

January, 2010

# Solid Copy de KC7Z

Newsletter of the North Kitsap Amateur Radio Club

PO BOX 2268 -- Silverdale, WA 98383-2268

Web page: <http://www.nkarc.org>

January 2010

## From the Editor's Machine:

Your editor has to apologize for being late with this issue of Solid Copy. With the holiday season, it was hard to put a newsletter together and meet the demands of scheduled visits and family gatherings. I planned to work in earnest right after I woke up on New Year's Day and arrange the articles for publication. There were many titles and suggestions contributed by club members as well as "stuff" I found while surfing the Web (the newest sport requiring minimum physical exertion) in my January 2010 folder.

Alas, when I turned on the machine, I found it was infected with Gates-Fluena. If I typed in something, I could go have a cup of coffee with a roll, take a walk around the block and chat with a neighbor and hope the machine would be ready when I came back to it. Aha, I have a virus or a Trojan software. Spent a couple of days running various "remedy" software programs without any success. Search for suggestions on what could be the cause and possible remedies using an alternative machine on the home network gave me many alternative but no success in mending the machine. Fortunately, my data files were stored on other hard drives so I did the inevitable – clean installed Windows XP and Windows Outlook 2003 after a week of frustration. Now, I am back to working on this \$#!\*\*##\* machine.

It won't be long before the weather improves and most of us will be out either reworking our antennas or putting up new ones. This leads to the idea of presenting articles related to antenna systems. Hope they provide some ideas and information on improving an antenna or setting up a new one.

Bob, N7KTP

## Annual Christmas Dinner:

From: AL WARNER [adw52@msn.com]

Thanks to all those that were able to attend. You made it an evening to remember. To all those that were unable to make it - Hope to see you next year. And finally to all have a fun and safe holiday season.

Al -- KE7RPR

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## January Club Meetings

### **Board of Directors and Business Meeting**

Location: Fire Station #51 – Silverdale

Date: Friday January 8th

Time: 6:30 PM until complete or 9:00

PM

### **General Club Meeting**

Location: Fire Station #51 – Silverdale

Date: Saturday January 16th

Time: 10:00 AM to 12:00 PM

### **Project Night**

Location: Fire Station #51 – Silverdale

Date: Friday January 22nd

Time: 6:30 PM until complete or 9:00

PM

### **Club Breakfast**

Location: All Star Lanes – Silverdale

Date: January 30

Time: 09:00 AM

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Two antennas met on a roof, fell in love and got married. The ceremony wasn't much, but the reception was excellent.

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**From the VE Team:**

January 2010 VE Exam Session

Our first VE exam session of the New Year was January 2, 2010. We were worried that the date so soon after New Year's Day might limit attendance, 12 applicants showed up we had a busy session.

Nineteen element exams were taken. As a result, there were 7 new Technician licenses earned, 3 new General licenses, and 1 new Extra license. Congratulations to Kurt Roberts AE7EN on his new Extra license, and to Michelle Roberts KF7GWF on her new Technician license.

We had 5 VE examiners on hand, but even so, the paperwork required for the number of applicants kept everyone busy, and more VEs would have been helpful. We need more VE examiners, and appeal to club members to become involved in this work. It's very gratifying to help people obtain or upgrade licenses. If information is needed, contact Horace Ory K7ORY at 360-779-2215 or [ory001@comcast.net](mailto:ory001@comcast.net).

Horace Ory, K7ORY

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**RACES/ACS Net Sessions:**

The Kitsap RACES/ACS net is held on Sunday nights at 7:30 PM on the 145.43 repeater (-600 offset, 179.9 PL tone). Check in and be informed on emergency communications in Kitsap County.

The packet radio net in on 145.63 Mhz at 7:00 PM. Connect to K7EK-5 and type "convers" at the prompt. If you cannot connect to K7EK-5 directly, connect to the ELYSSA node on the same frequency and then connect to K7EK-5.

If you have 10meter capability, check into the HF Net on 28.330 Mhz USSB starting at 7:00 PM

There is a 6 meter FM net on 52.35 Mhz starting at 7:00 PM.

Connect to the various modes and verify your

connectivity. Be ready and available when the need arises.

**Ham Radio and Digital Communications:**

Last month, NKARC members were presented with a challenge. A newsletter article gave the definition and description of digital communications and asked the question "How long have ham operators been involved with digital communications?" The key to answering the question is knowing that digital communications is defined as a "sequence of pulses over a designated media" and then examining the various modes of communications available to the ham operator which are many and varied.

The first instinct would be to think that digital communications came to amateur radio after World War II when some adventurous operators took some old Model 15 and Model 19 Teletype machines and designed some electrical and electronic assemblies to convert the Teletype bits into signals that could be exchanged over the air. The young 'uns will think of packet radio and its offshoots like PSK31. After all, they required either an electro-mechanical assembly of a computer with its monitor to present the operator with intelligent information.

However, what about CW? CW is actually a "sequence of pulses" over a designated media to transmit information. Before Teletype machines and computers, it was the operator who transferred the data from the written or spoken word into the series of pulses to be transmitted over the media using the manual telegraph key. At the receiving end, it was the operator who translated the series of pulses into information available for use. Numerous publications state that soon after Marconi proved the feasibility of wireless communications at the start of the last century, adventurous individuals started around 1909 experimenting with various devices and sending telegraphic wireless messages. That's when amateur radio operators became involved with digital communications.

Congrats to Al, KE7RPR, who sent me his answer few days after the question was asked.

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Bob, N7KTP

**KC7Z - NKARC Meeting Minutes  
Thursday December 17, 2009**

Clearwater Casino

Meeting was called to order by President Al Warner at 1900.

**Awards**

11 awards were presented to individuals for their support of club functions. Those individuals who received awards:

- Carl – W7WCM      Bob – N7KTP
- Malcolm – NF7MWarren – N7SI
- Al -- KE7RPR      Kurt – N7MQI
- Don – NS7Q      Dave – N7ORM
- Russ – KI7PG      Jim – KE6OJ
- ED – AK7H

**Prizes:**

2010 ARRL HANDBOOK to Jim - KE6OJ

LOWBAND DXING to Lois – N7ZAD – rumor has it though that Bob ended up with it – lucky man

**Elections:**

Those elected officers and directors for 2010:

- President: Jim – KE6OJ
- Vice President: Ed – AK7H
- Secretary: Al – KE7RPR
- Treasurer: Warren – N7SI
- Director #1: Dave – N7ORM
- Director #2: Malcolm – NF7M
- Director #3: John – W7DAD

Meeting was adjourned at 1945.

Submitted by Al Warner – KE7RPR

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**QRZ QRZ....Know any potential members?  
Invite them to the next meeting. Plenty of cof-**

**fee and friendly greetings for all.**

**2010 Dues Are Due**

Time flies and it's time to renew club memberships again. Put a check for your dues in the mail and address it to the club (Box 2268, Silverdale, WA 98383-2268) or better yet, bring it to the club meeting at Firehouse 51 in Silverdale on Saturday, 16 January. Dues are \$15/year (\$12 for seniors, \$6 for students and \$10 for additional family members). You can download an application for your renewal by going to the webpage at <http://nkarc.org> and clicking on "Join NKARC" followed by "Online".

Your pre-written check will facilitate matters at the meeting and help avoid interrupting the activities with change-making, etc. Treasurer Warren will have the club roster handy and we can just check you off once paid.

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**Change Address or Call Sign?**

Please notify the club secretary to update the roster if you changed your address, call sign or e-mail address. Include your phone number so that you can be contacted in case of emergency or for assistance. This will insure that you will get the latest news via the club newsletter. Either notify Norm (N7ORM) at the meeting or drop a card to NKARC at PO Box 2268, Silverdale, WA 98383-2268. You can also send the changes via e-mail to Norm or Bob Tomas at bobtomas@sprintmail.com

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**Looking for Elmer:**

Did you meet Elmer before you got involved in amateur radio? Or did you meet him after you got your license and he gave you good advice on how to start? Think back of the help he was in learning what those strange term like propagation meant. There is somebody else who now needs help. Why not introduce Elmer to that person? Better yet, you can become Elmer and help that person learn what this great hobby is all about.

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.A jumper cable walks into a bar. The bartender says, "I'll serve you, but don't start anything."  
Deja Moo: The feeling that you've heard this bull

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before.

**Keep Kitsap Green:**

Help the environment by properly disposing of discharged household batteries. This includes alkaline, regular zinc carbide batteries, and batteries with heavy metals such as ni-cads and lithium ion.

The Solid Waste Facility on Hansville Road accepts the batteries as part of the county-wide recycling program. Ron Sefton, N7EM, reports the Poulsbo recycle center also accepts used batteries, and again, not lead acid types. The site is located immediately north of the Hwy 305/Viking way intersection. This is to the east of the "Walmart/Hwy 3 interchange". Otherwise, bring them to the meeting for transfer to the disposal site.

Do not bring lead-acid batteries to the meeting for disposal. Take them to the Solid Waste Facility near Port Orchard.

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**Ham Station for Sale:**

The following is forwarded by Jerry K9CZZ. Might be a good source of equipment for someone just starting in ham radio.

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There is a complete HF/VHF ham station with antenna tower available for sale in the general Seattle area. The owner is no longer able to utilize the ham shack due to medical problems and he and his wife would truly like to sell all of the equipment. I do not have a complete list of the gear but here is the contact information.

Thanks, 73's, Happy New Year, & God Bless!  
DocBob/NL7UH

Owner: Joe Clayton/W7KGQ  
Contact: wife Dorothy for details  
Location: Snohomish, WA  
H Phone: 360-568-5763

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**Worldradio Magazine**

This is a neat publication. It is FREE so click on the URL below and register if you are not already a member.

WorldRadio Online posts a new issue on the twentieth of each month, and each has a column on propagation by Carl Luetzelschwab, K9LA. You can download it at,

<http://www.cq-amateur-radio.com/WorldRadio.html>

and read Carl's article on "The Impact of Deep Solar Minimum on 160m Propagation." Carl's column begins on page 28 of the current December issue. The January 2010 issue should appear online on December 20.

At least look at this month's issue and decide for yourself..

Warren , N7SI

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**Special Event Recommendations:**

Club president, Jim(KE6OJ) asked if anybody had any suggestions for a historical event that could be the basis of an Amateur Radio Special Event that could be conducted during the year. The event should be significant enough to be published in QST and merit attention from the national amateur radio community.

With the military presence in the county, someone may be aware of an event that would be considered as the basis for an event. I hear many stories of the clandestine radio operations conducted in the county during World War II.

Time for the history buffs to come out of hiding and share their knowledge. Contact the club officers with your suggestions. As the only stupid question is the one that is not asked, so is it that the only stupid suggestion is the one that is not presented. We're waiting to hear from you.

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Bob, N7KTP

## **Failures in antenna systems**

Any of the problems below can result in destruction of a bandswitch or other amplifier components.

### **Tuners**

Antenna tuners are a common problem. Many tuners are over-advertised, and will not handle the power claimed. Some models also have poor or unreliable connections in inductors. Many tuners have poorly designed power meters with peak meters that don't indicate true peak power. If you look at the antenna tuner review in the February 2003 issue of QST, you will see power rating problems exist with many tuners.

User adjustments also greatly control tuner power ratings. People adjusting "T" network tuners often forget to use the maximum possible capacitance required to match the load. Using less than maximum capacitance will reduce tuner power handling capability.

A very brief arc or open circuit in a tuner can cause a momentary very large change in antenna tuner input impedance. This large impedance change reflects back into the amplifier, and if the tank is momentarily unloaded a catastrophic bandswitch or capacitor arc will occur.

The worse possible change is one that results in a condition of high impedance at the amplifier tank input, in which cases tank voltages can reach many times the normal operating values.

Always be sure your tuner has reliable internal connections, and is tuned correctly (maximum capacitance that allows matching the load). Be sure the tuner can handle the peak transient power from your exciter-amplifier combination.

On an ICOM 775DSP radio, the peak transient power from that radio, even when set to 50 watts, was over 300 watts! While that pulse would not show on a normal power meter, it clearly showed on peak storage meters. When

you drive an 8877 amplifier with that radio, the few milliseconds of peak driving pulse would trip the very fast grid-current-fault protection system in my amplifier.

When the loading is advanced to prevent the grid trip from activating, the transient peak amplifier out is over 5kW. This would cause an antenna tuner like a large old KW Johnson Matchbox, to momentarily flash-over! When the tuner would arc, the amplifier tank would arc.

The entire system would have to be able to handle the exciter's 300-350 watt peak transient (amplified through the PA gain) in order to not have reliability problems!

### **Antenna and Feedline Failures**

Antennas can have arcing problems from bad connections or other defects. If an antenna fails to accept power or changes impedance intermittently, even if for a few milliseconds, it can trigger an arc elsewhere in the system. That point may even be in an amplifier tank system or in an antenna relay. Traps can arc, as can other components like gamma capacitors or matching networks. Be sure antenna wires are not able to brush up against other objects in the wind.

Be sure all connectors and hardware are tight, and connections are dry and well-insulated. Normal UHF connectors, even though rated less, handle much more power than type N connectors. UHF connectors are much less likely to develop intermittent connections, and actually have LESS loss below 50MHz. The only potential drawback for HF use is UHF connectors are less water resistant than properly installed N connectors. Waterproofing can be cured with proper waterproofing.

Antenna problems will show if you use a peak-storage meter, or a meter with a long hang-time. The only amateur radio products that have enough response time and hang time are the Ameritron meters used in the AWM-30 meter and ATR-30 and 20 tuners. Any momentary faults in antennas immediately show on the re-

flected power of those meters when they are in the peak mode.

### **Why 50 ohm coax?**

Standard coaxial line impedance for r.f. power transmission in the U.S. is almost exclusively 50 ohms. Why this value was chosen is given in a paper presented by Bird Electronic Corp. Standard coaxial line impedance for r.f. power transmission in the U.S. is almost exclusively 50 ohms. Why this value was chosen is given in a paper presented by Bird Electronic Corp.

Different impedance values are optimum for different parameters. Maximum power-carrying capability occurs at a diameter ratio of 1.65 corresponding to 30-ohms impedance. Optimum diameter ratio for voltage breakdown is 2.7 corresponding to 60-ohms impedance (incidentally, the standard impedance in many European countries).

Power carrying capacity on breakdown ignores current density which is high at low impedances such as 30 ohms. Attenuation due to conductor losses alone is almost 50% higher at that impedance than at the minimum attenuation impedance of 77 ohms (diameter ratio 3.6). This ratio, however, is limited to only one half maximum power of a 30-ohm line.

In the early days, microwave power was hard to come by and lines could not be taxed to capacity. Therefore low attenuation was the overriding factor leading to the selection of 77 (or 75) ohms as a standard. This resulted in hardware of certain fixed dimensions. When low-loss dielectric materials made the flexible line practical, the line dimensions remained unchanged to permit mating with existing equipment.

The dielectric constant of polyethylene is 2.3. Impedance of a 77-ohm air line is reduced to 51 ohms when filled with polyethylene. Fifty-one ohms is still in use today though the standard for precision is 50 ohms.

The attenuation is minimum at 77 ohms; the breakdown voltage is maximum at 60 ohms and the power-carrying capacity is maximum at 30 ohms.

Another thing which might have lead to 50 ohm coax is that if you take a reasonable sized center conductor and put a insulator around that and then put a shield around that and choose all the dimensions so that they are convenient and mechanically look good, then the impedance will come out at about 50 ohms. In order to raise the impedance, the center conductor's diameter needs to be tiny with respect to the overall cable's size. And in order to lower the impedance, the thickness of the insulation between the inner conductor and the shield must be made very thin. Since almost any coax that \*looks\* good for mechanical reasons just happens to come out at close to 50 ohms anyway, there was a natural tendency for standardization at exactly 50 ohms.

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### **Birds Famous General Purpose Wattmeter**

A field-proven portable, insertion-type instrument designed to measure both forward and reflected CW power in coaxial transmission lines under any load condition. With a full-scale accuracy of  $\pm 5\%$ , it accurately measures RF power with low added VSWR and insertion loss. QC (quick change) type connectors and a full range of plug-in elements provide a wide choice of frequency ranges and power levels giving the Model 43 amazing flexibility. Two extra elements can be stored in the housing, one on each side. The Model 43 is easy to use and simple to service in the field.

- Accurate CW field power measurement over 450 kHz to 2.7 GHz and 100 mW to 10 KW.
- Uses industry standard Bird elements with space to store 2 additional within the meter housing
- Rugged metal housing for the most demanding environments
- Quick Change (QC) connectors to minimize the need for adaptors when making critical measurements

If you are interested in what the Bird elements look like and how they are constructed, the following website has a complete article on disassembly, repair and reassembly of one. Very interesting:

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<http://www.repeater-builder.com/projects/bird-element-tour/bird-element-tour.html>