



ARRL 160 Meter Contest 2014 Results

By Gary Breed, K9AY (k9ay@k9ay.com)

A Fine Winter Weekend on Top Band

Following publication, a bug in the log-checking software was discovered that had caused a number of stations to lose credit for certain multipliers. Version 2.0 of the writeup includes corrected scores in all categories.

Once the 2014 ARRL 160 Meter Contest ended, I was struck by how the contest seemed so normal — with a pleasant, familiar feel to it! Band conditions were typical — up and down with a few good openings and other times that were not so productive. Atmospheric noise was generally low, with only a few weather-related challenges across North America. Activity was very high in the first hours of the contest, with the usual slowing as participants worked their way through the available QSOs. Many familiar callsigns were logged, along with plenty of brand-new 160 meter explorers. The “Gentleman’s Band” attitude was present, as well. I received (and sent) many extra greetings from both close friends and casual acquaintances. It sure was nice to copy “Hi Gary” along with “5NNxx”! Didn’t seem to slow down my rate, either.

Before discussing the highlights of this particular contest, let’s look at a couple statistics. There were 1175 logs submitted, down about 4 percent from last year, but still a number similar to most of the past dozen runnings of this event. Participation increased rapidly when Europe, then Japan, expanded access to the 160 meter band, and the trend continues. With propagation off a bit at sunspot maximum, there is only a slight decline in contest entries. Over the next few years as the sun quiets down once again, we will no doubt see 160 meter activity rise to previous levels or higher.

The brand new class of Single Operator Unlimited categories was introduced, which meant that single operators with spotting assistance no longer need to enter the Multioperator category. A total of 375 contestants chose Unlimited entries at one of the three power levels. Along with the 44 Multi-op logs, 35.7 percent of all entries allowed spotting. By comparison, the 2013 contest had 27.3 percent Multi-op logs. It appears that growing interest in the use of operating assistance, particularly the CW *Skimmer*-based Reverse Beacon Network (RBN, reversebeacon.net), justifies the addition of this new category. You can see all the top scores in the accompanying tables, so I’ll just spotlight some of the noteworthy races and performances.

The New Unlimited Categories

First is the inaugural set of Single Operator Unlimited categories, which had several highly competitive performances. At QRP power, Dale, WC7S handed out 236 QSOs from his Wyoming QTH, which he says was three times as many as he made in any of the past 10 years. Close behind was Vlado, N3CZ in the NC section. Although well behind the winners in the traditional QRP category, the QRP Top Ten are still the trailblazers of this new entry category.

Top Ten - Single Operator Unlimited, QRP

W/VE	
WC7S	30,615
N3CZ	29,400
WR5O	27,434
KC9EE	27,360
K4DZR	17,568
KA3EHL	9,360
K8ZT	8,184
K9YC	5,053
NM2O	4,800
KØVK	3,243

In the Unlimited, Low Power category, Chad, WE9V, dominated the field with a margin of victory of more than 59,000 points. His was the second-highest score of all low power entries, single or multioperator. Part of Chad’s success was his choice to set up a temporary operation at his mom’s farmhouse in a quiet rural part of WI. Real quiet. “My TX antenna noise was an amazing S3. So all but about 5 QSOs were with listening on the TX antenna.” Once past Chad’s strong finish, 2nd to 6th places were tightly bunched, with a spread of less than 10,000 points, just 6-1/2 percent.

Top Ten - Single Operator Unlimited, Low Power

W/VE	
WE9V	227,484
W1NT	164,948
NØAT	160,188
K8BL	159,120
WØDLE	156,408
NØIM	150,535
N9CK	125,214
AA5AM	123,984
WA4PSC	103,950
N3UA	98,189
DX	
XE2B	11,844
HA4XH	416
G3VGZ	288
US2WU	220
HB9CPS	180
R7IA	50

The Single-Op Unlimited, High Power winner was another Midwesterner, Craig, K9CT, in IL, followed by a well-experienced operator in the assisted categories of many contests, Charles, K3WW, in EPA. Both of these operators had scores similar to the middle of the Top Ten in the highly competitive “unassisted” Single Operator, High Power category. As with all the Unlimited categories, the High Power results include Top Ten finishes from a wide geographical range, including westerly stations KØRF in CO at #4 and W5TM in OK at #7.

Top Ten - Single Operator Unlimited, High Power

<i>W/VE</i>	
K9CT	321,600
K3WW	307,294
W8MJ	267,623
KØRF	245,106
WØAIH (KØTG, op)	240,300
VE3RZ	236,900
W5TM	236,456
W8FJ	209,032
VE3TA	200,687
K1RO	199,595
<i>DX</i>	
XE2X	59,640
GW3YDX	16,836
IQ9UI (LY5W, op)	13,502
S51V	11,480
PI4DX (PD1DX, op)	10,488
DL2SAX	7,140
EA1SA	5,624
GWØGEI	4,356
EA7PP	4,092
EA6URA (EA3AIR, op)	3,886

The Single Ops

The Single Operator, High Power results were an eastern affair; with a back story of sibling rivalry and the pesky kid next door. Peter, K3ZM, came out on top with the highest score in any operating category. He was followed by up-the-coast competitor Jon, AA1K, who in turn, edged out Peter’s brother Jeff, K1ZM, who operated from Cape Cod, MA rather than the VY2ZM PEI superstation. Making up the rest of the Top Ten are more of “the usual suspects” among strong 160 meter contesters.

In his [3830 Soapbox novella](#), Peter managed to sum up how Single-Op, High Power works in this contest: “I worked every ham in the great state of Alabama and the Republic of Texas. I worked everybody in AZ but Barry Goldwater. If I could just get a normal opening to EU at their sunrise, it could be a game-changer.” And that’s just how it turned out ... this time.

Top Ten - Single Operator, High Power

<i>W/VE</i>	
K3ZM	479,454
AA1K	407,591
K1ZM	405,314
NO3M	364,387
VE3EJ	355,300
VA2EW	325,728
W3BGN	304,219
WF2W	303,975
K1LT	300,475
K1LZ	297,696
<i>DX</i>	
XE2S	89,528
ZF2AH	82,786
M5O (G3LET, op)	19,624
G4AMT	17,480
OK2W	7,888
OK1TN	6,912
GM4ZUK	6,848
DF2PY	5,248
DL4CF	2,064
DK2CF	1,216

Single Op, Low Power is an entirely different game. 150 watts or less is not “brute force” that will overcome QSB, noise and marginal propagation to DX locations. This bunch needs to rack up QSO numbers and all the section multipliers possible, while keeping an ear out for any DX openings good enough to punch through. Allen, N2KW, had the top score from WMA (at K1TTT), followed by Charlie, NØTT, in MO. Charlie had 25 more QSOs, but Allen’s 12 additional multipliers pushed him to the top. Rick, WB8JUI, in OH was not far behind the two leaders.

Top Ten - Single Operator, Low Power

<i>W/VE</i>	
N2KW	237,846
NØTT	198,660
WB8JUI	169,162
KØTI	158,517
WØUO	157,332
K8FH	156,262
W9SN	153,971
NE9U	153,716
VE3MGY	150,024
K9MMS	142,106
<i>DX</i>	
XE2YWH	4,690
SP3HLM	1,794
G4L	864
DL5ZB	280
EA2SW	220
DL5CL	216
CO8DM	216
OK1CZ	180
EI3KI	176
HA7JQK	96

QRP is always a fascinating exercise on 160 meter: It’s amazing what you can work, but at the same time, frustrating for what you can’t! Big antennas and hard work get results, as shown by the #1 finish by Bill, KVØQ, from CO. Glen, WØGJ, in IA was a worthy competitor, capturing the second place spot. Apparently, the challenge of QRP was too much for most operators,

as the scores dropped off dramatically near the bottom of the Top Ten list.

Top Ten - Single Operator, QRP

W/VE	
KVØQ	153,300
WØGJ	139,938
WD5COV	112,963
K4FT	97,056
KA1J	78,798
W3TS	71,360
N7IR	57,760
K9TF	55,338
N2WN	51,606
N8BB	39,105
DX	
OL1A	162
JH4UYB	32

Multi-Operator Categories

The ambitious gang at W2GD had a convincing win in Multi-Op, High Power. The installation and maintenance woes of their coastal NJ site have been well-chronicled over the years. This time, all the pieces and parts held together long enough to run up a nice score. In the ONE section, VE3JM’s team took second place, having a nice multiplier total, but well behind W2GD’s number of QSOs.

Top Ten - Multioperator, High Power

W/VE	
W2GD	444,465
VE3JM	369,725
N1LN	366,352
NØNI	342,996
N2CEI	334,290
N3RR	299,145
K7CA	252,822
VE2OJ	232,608
W4HZ	212,970
K3MJW	173,826
DX	
PJ2T	141,526
OL7M	13,884
8J2VE	1,938
LY2XW	1,540
OG9W	240

Multi-Op, Low Power is a category with potential for some fun regional competition, as well as friendly teamwork without a big electricity bill. In 2014, a close finish was the case, with KGØUS’ group in MO edging out the team at K8UO in MI. Although only 1-1/2 percent apart in score, there couldn’t have been a wider spread in QSOs and multipliers: KGØUS had more than 100 fewer QSOs than K8UO, but made up the difference with 10 more multipliers.

Top Ten - Multioperator, Low Power

W/VE	
KGØUS	114,800
K8UO	113,190
VE9ML	108,800
NØHJZ	69,696
KEØL	59,256
W3HAC	54,275
NØAH	46,725
W5WTM	39,329
N3FJP	35,672
KA9VVQ	19,800

Regional Observations

Geography plays a part in all contests. The various bands and entry categories have strengths and weaknesses, which are also affected by that year’s propagation conditions. Another reason I’ve dubbed the 2014 contest “normal” is that most of the typical patterns were apparent. One of the most obvious is that the Single Operator, High Power category is dominated by stations in the Eastern Time Zone, where proximity to the many multipliers in Europe is a recognized advantage. This was again the case in 2014, with the top 11 scores achieved from the eastern US and Canada. Your author was pleased to have this category’s highest score west of EST at 12th place overall.

The advantage of an eastern QTH is a bit less in the High Power Multioperator and Single-Op Unlimited categories. Spotting networks, multiple radios and several sets of ears can efficiently locate additional QSOs and multipliers, and the Top Ten lists for these entry categories include several stations in the Central and Mountain Time Zones. Among them is the 4th place Multioperator team at NØNI in IA, who provided an example of another typical pattern — they had the highest QSO total of any station (1644), a feat often achieved from the center of North America.

The ability to make lots of QSOs from the middle of the U.S. is evident in the Low Power and QRP results for the Single-Op, Multiop, and Single-Op Unlimited categories. Four of the five low power and QRP categories were won from the Central or Mountain Time Zones, with a 2nd place finish in the fifth one. If you are a competitive contester from the central or western U.S., history suggests that your best chance of achieving a Top Ten finish is at low power or QRP.

It is true that an overall high finish is nearly impossible from the far western part of North America, but there is much fun to be had in regional competition, or simply participating in a major operating event on this unique band. In 2014, hams out west had significant DX activity from Japan and the Pacific to keep things interesting. For a look at how one of the ‘Arizona Outlaws’ takes 160

meter seriously, see N51A's story about his new antenna system at the end of this article.

Club Competition

The camaraderie and elmering of a radio club is a big part of our hobby. With a special band like 160 meters, a little help from your friends is the way to learn and improve your station hardware and operating skills. Four clubs had more than 50 members submit logs, qualifying them for the Single-Op Unlimited categories. This past December, the Potomac Valley Radio Club mustered 86 of their troops for both the highest participation and highest aggregate score total. The Frankford Radio Club topped the Medium Category, while in the Local Category, the Central Virginia Contest Club came out on top. If you ever wondered how important clubs are to contesting, please note that more than 50 percent of the submitted logs were affiliated with one of the participating clubs!

Affiliated Club Competition

Club Name	Score	Entries
Unlimited Category		
Potomac Valley Radio Club	6,512,552	86
Society of Midwest Contesters	2,899,444	57
Minnesota Wireless Assn	2,861,035	53
Medium Category		
Frankford Radio Club	3,693,232	37
Yankee Clipper Contest Club	3,456,566	47
Contest Club Ontario	2,282,966	29
Arizona Outlaws Contest Club	1,560,856	33
Tennessee Contest Group	1,353,676	22
Mad River Radio Club	1,065,175	12
Alabama Contest Group	951,672	17
DFW Contest Group	856,509	17
Florida Contest Group	780,214	13
North Coast Contesters	753,005	10
Grand Mesa Contesters of Colorado	611,880	7
South East Contest Club	584,487	10
Northern California Contest Club	528,441	18
Central Texas DX and Contest Club	442,335	5
Carolina DX Association	396,113	6
CTRI Contest Group	395,213	4
Contest Group Du Quebec	377,613	4
North Texas Contest Club	346,534	3
Western Washington DX Club	312,589	12
Southern California Contest Club	308,763	8
Mother Lode DX/Contest Club	272,932	7
Rochester (NY) DX Assn	249,300	6
Niagara Frontier Radiosport	218,457	6
Delara Contest Team	204,974	4
Utah DX Association	201,702	7
Hudson Valley Contesters and DXers	181,909	5
Spokane DX Association	179,277	3
Maritime Contest Club	163,496	4
Kentucky Contest Group	148,536	4
Louisiana Contest Club	124,850	4
West Park Radiops	112,879	8
Swamp Fox Contest Group	112,386	3
Willamette Valley DX Club	81,917	6
Bergen ARA	24,304	3
Local Category		
Central Virginia Contest Club	512,912	7
Kansas City DX Club	326,822	3
Bozinga DX and Contest Club	237,597	4
Lincoln ARC	157,993	3
Bristol (TN) ARC	143,823	5
North Carolina DX and Contest Club	100,076	3

The Wrap-Up

Summer is approaching, so take advantage of good weather to upgrade your station for the 2015 edition of the ARRL 160 Meter Contest, December 4-6! With Cycle 24 now past its peak, low band conditions should improve over the next few years. But with the 160 meter band and its mysterious ways, we'll need to be there to find out!



Although recovering from a cycling accident, Markus Hansen, VE7CA took some time to fire up his vintage Viking Ranger and Collins 51J-4 and make 52 QSOs in 25 sections. [VE7CA photo]

Comments and Observations from the 160 Meter Crowd

Here are some selected comments taken from the [3830 score reporting reflector](#), the [ARRL Soapbox website](#), a couple of club reflectors, and a few private emails. This is a pretty typical collection of comments that will give you a good idea what it was like the first full weekend in December 2014!

Operating Stories

I started at 2330Z Saturday night. As soon as the radio came on, there was VE3CX calling CQ. Hey, ONN! Got him! That's one potentially tough Section in the bag. Good start! (You can see my SS CW and Clean Sweep obsession coming thru.) I slid off a couple of kHz, found a little hole and called CQ. Holy Moley! 14 QSOs in the first 4 minutes! 208 QSOs in first 109 minutes, even including a few zero minutes when I got driven off my run freq. I did an S&P sweep, and after that, up to 0530Z, I had five more runs of >20 QSOs; altogether, 340 QSOs in 213 minutes of running.

But by 0530Z my newness had worn off. "Runs" were short, and S&P was equally effective. Nonetheless, the rates up until 0530Z had me so fired up that I kept going a lot longer than I had expected I would. Some "rare" Sections were plentiful. Several Nebraska, and I never heard so many South Carolina! OTOH, GA seemed a little absent. DX was PJ2T and ZF2AH. The only EU I heard was a weak G4 who answered my CQ but too weak to copy. So, all in all, I have a good shot at winning the (hypothetical) one-night low-power category, because I think I had more fun than anybody, and for me, that's what counts. —K3KU

Really had an enjoyable time in the contest. The station is hosted by a church that is just down the street from the White House and right next door to the Marconi Monument. This was really a great place to be on the anniversary of the 1924 Transatlantic Tests. Quite a different type of contest then. 73, Pat KØOO and Don K6ZO. —W3HAC

Condx better than 2013. Some stations have great ears, while others less so. Great fun—one of my favourite contests. —GM4ZUK

Decided to try the new category... SO assisted and also use SO2V extensively. Assisted only helped to spot DX mults and unworked stations as they appeared on the slower periods... never helped with the Sections as I ran they came to me. —K9CT

First time entering 160 CW contest. —K1VMT

Still need NV, WA, AK, and HI. Oh, and sleep. —KE8UM

First night pretty dire until dawn. Second night started off worse, with very little heard until nearly 0200, after which signals improved dramatically. Nothing west of IA and KS. —M5O

Very fun! I didn't think the signal from my little station and compromise "antenna" would be heard beyond New England. But I was able to work clear out to the Rocky Mountains and beyond! —NIYE

Always my favorite contest, wish more DX participated though. —W2CCC

Condx seemed pretty good, although I was not able to work much DX. QRN was low, so it was easy to copy the weak ones. —K5KG

Just playing around. —WA1FCN

The best part about having an utterly ridiculous antenna for 160 meters, and operating QRP to boot, is that every QSO is a small miracle to be celebrated and whatever time I can put into this contest is pure pleasure. Thanks for your patience to all those who copied my faintly whispering signal through several repeats! —K8CN

Antenna Stories

K3CCR is the club station at the Collington retirement community. For ARRL 160 this year available operators were N3UM and K3DI. Our 160 m. antenna was an expedient compromise: an inverted V with its apex at the 75-ft. level on our 85-ft. tower (the base of which is 45 ft.

above most surrounding terrain). The wire was hoisted hastily and its ends secured Thu and Fri by Grant W3GB and Gerry N3ADY, and worked well. —K3CCR

No antenna for 160 meter so used my super Palstar tuner and loaded up my 80/40M fan dipole. At least sort of got out! —KG9Z

Finally finished and raised the new 160 meter Tee, it was a bear to get up with no traction on the soft ground. Many thanks to my wife, Rita for helping out with this beast. This one is about 13' taller than the last one, a BIG 84' and it seems like it played well. 2 more multipliers than last year and a bigger score. —N2WN

Lots of stations from TN on the air!! Brand new 4-square here and it seemed to hear everyone. It seemed loud and I held my freq ok. Sometimes it took a while to figure out what direction weak ones were calling from. Sorry for your wait. Lots of fun when your antenna is quiet and runs are good. —W9SN

Considering I used two antennas not cut for 160, and I easily worked 38 sections in two countries, including everything East of the Mississippi, I'm pretty happy. —KK6L

Strung a dipole through the trees in the rain on Friday and had fun. —N3EN

Trials, Tribulations and Rants

Antenna blew down at QSO 75 ...oh well... —KB8KMH

Power failure Sunday morning cut my contest short. —VE3ADQ

After 5 hours of operating my 160 antenna gave up the ghost, gremlins showed up and made continuing impossible, but it sure was fun while it lasted. —K2TTT

I don't share the same passion for the 160 meter contest that others in the area have; however, I still tried to get on for a brief showing to help the MWA cause. When entering this contest, I always have aspirations to work more DX than tends to be on. In addition, everyone is really jammed in the band, so it is very difficult to hear the weak stations with the filters cranked up. —KBØEO

Win 7 does not like all the multi-tasking... but then again, no Windows OS is a true multi-tasking OS. I had to shut everything down about once every two hours and restart. Too bad the software was not ported to Linux or some other more stable platform. But.. it was tolerable as it made me get up and stretch. —AK7AR

14 hrs and 850 contacts first night. Four hours into second night it dawned on me that this was an endurance contest and I was not qualified to compete. Giving up on a 48 hour contest is a sure sign of getting old. —WD5R (N5ECT)

Little heard here of the west coast W6s and W7s with just the Inv. L and my lack of ability to stay awake or get up quite early enough. —K3YDX

Murphy struck twice. Antenna adjustment was incorrect for first evening — couldn't get better than SWR=4 except WAAAYYYY high in the band. It was too dark and too cold to make adjustments in the dark, so operated anyway. Saturday/Sunday evening/morning was much better, after adjusting the antenna for satisfactory match between 1800 and past 1860 kHz. However, my atomic clock, which is also my alarm clock, went bonker, and didn't awaken me around 0900Z, when I planned to operate an hour or two to pick up more multipliers. Woke up when my wife's alarm clock went off about 1300Z, which was past sunrise, so didn't even turn on the rig. —N8XX

A New Antenna System at N7GP (N5IA Remote Site)

By Milt Jensen, N5IA (n5ia@zia-connection.com)

Milt provided this description of his big 160 meter antenna project in response to my request for stories from the 2014 ARRL 160 Meter Contest. —Gary, K9AY

I am nearing the completion of a project that has taken 2.5 years.

For the IARU contest in the summer of 2012 the Arizona Outlaws Contest Club (AOCC) was awarded the right to be the W1AW HQ station. I am a member of the club and I live in New Mexico, just 3 miles from AZ and Zone 3. I wanted to operate 160 meters but could not operate my own station, being out of state. So, having recently purchased some property near Safford, AZ, 50 miles west of me, I made the decision to construct a single, full sized tower element for a TX antenna and some Beverages. Long story short, it was completed and worked well for IARU.

In doing the planning for the single tower, I located it where it could be part of a multi-element array should I decide to do that in the future. Later in 2012 I completed the Beverage "farm" to (8) 2-wire Bevs so that I have a full wavelength Bev at each 22.5 degrees of the compass. That is a total of 15 azimuths covered.

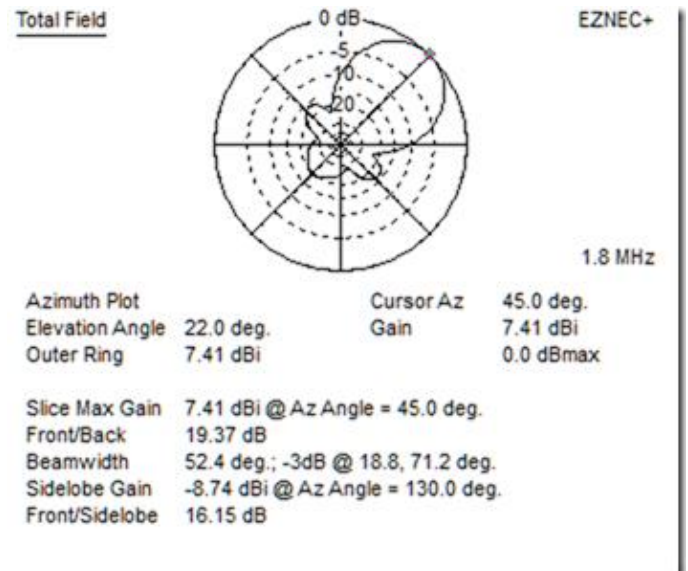
I operated the 160 contests during the winter of 2012-2013 to evaluate the performance of the single vertical and the site as a whole. However, the operating situation was not really conducive to comfort. My equipment was located in an old school bus that I own and had used for FD and other portable operations during milder weather. The bus was not heated; just a couple of tables and chairs for operating. Even though I was enthusiastic about the performance of the antenna system, I didn't like being wrapped up in blankets while trying to operate.

During the spring of 2013 I hit upon the idea of operating remotely from home, 50 miles away. Since I operate with an Elecraft K3, the RRC units were an off-the-shelf, ready-made fix. I purchased the RRC kit, bench tested it at home, and then installed it at the remote location. I had already installed the Green Heron server for control of my Beverage selection box. I needed a way to turn my old Alpha 89 ON/OFF and switch from STANDBY to OPERATE. I made a three-relay box, removed the front panel of the Alpha, and made attachments to the appropriate switch positions. I then interfaced the relay box so the Green Heron control could make the relays operate remotely. WOW! The whole thing worked.

I operated the entire winter 2013-2014 from the comfort of my heated home with bathroom facilities and the bedroom just seconds away from the operating desk.

At the end of a great Top Band season I was enthused to put the 2nd phase of the TX antenna system into construction. I intended to install seven sisters for the lonely vertical so she would be able to play in concert.

So, the past seven months have seen near non-stop work on the phased array, now a full-sized 8-Circle for transmitting. The Thursday before CQWW CW, I finished the last feed line connection to the elements. The transmission line hybrid had been tested a couple of days earlier. The extensive radial/grid system (32 radials per element) had been finished a week before that. All individual element feed lines (3/4 electrical wavelengths) and the 50 ohm and 37.5 ohm lines composing the transmission line hybrid had all been cut to the inch using a RigExpert AA-54. The total footage of 1/2" hard line coaxial cable stands a bit over 3,200.



The modeled directional pattern of N5IA's 8-Circle, with 7.41 dBi gain and almost 20 dB F/B.

I have been working with a ham friend who does circuit boards to get the relay selection board finished, but it was a couple of weeks away from being completed. I decided to hardwire the hybrid to the four elements which would direct the output of the array to the NE; that is to EU. I operated that way until midnight local Friday night of the CQWW CW, which corresponds to the terminator clearing the British Isles. I then got in my truck and drove 50 miles to the TX array site, manually changed the jumpers to allow the array to be directed to the NW; that is to JA.

I drove back home and operated the balance of the night until local sunup. I repeated the operation for the Saturday night session. Results: I scored reasonably well under poor conditions overall and the disadvantage of the non-controllable TX antenna directions. My count was 268 (QSOs) – 17 (Zones) – 45 (Countries). I received three unsolicited e-mail messages from Euros which had audio clips of my contacts with their stations. The farthest was 4O3A. I logged 57 JA stations under less than good propagation conditions.

Which now brings us to the recent ARRL 160. Since I could not afford the loss of two hours of operating time each night to travel and change the TX antenna direction, and since I would give up some K-W-N contacts in some directions and have an advantage for more contacts in the favored direction, I decided to fix the array to the NE and let it fly. I would also give up the opportunity to help my score with a bunch of 5-point JAs.

That is the configuration I operated, remotely from the comfort of home. I did not take time to send in a detailed report to 3830, so here follows a blurb I wrote to satisfy the request from a member of the AOCC group.

 Outlaws,

I had been asked by one Outlaw how I determined my new TX array was functioning correctly, as I had said in my 3830 comments I could tell by the results. I decided to answer that question to everyone on the reflector.

My analysis is based upon my experience operating for nearly two decades in this contest from this area, always previously with an omni TX antenna. In other words, through the years I have come to expect certain results (number of Qs) from certain geographic areas (sections). Typically, no matter what actual band conditions were experienced, the percentages of contacts from various areas were always very close to the same year after year.

The TX array was manually selected to fire to the northeast, 45 degrees true. The *EZNEC* model shows the 3 dB beamwidth to be ~50 degrees. From this location that 50 degrees covers from central North Dakota to Central Virginia. It is centered on Wisconsin, VE3, and VE2.

Normally the aggregate total of California section Qs is head and shoulders above all other section counts. After that, Texas and a couple of the midwest 160 hotbed states are historically at the top of the Q count list for me. These top Q count areas are still in their historic placing, but the percentage of difference from the others is significantly lower.

The Q count from far distant New England and eastern Canada is always low, with some of those states and provinces the most difficult to work (if they are on the air). With that in mind and the stage set, here are the telling Q counts.

QSOs Totals by Location

<i>Location</i>	QSOs
CA, all Sections:	69
TX, all Sections	60
OH	59
MN	51
IL	46
VA	43
AZ	42
ON, all Sections	42
<i>What a great number; by far the most I have ever worked in VE3.</i>	
MDC	38 – <i>My goodness!!!!</i>
MI	37
WA, both sections	37
<i>This area is in line with the side lobe which also permitted me to put 48 JA stations into the log. Not too bad since the side lobe is modeled to be down 11.2 dB when the array is oriented to the NE. This means I was effectively operating in that direction with ~100 watts.</i>	
CO	35
EPA	35
WI	33
EMA	31
TN	30

And look at these numbers from locations where at times in the past it has been difficult to get a single Q for a mult:

NH	17
ME	9
MAR	9 – <i>Never heard a VO1</i>
NLI	8
DE	6
VE2	5
ND	5
SD	5
WY	5
VT	4
NNY	3
RI	3

And to contrast, these numbers from areas that historically have ranked much higher on the Q count list. These areas are in the very deep null between the side lobe and the rear lobe (OR), or the side lobe and the main lobe (FL and GA), of the pattern of the array. And all signals were weaker than normal with NO outstanding signals from these areas.

FL, all sections	31
GA	21
OR	18

The pattern of more Qs in the prime direction and less Qs off the side in the null areas is also visible in most of the other states I have not listed, but to a lesser extent. I believe you can draw the same conclusion I have; the beast does work as advertised. I trust these hard figures will answer the question of why I am positive the ‘beast’ is a flame thrower.

Division Winners

Single Operator, QRP

Atlantic	W3TS	71,360
Central	K9TF	55,338
Dakota	KEØG	11,704
Delta	N2WN	51,606
Great Lakes	K4FT	97,056
Hudson	W2JEK	4,050
Midwest	WØGJ	139,938
New England	KA1J	78,798
Northwestern	W7DRA	1,152
Pacific	K2GMY	1,190
Roanoke	WB4MSG	28,765
Rocky Mountain	KVØQ	153,300
Southeastern	N4AX	37,888
Southwestern	N7IR	57,760
West Gulf	N5OE	37,944
Canada	VE7VV	23,128

Single Operator, Low Power

Atlantic	K1PTF	111,930
Central	NE9U	153,716
Dakota	KØTI	158,517
Delta	W9SN	153,971
Great Lakes	WB8JUI	169,162
Hudson	K2TTM	112,752
Midwest	NØTT	198,660
New England	N2KW	237,846
Northwestern	A17H	49,050
Pacific	N6RK	94,721
Roanoke	W4UX	108,342
Rocky Mountain	W7SE	116,397
Southeastern	K1DC	125,040
Southwestern	WA7NB	64,988
West Gulf	WØUO	157,332
Canada	VE3MGY	150,024

Single Operator, High Power

Atlantic	AA1K	407,591
Central	K9AY	248,832
Dakota	WØSD (WØDB, op)	241,400
Delta	KM5PS	111,188
Great Lakes	K1LT	300,475
Hudson	K2UF	146,784
Midwest	KØBJ	136,203
New England	K1ZM	405,314
Northwestern	N9RV	125,874
Pacific	W7RN (K7NV, op)	141,426
Roanoke	K3ZM	479,454
Rocky Mountain	W7UT	158,424
Southeastern	N4PN	209,529
Southwestern	N7GP (N5IA, op)	239,944
West Gulf	K5WA	239,424
Canada	VE3EJ	355,300

Single Operator Unlimited, QRP

Atlantic	NM2O	4,800
Central	KC9EE	27,360
Delta	K4DZR	17,568
Great Lakes	K8ZT	8,184
New England	N1IMW	3,120
Pacific	K9YC	5,053
Roanoke	N3CZ	29,400
Rocky Mountain	WC7S	30,615
West Gulf	WR5O	27,434

Single Operator Unlimited, Low Power

Atlantic	K3MD	85,190
Central	WE9V	227,484
Dakota	NØAT	160,188
Delta	N4ARO	67,414
Great Lakes	K8BL	159,120
Hudson	WA2MCR	39,864
Midwest	KØKT	3,100
New England	W1NT	164,948
Northwestern	AB7R	51,359
Pacific	K6MI	11,826
Roanoke	WA4PSC	103,950
Rocky Mountain	WØDLE	156,408
Southeastern	WE4S	87,673
Southwestern	AK7AR	53,669
West Gulf	AA5AM	123,984
Canada	VE3VSM	36,366

Single Operator Unlimited, High Power

Atlantic	K3WW	307,294
Central	K9CT	321,600
Dakota	KØRC	110,454
Delta	N4VV	115,287
Great Lakes	W8MJ	267,623
Hudson	N2GC	188,604
Midwest	KIØI	149,850
New England	K1RO	199,595
Northwestern	KG7H	181,080
Pacific	W6DR	74,034
Roanoke	NR4M	183,724
Rocky Mountain	KØRF	245,106
Southeastern	KR4F	135,120
Southwestern	AA7A	121,716
West Gulf	W5TM	236,456
Canada	VE3RZ	236,900

Multioperator, Low Power

Atlantic	W3HAC	54,275
Central	KEØL	59,256
Dakota	NØHJZ	69,696
Great Lakes	K8UO	113,190
Midwest	KGØUS	114,800
Rocky Mountain	NØAH	46,725
West Gulf	W5WTM	39,329
Canada	VE9ML	108,800

Multioperator, High Power

Atlantic	W2GD	444,465
Central	K9MOT	57,706
Great Lakes	W3HKK	168,168
Midwest	NØNI	342,996
New England	W1OP	113,815
Northwestern	K7LFY	84,800
Pacific	KH6LC	61,983
Roanoke	N1LN	366,352
Rocky Mountain	K7CA	252,822
Southeastern	N2CEI	334,290
Southwestern	W6XI	70,310
Canada	VE3JM	369,725

Regional Leaders

SOQRP/LP/HP = Single-Op; SOUQRP/LP/HP = Single-Op Unlimited; ML/MH = Multioperator

Northeast Region			Southeast Region			Central Region			Midwest Region			West Coast Region		
New England, Hudson and Atlantic Divisions; Maritime and Quebec Sections			Delta, Roanoke and Southeastern Divisions			Central and Great Lakes Divisions; Ontario Section			Dakota, Midwest, Rocky Mountain and West Gulf Divisions; Manitoba and Saskatchewan Sections			Pacific, Northwestern and Southwestern Divisions; Alberta, British Columbia and NWT Sections		
Call	Score	Cat	Call	Score	Cat	Call	Score	Cat	Call	Score	Cat	Call	Score	Cat
KA1J	78,798	SOQRP	N2WN	51,606	SOQRP	K4FT	97,056	SOQRP	KVØQ	153,300	SOQRP	N7IR	57,760	SOQRP
W3TS	71,360	SOQRP	N4AX	37,888	SOQRP	K9TF	55,338	SOQRP	WØGJ	139,938	SOQRP	VE7VV	23,128	SOQRP
W1WBB	24,010	SOQRP	WB4MSG	28,765	SOQRP	N8BB	39,105	SOQRP	WD5COV	112,963	SOQRP	WØRSP	2,323	SOQRP
KN1H	23,556	SOQRP	W5NZ	9,204	SOQRP	N8HP	38,080	SOQRP	KF7MD	38,080	SOQRP	K2GMY	1,190	SOQRP
AA1CA	17,040	SOQRP	K3TW	9,064	SOQRP	N8EA	32,981	SOQRP	N5OE	37,944	SOQRP	W7DRA	1,152	SOQRP
N2KW	237,846	SOLP	W8IM	8	SOQRP	WB8JUI	169,162	SOLP	NØTT	198,660	SOLP	N6RK	94,721	SOLP
K2TTM	112,752	SOLP	W9SN	153,971	SOLP	K8FH	156,262	SOLP	KØTI	158,517	SOLP	WA7NB	64,988	SOLP
K1PTF	111,930	SOLP	K1DC	125,040	SOLP	NE9U	153,716	SOLP	WØUO	157,332	SOLP	AC7A	50,197	SOLP
N1IX	105,846	SOLP	W4UX	108,342	SOLP	VE3MGY	150,024	SOLP	KØTT	129,762	SOLP	A17H	49,050	SOLP
W2TZ	98,483	SOLP	AA4LR	107,744	SOLP	K9MMS	142,106	SOLP	W7SE	116,397	SOLP	W7QDM	48,900	SOLP
AA1K	407,591	SOHP	AA4NU	104,652	SOLP	VE3EJ	355,300	SOHP	WØSD	241,400	SOHP	N7GP	239,944	SOHP
									(WØDB, op)			(N5IA, op)		
K1ZM	405,314	SOHP	K3ZM	479,454	SOHP	K1LT	300,475	SOHP	K5WA	239,424	SOHP	W7RN	141,426	SOHP
NO3M	364,387	SOHP	K7BV	243,700	SOHP	K9AY	248,832	SOHP	WXØB	204,102	SOHP	(K7NV, op)		
VA2EW	325,728	SOHP	AA4NC	224,200	SOHP	W8TA	175,960	SOHP	(HK1A, op)			W6PH	126,116	SOHP
W3BGN	304,219	SOHP	N4PN	209,529	SOHP	VE3PN	156,687	SOHP	K5RX	189,162	SOHP	N9RV	125,874	SOHP
NM2O	4,800	SOUQRP	WX4G	194,000	SOHP	KC9EE	27,360	SOUQRP	W7UT	158,424	SOHP	WJ9B	123,172	SOHP
N1IMW	3,120	SOUQRP	N3CZ	29,400	SOUQRP	K8ZT	8,184	SOUQRP	WC7S	30,615	SOUQRP	K9YC	5,053	SOUQRP
W1NT	164,948	SOULP	K4DZR	17,568	SOUQRP	WE9V	227,484	SOULP	WR5O	27,434	SOUQRP	AK7AR	53,669	SOULP
K3MD	85,190	SOULP	KA3EHL	9,360	SOUQRP	K8BL	159,120	SOULP	KØVK	3,243	SOUQRP	AB7R	51,359	SOULP
W2CCC	77,778	SOULP	WA4PSC	103,950	SOULP	N9CK	125,214	SOULP	AF5Q	286	SOUQRP	W7RV	30,488	SOULP
(K2CS, op)									NØAT	160,188	SOULP	KB7Q	24,510	SOULP
N3EN	76,942	SOULP	N3UA	98,189	SOULP	N9AUG	67,379	SOULP	WØDLE	156,408	SOULP	K6MI	11,826	SOULP
W1KM	55,440	SOULP	WE4S	87,673	SOULP	N9TF	65,462	SOULP	NØIM	150,535	SOULP	KG7H	181,080	SOUHP
K2RS	55,142	SOULP	WA4PGM	70,448	SOULP	K9CT	321,600	SOUHP	AA5AM	123,984	SOULP	N7XU	171,656	SOUHP
W3KB	48,060	SOULP	N4ARO	67,414	SOULP	W8MJ	267,623	SOUHP	KØMPH	67,452	SOULP	(K4XU, op)		
KN3A	46,102	SOULP	NR4M	183,724	SOUHP	WØAIH	240,300	SOUHP	KØRF	245,106	SOUHP	K7OX	148,176	SOUHP
						(KØTG, op)						AA7A	121,716	SOUHP
K3WW	307,294	SOUHP	K4XL	149,055	SOUHP	VE3RZ	236,900	SOUHP	W5TM	236,456	SOUHP	K7FA	97,840	SOUHP
W8FJ	209,032	SOUHP	W4PK	137,445	SOUHP	VE3TA	200,687	SOUHP	KIØI	149,850	SOUHP	K7LFY	84,800	MH
K1RO	199,595	SOUHP	KR4F	135,120	SOUHP	K8UO	113,190	ML	K2DSW	134,240	SOUHP	W6XI	70,310	MH
NN3Q	188,900	SOUHP	N4VV	115,287	SOUHP	KEØL	59,256	ML	K5NA	130,652	SOUHP	KH6LC	61,983	MH
N2GC	188,604	SOUHP	N1LN	366,352	MH	KA9VVQ	19,800	ML	KGØUS	114,800	ML	NC7G	20,007	MH
VE9ML	108,800	ML	N2CEI	334,290	MH	VE3JM	369,725	MH	NØHJZ	69,696	ML			
W3HAC	54,275	ML	W4HZ	212,970	MH	W3HKK	168,168	MH	NØAH	46,725	ML			
N3FJP	35,672	ML	N4WW	142,857	MH	K9MOT	57,706	MH	W5WTM	39,329	ML			
W2GD	444,465	MH	KP2Q	93,660	MH				A15H	2	ML			
N3RR	299,145	MH							NØNI	342,996	MH			
									K7CA	252,822	MH			
									KØLIR	165,321	MH			
									K5ZG	118,192	MH			