



Newsletter of the
Twin City DX Association

Volume 4, Issue 3

Fall, 2007



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"Much knows the one who
knows nothing, if he has
the sense to be quiet..."

Leif, SM5BFJ

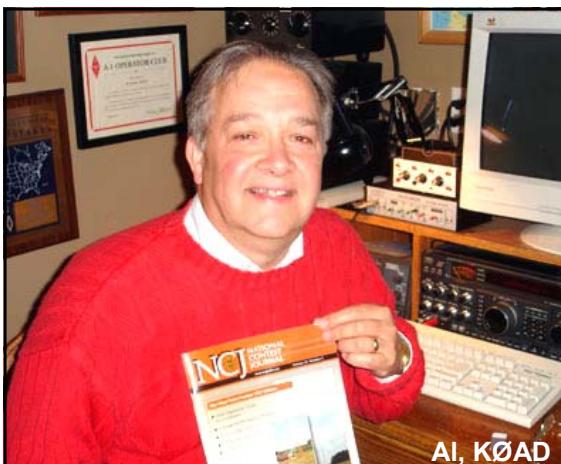
Gray Line Staff

KØIEA
KØJUH
KØRC
WØBV

The GRAY LINE REPORT

DXing from Minnesota - Land of 10,000 Lakes

KØAD IS NEW EDITOR OF THE NCJ!!



AI, KØAD

Volume 1, Issue 1 of *The National Contest Journal (NCJ)* was published in January, 1973 by Tod Olson, KØTO, who was then President of the Minnesota Wireless Association (MWA). Tod believed "that a genuine interest exists for more information about Radio Contests. Most of us have an interest in learning about other stations, operators, etc. that we find in competition with us."

Tod relied on the National Traffic System (NTS) to gather claimed scores in order to print tables of likely winners months before the official results were published by the contest sponsors. Publication for the first three years was done with typewriters and offset printing. Each issue was 16 pages in 5" x 7.5" format. After printing, issues were assembled at Tod's home in Long Lake, MN and mailed.

It was an MWA publication.

Fast forward 35 years - the *NCJ* has evolved, but continues Tod's original vision of purpose and content. Now published six times per year by the ARRL, *NCJ* is highly popular among contestants and DXers.

Now, the *NCJ* has come back home. Al Dewey, KØAD is the current President of the MWA. Al's *NCJ* editor duties officially begin in January - with Volume 36, Issue 1. We wish Al the best of luck, and hope he finds his assignment both fun and reward-



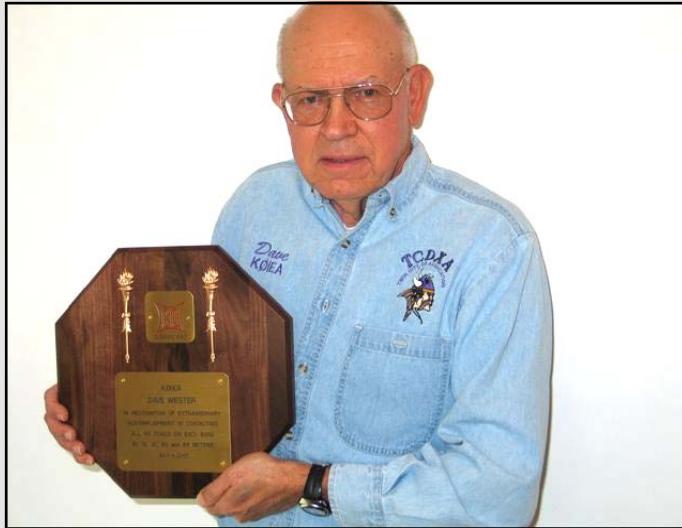
<u>Editor</u>	<u>Years</u>
Tod Olson, KØTO	1973-1975
Pete Grillo, WØRTT	1975-1978
Tod Olson, KØTO	1978-1979
Randy Thompson, K5ZD	1979-1980
Tom Taormina, K5RC	1981
John Crovelli, W2GD	1981-1982
Rick Niswander, K7GM	1982-1983
Randy Thompson, K5ZD	1983-1984
Dave Pruitt, K8CC	1985-1987
Randy Thompson, K5ZD	1988-1989
Trey Garlough, N5KO	1990-1994
Bruce Draper, AA5B	1994-1996
Dave Patton, NN1N	1997
Dennis Motschenbacher, K7BV	1998-2002
Carl Luetzelschwab, K9LA	2002-2007
Al Dewey, KØAD	2008-

Member News

Many say...5BWAZ IS THE ULTIMATE DX AWARD!

After chasing CQ zones for years, two TCDXA “old timers,” both licensed back in the 50s, finally snag #200 for 5BWAZ! Dave, **KØIEA**, and Jim, **KØJUH**, worked their last zone on 80 meters during the winter of 2006-2007. Dave worked **VU7RG**, Lakshadweep Is., **Zone 22**, and Jim worked **DXØJP**, Spratly Is., **Zone 26**. Congratulations Dave and Jim!

Congratulations Dave and Jim!

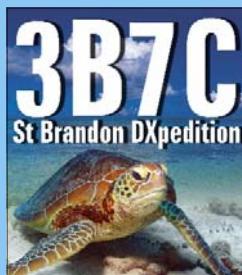


To: All TCDXA Members
Re: Dollars for DX

The mission of our club is to support DXpeditions with financial donations. When you consider what it costs to plan and carry out a major DXpedition, you realize that our small donations are insignificant in comparison to the overall expense. We are aware of this, but that doesn't lessen the fact that we help defray some of the costs, and along with other contributors, help make many operations possible.

Over the years, the stay-at-home DX community has enjoyed the hard work of those who plan and organize DXpeditions. Many of us would not have worked that rare one, if not for the DXers who were willing to make a personal sacrifice in terms of time and money, and make the journey to Heard, Peter, Bouvet, and the other “most needed” entities.

On behalf of all the DXpeditions we've helped out, please accept our sincere thanks for supporting this effort with your membership and annual dues. You are appreciated more than you realize.



Sponsored DXpeditions

- VKØIR - Heard Island '97
ZL9CI - Campbell Is. '99
A52A - Bhutan '00
T33C - Banaba Island '04
3B9C - Rodrigues Is. '04
TX/C - Chesterfield Is. '04
CP6CW - Bolivia '04
3YØX - Peter I Is. '05
K7C - Kure Island '05
5A7A - Libya '06
VU4AN - Andaman '06
VU7RG - Lakshadweep '06
XU7MWA - Cambodia '06/'07
S21EA - Bangladesh 2007
J2ØRR/J2ØMM - Djibouti '07
BS7H - Scarborough '07
N8S - Swains Island '07
3B7SP - Agalega Island '07
3B7C - St. Brandon Is. '07
5JØA - San Andres Is. '07



Ye Old Boat Anchor

by Jim Junkert, KØJUH

Have you ever wondered about the term “boat anchor,” and how it became the term we use to describe vintage radios? Well, stay tuned folks, and we’ll explain that, and also, introduce you to Dennis, KØE00, collector of some of the classiest boat anchors you’ve ever laid eyes on. We checked Answers.com for an explanation of the term, and here’s what we found: *“In amateur radio, ‘boat anchor’ is a slang term used to describe something obsolete, useless, and cumbersome; so-called because metaphorically it’s only productive use is to be thrown into the water as a boat mooring.”*

This is not always the case. Many will take exception to this definition, because old radio equipment can be restored to mint condition, and operate like the day it came off the production line. These old radios are far from being obsolete and useless. In fact, many owners regularly put the equipment on the air, and communicate with other hams, using the popular CW, SSB and AM modes.

Dennis, KØE00, is one of these owners. His collection of vintage radios is considered by many to be world class. Ride along, as we visit his shack and take a look at some of these beautiful vintage radios and transmitters. As you look at the collection, you will notice that some of the equipment is homebrew. Dennis actually got into homebrewing before he got started collecting vintage radios.

Over the first 20 years as a licensed ham, he built three receivers, designed and built a 500w CW/SSB transmitter, a solid-state 5-band transceiver, a dual-band transverter published in September 1968 QST, a compact 1500w linear amplifier, several keyers, TR switches and other assorted gadgets too numerous to mention.

Dennis says “all that building got me to the next stage of my life - electronics as a career.” He worked as an engineer and/or manager for Control Data, Micro Component Technologies, LTX and currently with Wavecrest Corporation.



Collins 30K-1, Johnson Desk KW,
and HQ-180AC receiver.



B&W 5100B w/SSB exciter, NC-300, Viking I and HQ-150, SX-100MKII-B and AF-67, Globe King 500C transmitter.

In 1965, Dennis joined the US Navy for 4 years, with two cruises to Vietnam. While in the Navy, he met Brian Harris, WA5UEK who he has managed to stay in touch with and remain best friends with over all these years, thanks to amateur radio. Much to his dismay: “I got Brian involved in collecting radios some 13 years ago, and today, his collection is bigger than mine, if you can believe that...”

Dennis started collecting boat anchors in 1991, while living in San Jose, California. He began with the CE 100V, and shortly thereafter started receiving Electric Radio - a magazine for vintage radio collectors. “I enjoy restoring and operating old radios, and especially operating AM, whenever I get a chance.”



James Millen 500w CW & AM transmitter, 812s modulated by 811s, & National HRO-5RA1 receiver.



Collins 32V2 and 75A1, 32V3 and 75A3



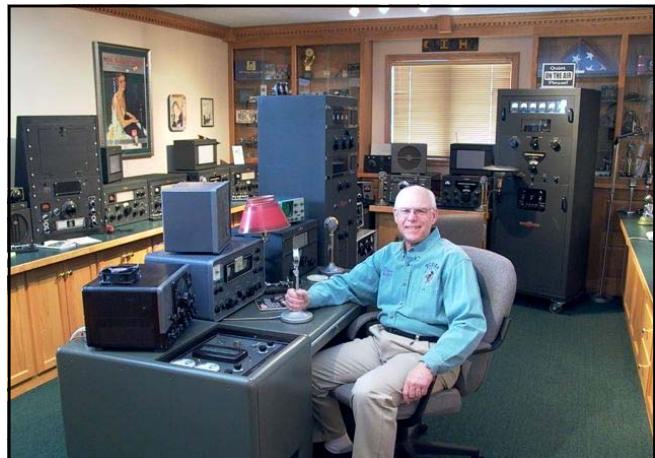
Display case with misc. gear from the 40s & 50s.



Collins S-Line, National NCX-5 w/remote VFO & HRO-500 receiver , and Johnson Courier amplifier.



1958 Cosmophone 35 dual tuned 80m-10m transceiver (one of 32 known to exist) and a National NC-303 receiver.



Dennis, KØEOO

Technical Troubleshooting Tips from Alvin the Chipmunk

How do you resolve intermittent Rotator problems? Easy.....

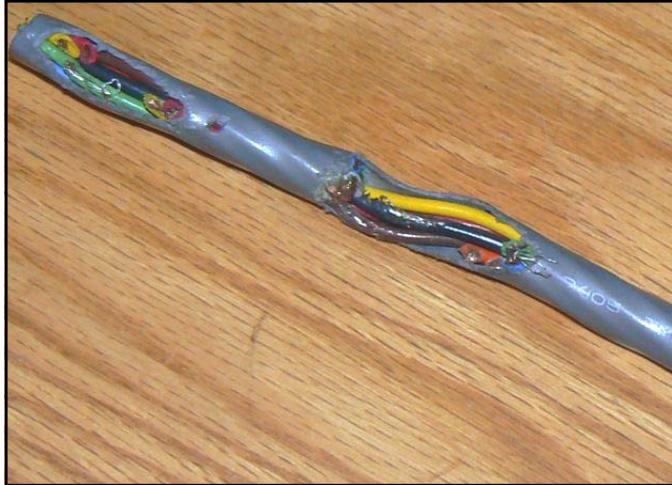
* Get rid of the Chipmunk that chewed up your rotator cable.

* Replace the rotator cable, and make sure the opening where the coax and rotator cables enter your home is sealed off.

* Don't procrastinate sealing off the opening!

And now the details. When **KØJUH** started having problems with his rotator, they were intermittent. Some days the rotator would turn freely, and other days it was very sluggish.

When it stopped working completely, Jim decided it was time to replace it with a new Yaesu 2800 and a new run of rotator cable. It was when he was replacing the cable, he discovered the badly chewed wires at the point where it passed through the basement wall.



This is **NOT** so cute!

Now it was clear why the rotator wouldn't work, but what was responsible for the "chewing?" And then Jim remembered something. Weeks earlier, he had discovered acorns hidden all over the basement – in hunting boots, boxes, and jacket pockets. A chipmunk had decided to make the basement his home.

The chipmunk had been entering and leaving the basement through the opening for the coax and rotator cable – before Jim got around to sealing it off. Once the opening was sealed off, the chipmunk became a prisoner, trapped in the basement, and not the least bit happy about it.



Isn't he cute?

Angry and frustrated, chipmunks chew on whatever they can get their teeth on, and in Jim's case it was his rotator cable.

There's a happy ending to this story. The cable damage was repaired, and replacing the rotator was not necessary. The old Yaesu 2800 rotator is still in the tower, and working fine. The Chipmunk was released unharmed, and lives to "chew" another day.



Recently spotted: If there were an award for the most antenna hardware in a small city lot, it might go to **W9RPM** of La Crosse, WI. John's antennas cover the bands from 160m to 440mHz, including a 2el 80m yagi!! See www.w9rpm.com for more details on this amazing station.

A ***BIG*** welcome to new TCDXA member Ted Tsengas, K2RCA!

What do N5IN and the DIGI-KEY Corporation Have in Common?

They both call Thief River Falls home. And, if you think Bemidji is way up north, grab a map and look up N5IN's QTH. Now, that's "way up north!" Living in "God's country" at this far northern latitude has not hurt Ron Stordahl's performance when it comes to DXing.

He currently is on the Honor Roll, with 334 confirmed, and is active on all the bands and modes. In addition, he hosts the very popular and busy DXSPOTS.COM N5IN AR-Cluster <http://www.dxspots.com/>, as well as DXSPOTS.NET N5IN-2 CC-Cluster <http://www.dxspots.net>.

Ron's interest in ham radio provided the springboard for what has become Digi-Key Corporation today. While in college, he assembled and began selling a digital electronic keyer kit for sending radiotelegraph code for ham radio operators. It was called the Digi-Keyer.

After obtaining his PhD in Electrical Engineering from the University of Minnesota, Ron returned to his hometown of Thief River Falls, Minnesota. The keyer kit was discontinued, and he began selling electronic components in 1973. From those very humble beginnings, the small "way up north" company has become one of the fastest-growing electronic component distributors in the World. DigiKey is now among the top 10 electronic component distributors, and has 1800 employees. Visit their website at



Inventory



N5IN home QTH. Tower with Tennadyne T12 shown.



Packaging

<http://www.digikey.com/> for more information on the company.

Ron is a very busy guy, and when he takes time away from the business world, you'll usually find him involved with one of his many pastimes. In addition to DXing and contesting, he enjoys bike riding (he peddles nearly 2000 miles each summer), skiing and flying. He also produces CD's which you can find at <http://www.consonantworks.com> that feature Indrek Laul, an Estonian pianist friend.



Here's Ron enjoying yet another one of his favorite hobbies beyond DXing and radiosport. He's shown here with his turbocharged Mooney 252, which he says "flies high and fast!"



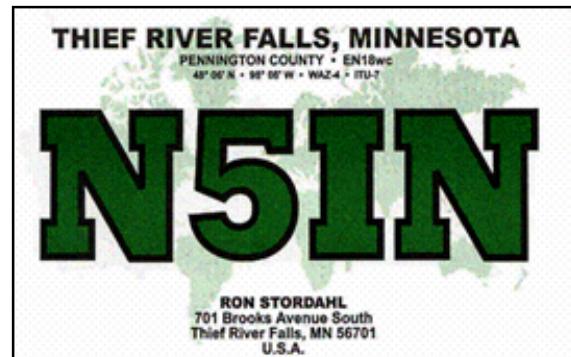
Bicycling is one of Ron's passionate pastimes. He rides nearly 2000 miles each summer!



Ron's Zero-Five brand 80m vertical. He says that it works "exceptionally well." Ron is in the process of converting it to a 160/80m vertical, using a motorized coil at the 40-ft. level that is controlled from the shack.



Here's Ron at Big Sky, Montana getting ready to enjoy one of his favorite winter pastimes. He has skied down from the top of the tall mountain in the background (Lone Peak) - many miles down.



Building a 4-square in the Forest

The NØIJ 80 meter 4-square Project

John Baumgarten, **NØIJ** completed installation of his new 80m 4-square on August 17th. John lives in Duluth, where his hillside QTH is not suited for large antennas. But, he also owns a vacation home on Lake Minnesuing in northwestern Wisconsin. There, he has plenty of space for antennas, with 12 acres of (mostly) level ground. There's just one catch – 95% of his acreage is heavily wooded.

John began this project in early July. The first step was to locate a level area, suitable for the array. Then, with the help of Terry, **WØTVD**, they carefully surveyed the area, and located the four corners of the array. 3650 kHz was selected for the design frequency, with the hope that the array would cover both the CW and SSB DX portions of the band. Holes were then dug, and 1 ½" pipes were planted in each of the four corners, using concrete.

The next step was to lay down 32 quarter-wave radials at each of the four element locations. These 128 radials required over 8500 ft. of #18 wire. All radials were crimp-soldered to ring terminals at one end, and secured with 7 in. landscape "hairpins" at the far end. The radials were connected to the pipes, using Comtek radial plates.

Next, came the back-breaking work. John "hired" his grandson to help him clear enough trees to allow erection of the vertical elements. They worked for two hot days in early August to clear two parallel openings – one for the two north side elements, and the other for the two south side elements.

The main feedline was another challenge. The distance from the shack to the array is about 475 ft. John was able to locate a used piece of 50 ohm 7/8" hardline. This cable is in excellent condition, and came with N-connectors installed on both ends. It was advertised as a 300 ft. piece, but turned out to be almost 400 ft. The additional required length was covered with a fresh piece of direct burial 50 ohm LMR. A 3-conductor 18ga. cable was run parallel to the feedline to control directional switching of the array.

The final 3-day build/tune/test phase began on August 15th. With assistance from Bob, **WØBV**, the four DX Engineering model DXE-80VA-1 verticals were assembled and installed. These are 42 ft. verticals, with a 3-wire capacity cage sloping from the top (see photo, next page). The custom hardware is very well designed and superbly manufactured. Everything was a precision fit. The assembly manual is also above average.



The two north side elements.



John begins assembly of the vertical elements.



John and Bob raise one of the verticals. The design of the DX Engineering tilt base makes this job easy.



Close-up of the DX Engineering tilt base. John added the Comtek plate for a neat and reliable radial installation.



John carefully tunes each vertical for resonance at 3550 kHz.



The electrical length of each vertical is extended, using three 20-ft. wires sloped down from the top of the antenna. 20 ft.-long Dacron ropes are used to maintain equal wire spacing, and to form a pyramid configuration. The result is a stable capacity hat, that is repeatable for all verticals.

Two key factors in 4-square performance are exact symmetry in element location and element tuning. John took great care to tune each element to resonate at 3550 kHz. (The resonant frequency of the array rose to the design frequency of 3650 kHz, after the four elements were connected to the phasing box.) The design of the DX Engineering vertical offers a convenient way to adjust overall element length, by sliding the main vertical element up or down on a smaller diameter, 3 ft.-long stub, located right at the base (a very slick tuning method!).

John chose the Comtek model ACB-4 hybrid quadrature coupler for phasing control. Each vertical element is connected to the phasing box, using a quarter wave length of 75 ohm foam coax (Belden 8213). A fifth port on the phasing box requires connection of a 50 ohm dummy load, which is used to dissipate any power caused by an imbalance in the electrical symmetry of the array. When the array is working well, with all elements equally resonant, there is typically less than 5% of the transmitted power dissipated by this load.

It was finally time to test the new array. John is an avid contester. He hosts multi-op operations in the CQWW DX contests. Here are John's observations: "Our first real test for the antenna came during the CQWW SSB contest. Unfortunately, conditions on the low bands requiring a polar path (especially to the east) were difficult. We basically couldn't hear anything north of central Europe. On the plus side, when the band was open for us, we had little problem raising anyone we could hear. Southern Europe and African stations were worked easily, and there were no loud stations that would CQ in our face as we have experienced in some past contests."

Another very strong indicator was that stations were about the same readability using the 4-square as they were with the Beverages, which are good performers. With our old sloper, this was definitely not the case. The path to JA was not great, but we worked all that we could hear--the same with Pacific/VK/ZL. Many large pileups to the Caribbean/South America were quickly cracked. Bottom line is that it works! Too bad we can't move everything about 200 miles south."

During a more recent test of the array, John made 1418 QSOs in the 2007 ARRL SSB Sweepstakes. Of that total, 659 were made on 80m! John said, "I always felt strong on 80. The 4-square proved that it is an exceptional SS antenna as well as a DX antenna." 9

The MWA Contest Corner

ed. - MWA contester, Bob, KØRC, recently pulled up stakes in Minnesota and moved to North Dakota for the ARRL CW November Sweepstakes weekend. With the help of Glenn, WØGJ, Mark, KØMJ, and Ron, N5IN, he operated from Grand Forks, ND during the contest weekend.

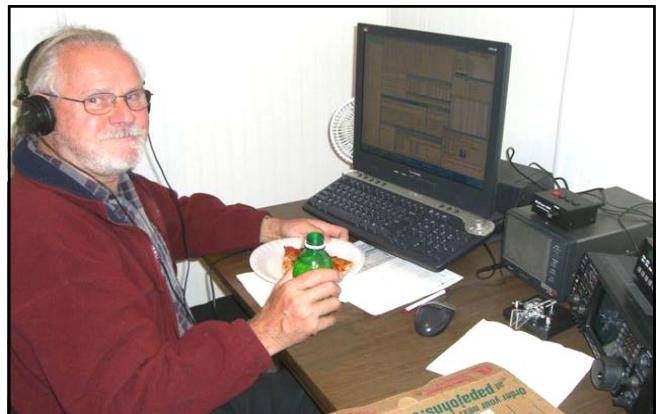
In a full story that will appear later in the NCJ, Bob describes all of the events that took place on that special weekend in early November. We are happy to share with you some excerpts and photos from that story.

Each fall, the amateur bands spring to life during the fourth weekend in October. This flurry of activity is the result of the CQ World Wide DX SSB contest. It's the kick off event of a new season for the contesting community. Following closely is the ARRL CW Sweepstakes, a domestic contest held during the first full weekend of November.

In the ARRL Sweepstakes contests, the 80 ARRL sections are the only multipliers used to calculate your final score. The three most difficult sections to work from our area seem to be the Canadian Northern Territories (NT), and the US states of Wyoming (WY), and North Dakota (ND). For many years, I thought it would be fun to operate a contest from our neighboring state of North Dakota, and be one of the sought after multipliers.

From 1984 through 2003, Bill Straw, WBØO was a very active contest operator from Bottineau, ND. His relocation to Tucson, AZ in 2004 has left a noticeable void of contacts with North Dakota. There are several other stations active in contesting, including KEØA in Grand Forks and K7IV in Minot, but the small number of ND amateur radio operators continues to make it one of the rare multipliers.

Getting a "clean sweep" of all 80 Sections in Sweepstakes is a common goal, although only a small percentage of all competitors accomplish this task each year. It requires a combination of strategy, skill, and luck.

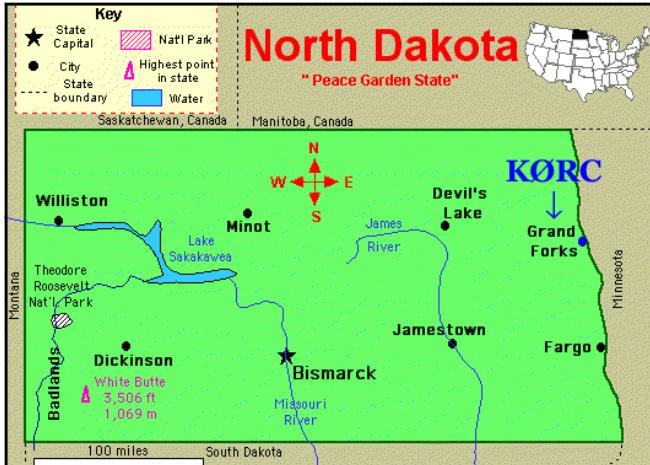


Bob, KØRC, QRV from North Dakota in 2007 SS

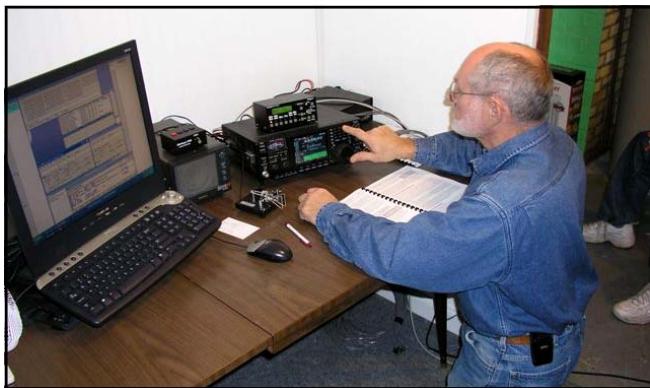
Earlier this year, I made inquiries to see if I could find a North Dakota location where I could operate. I did not receive any replies, until I made a second plea on the MWA and TCDXA reflectors. Glenn Johnson, WØGJ sent a message suggesting I talk to him about my ideas and plans. He told me he owned a small house in Grand Forks, that is located a couple of blocks from the University campus. His son Mark, NØMJ is attending college there.

Glenn said there were no plans for a tower, but he had recently placed an order for a BigIR vertical from SteppIR. Our first discussion about operating from North Dakota was in the middle of May. Neither of us was certain the antenna would arrive in time for the contest season. The "problem" is that the entire SteppIR product line is enjoying enormous popularity, and their delivery times were being quoted as 4 to 6 months after order. On top of that, they had many orders from the 2007 Dayton Hamvention and the factory was in the process of relocating to a larger facility. These facts added more uncertainty to a firm delivery date.

Months passed. Actually, five months passed. One evening, a message arrived from Glenn proclaiming "North Dakota is on the air!" The vertical had arrived, and he installed it along with 4,000 feet of radial wires. He said it tested perfectly on all bands - 80 through 6 meters. I started making plans to operate the 2007 ARRL CW Sweepstakes from North Dakota. It was only a couple of weeks away!



I made it to Glenn's QTH in Grand Forks right at 2:00pm. He told me he had just arrived a few minutes earlier, and he was starting to set up the equipment. He showed me the BigIR vertical, and all the radials he had laid out in the backyard. There was wire everywhere!



Glenn, WØGJ tests the contest setup.

Everything was setup and ready to go with a half hour to spare. Glenn gave me a quick lesson about the operation of the BigIR antenna. It uses a stepping motor to change the length of the radiating element. This variable element is enclosed in a fiberglass tube. The antenna controller connects to the transceiver, and automatically adjusts the antenna length as you move your VFO across the bands. You will find all the detail about this very interesting antenna at: <http://www.steppir.com/Catalog.html>.

At 4:00pm sharp, I hit the F1 key and begin calling CQ on 20 meters. I continued to call CQ for what seemed like an eternity. No one was answering my calls! After 5 minutes, without a single answer, I changed strategy. I grabbed the

knob and started searching for stations to work. The first station I came across was N6TV. I called him once, and he immediately responded with my call and then sent his report. I returned with my Sweepstakes exchange: TU N6TV NR 001 U KØRC 62 ND. There was a noticeable pause, and then a confirmation. I tuned up the band and called N1LN. Again, I got an immediate response.

A pattern began to develop. I called it the “pregnant pause.” It occurred at the end of nearly every contact. I would send my report and there would be a distinct hesitation, before I would get their confirmation. It was obvious that many stations were caught off guard with my ND section. It was striking enough that I removed my headphones and used the speaker during several contacts so Glenn and Ron, N5IN could hear it for themselves. Some operators even sent back “ND??” for a confirmation. In 40+ years of contesting, I have always sent MN.

Glenn and Ron went out for dinner, and I focused on getting stations into the log. The fellows returned a while later to see how I was do-



The BigIR vertical antenna by SteppIR.

ing. It was difficult to tell them I had only logged 35 contacts the first hour and 23 contacts the second hour. The bright spot was working **KH7Y** in the Pacific section on 15 meters. But, these rates were terribly low, especially considering it was the beginning of the contest when the rates are normally the highest. It took me three and a half hours to put the first 100 contacts into the log. I felt like I was going nowhere, fast!

Nine hours into the contest, I had run out of adrenaline, and the bands were thinning out. I made my last contact with **N6RK** on 80m at one minute before 1:00am. I went upstairs, found the bed, and quickly fell asleep.

Six hours later, I was back on the air. I was surprised to find 80m was already alive with many signals. My first contact was with **NM2L** in Georgia, followed by 2 hours of contacts from all directions. I was working stations on the East Coast, down into the Gulf Coast, out west into California, and up into central Canada - pretty much all directions around that vertical! The QSO rate slowly increased as I made contacts, until I took a break at 11:30am. I had close to 400 entries in the log. It was time for breakfast!

I had 75 of the 80 Sections logged, and only needed NLI, WY, MB, NL, and NT. I had another 9 hours to go, and figured a sweep was within my reach. I found both NLI and WY stations on 40 meters. The pileups on both NL and NT stations were tough. Jay, **VY1JA** was working stations by call areas in order to manage the chaos. Unfortunately, I never heard a single MB station the entire weekend.

One of the attractions for me to travel and operate from North Dakota was to experience what it is like to be a sought after station. To be on the receiving end of the pileup. But, this never happened during the entire weekend. I realized something was amiss, when I saw a DX Cluster spot with my callsign and the attached note "YET ANOTHER ND!" I would later discover there were at least 6 other North Dakota stations on the air; all of us participating in the CW Sweepstakes contest this year. Glenn was right. North Dakota was on the air!

The contest was over at 0300 UTC, 9:00pm local time Sunday night. Signals abruptly disappeared from the bandscope, and headphones as the clock rolled past the hour. I ran some log-book reports which showed I had 600 contacts. This was quite a shortfall from the optimistic goal of 1,000 contacts I had set for myself. **KEØA** and I would later trade notes about the contest, and he told me he logged over 400 contacts. The 1,000 QSO goal this year will be shared by us, operating our stations from Grand Forks.

The next morning, I disconnected all the cables and buttoned up the shack. My log has been uploaded to the eQSL Card Center and Logbook of the World systems. I received many messages the following week thanking me for the ND multiplier. Some fellows indicated it was the last section they needed for their sweep.

There were also many comments regarding how strong my signal was on both 80 and 40 meters. This positive feedback gives me a new appreciation for vertical antennas.

I would like to thank Glenn Johnson WØGJ, Ron Stordahl N5IN, Rod Klug KEØA, and Mark Johnson NØMJ for their help. Their encouragement made this a new (and fun) experience in my amateur radio career. I also want to thank my wife, Mary, for single-handedly taking care of all my "livestock" chores at home, while I operated from North Dakota!

73 de Bob – KØRC/Ø in ND
(for the 2007 ARRL CW Sweepstakes)





TCDXA DX DONATION POLICY

The mission of the TCDXA is to support approved DXpeditions with financial donations. Annual membership dues are the major source of funding for this activity.

The Club Treasurer is responsible for the initial evaluation of donation requests received by the club from DXpedition organizers. The request will be judged by how well DXpedition plans meet several key considerations (see, below). If the DXpedition is deemed worthy of support, a recommended donation amount will be sent to the membership for approval. The Club Treasurer will communicate the decision of the membership to the requestor.

Key Considerations for a DXpedition Funding Request

DXpedition destination

Ranking on *Most Wanted Survey*

Most wanted ranking by TCDXA Members

Logistics and transportation costs

Number of operators and their credentials

Number of stations on the air

Bands, modes and duration of operation

Equipment: antennas, radios, amps, etc.

Stateside QSL mgr and/or foreign mgr

Website with logos of contributing clubs

QSLs with logos of contributing clubs

On-line logs/pilot stations

Up front cost to each operator

Support by NCDXF & other clubs

LoTW log submissions

Success of previous operations by same group

Valid license and DXCC approval

Funding mode: USA and/or foreign financial address

Guidelines for Level of Funding

\$600 - \$1000	A major operation in terms of operators, equipment, duration of stay, and transportation. Requires elaborate planning and a huge budget. Always ranks high on Most Wanted Survey. Examples: VKØIR, 3YØX.
\$400 - \$500	Major to modest operation in terms of operators and equipment. Ranking on Most Wanted Survey can vary from high to low. Examples: D68C, 3B9C
\$200 - \$300	Modest operation in terms of operators and equipment. Usually ranks low on Most Wanted Survey. Examples: T33C, K7C
\$ (open)	Special requests. Examples: CP6CW, XU7MWA

- end -

