



# ARRL RTTY Roundup

## 2013 Results

by Jay Townsend, WS7I

***“The best competition I have is against myself to become better.” - John Wooden***

This year we look back with pride on the Silver Anniversary of the ARRL RTTY Roundup. It has been twenty-five years of fun and competition during the Roundup. I hope it has been a fun event for you!

The ARRL RTTY Roundup starts the radiosporting year in the eyes of many operators. You know that activity will be wall-to-wall but you never know just what conditions might be and occasionally there is the odd twist of fate.

Alan summed it up quite nicely. *“Great contest to start 2013. Glad the world didn't end after all...N8AGU”*

Most contest articles seem to dwell on the winners and not on the participants. Everyone who enters the RTTY Roundup is a winner. This radiosporting event has something for everyone. Picture this: working new DX, getting another state for the Worked All States (WAS) award, trying out your new demodulator (hardware or software), a new antenna, or a new computer. And don't forget helping out your club or just your team. But most of all there is a fast rate and loads of fun.

Some participant comments were: *“First time in this contest in 13 yrs. Had to learn some new software and only got on for 7.0 hours, but I had a lot of fun...AD5A”* *“part time ops...A65BR”* *“First ever RTTY contest - just getting familiar...G4PIQ”* *“Woohoo!...KK5JY”* *“This was the first time I ever made a RTTY qso, it was fantastic, see u in the next one...VE5KS”* *“This was our first try as a club for the RTTY RU. We all had a blast and can't wait until next year! W4LMS”* Comment after comment celebrated RTTY Roundup experiences of operator skill, effort, and fun this year.

### Propagation

Solar conditions improved over last year. With the flux in the 140s and a nice A and K index, things couldn't have been much better. Ten meters was open again this year but the big surprise was that 80 meters showed the better activity increase. With a record number of 1922 logs submitted and a record number of QSOs made it was interesting to see who was operating where in the bands. Ten meter QSOs were actually down by 25,000

contacts while 40 and 80 saw big increases. The big deal this year on the low bands was the low noise level. 80 meters was as full as I have seen it in a RTTY contest. Look for analysis throughout this write-up of how different operators used differing strategies during the contest to take advantage of the propagation.

### Yearly QSO Data

	2012	2013
Total Qs	630,742	658,523
80 Meter QSOs	69,087	79,226
40 Meter QSOs	144,094	161,081
20 Meter QSOs	180,900	200,106
15 Meter QSOs	168,439	174,985
10 Meter QSOs	67,349	42,671

### Solar Indices

Date	Hour	SF	A	K
5-Jan-2013	18	143	2	0
5-Jan-2013	21	145	3	1
6-Jan-2013	00	145	3	0
6-Jan-2013	03	145	3	0
6-Jan-2013	06	145	3	0
6-Jan-2013	09	145	3	0
6-Jan-2013	12	145	3	0
6-Jan-2013	15	145	3	1
6-Jan-2013	18	145	3	1
6-Jan-2013	21	142	3	2
7-Jan-2013	00	142	3	1

Unlike other recent RTTY contests with quiet bands during the entire contest, it was fairly difficult for operators to make wrong choices in Roundup. The money band made 20 meters the band of choice. Fairly equal numbers of contact were logged on 40 and 15 meters. No doubt the single operator, two radio (SO2R) operators placed a radio or a VFO on the band above or below 20 depending on their location. The single operator, multiple radio stations – with up to 6 VFOs (three radios with dual receivers) – probably had something everywhere!

### A Brief History of RTTY Roundup

RTTY Roundup was first held in 1987 and it changed RTTY contesting forever, yet the contest today barely resembles the days of old. Hal, WA7EGA stated in *QST* after the first event, “The popularity of the Roundup could have been predicted. Where else can you find a fast-paced, worldwide RTTY contest with a schedule that allows the contestant to take the XYL out to dinner Friday, have a leisurely breakfast the next morning, get

six hours of sleep Saturday night and be finished in time to watch 60 Minutes on Sunday?"

The Roundup was the first RTTY contest "for folks who do not heat their homes with their final tubes" and Low Power entries became the majority. "Barefooters" competed in their own group in 1987 and 'peanut whistles' out-numbered 'barn-burners' by nearly three to one!" WA7EGA wrote. QSO totals were in excess of 700 the first year and now we exceed that in the first seven hours. Rates now average 100 contacts plus per hour for the entire RTTY Roundup.

Don, AA5AU won the Single-Operator, Low Power category in 1987. After the RTTY Roundup Silver Anniversary he wondered where he was and what he was running back in 1987. Don was thirty years old back then and was very active in RTTY DXing. Along with many others Don could be found nearly every evening on 20 meters ragchewing with RTTY operators from around the world. He ran a ground mounted 5-band vertical from Louisiana back in 1987.

The rules that Hal and I wrote all those years ago have withstood the test of time. The intent was to equalize station advantages and disadvantages so that stations could win the contest from anywhere across Canada and the United States, as well as making DX an important part of the contest.

It seems to have worked. We have winners from the "Black Hole", the "West Coast", and all over the continent. Look at any Top Ten box and you will see W1, W3, W4, VE7, WØ, W9, and W5 all in the winner's circle. What other contest has NØNI and WØSD beating out K1SFA, W4RM, or NR5M?

## Affiliated Club Competition

Since the Club Competition was added years ago it has added significantly to the RTTY Roundup. Good friendly competition always adds fun to the event. The Northern California Contest Club (NCCC) once again had over 70 participants and led the Unlimited category. The Potomac Valley Radio Club (PVRC) had 51 participants this year but trailed in scores submitted by their members, leading to a second-place finish in the Unlimited category.

The Minnesota Wireless Association (MVA) was first in the Medium Club ranks with 43 operators turning in 1.6 million points. Very close behind was the Yankee Clipper Contest Club (YCCC), less than 100,000 points off the winning pace. The Arizona Outlaws Contest Club was in the third spot this year.

On the Local Club level it was the Orleans County Amateur Radio Club showing just over a million points, with 10 radiosporting members submitting scores. They waxed the Spokane DX Association who also had 10 operators submitting but their score was 500,000 behind. The Iowa DX and Contest Club placed third with only three operators submitting scores for a valiant effort.

## Affiliated Club Competition

	Logs	Score
<b>Unlimited Club</b>		
Northern California Contest Club	71	4,044,558
Potomac Valley Radio Club	52	2,777,845
<b>Medium Club</b>		
Minnesota Wireless Assn	43	1,607,832
Yankee Clipper Contest Club	34	1,542,597
Arizona Outlaws Contest Club	22	1,332,572
Society of Midwest Contesters	21	1,216,348
Frankford Radio Club	17	1,006,537
Tennessee Contest Group	19	902,234
Contest Club Ontario	18	779,468
CTRI Contest Group	11	539,899
Alabama Contest Group	15	527,153
Western Washington DX Club	10	526,744
Florida Contest Group	16	499,691
Louisiana Contest Club	5	494,195
Grand Mesa Contesters of Colorado	8	491,525
DFW Contest Group	8	480,050
Southern California Contest Club	11	466,810
Contest Group Du Quebec	6	445,081
Willamette Valley DX Club	9	419,693
ORCA DX And Contest Club	6	331,332
Saskatchewan Contest Club	3	299,626
Maritime Contest Club	5	280,637
Mississippi Valley DX/Contest Club	4	262,766
Georgia Contest Group	3	250,069
Central Texas DX and Contest Club	3	240,119
North Coast Contesters	6	238,190
Carolina DX Association	4	222,783
Hudson Valley Contesters and DXers	5	217,228
Mad River Radio Club	5	202,850
Utah DX Assn	4	197,237
South East Contest Club	4	156,336
Kentucky Contest Group	5	142,942
Order of Boiled Owls of New York	3	106,387
Rochester (NY) DX Assn	4	83,335
Radio Club of Redmond	3	74,434
<b>Local Club</b>		
Orleans County Amateur Radio Club	10	1,065,283
Spokane DX Association	10	498,633
Iowa DX and Contest Club	3	273,864
Dominion DX Group	3	207,654
Metro DX Club	4	165,938
Midland ARC	5	154,782
Bergen ARA	3	152,017
Kansas City DX Club	3	146,876
Bristol (TN) ARC	5	114,182
Boeing Employees ARS - St. Louis	4	92,142
Low Country Contest Club	4	87,340
Sterling Park ARC	3	8,577

## U.S. and Canadian Highlights by Region

Prior to looking at the region highlights I would like to show you the year-by-year choices of which category operators have entered in the U.S. and Canada.

### 25 Years of Category Choice (W/VE only)

Year	SOLP	SOHP	MSLP	MSHP	Total
1989	166	60		9	235
1990	148	49		12	209
1991	190	57	15	5	267
1992	245	65	12	12	334
1993	220	61	22	10	313
1994	209	78	18	12	317
1995	220	65	12	16	313
1996	209	89	19	8	325
1997	224	89	20	15	348
1998	224	71	16	17	328
1999	321	104	20	14	459
2000	207	70	15	10	302
2001	252	100	20	20	392
2002	221	90	20	17	348
2003	283	103	24	17	427
2004	341	122	25	34	522
2005	327	129	19	26	501
2006	390	177	35	37	639
2007	401	176	39	51	667
2008	444	184	59	56	743
2009	542	258	54	94	948
2010	517	259	69	96	941
2011	478	228	66	93	865
2012	502	233	102	148	991
2013	499	217	101	165	986

### Northeast Region

This year we highlight the radiosporting Keane's. The Northeast Region's highlighted entry is that of Khrystyne, K1SFA and Michael, K1MK who operate the K1TTT station. Khrystyne and Michael established a new Multi-Single, High Power multiplier record of 138. Their other accomplishments this year are listed below.

The Single-Operator, Low Power category in this region was won by Fabi, VA2UP. Fabi set the new Canadian Low Power record while securing third place overall. Bob, WØBR from Eastern Pennsylvania took the Atlantic hardware again this year and placed second in the region. Dany, VE2EBK placed third in the region. Dean, NW2K was in the region's fourth slot. George, K2ONP won the Hudson Division and Alan, W1CCE captured the New England Division plaque.

In the Single-Operator, High Power category Dennis, W1UE piloted Greg, W1KM's station to a third overall Top Ten place. Dennis won the New England plaque and related that Murphy hit his effort in the first hour of the contest with audio problems resulting in a 52-QSO hour that W1UE never could quite make up.

Bud, AA3B was fifth overall in the Top Ten and captured the Atlantic hardware. Wayne, N2WK came in sixth place in High Power overall. Tony, N2KI won the

Hudson Division while setting a new Hudson Division record. Chuck, N8CI completed the Northeast Region Top Ten list.

Multi-Single, Low Power in this region was won by Rich, K2EN he grabbed the Atlantic Division hardware. Bob, W1SLF won New England plaque. Bob usually uses a doublet and a G5RV from Maine.

The KA3QLF crew out of Eastern PA set a new section record. Kermit, AB1J no longer had his 80 meter antenna in service and he changed category to Multi-Single this year. Andy, KC2HZM, a member of the Orleans County club, finished in fifth place in the region while helping the club.

A win in the Multi-Single, High Power category was secured by K1SFA who was third overall and won the New England plaque while setting a brand new Division record. K3MJW and a large crew of operators were second in the region and won the rights to the Atlantic Division plaque. Bruce, WA2TMC, another Orleans Club member, was in third place in the Northeast region. Eric, KV1J with Matt, W1MAT assisting were in fourth and John, K3MD using the spotting network finished out the Northeast list.

### Northeast Region (New England, Hudson and Atlantic Divisions; Maritime and Quebec Sections)

Call	Score	Category
VA2UP	201,125	SO LP
WØBR	110,852	SO LP
VE2EBK	86,424	SO LP
NW2K	84,843	SO LP
W1CCE	81,852	SO LP
W1UE	293,862	SO HP
AA3B	268,288	SO HP
N2WK	264,404	SO HP
N2KI	136,304	SO HP
N8CL	127,651	SO HP
K2EN	110,823	MO LP
W1SLF	92,070	MO LP
KA3QLF	87,516	MO LP
AB1J	73,644	MO LP
KC2HZM	72,240	MO LP
K1SFA	224,250	MO HP
K3MJW	142,919	MO HP
WA2TMC	138,120	MO HP
KV1J	129,580	MO HP
K3MD	120,404	MO HP

### Southeast Region

The Southeast region once again secured three overall category wins in the RTTY Roundup out of the four available in the US and Canada.

Single-Operator, Low Power was again secured by perennial winner Don, AA5AU. Don again won the Delta Division title and the Mary Brown Memorial Trophy for first place in Low Power. This time Don had

some competition from Mark, N2QT. Mark secured the rights to the Roanoke hardware. N2QT had a second place Top Ten finish just behind AA5AU while setting a new all-time Roanoke Division record. Jim, KC4HW, operating in Alabama, also made it to the Top Ten box, placing fifth in Low Power. KC4HW also won the Southeast Division award. Jamie, WB4YDL was in the region's fourth slot from Tennessee. Ben, WB2RHM completed the top five spots in the region. This is a powerful region from which to operate, with 30% of the region's Low Power Top Ten placing in the contest.

Mike, K4GMH moved up from last year's finish to notch the win as the overall Single-Operator, High Power finisher. Mike's story is recounted later in this article. He won the Roanoke Division as well as the W7RM Memorial Trophy. My old buddy Nick, W4GKM was in second, grabbing the Delta Division hardware. Kenny, AB4GG, also from Tennessee, was a region third and Don, N4ZZ out of Nashville took region fourth. Sam, W4PK finished up the region's top stations and had a 139-QSO hour on Sunday morning for his personal best before a church commitment. Steve, AG4W won the Southeastern Division trophy but was a little off the pace to round out the top five in the region.

The Multi-Single, Low Power category was won by Dick, K9OM, now contesting from Florida. I guess that the Florida weather is better than in Illinois. K9OM took the Southeastern Division title. Will, AA4NC won the Roanoke Division. The Saint Petersburg Amateur Radio Club, W4GAC was a regional third. Their crew included several top RTTY radiosport warriors. Out of North Carolina it was W4APP (The Appalachian Contesters) with WK4P and KB4ER operating to a fourth spot. Robert, W4BNO completed the top five in the Southeast Region. Winning the Delta Division rights was the famous college station W5YD winning a trophy for Mississippi State University. I know that Jarrod, AE5LG was no doubt involved.

The Multioperator, High Power category saw some serious competition in the Southeast Region with Ted, KN5O and operators Rex, NX8G and Dallas, K1DW setting a new Delta Division record while placing sixth overall. They might have done better if a prior commitment hadn't cut the day a bit short. Fred, WW4LL trailed the leaders by just a few points. Fred also had W4DXX and K1ZZI assisting in his crew from the Georgia Contest Club and they secured the Southeastern Division trophy, seventh overall in the Top Ten. Just behind them was the team from Steve, NR4M's. Steve, K3UI, KA4RRU and Jennifer won the Roanoke Division title while securing eighth overall in the Top Ten. Closely on their heels came the team of

W4RM. Bill's team members W7IY and K4RG installed K3s for the station. W4RM was the final member of the Top Ten box for Multioperator, High Power. Zibi, KU1T working with packet was the last of the region's top five.

#### **Southeast Region (Delta, Roanoke and Southeastern Divisions)**

<i>Call</i>	<i>Score</i>	<i>Category</i>	
AA5AU	251,244	SO	LP
N2QT	209,592	SO	LP
KC4HW	163,683	SO	LP
WB4YDL	99,990	SO	LP
WB2RHM	73,793	SO	LP
K4GMH	310,050	SO	HP
W4GKM	162,286	SO	HP
AB4GG	149,155	SO	HP
N4ZZ	148,610	SO	HP
W4PK	144,480	SO	HP
K9OM	144,738	MO	LP
AA4NC	101,916	MO	LP
W4GAC	96,193	MO	LP
W4APP	54,463	MO	LP
W4BNO	52,185	MO	LP
KN5O	196,080	MO	HP
WW4LL	193,225	MO	HP
NR4M	192,570	MO	HP
W4RM	177,664	MO	HP
KU1T	172,752	MO	HP

#### **Central Region**

2013 saw many changes to the leaders in this region in the Single-Operator, Low Power category. Craig, KD9MS moved into the first slot and won the rights to the Central Division award. John, K8AJS from Ohio was second and got the Great Lakes Division win. Randy, AA8R took region third. Fourth among the Central Region leaders was Jim, W4LC out of Kentucky. David K9QC put in 14 hours of work and finished out the top five leaders in the Central region.

Single-Operator, High Power in the Central Region was once again won by Steve, AI9T. This year he barely made it to the Top Ten box in the final spot for High Power. Steve set a new all-time Central Division mark for the record books. Steve, N8BJQ was in region second place with his impressive two-tower antenna system, winning the Great Lakes Division plaque rights and setting a new all-time Division record to boot. Bob, N8NR was in the third position. Paul, NO9C was fourth with his stacked KT-34s. Rich, VE3KI who writes Cabrillo-to-ADIF converter software finished up in the final Central Region spot.

Multioperator, Low Power in the Central region was won by John, W9ILY to take the Central Division plaque. Phil, N9LAH and his crew were second in the region and Larry, KT9L was in third. Dave, N8DC won the Great Lakes trophy rights for his Division. Paul, ND4X



completed the Central Region listings. Many of these operators used spotting assistance.

Multioperator, High Power was won by Craig, K9CT. Craig's crew used N1MM with three demodulators this year and was fourth overall in the Top Ten while winning the Central Division. Jim, N7US was in the second spot. Everett, WZ8P and his friends won the Great Lakes Division plaque rights. Barry, N2BJ was in fourth position. VE3FJB was working the kinks out for February according to Keith, VA3YC who was part of the operating crew. They finished up in fifth place from the Central region.

**Central Region (Central and Great Lakes Divisions; Ontario East, Ontario North, Ontario South and Greater Toronto Area Sections)**

Call	Score	Category	
KD9MS	104,538	SO	LP
K8AJS	83,055	SO	LP
AA8R	77,063	SO	LP
W4LC	73,370	SO	LP
K9QC	63,368	SO	LP
AI9T	218,377	SO	HP
N8BJQ	167,680	SO	HP
N8NR	138,528	SO	HP
NO9C	132,704	SO	HP
VE3KI	124,978	SO	HP
W9ILY	95,485	MO	LP
N9LAH	63,450	MO	LP
KT9L	50,328	MO	LP
N8DC	47,080	MO	LP
ND4X	46,360	MO	LP
K9CT	218,115	MO	HP
N7US	123,872	MO	HP
WZ8P	121,278	MO	HP
N2BJ	112,344	MO	HP
VE3FJB	99,232	MO	HP

## Midwest Region

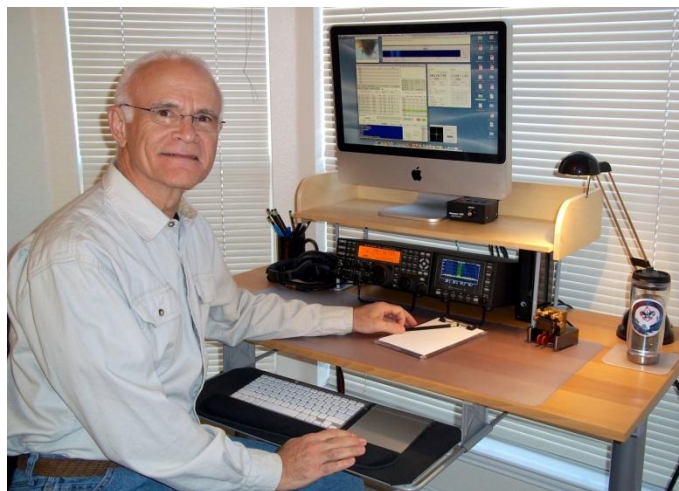
Featuring another husband and wife team in the Midwest Region, Ron, KOØZ and Debbie, KC9ULA looked forward to the Roundup for almost a full year. "For on that weekend, the airwaves on 80-10 meters will be filled with the cacophony of testers' mark and space tones." Ron has competed in the RTTY Roundup for 20-plus years and this will be Debbie's fourth outing. To them it's all about the fun and excitement. They returned to their old Missouri QTH for the Roundup.

The Single-Operator, Low Power winner was Ron, NØAT with a new Dakota Division record and fourth overall in the Top Ten. Al, KØAD was in sixth overall with a personal best thanks to a tip from Don, AA5AU on the new RTTY demodulator, *2Tone*. Don, NTØF was hoping to do SO2R but his second radio died. He did manage a personal best and won the Midwest Division while coming in ninth in the Top Ten for Low Power. Bill, KE5OG won the West Gulf Division and set a new

Division record. Steve, KTØDX nailed down the Rocky Mountain Division.

George, ABØRX took top honors for Single-Operator, High Power in the Midwest region. He was eighth overall in the Top Ten while setting a new Midwest Division record. Closely behind and ninth overall, the Top Ten and Rocky Mountain Division winner was Ken, WØLSD. This was Jeff, ACØC's first contest after moving to a new QTH and he was third in the region. Susan, K5DU took the West Gulf Division and Jim, W5AP was a regional fifth place.

Multi-Single, Low Power was led in this region by Glenn, WB5TUF who was second overall while winning the West Gulf Division and setting a brand new record. Next was Dick, WØRAA with partner KFØUR taking ninth overall and the Rocky Mountain Division. KØOZ, our featured Midwest team, won the Midwest Division. Mike, W5ZO placed fourth in the Midwest. WØFRC and crew was fifth in the region.



Jim K5ND entered as Single-Operator, Low Power from Texas (Photo by K5ND)

There is tough competition in the Midwest Region year after year. Toni, NØNI and crew again won the contest and the Midwest honors. In second and winning the Dakota Division was Ed, WØSD and his crew. Out of New Mexico was John, WA5ZUP who secured the Rocky Mountain Division again this year. If John adds my old buddy Ron, K5DJ to his crew (Ron lives just down the street) he could be a force. George, NR5M won the West Gulf Division honors. Todd, VE5MX won Canada from his Saskatchewan QTH. It's nice to see our neighbors to the North do so well in the contest!

**Midwest Region (Dakota, Midwest, Rocky Mountain and West Gulf Divisions; Manitoba and Saskatchewan Sections)**

Call	Score	Category	
NØAT	199,200	SO	LP
KØAD	162,108	SO	LP
NTØF	137,007	SO	LP
KE5OG	136,141	SO	LP
KTØDX	103,897	SO	LP
ABØRX	233,100	SO	HP
WØLSD	229,068	SO	HP
ACØC	206,892	SO	HP
K5DU	197,200	SO	HP
W5AP	183,456	SO	HP
WB5TUF	124,928	MO	LP
WØRAA	81,696	MO	LP
KOØZ	74,235	MO	LP
W5ZO	55,020	MO	LP
WØFRC	38,532	MO	LP
NØNI	265,950	MO	HP
WØSD	249,480	MO	HP
WA5ZUP	204,120	MO	HP
NR5M	173,026	MO	HP
VE5MX	172,874	MO	HP

## West Coast

Our highlighted West Coast participant is Jeff, WK6I who piloted the W7RN station to a record setting 309,248 points. This is the fourth-highest Roundup score ever in the US and it is the top West Coast Region score ever generated. Jeff is active in the NCCC and he also owns the Twisted Oak Winery in California, so he wears many hats. The W7RN station is in Virginia City, NV and is a K5RC and W5FU creation. Big antennas led to 724 QSOs on 15 and 398 on 10 meters.



Jeff, WK6I operated SO6V (Single-Op, 6 VFOs!) at W7RN (Photo by K5RC)

WK6I is definitely changing the RTTY landscape with his SO6V operating configuration. It gives Tom, K5RC a headache just watching him use this control center. Three K3s, six VFOs, five amps, 12 antennas, five rotators, five monitors, three computers, three mice, one rubber chicken, and one operator, WK6I.

The Single-Operator, Low Power category was won by W7Yaq out of Oregon. Bob set a new Northwestern Division record and secured the Division win. This was good for seventh place overall. Dick, W7ZR in Arizona was eighth overall and won the Southwestern Division. Bill, K2PO/7, also from Oregon, was in third position but won the multiplier race. Randy, K7TQ from Idaho was next. Koji, VA7KO representing the Orca DX and Contest Club was in the final region spot. Chuck, N6OJ won the Pacific Division.

### West Region Single Operator Low Power Comparison

Call	Sec	Score	QSOs	Mults	80 M	40 M	20 M	15 M	10 M
					QSOs	QSOs	QSOs	QSOs	QSOs
W7Yaq	OR	138,195	1254	111	134	225	388	266	241
W7ZR	AZ	138,137	1303	107	79	234	477	439	74
K2PO/7	OR	134,794	1121	121	115	66	320	431	189
K7TQ	ID	104,133	1021	103	157	135	453	187	89
VA7KO	BC	99,510	1091	93	59	99	328	394	211

The table above demonstrates how close the race was in the Western Region. It shows the propagation and choices that were made by the operators. W7Yaq and W7ZR both started on 10 meters running stations and had nearly identical first hours of 38 and 37 QSOs. K2PO/7 and VA7KO both started SO2R on 20 meters doing search-and-pounce. K7TQ started on 10 meters but quickly moved after only 17 QSOs. Randy was also S&P with just one radio. W7ZR took a little more time off and that most likely cost him the victory. The winner, W7Yaq, worked until 0704Z and fired up a little over six hours later on 40 meters.

Single-Operator, High Power in the Western region was won by W7RN as described above. Lee, VE7CC was in second place, winning Canada while setting a new Canadian record. Dave, K6LL operating WK7S set a new Southwestern record while winning the Division. Bob, K8IA was in regional fourth place. My old contesting buddy Jim, W7RY won himself another Northwestern Division trophy, his first from Western Washington I believe.

All Multi-Single, Low Power places in the West Coast Region were stations running with assistance. Mark, WT6P got the Southwestern Division win. Paul, N6MA was in second and Bruce, VE7BSM was third. Dick, W6TK was fourth and Russ, K5OA finished out the top five in the region.

The region's Multi-Single, High Power category was won by Gene, KB7Q using Tom, K7FA's station in Arizona. The two of them set a new record for the Southwestern Division and were ninth overall in the contest. Dick, K7BTW and crew out of the Seattle area won the Northwestern Division. Tom, NW6P assisted by N7MH won the Pacific Division. Iain, N6ML operating at K6LRG was in the next spot. The innovative group of

W6NEV, W6RK, K6YL, and K6UFO from Stanford University station W6YX captured the last spot in this region.

#### West Coast Region (Pacific, Northwestern and Southwestern Divisions; Alberta, British Columbia and NWT Sections)

Call	Score	Category	
W7YAQ	138,195	SO	LP
W7ZR	138,137	SO	LP
K2PO/7	134,794	SO	LP
K7TQ	104,133	SO	LP
VA7KO	99,510	SO	LP
W7RN (WK6I, op)	309,248	SO	HP
VE7CC	271,816	SO	HP
WK7S (K6LL, op)	238,497	SO	HP
K8IA	182,628	SO	HP
W7RY	168,150	SO	HP
WT6P	66,833	MO	LP
N6MA	60,698	MO	LP
VE7BSM	48,752	MO	LP
W6TK	34,240	MO	LP
K5OA	28,728	MO	LP
KB7Q	186,147	MO	HP
K7BTW	172,634	MO	HP
NW6P	171,244	MO	HP
N6ML	154,734	MO	HP
W6YX	147,950	MO	HP

### New US/VE Records and Top Ten

With solar conditions being pretty good this year we had modest changes to the all-time Roundup Records. Thirteen new Division records were established along with fifty-one new Section records.

On both sides of Canada we have two tough radiosporting gurus; Fabi, VA2UP and Lee, VE7CC. They continue to knock out new records for Canada nearly every year.

Call	Sec	Category	Score	QSOs	Mults
VA2UP	QC	SOLP	201,125	1619	125
VE7CC	BC	SOHP	271,816	2243	122

Division	Category	Station	Score	QSOs	Mults
Canada	SOLP	VA2UP	201,125	1619	125
Canada	SOHP	VE7CC	271,816	2243	122
Central	SOHP	AI9T	218,377	1680	131
Dakota	SOLP	NØAT	199,200	1684	120
Delta	MSHP	KN5O	196,080	1526	129
Great Lakes	SOHP	N8BJQ	167,680	1319	128
Hudson	SOHP	N2KI	136,304	1239	112
Midwest	SOHP	ABØRX	233,100	1877	126
New England	MSHP	K1SFA	224,250	1631	138
Northwestern	SOLP	W7YAQ	138,195	1254	111
Pacific	SOHP	W7RN (WK6I)	309,248	2428	128
Roanoke	SOLP	N2QT	209,592	1712	123
Roanoke	SOHP	K4GMH	310,050	2415	130
Southwestern	SOHP	WK7S (K6LL)	238,497	1949	123
Southwestern	MSHP	KB7Q	186,147	1619	117
West Gulf	SOLP	KE5OG	136,141	1264	109
West Gulf	MSLP	WB5TUF	124,928	1031	122

Section	Category	Station	Score	QSOs	Mults
CT	MSHP	K1DM	89,320	826	110
EMA	SOLP	W1CCE	81,852	727	114
	SOHP	W1UE	293,862	2313	129
	MSLP	AB1J	73,644	727	102
ME	MSHP	KV1J	129,580	1052	124
VT	MSLP	WA1ZAM	23,760	307	80
	MSHP	WE1H	55,460	599	94
WMA	MSHP	K1SFA	224,250	1631	138
ENY	SOHP	N2KI	136,304	1239	112
SNJ	SOLP	N2NF	38,950	414	95
EPA	MSLP	KA3QLF	87,516	769	117
MDC	MSHP	W3LL	118,167	1006	119
AL	SOLP	KC4HW	163,683	1431	117
GA	MSHP	WW4LL	193,225	1505	131
VA	SOLP	N2QT	209,592	1712	123
	SOHP	K4GMH	310,050	2415	130
LA	MSHP	KN5O	196,080	1526	129
MS	MSHP	NA5NN	118,250	1086	110
STX	MSLP	WB5TUF	124,928	1031	122
WTX	SOLP	KE5OG	136,141	1264	109
	MSLP	W5ZO	55,020	665	84
EB	MSHP	N6ML	154,734	1261	123
SB	MSLP	W6TK	34,240	432	80
SCV	SOHP	K6TU	155,120	1399	112
	MSHP	NW6P	171,244	1396	124
SDG	SOLP	WN6K	70,400	807	88
SF	SOHP	N6IE	135,660	1354	102
SV	MSLP	KJ6RA	4488	102	44
AZ	SOHP	WK7S (K6LL, op.)	238,497	1949	123
	MSHP	KB7Q	186,147	1619	117
EWA	SOHP	W6AEA	139,100	1306	107
ID	SOLP	K7TQ	104,133	1021	103
NV	SOHP	W7RN (WK6I, op.)	309,248	2428	128
OR	SOLP	W7YAQ	138,195	1254	111
UT	SOLP	WA7LNW	59,556	716	84
WWA	SOHP	W7RY	168,150	1453	118
WY	MSHP	WY7SS	136,188	1426	97
OH	SOHP	N8BJQ	167,680	1319	128
WV	MSHP	KU1T	172,752	1471	118
IL	SOLP	KD9MS	104,538	928	114
	SOHP	AI9T	218,377	1680	131
IN	SOHP	KE9I	124,096	1119	112
KS	SOHP	ACØC	206,892	1704	126
MN	SOLP	NØAT	199,200	1684	120
MO	SOHP	ABØRX	233,100	1877	126
SD	MSLP	KDØS	5029	107	47
QE	SOLP	VA2UP	201,125	1619	125
MB	SOHP	VE4EAR	159,467	1481	109
SK	MSHP	VE5MX	172,874	1424	122
BC	SOLP	VA7KO	99,510	1091	93
	SOHP	VE7CC	271,816	2243	122



## W/VE Top 10

### Single-Operator, Low Power

AA5AU	251,244
N2QT	209,592
VA2UP	201,125
NØAT	199,200
KC4HW	163,683
KØAD	162,108
W7Yaq	138,195
W7ZR	138,137
NTØF	137,007
KE5OG	136,141

### Single-Operator, High Power

K4GMH	310,050
W7RN (WK6I, op)	309,248
W1UE	293,862
VE7CC	271,816
AA3B	268,288
N2WK	264,404
WK7S (K6LL, op)	238,497
ABØRX	233,100
WØLSD	229,068
AI9T	218,377

### Multioperator, Low Power

K9OM	144,738
WB5TUF	124,928
K2EN	110,823
AA4NC	101,916
W4GAC	96,193
W9ILY	95,485
W1SLF	92,070
KA3QLF	87,516
WØRAA	81,696
KOØZ	74,235

### Multioperator, High Power

NØNI	265,950
WØSD	249,480
K1SFA	224,250
K9CT	218,115
WA5ZUP	204,120
KN5O	196,080
WW4LL	193,225
NR4M	192,570
KB7Q	186,147
W4RM	177,664

## DX Highlights

RTTY Roundup has grown from 295 logs submitted in 1989 to 1922 logs in 2013 – a major increase in participation. The most significant increase in participation has come from the DX side. From only 60 DX logs in 1989 it has grown to 936 logs in 2013. In fact, while US/VE logs decreased slightly this year DX logs showed a healthy increase of more than 15% over last year.

The 2013 RTTY Roundup had good balance with nearly equal log numbers coming from US/VE and the DX locations. The breakdown in increased operation is: Africa 1.4%, Asia 18.6%, Europe 70.2%, North America (outside W/VE) 3.2%, Oceania 2.8% and South America 3.8%. By entry category the logs were 511 SOLP, 203 SOHP, 97 MSLP, and 90 MSHP. This distribution is

pretty much in line with the distribution in the US/VE logs as well.



Sergio IT9MBZ operating at the IT9BLB M/S (Photo by IT9BLB)

## Africa

Leading off in the Single-Operator, Low Power category is Mohamed, CN8KD who was third in the Top Ten. Ashraf, KF5EYY operating the 3V8BB station set a new Tunisian record. Single-Operator, High Power was won by Jose, CT3KY who also established a new Madeira Islands record.

The Multi-Single, Low Power category was won by Claudia EA8/PA3LEO while setting a new Canary Islands record. Multi-Single, High Power was won by Bernie, ZS4TX who also secured a new South African record. Perhaps all these records will increase some interest in beating them next year.

## Asia

In Asia it was Single-Operator, Low Power Taro, JA1BJI doing the continental honors and setting a new Japanese record. Oleg, A65BR created a new United Arab Emirates record.

Single-Operator, High Power was won by Gennadiy, UN1L. Leonid, 4Z5KU had a new Israel record. From Taiwan it was Fred, BV1EK with a record setting effort.

Multi-Single, Low Power was won in Asia by Nakaba, JG3FEA, which was also a new record. (Remember that many MSLP entries are single operators with spotting assistance!) Chun-I, BX2ACN set a new Taiwan record. Tasanakorn, E22WIW set a new Thailand record.

The Multi-Single, High Power winner from Asia was Mitsuo, JM1XCW entering as M/S with assistance.



## Europe

In all four categories there were new European country records. In fact records were set in 32 countries in all categories in the 2013 running of the RTTY Roundup.

Country	Category	Station	Score	QSOs	Mults
Croatia	SOHP	9A5W	213,237	1669	129
Fed. Rep. of Germany	SOLP	DL4MCF	116,263	990	119
	MSHP	DJ3NG	97,704	836	118
Spain	MSHP	EC4DX/1	189,924	1448	133
Ireland	SOHP	EI7KD	125,552	1135	112
	MSLP	EI3GRB	30,720	392	80
	MSHP	EI7M	219,604	1797	124
Moldova	MSLP	ER3DX	19,890	222	90
England	SOHP	G6PZ	278,528	2088	136
		(UT5UDX)			
Scotland	SOLP	GMØFGI	63,162	651	99
	SOHP	GM3POI	75,705	726	105
Switzerland	MSHP	HB9DHG	33,280	421	80
Italy	SOLP	IT9MUO	68,452	645	109
	SOHP	IQ2CJ	191,872	1529	128
		(IK2NCJ)			
	MSHP	IT9BLB	162,756	1253	132
Norway	MSLP	LA6FJA	17,141	285	61
	MSHP	LA9TJA	14,980	220	70
Austria	MSLP	OE3RTB	32,760	438	78
Finland	SOLP	OH8KVY	56,814	565	102
Czech Republic	MSLP	OK2RVM	44,469	554	81
Slovakia	MSLP	OM3KWZ	52,866	605	89
Belgium	MSLP	OQ6A	94,653	816	117
Denmark	SOHP	OZ1ADL	39,032	483	82
	MSHP	5Q2J	1,968	84	24
Slovenia	MSHP	S53M	175,768	1396	127
Sweden	SOLP	SM5CSS	43,326	502	87
Poland	SOHP	SN7Q	198,072	1598	126
Iceland	MSHP	TF3W	73,748	727	103
Ukraine	MSHP	UW4I	175,763	1511	119
Latvia	SOLP	YL2TB	34,340	409	85
Serbia and Montenegro	SOHP	YU/S56A	133,608	1192	114
		(S56A)			
Macedonia	SOHP	Z39A	3,010	70	43

Continental Single-Operator, Low Power was won by Tom, DL4MCF. Tom was also fourth overall in the Top Ten. DL4MCF also set a new record for Germany. Gerard, F5BEG took the final place in the Top Ten.

The RTTY Roundup had a huge pileup of fine operators in the Single-Operator, High Power category this year and Europeans filled 60 percent of the Top Ten box. Taking European top honors was Sergy, UT5UDX who operated G6PZ to second place overall while establishing a new Europe Continental record. Nikola, 9A5W was third overall. Chris, SP7GIQ used his contest call SN7Q to capture the fourth spot. If you enjoy looking at quad antennas then get on the Internet with google and check out the SN7Q antenna farm. Luca, IK2NCJ operating IQ2CJ placed fifth in the overall standings. Pavel used his contest call OL8M and that led to a sixth-place Top

Ten finish. Completing the European run was Alex, UR7GO who guided EM2G to ninth overall.

The Multi-Single, Low Power category in Europe had nine out of ten stations on the Top Ten list. Some winners were team efforts and some were operators using spotting or CW Skimmer assistance. Jo, ON5MF won for Europe using contest call OQ6A, although he normally doesn't participate in the Multi-Single category. Using the relatively new RTTY skimmer spots, Jo ran stations on his main VFO and jumped from one spot to another with his second VFO, no doubt mostly in-band to comply with the band change rules. Operating station EA2RY were EA2ABI, EA2KU, EA2WT and station owner EA2RY – they were second place. Esa, OH8KTN with additional operators OH8FTF and OH8GDU came in third place in the Top Ten. Frederico, IW1QN with packet was fourth. Another assisted operator was Oleg, UT8EL who came in fifth spot. UX4E placed sixth with Alex, UR7EC and Ivan, UT5EOX as station operators. Seventh place was won by Zvolen Club station OM3KWZ operated by Julo, OM7AA and Steve, OM7KW. At another radio club, the Oslava station of OK2RVM, operators Josef, OK2PDU and Radek, OK6AB completed the top eight places for Europe. Robert, OE3RTB used assistance to take the ninth spot.

Multi-Single, High Power wasn't won by a European operator, yet they dominated the field, taking all but the top place in the High Power box. EI7M, who is still training the crew on RTTY, set a new European continental record while placing first in Europe. Javier, EC4DX/1 with team members EA1AR, EC1KR and EA4AOC were next. Pavel, OL7M using assistance was next in line. Miha, S51FB operated S53M to the fifth overall Top Ten place. Vlad, UW4I was sixth. The IT9BLB crew containing IT9BLB, IT9MBZ, IT9PAD, IT9RGY and IT9VDQ were next. Using assistance was Kristjan, S5ØXX for the Top Ten eighth place. MW2I, the Denzil Contest Group station, was next with WW2R teaming up with GW5NF while contesting out of Wales. Simo, OH2HAN along with partner Pasi, OH2MZB completed the Top Ten places for the Europeans.

## North America

This region produced three fine scores after the log checking in the Single-Operator, Low Power category with Hector, XE2K taking the first place overall honors. Next was Jamie, VP9/WW3S. Third in the Top Ten was Ted, HI3TEJ. Operating from Grenada was Derek, J35X coming in fifth place in the overalls. Phil, KL8DX had a nice score out of Alaska but missed the big box.

Single-Operator, High Power in North America outside US/VE was won by Jose, KP4JRS who finished up seventh in the Top Ten. Edgar, HI8PLE finished up just behind Jose with an overall eighth-spot finish. A great effort was turned in by Rich, KL7RA, operating his Kenai station to the final place in the Top Ten. Quiet conditions are great for those who operate in the North.

The Multi-Single, Low Power North America category was won by KP2D. This crew consisted of operators AI8P, KP2E and KP2US. They placed ninth in the Top Ten.

The winner of Multi-Single, High Power was WP2NN using the Radio Reef station KP2M with operators Ron, N6EE and Chet, W6XK. They set a new North American record along with a new Top multiplier record of 136. From VP5NN to PJ2N and now WP2NN – where will they show up next?

Country	Category	Station	Score	QSOs	Mults
Guadeloupe	MSLP	FG1PP	9,024	151	64
Dominican Republic	SOHP	HI8PLE	147,828	1170	127
Grenada	SOLP	J35X	116,388	1103	106
Alaska	SOLP	KL8DX	91,902	907	102
	SOHP	KL7RA	137,970	1332	105
	MSLP	WL7BDO	26,220	357	76
U.S. Virgin Islands	MSHP	WP2NN	269,008	1993	136
Puerto Rico	SOHP	KP4JRS	162,737	1509	109
Guatemala	SOLP	TG9ANF	55,335	657	85
Mexico	SOLP	XE2K	160,608	1452	112

## Oceania

Max, KH6ZM secured the Top Ten's eighth spot while winning the honors for Oceania in Single-Operator, Low Power. This was both a new Oceania continental and Hawaiian record. Go, 9M6YBG set a new East Malaysia record.

Steve, VK3TDX won Single-Operator, High Power in Oceania. Mac, DV1/JO7KMB set a new Philippines record.

Graeme, VK7DZ got the Oceania win with spotting assistance in Multi-Single, Low Power. Larry, DU3/NØQM set a new Philippines record.

John, VK4UC captured the Multi-Single, High Power category in Oceania using spotting assistance and also set a new Australian record. It's been a while since Ron, K5DJ and I operated with John and nice to see him doing well. Frank, ZM2B also set a New Zealand record.

## South America

Wanderley, PY2MNL took seventh place overall in the Single-Operator, Low Power standings as ZZ2T. Not far behind was Shelly, HC2/K7MKL who not long ago was operating in the Rookie Roundup. She was ninth overall with a new Ecuadorean record. Jorge, LV5V established a new Argentina mark to beat as well.

Setting the World Record again was Ed, WØYK, the pilot of P49X. He is the contest Single-Operator, High Power winner. Ed's QSO total was also a new mark of 3,451. That is a rate of 143.79 QSOs per hour. P49X has now won the event eight times. Tom, CX7TT created a new Uruguay country record.

Multi-Single, Low Power was taken by Gonzalo, LU1DVE with spotting assistance. Sandra, HK3JJB set a new Colombian record. Jack, HC2/W6NF operated the HC2AD rental station and set what might be the lowest record ever, but records are records until beaten!

The South American Multi-Single, High Power category was won by Radiogruppo Sur. They put CW9OA on the air to celebrate the 90th Anniversary of the Uruguayan Radio Broadcasting. That team was comprised of CX1FU, CX5BE, CX6DAP, CX2ABC, and CX1CAK.

### DX Top 10

#### Single-Operator, Low Power

XE2K	160,608
VP9/WW3S	150,442
HI3TEJ	145,936
CN8KD	144,612
J35X	116,388
DL4MCF	116,263
ZZ2T (PY2MNL, op)	113,850
KH6ZM	108,388
HC2/K7MKL	97,545
F5BEG	97,114

#### Single-Operator, High Power

P49X (WØYK, op)	454,860
G6PZ (UT5UDX, op)	278,528
9A5W	213,237
SN7Q	198,072
IQ2CJ (IK2NCJ, op)	191,872
OL8M	173,118
KP4JRS	162,737
HI8PLE	147,828
EM2G (UR7GO, op)	146,133
KL7RA	137,970

#### Multioperator, Low Power

OQ6A	94,653
EA2RY	69,372
OH8KTN	65,208
IW1QN	63,838
UT8EL	57,252
UX4E	54,219
OM3KWZ	52,866
OK2RVM	44,469
KP2D	38,548
OE3RTB	32,760

<i>Multioperator, High Power</i>	
WP2NN	269,008
EI7M	219,604
EC4DX/1	189,924
OL7M	176,640
S53M	175,768
UW4I	175,763
IT9BLB	162,756
S5ØXX	157,374
MW2I	137,170
OH2HAN	125,512

## Next Year

*“Every time we make contact with a person, we have the ability to make their day better or worse . . . make it better.”* –George Raveling

The great unknown next year will be the propagation and what it might bring to the table for the RTTY Roundup. Carl, K9LA in a recent webinar presented his thoughts on what Cycle 24 might bring the rest of this year and of course the next Roundup – looks like it might be a double peak cycle but we won’t know for a while.

Yes, PSK31 is part of the Roundup notes W8FDV. He made *“All Contacts on PSK-31”*. Jim made about 100 QSOs. He used to be KA8OUT and is an Arizona Outlaw Contest Club member. We need more PSK31 operators involved.

One important point was made recently by Ed, WØYK (P49X) in an email to the RTTY reflector. Ed was clarifying what is necessary for Single-Operator, Two Radio (SO2R) operators. This would also of course apply to Single-Operator, Six VFO (SO6V) operators.

WØYK wrote, “One should always use a hardware interlock in SO2R to guarantee only one signal is on the air at a time. The *WriteLog* software interlock is not sufficient, as there is often an overlap of the two transmitted signals if you rely on it to stop the first transmission. This isn’t a bug but rather an inevitable limitation of using software for this function.”

This is most likely also true with any software lockouts. Funny as hardware interlocks were discussed as far back as the first CQ WW RTTY contest when multi-single stations used hardware interlocks at HD8CQ to prevent having more than one signal on a band. This was of course prior to the band change a rule for multi-single.

I think next year will bring another round of nice band conditions and yet another increase in participation. The 150 QSO per hour mark may well be beat, as operators become more efficient with the use of multiple radios and VFOs.

Use the rest of this year to plan your strategy for the next Roundup. January 4-5 will be the contest dates in 2014.

## A Day in the Life of A "Rate Junky"

by Mike Sims, K4GMH

Mike K4GMH needs no introduction but he has another compelling story that he shared for this year’s extended web version. Note the lack of propagation on ten meters and his small QSO totals on that band – WS7I

Nice ARRL RTTY Roundup contest. However, it didn’t start out so nice or so it seemed to me.

Goal for the contest was to make 2400 QSOs in 24 hours which I had reached the last couple of years (yeah, I’m a “rate junky”). My SO2R operating approach is to “run” on both radios rather than SO2R operation of “run” on one radio and search and pounce on the other radio. Using this method has produced my best QSO rates per hour.

Started out at the beginning of the contest, 1800Z, and that may or may not have been a good decision. (Could have started an hour or two later and counted the time towards my official six hours off time.) Wasn’t able to get sustained runs on either radio, at least not when 100 plus QSOs per hour were anticipated at the start of the contest. Something had to change or my goal couldn’t be reached.

Twenty and 15 meters were my starting bands with the antennas for both bands on Europe. This band combination was chosen after listening and calling CQ on 15 and 10 meters just prior to the contest. The SFI was 145 at the start of the contest, high enough, at least I thought, to have good 10 meter activity for an hour or two at the beginning of the contest. However, didn’t hear more than one or two stations on 10 meters in the half hour leading up to the start. A few minutes before the contest, the decision was made to start on 15 and 20 meters. Maybe 10 meters would be open Sunday morning. (Ten meters never did open during the contest, for me at least, as anticipated based on the SFI and propagation forecasts.)

With this decision out of the way, the contest started, but not as I had hoped. Averaged 85 QSOs per hour for the first four hours using 20 and 15 meters with the antennas on Europe. By this time, realized I had to average more than 100 per hour over the next 20 hours of the contest to reach my goal. Had to do something. Definitely, 20 and 15 meters with the antennas pointed towards Europe weren’t going to allow the goal to be reached and 15

meters was the slower of the two bands. Decided to go to 40 meters a bit early.

My mindset, going into the contest, was to move the 15 meter radio to 40 meters between 2230Z and 2300Z. Bumped this up a half hour. Also decided to point the lower 40 meter antenna towards Europe and the upper 40 meter antenna toward the NW. This also puts the upper 20 meters antenna in the NW direction as both upper 20 and 40 meter antennas are on the same mast (single tower). Still having acceptable runs to Europe on 20 meters so kept the lower 20 meter antenna (4-el SteppIR fixed on Europe at 100 feet) in the forward direction (SteppIR capable of 180-degree reversal by adjusting element length from the shack). This combination, one radio on 20 meters with the top antenna pointed NW and the lower antenna pointed towards Europe and the other radio on 40 meters with its top antenna towards the NW and the lower antenna pointed at Europe, hit the "sweet spot" for a rate junky. (Both antenna combinations were fed in phase.) Next two hours produced rates of 139 and 124 QSOs per hour!

The 20 meter rate increased due to the West Coast stations now hearing me better along with a nice number of Far East stations being put in the log. This nice 20 meter run lasted the next two plus hours with rates of 66 and 59 QSOs per hour. Meanwhile 40 meters was producing 70 and 66 QSOs per hour. Finally, 20 meters started to slow and this radio was switched to 80 meters.

Now on 80 and 40 meters, the QSO rate remained 120-plus per hour average for the next six hours. Unfortunately, this far into the contest the rate junky adrenaline high was overcome by the urge for sleep especially for this 70-plus-year-old who now had been up for over 18 hours.

Five and half hours were officially taken (0600Z to 1130Z) in the contest with a bit over five hours for sleep. Half-hour maximum breaks were taken from time to time throughout the contest which don't count towards the six hours of official off time unless a half hour off time is used as one of the two official off times. Still my official operating time was less than 23 out of 30 hours of the contest. (Single operators can operate 24 of the 30 hours with no more than two off times that can be counted towards the six hours of official off time.) Another factor, for me at least, is at 120-plus QSOs per hour I'm too busy, even for RTTY contesting, to eat while in front of the radio. Thus my need to take the break, get up and take a few steps, get something to eat, take care of bodily functions, etc.

The contest ended, mercifully according to my body, with 2469 QSOs in the log. Goal had been reach, 2400 QSOs for the contest, even though I only operated (officially) for 22 hours, 20 minutes.

Now, whether the score, 323,439 points (unofficial), will be sufficient to win a category and help PVRC get another gavel is up to the contest committee and the official scoring computer. What ever happens, I had fun in making all the contacts with old and new friends. Reaching and exceeding my pre-contest goal was definitely the icing on this delicious cupcake called the ARRL RTTY Roundup.

Band	QSOs	Mults
80	371	6
40	710	29
20	808	55
15	529	41
10	51	0
Totals:	2469	131

Radios: IC746s

Amps: GS-35Bs (1400 W RTTY)

Ant: 10 - 20, pair of 4 el. SteppIRs (one at 130 ft the other fixed on Europe at 100 ft); TH6DXX fixed SE at 40 ft

40, pair of F12 EF240Xs (one at 142 ft the other at 70 ft)

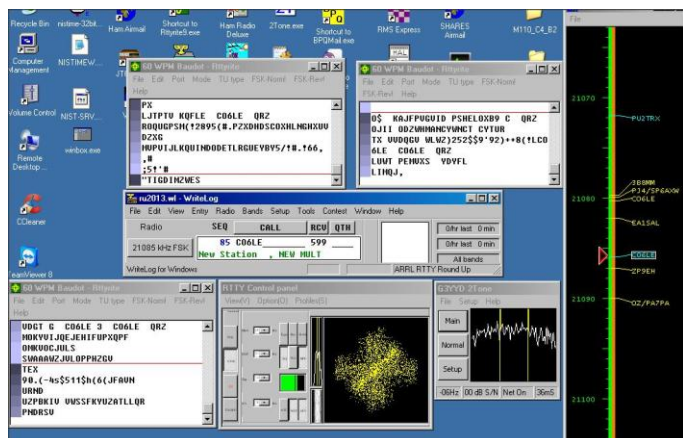
80, xmit on inverted V with apex at 120 ft; reception pair of 480 ft Beverages (one NE other W)

S/W: WL w/ MMTTY run on a single computer.

All antennas, except the Beverages, are mounted on a 130 ft tower.



## Technology and RTTY Radiosporting



Screen shot of RTTY Roundup. Showing three demodulators: ST-8000, 2Tone and MMTTY at WS7L.

Implementing soundcard RTTY with 2Tone was the major technical achievement in RTTY contesting for this year. David, G3YYD developed 2Tone, a new soundcard demodulator. 2Tone initially came out on the N1MM Logger contest program platform and was quickly added to other programs like Logger32 and WriteLog. N1MM Logger is David's favorite radiosporting program.

### 2Tone - the latest RTTY Demodulator

By David Wicks, G3YYD and M7T

While at school in the mid to late 1960s, I self-studied for and passed the radio amateur exams and was issued with a full HF amateur radio licence, G3YYD. Not soon after, in 1970 I was given a very old 1944 Creed 7B teleprinter by a local which I got working with a simple homebrew terminal unit and AFSK interface.

Realising that my simple TU was lacking in performance I built an ST6 which was considered at that time the premier design of TU. I also managed to buy off a scrap heap a brand new Creed 7E/RP plus an old USA-made three-headed tape reader. Now I had the full kit including use of perforated tape.

I then added digital electronics in the form of a speed converter with 80 characters of FIFO so I ran the machinery at 56 baud and input/output at 45.45 baud. I had a link that stopped the tape reader when the FIFO was filled with 64 characters and started it again when it fell to 32 characters. I also had a large meter that indicated how full the FIFO was as I could type faster than 45.45 baud (60 WPM) and could overflow the FIFO.

In 1974 I designed and built a new terminal unit based on the "AM" system using a 3-pole LC filter for mark tone and another for space tone, a high dynamic range op amp-based detector, 3-pole LPF that compensated the LC filter response to minimise intersymbol interference (ISI) with envelope determination for each tone then linear combining into the slicer. This outperformed the ST6 by a long way.

Between Christmas and New Year 1977, I completed the build of a Motorola 6800 based computer and by the second week in January had it working RTTY. Not long after that I started to co-operate with Peter Martinez, G3PLX, who had a similar 6800-based computer co-operated, in trying out different coding systems that would work using our existing terminal units. Some of them required 100 baud so I changed the ST6 low pass filter to work with 100-baud signals. The AM unit tone filters were too narrow for anything more than 45.45 baud. We tried all sorts of synchronising with or without forward error correction and detection with correction by automatic repeat request. I obtain the CCIR 476-1 recommendation and that was implemented by Peter. We had better systems but with the cold war still "hot" decided the authorities would be better with a known system.



Creator of 2Tone David G3YYD at his operating position. (Photo by G3YYD)

In the early 80s I designed a 1200 baud modem to plug into the 6800 computer and started using packet AX.25 on VHF with homebrew software. The next step came in the early 90s when the family PC was replaced and the old one came to the radio desk. Started to use the available RTTY freeware and realised that it did not work as well as my old 1970s "AM" TU. However being busy at work and with family nothing I could do about it. I was entering contests using N1MM logging software

with *MMTTY* and everyday *Logger* (now *Logger32*) with *MMTTY*.

I retired early at 56 and after a number of months decided that I needed to replicate and improve on my old AM TU by using PC software. Knowing nothing about digital signal processing or Windows programming, this was definitely something to keep the grey cells ticking over. I asked Peter Martinez, G3PLX for some guidance and he was most helpful helping me with how to programme for the sound card and DSP. Fortunately when my team at work had a problem in the mid 80s, being the manager I got hold of a C book and software for the PC. I wrote some software to improve their productivity by about 100 times and in the process learned enough C to be useful.

The first version of *2Tone* came into existence in a DOS (console) window format after a large struggle with sound card programming (MS seem to deliberately make life difficult). This proved at that early stage to outperform *MMTTY* and I used it in a DOS window during contests. I then went on to adding a Windows interface with the help of a book by Penfold that now makes a very good door stop. Again MS do not make life easy.

I used *2Tone* standalone to give me a competitive advantage in RTTY contesting which it did. Then I looked at the *N1MM Logger/MMTTY* interface and wrote some middleware so I could detect what messages passed between *N1MM Logger* and *MMTTY*. I implemented those messages so *2Tone* could be used directly with *N1MM Logger*. Rick, N2AMG was most helpful in telling me that the *N1MM Logger* DI (digital interface) needed access to *MMTTY.ini* to work, not something my middleware could detect.

After a few years of using *2Tone* improving it as time went forward, it was time to enable others to have the benefits of my efforts. After all I had been using *Logger32* and *N1MM Logger* for years for free and it was now my turn to help the amateur community. So I realised it from the N1MM digital site and sent an email out. I had forewarned the N1MM software team that this was going to happen.

The response has been varied and interesting. Some have their own particular idea which is often not based on thought out scientific or engineering principles. Other have some good ideas which in some cases have been incorporated into later releases of *2Tone*.

## 2Tone – When You Want the Best

By Don Hill, AA5AU



Don AA5AU's radiosporting station (Photo by Shay Hill)

After several years of development, David Wicks, G3YYD released a new RTTY soundcard modem in 2012 called *2Tone* as a direct replacement to *MMTTY*. *2Tone*, like *MMTTY*, uses a soundcard in a Windows computer to encode and decode RTTY signals. Although it is limited to AFSK transmission, the true value of *2Tone* is its superior decoding capabilities as compared to *MMTTY*. *MMTTY*, created by Mako Mori, JE3HHT, gained popularity around the year 2000 and has served RTTY enthusiasts well for many years. But it may be time for *MMTTY* to step aside as *2Tone* becomes the preferred decoder among RTTY contesters and DXers.

Wicks originally designed *2Tone* to be used with *N1MM Logger* since he is an avid RTTY contester. With *N1MM Logger* being the most widely used contesting program for RTTY today; it didn't take long for word to get out about this new sensational modem. In just one short year, *2Tone* has become the rave of the amateur radio RTTY community world-wide. It allows operators to decode RTTY better than ever before using a soundcard in conjunction with today's most popular RTTY programs.

The buzz about *2Tone* caused software writers to scramble in early 2013 to make sure it was available in their RTTY programs. Besides *N1MM Logger*, *2Tone* can now be used with *Logger32*, *DXLab WinWarbler*, and *WriteLog* for Windows, thanks to an ActiveX component called *XMMT.ocx* written by Mori. *XMMT.ocx* is used to call *2Tone* into programs in the same manner as *MMTTY*; thus making *2Tone* a direct *MMTTY* replacement.

In side-by-side testing, *2Tone* has proven to be better at decoding RTTY than *MMTTY* on a consistent basis under a variety of conditions. Where *2Tone* really excels is when the signal is weak and undergoing deep rapid fading or selective fading where either the mark or space tone is suppressed. Many RTTY operators now subscribe to the idea that *2Tone* is overall better than *MMTTY*. But *MMTTY* is not going completely away just yet.

Results of a survey conducted on [rttycontesting.com](http://rttycontesting.com) in 2010 showed that FSK is the preferred method of RTTY transmission among RTTY contesters by a margin of more than 2 to 1. Since *2Tone* does not support direct-keying FSK, FSK users must still use *MMTTY* in their main RTTY window in all programs that support *2Tone* with the lone exception being *WriteLog*. *WriteLog* users can employ *2Tone* in their main RTTY window because *WriteLog* can generate FSK independently. Not to be lost is the fact that *2Tone* can actually be used to key FSK in a roundabout way called pseudo-FSK by outputting a 5 kHz audio tone in on/off fashion from a soundcard. This audio tone “keying” can then be converted to direct on/off keying using an external homebrew circuit between the soundcard and FSK input of the transmitter. It’s a novel way to achieve FSK, but who wants to build homebrew circuits anymore? Some will and that’s great, but non-*WriteLog* users will still rely on *MMTTY* in their main window so they can directly key FSK. Mori’s *MMTTY* will live on for now.

It is a common thought among many that using both *2Tone* and *MMTTY* together in separate windows allows for greater diversity in decoding RTTY. Both *WriteLog* and *NIMM Logger* allow several receive-only RTTY windows to be opened at the same time to decode the same signal. These windows can be *2Tone*, *MMTTY* or any combination of both and can even include external hardware decoders. Using multiple decoders is not new, but now with *2Tone* leading the way, copying RTTY signals has never been better. *2Tone* is truly remarkable. What may be even more remarkable than *2Tone* itself, is its author. Wicks had no prior experience in designing RTTY software filters or Windows programming when he ventured into creating *2Tone*. I, for one, am glad he did. *2Tone* is now my #1 decoder for both RTTY contesting and DXing. As far as RTTY soundcard modems go, *2Tone* is now the best.

### Plaque Category

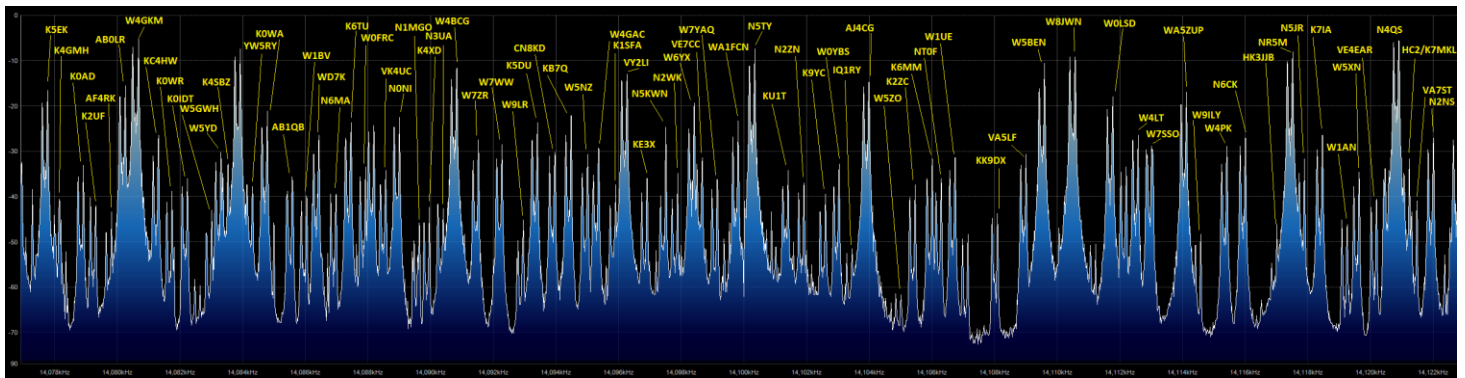
W/VE Single Operator High Power  
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NTØF  
  
W1CCE  
N2QT  
AA4NC



Is the frequency in use? Of course it is! This spectrum from 14.077 to 14.123 MHz shows why it was hard to get a character in edgewise. The band was captured and analyzed by Andy Flowers, KØSM/2, using a Softrock Ensemble II and SDR# software on a low dipole in upstate New York.