical Report was given by Doug (WB4KGY). Conditions at the WPB SWITCH are back to normal as there were no problems nor was the site visited. The continuing problem with the BOCA SWITCH were resolved by Joe Kuntz (WB4TEM) during the middle of January when he visited the site and found the squelch adjustment on the 440 MHz radio that links to HWD was misadjusted. As reported last month the construction of the South Bay tower site is nearer to construction. This site has gone by various names in the past. In the future we will refer to it as the Lake Harbor Switch site. Lake Harbor is located in far west Palm Beach County on highway 27. If you are driving between South Bay and Clewiston you are passing through Lake Harbor when you drive over the Miami Canal, see a large water tank on the south side of the road, and a large pumping station on the north built into the dyke. The last item is the upgrade of the Clewiston APRS site. The new building has been installed including a generator. It is expected that within the next few weeks the move will be made and possibly leaving the digipeater off the air for some days.

Under News & Info it was noted that the FCC had completed the auction & reauction of "F Block" of frequencies for PCS providers. With final bidding complete the government will receive \$17 Billion that goes to the general fund. Also noted the next auction for the 700 MHz band (TV channels 60 to 69) has been delayed as increased lobbying by the cellular/mobile data industry who wants to displace the TV stations sooner than previously agreed. The other LEO (Low Earth Orbit) company, Globalstar, has lost its primary backer, Loral, and is expected to file for bankruptcy. Also noted, Doug gave a talk to the West Palm Beach Radio Club on January 23<sup>rd</sup> on PSK-31 and wants to thank Larry Lazar (President of the Wellington ARC) for providing a large monitor so all could view the demonstration.

Under New Business it was announced that the CD the club has was moved to Sterling Trust in January when it was time for renewal due to the ½ point higher interest rate. This interest rate gives us the equivalent of approximately seventeen one-year members. The PBPG in conjunction with the Wellington ARC has purchased PC Boards for constructing the interface between your computer soundboard and your radio for operating the many digital modes. These boards are available on a first come first serve basis. Bare boards are \$5.00 and kits will be under \$25.00. If you would like to participate call Doug at (561) 686-3747. If you would like to be involved in any of the functions of the PBPG please feel free to contact any of the board members.

Doug presented the Workshop this evening. He discussed the interface board noted in the above paragraph. Next month Workshop will be on dealing with the FCC since the many changes in the licensing procedures. The next meeting will be March 8, 2001. The meeting was adjourned at 2025 Hrs.

Respectfully submitted by Doug Welcker for Dick Schofield (AF4OR)

## **Broward Amateur Radio Digital Society**

February 17, 2000

It is common knowledge that a 40-meter dipole can be successfully use as a 15-meter dipole. The 15 meter pattern has lobes that are not the familiar donut dipole pattern but work well on an antenna parallel to the horizon. John, KN4HX, started the meeting with a EZ-NEC antenna simulation which showed that a two meter vertical has a good SWR on 440 MHz but the pattern is not longer optimized. In fact, using a simulation over perfect ground the horizontal pattern is 7 dB below the equivalent 1/4 wavelength vertical. The pattern shows a main lobe off at 60 degrees above horizontal.

Seymour demonstrated a Single Board Computer called FIRECARD [no connection with the name FIREWIRE ]. The board is a computer on a chip with FIREBASIC and an operating System. The device has on board peripherals like A/D, D/A, PWM, two com ports. It comes with a 1 Meg Flash Disk and room for removable flash cards of up to 1 Meg in Memory. Anyone interested in experimenting with Microcontrollers that wants a lot of features at a very low cost should consider starting with FIRECARD. Additional Information: [www.firewindandrain.com](http://www.firewindandrain.com)

The LCD display panel we have been using over the years for presentation now requires a 2-hour warm up before it will work with a VGA computer input. It will accept composite video without the long warm up. John used the VGA input and Seymour used the Composite input. It looks like we have solved our computer presentation problems. Presentations will be better we can use the much brighter Proxima ceiling mounted projector. Bob, N4CU, got that going after the meeting. We will use it in the future but have the LCD panel for back up.

Some of the usual BARDS group meets for breakfast on Sunday. The new breakfast location is the 84 Diner

Jim, WA4CSQ, will make our March 17 presentation on transmission line matching.

The White Noise web site is [www.qsl.net/pbpg](http://www.qsl.net/pbpg). The BARDS web site is <http://www.geocities.com/ResearchTriangle/Lab/7781/73>, Bob, N4CU