The Heterodyne

Bulletin of the West Valley Amateur Radio Association
An Affiliated Club of the American Radio Relay League

West Valley Amateur Radio Association, W6PIY— http://www.wvara.org
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February 2009

Next Meeting: Wednesday, 7 to 9 p.m., Februuary 18, 2009 at the American Red Cross, 2731 North First Street at Plumeria (between Trimble and Montague Expressway) in San José. Speaker: Edison (Ed) Fong, WB6IQN — Subject: "DBJ-1 and DBJ-2 Antennas"

About Our Program and Speaker: Our guest speaker for the February meeting will be Edison (Ed) Fong WB6IQN. An active member of our club, he is the inventor of the DBJ-1 and DBJ-2 antennas that were featured in the February 2003 and March 2007 issues of QST. The DBJ-2 won the Plaque of the Month Award. There are over 1600 of these antennas in use today. About half of them are used by hams and the other half by government and commercial entities. They are available at Ham Radio Outlet (HRO) stores. In this month's presentation, Ed will first review how the original DBJ-1 works and then how he managed to convert the original DBJ-1 into a portable antenna. He will bring his own test equipment and prove to you this configuration really does outperform other antennas in its class. He will have a limited number of antennas for sale at $20 each.

Ed Fong was first licensed in 1968 as WN6IQN. He later upgraded to Extra Class with his present call of WB6IQN. He obtained the BSEE and MSEE degrees from the University of California at Berkeley and his Ph.D. from the University of San Francisco. A Senior Member of the IEEE, he has 9 patents and over 30 published papers and books in the area of communications and integrated circuit design. Presently, he is employed by the University of California at Berkeley as an instructor teaching graduate classes in RF design and is a Principal Engineer at National Semiconductor in Santa Clara working in high frequency and microwave circuits.

RadioFest 2009: March 7– 8: See http://www.radiofest.org/. This two day event is the ARRL Santa Clara Valley Section Convention.

International DX Convention: April 17-19: located at the airport Holiday Inn, Visalia, California. Sponsored by the Northern California DX Club (NCDXC), this event is the premier DX gathering in the world and participants travel from dozens of countries to attend. For more information on the event, see http://dxconvention.org. For more information on the Northern California DX Club, see http://ncdxc.org.

Northern California Contest Club (NCCC) Contest Academy, April 17: will occur during the first day of the International DX Convention. Contest Academy will be held on Friday, April 17, 2009, 1 to 5 p.m. The cost will be $10 to attend, which includes a contest resource kit.

Inspired by a strong growing interest in contesting at the International DX Convention, the Northern California Contest Club will provide will be a valuable learning experience for attendees. The primary goal will be to cover the basics of contesting, drawing from NCCC's 38-year reputation as a recognized participant and leader in amateur radio contesting.
Program topics will be of interest to all participants, and will be presented by some of NCCC's most experienced contesters.

You can read more about the Contest Academy at: http://dxconvention.org/?page_id=204

WVARA Raffles, January 21 and February 18, 2009: The club has instituted a "member raffle" to encourage members to renew their memberships promptly. There are two raffles, one at the January meeting and another at the February meeting. Participation in the raffle is limited to those who have currently active memberships — those who have paid their dues!

On January 21, Bill Rainey, K6WAR won a 2009 NARCC Repeater Directory and Chuck Kamas, AD6CL won a DX Engineering baseball cap. Congratulations!

For our February 18 meeting, the prize will be a 2008 ARRL Handbook, the last known handbook to contain companion software. Companion software for the 2009 ARRL Handbook is now sold on a separate compact disc.

North Dakota QSO Party, March 21: Stations working on their Triple Play Award http://www.arrl.org/awards/ or Year of the State QSO Party Award http://www.arrl.org/awards/ysqso/ will want to be on the air on Saturday, March 21 as North Dakota – always a rare state – will hold its first QSO Party in 14 years.

"The North Dakota QSO Party (NDQP) is certain to put North Dakota on the map – and hopefully off the Needed List of many a deserving amateur," said ARRL Contest Branch Manager Sean Kutzko, KX9X The contest is sponsored by the North Dakota Radio Association (NDRA) with help from several other North Dakota clubs.

Newly appointed North Dakota Section Manager Lynn Nelson, W0CQ, told Kutzko that interest has been high for starting the event up again. "I had many hams asking me to kick off a State QSO Party," Nelson said. "We are encouraging North Dakota stations to work 20 meters in the afternoon hours. This will help to tackle the demand of the state – and its many rare counties – for several amateur radio awards, including the ARRL's Triple Play and Year of the State QSO Party."

The North Dakota QSO Party runs from 1700 UTC Saturday, March 21 until 0100 UTC Sunday, March 22. All bands from 160–2 meters (except 60, 30, 17 and 12 meters) are acceptable. Complete rules and forms can be found on the NDRA Web site http://k0ln.com/. Do not miss your chance to work one of the rarest states in the country – get in on the fun of the North Dakota QSO Party!

WVARA Tuesday Night Net Check-ins — X = checked in; # = net control.

Call Sign	Name	Jan. 13, 2009	Jan. 20, 2009	Jan. 27, 2009	Feb. 3, 2009
AB6XS	Kevin	X		X	
AD6YU	Loren		X	X #	X
K6EBN	Eben	X	X	X	
K6QFO	Mike	X			
K6WAR	Bill	X		X	X
KD6VOR	Marv		X	X	X
KF6EMB	Svend		X	X	
KF6UTE	Casey	X			X
KG6MYR	Harry			X	
KG6SEA	Tom	X	X		X
KK6VF	Kevin	X #	X #	X	X
W6HOC	Howard	X	X	X	X
W6RPH	Doug		X	X	X
W6TQG	Phil		X	X	X #
WB6KHP	Dave	X	X	X	X

Club Net: Tuesday, 8:30 p.m. on our club repeaters:

WVARA Repeaters (W6PIY)			
Band	**MHz**	**PL**	**Status**
6 Meters	52.580-	151.4 Hz	Operating
2 Meters	147.39+	151.4 Hz	Operating
1.25 Meters	223.96-	156.7 Hz	Operating
0.70 Meter	441.35+	88.5 Hz	Operating
0.23 Meter	1286.2-	100 Hz	Operating

All Fail Down— by Larry Baxter
(From EDN, November 27, 2008, page 70)

Computer terminals were failing all over town — not all towns, just those with low humidity, such as Las Vegas, which was particularly hard-hit. I was called in as a consultant for a company there to repair the failing units. The terminals included an 8-bit microcontroller, an LCD, a membrane keypad, and the usual other stuff. Most of the terminals were wall-mounted. Users would unwittingly shuffle across a rug, picking up as much as 30 kilovolts across 300 picofarads of body capacitance, discharge it through the keypad, and reset the device. This resetting would cloud the unit's memory. The problem was not affecting terminals in the company's offices in high-humidity locations, such as Oahu and Miami.

I looked at the schematic, found nothing suspicious, and asked the engineers what they had tried. "Everything," they responded. "Northing worked." "Everything? Could you give me some details?", I asked. "The reset line sort of snakes around the board," they answered. "We added a few 0.1 microfarad capacitors on it. The path of the zap through the keypad did not get directly to chassis ground; we added many short braid connections. We scoped the power rails and added more bypass capacitors. We added decoupling capacitors to the AC input because, if the chassis gets a pulse, it could couple into the computer board through the AC-input connection. We added some 10-kilohm isolation resistors on the logic driving the keypad.

We added more 0.1-microfarad capacitors here, too, in case the pulse was finding its way back through the drivers. Nothing worked. We tried everything."

I mulled the situation over for a minute. They had done all the right stuff. The terminal should be working. I could think of no other patch. "Can I look at the terminal?", I asked. "Well, here's one," they replied. "Is this the one with the fixes in it?" "We took the fixes out," they said. "None of them worked."

It was time to break for lunch anyway; my brain does not work well if calorie-deprived. At lunch, after a glass or two of Cabernet, another question occurred to me. "Listen, just to make sure, when you say you took the fixes out," I said, "you mean you put all the changes in, did not fix it, and then took them all out, right?"

"No, not exactly. We tried them one at a time. None of them worked," they answered.

I was filled with great happiness and amusement — and, no, not because of the Cabernet I had consumed. "After lunch," I said, "we will put them all back in — all at the same time."

Sure enough, when we installed all six fixes, the terminal was bulletproof. Pulling them out one at a time, we found the two critical fixes and wrote the ECO (engineering change order).

The company had fallen into an insidious logic trap: the assumption that the failure has one cause instead of several. One at a time, the fix would help somewhat, but, in most cases, some help is hard to recognize. After installing all the fixes, I could easily see the effect of removing one. Now that I knew how to identify this sneaky trap, I began to see it in many other instances.

Note: Larry Baxter, of Lexington, Massachusetts, is a consulting analog and embedded systems engineer at Capsense.com . You can reach him at larry@capsense.com .

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