NCJ

# NATIONAL CONTEST JOURNAL

$4

May/June 2000

Volume 28 Number 3

Visit our NEW Web Site: www.ncjweb.com

- The RSGB IOTA Contest
- The Bavarian Contest Club's DXpedition to Pennsylvania
- The Monoband Log-Cell Yagi Revisited—Part 3
- Field Day in Europe
- *NCJ Profiles:* S57AW


**The GU8D IOTA Team was assembled to activate Sark, one of the UK's Channel Islands, for the 1999 running of the RSGB *Islands on the Air* Contest.**

**NCJ: The National Contest Journal**
American Radio Relay League
225 Main Street • Newington, CT 06111-1494

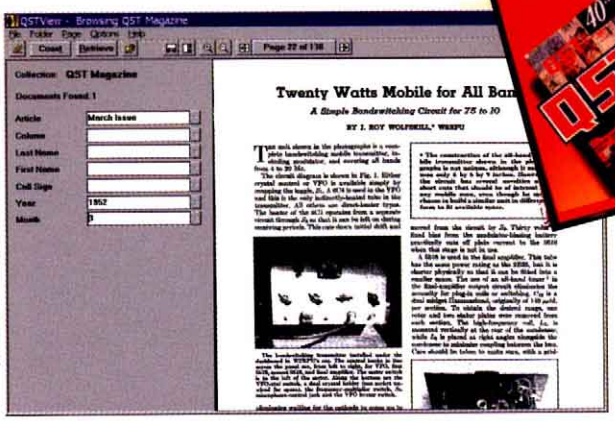
# "With ARRL CD-ROM Collections, you have information at your command!"

## QST View

Imagine having back issues of ***QST*** magazine at your fingertips! Each ***QST View*** CD-ROM includes all the **ads, articles, columns** and **covers**—scanned to provide a black-and-white image that can be viewed on your computer screen or printed. **Every Page**. Easy-to-use software included on the CD allows you to:

- **search for articles by title and author**
- **select specific year and issue, and**
- **browse individual articles or columns**

**Microsoft *Windows* required**





**SAVE** when you order the entire *QST* View Collection. Includes all 11 CD-ROM sets!

QSTV ~~$433.45~~ **Now $373.45**

### QST View CD-ROM sets

| Years | Order No. |
|---|---|
| 1915-29 | #7008 |
| 1930-39 | #6710 |
| 1940-49 | #6648 |
| 1950-59 | #6435 |
| 1960-64 | #6443 |
| 1965-69 | #6451 |
| 1970-74 | #5781 |
| 1975-79 | #5773 |
| 1980-84 | #5765 |
| 1985-89 | #5757 |
| 1990-94 | #5749 |

**ONLY $39.95* PER SET**

*plus shipping/handling

## ARRL Periodicals CD-ROM

### An entire year of reading on one space-saving CD-ROM!—

- **SEARCH** the full text of every *QST*, *QEX* (*the Forum for Communications Experimenters*) and *NCJ* (*The National Contest Journal*) published during one year.
- **SEE** every word, photo, drawing and table—including color images!
- **PRINT** what you see.

**Requires Microsoft *Windows***


**ARRL Periodicals CD-ROM sets:**

| Year | Order No. |
|---|---|
| 1998 | #7377 |
| 1997 | #6729 |
| 1996 | #6109 |
| 1995 | #5579 |

**JUST $19.95* PER SET!**

*plus shipping/handling

## QEX and NCJ Collection CD-ROM

### QEX and NCJ Collections

Back issues from these journals have been scanned to provide black-and-white images that can be read on your computer screen or printed. All the articles, ads, columns and covers are included. **Search—Select—Browse—it's all there!** System Requirements: Pentium or equivalent IBM-compatible PC, and Microsoft Windows 95, 98 or NT 4.0.


### The QEX Collection CD-ROM

For Communications Experimenters! Includes all ***QEX*** issues from 1981 through 1998.

ARRL Order No. 7660 **$39.95***

**NEW!**

### The NCJ Collection CD-ROM

Contests, scores and more! Includes all ***NCJ*** issues from 1973 through 1998.

ARRL Order No. 7733 **$39.95***

**Order Toll Free**

**1-888-277-5289**

***Shipping/Handling:** US orders add $4 for one CD-ROM, plus $1 for each additional CD ($9 max.). US orders shipped via UPS. International orders add $1.50 to US rate ($10.50 max.). Shipping via surface mail.

**ARRL** 225 Main Street, Newington, CT 06111-1494 USA tel: 860-594-0355
fax: 860-594-0303 e-mail: pubsales@arrl.org World Wide Web: http://www.arrl.org/

# CABLE X-PERTS, INC.

**JAKE** wants you to get into the Antenna season by **Rolling, Reeling & Roping** in our

## MAY 2000 SPECIAL

4 Sizes on **500ft Spools**

$^3/_{32}$" (260#) $22.50/ea.

$^1/_8$" (420#) $35.00/ea.

$^3/_{16}$" (770#) $45.00/ea.

$^5/_{16}$" (1790#) $70.00/ea.

**for product details see antenna and tower support rope below*

Enjoy "FREE FREIGHT" (UPS Ground within the 48 contiguous states only) on this special only. Shipping applies to all other destinations and products listed herein. Sorry NO COD'S. Illinois residents add 8.25% state sales tax.

### COAX (50 OHM"LOW LOSS" GROUP)

| | 100FT/UP | 500FT | 1000FT |
|---|---|---|---|
| "FLEXIBLE" 9913 STRD BC CNTR FOIL + 95% BRAID 2.7dB@ 400MHz NC/DB/UV JKT | .58/FT | .56/FT | .54/FT |
| LMR 400 SOLID CCA CNTR FOIL + BRAID 2.7dB @ 450MHz WP/UV JKT | .59/FT | .57/FT | .55/FT |
| LMR 400 "ULTRA-FLEX" STRD BC CNTR FOIL + BRAID 3.1dB @ 450 MHz TPE JKT | .87/FT | .86/FT | .85/FT |
| LMR 600 (OD.590") SOLID CCA CNTR FOIL + BRAID 1.72dB @ 450 MHz WP/UV JKT | 1.25/FT | 1.22/FT | 1.20/FT |
| LMR 600 "ULTRA-FLEX" STRD BC CNTR FOIL + BRAID 2.1dB @ 450MHz TPE JKT | 1.95/FT | 1.93/FT | 1.90/FT |

### COAX (50 OHM "HF" GROUP)

| | 100FT/UP | 500FT | 1000FT |
|---|---|---|---|
| RG213/U STRD BC MIL-SPEC NC/DB/UV JACKET 1.2 dB/2500WATTS @ 30MHz | .36/FT | .34/FT | .32/FT |
| RG8/U STRD BC FOAM 95% BRAID UV RESISTANT JKT 0.9dB/1350WATTS @ 30MHz | .34/FT | .32/FT | .30/FT |
| RG8 MINI(X)95% BRAID UV RESISTANT JACKET 2.0dB/875 WATTS @ 30MHz | .15/FT | .13/FT | .12/FT |
| RG58/U 95% BRAID UV RESISTANT JACKET 2.5dB/400 WATTS@ 30MHz | .15/FT | .13/FT | .11/FT |
| RG58A/U STRD CENTER 95% TC BRD UV RESISTANT JKT 2.6dB/350 WATTS @ 30MHz | .17/FT | .15/FT | .13/FT |
| RG214/U STRD SC 2 95% BRD NC/DB/UV JKT 1.2dB/1800WATTS @ 30MHz | .25FT/UP | 1.75/FT. | |
| **RG142/U** SOLID SCCS 2-95% SILVER BRAIDS *Teflon®* JKT 8.2dB/1100WATTS @ 400MHz | .25FT/UP | 1.25/FT. | |

### COAX (75 OHM GROUP)

| | 100FT/UP | 500FT | 1000FT |
|---|---|---|---|
| RG11A/U STRD BC (VP-66%) 95% BRAID NC/DB/UV JKT 1.3dB/1000WATTS | .44/FT | .42/FT | .40/FT |
| RG6/U CATV FOAM 18GA CW FOIL + 60% ALUM BRAID | .20/FT | .13/FT | .11/FT |
| RG6/U CATV FOAM 18GA CW FOIL *QUAD SHIELD* | .25/FT | .18/FT | .16/FT |

### LADDER LINE GROUP

| | 100FT/UP | 500FT | 1000FT |
|---|---|---|---|
| "FLEXIBLE" 450 OHM 16GA COMPRESSED STRD CCS(PWR-FULL LEGAL LIMIT+) | .20/FT | .18/FT | .16/FT |
| "FLEXIBLE" 450 OHM 14GA COMPRESSED STRD CCS(PWR-FULL LEGAL LIMIT++) | .25/FT | .24/FT | .23/FT |
| 300 OHM 20GA STRD (POWER: FULL LEGAL LIMIT) | .15/FT | .13/FT | .12/FT |

### ROTOR & CONTROL CABLES

| | 100FT/UP | 500FT | 1000FT |
|---|---|---|---|
| 5971 8/COND (2/18 6/22) BLK UV RES JKT. Recommended up to 125ft | .20/FT | .18/FT | .16/FT |
| 1618 8/COND (2/16 6/18) BLK UV RES JKT. Recommended up to 200ft | .35/FT | .34/FT | .32/FT |
| 1418 8/COND (2/14 6/18) BLK UV RES JKT. Recommended up to 300ft | .47/FT | .45/FT | .43/FT |
| 1216 8/COND (2/12 6/18) BLK UV RES JKT. Recommended up to 500ft | .78/FT | .74/FT | .70/FT |
| 1806 18GA STRD 6/COND PVC JACKET Recommended for Yaesu Rotors | .23/FT | .21/FT | .19/FT |

### ANTENNA WIRE

| | 100FT/UP | 300/FT | 500FT | 1000FT |
|---|---|---|---|---|
| 14GA 168 STRD *"SUPERFLEX" (great for Quads & Portable set-ups etc.)* | .19/FT | .16/FT | .12/FT | .10/FT |
| 14GA 7 STRD *"HARD DRAWN" (perfect for permanent Dipoles etc.)* | .15/FT | .12/FT | .08/FT | .06/FT |
| 14GA SOLID *"COPPERWELD" (for long spans etc.)* | .15/FT | .12/FT | .08/FT | .06/FT |
| 14GA SOLID *"SOFT DRAWN" (for ground radials etc.)* | .15/FT | .12/FT | .08/FT | .06/FT |

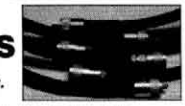
### ANTENNA & TOWER SUPPORT ROPE

| | 100FT/UP | 250/FT | 500FT | 1000FT |
|---|---|---|---|---|
| 3/32" DOUBLE BRAID *"POLYESTER"* 260# TEST WEATHERPROOF | .075/FT | .06/FT | .045/FT | .04/FT |
| 1/8" DOUBLE BRAID *"POLYESTER"* 420# TEST WEATHERPROOF | .10/FT | .08/FT | .07/FT | .057/FT |
| 3/16" DOUBLE BRAID *"POLYESTER"* 770# TEST WEATHERPROOF | .15/FT | .12/FT | .09/FT | .08/FT |
| 5/16" DOUBLE BRAID *"POLYESTER"* 1790# TEST WEATHERPROOF | .20/FT | .17/FT | .14/FT | .13/FT |

### FLEXIBLE 2/COND RED/BLK DC POWER "ZIP" CORD

| | | | |
|---|---|---|---|
| 8GA (rated:40 amps) | 50FT $24.50 | 100FT $44.50 | 250FT $107.50 |
| 10GA (rated:30 amps) | 50FT $15.50 | 100FT $28.00 | 250FT $65.00 |
| 12GA (rated:20 amps) | 50FT $10.50 | 100FT $19.00 | 250FT $42.50 |
| 14GA (rated:15 amps) | 50FT $8.50 | 100FT $15.00 | 250FT $32.50 |
| 16GA (rated:12 amps) | 50FT $5.50 | 100FT $10.00 | 250FT $22.50 |
| 18GA (rated: 8 amps) | 50FT $4.50 | 100FT $8.00 | 250FT $17.50 |

### COAX CABLE ASSEMBLIES



*with USA made Silver/Teflon® Gold Pin PL259 connectors.*

FLEXIBLE 9913 strd BC cntr foil+95% braid 2.7dB 400MHz NC/DB/UV JKT.
200' $129.95 175' $114.95 150' $99.95 125' $84.95 100' $69.95 75' $54.95 50' $39.95
25' $24.95 15' $21.95 10' $18.95 6' $12.95 3' $11.95 1' $10.95

RG213/U strd BC Mil-Spec NC/BD/UV JKT. 1.2dB 2500 watts @ 30MHz.
200' $89.95 175' $79.95 150' $69.95 125' $59.95 100' $49.95 75' $39.95 60' $34.95
50' $29.95 25' $19.95 15' $17.95 10' $15.95 6' $11.95 3' $9.95 1' $8.95

RG8/U strd BC foam 95% braid UV resistant JKT. 0.9dB 1350 watts @ 30MHz.
200' $81.95 175' $74.95 150' $64.95 125' $54.95 100' $44.95 75' $34.95 50' $24.95
25' $14.95 15' $15.95 10' $13.95 6' $11.95 3' $9.95 1' $8.95

RG8 MINI(X) strd BC foam 95% braid UV resistant JKT. 2.0dB/875watts@ 30 MHz
200' $47.95 175' $41.95 150' $34.95 125' $29.95 100' $24.95 75' $19.95 50' $15.95
25' $10.95 (18' $10.95 6' $9.95 3' $8.95 *clear PVC JKT*) (6' $4.95 3' $3.95 *China made*)

LMR 400 SOLID CCA CNTR FOIL + BRAID 2.7dB @ 450MHz WP/UV JKT 100' $72.95

*With USA made Silver/Teflon®/Gold Pin male "N" connectors.*

FLEXIBLE 9913 strd BC cntr foil+95% braid 2.7dB 400MHz NC/DB/UV JKT.
200' $147.95 175' $129.95 150' $110.95 125' $95.95 100' $80.95 75' $67.95 50' $54.95
35' $45.95 25' $39.95 15' $32.95 10' $25.95 6' $16.95 3' $15.95 1' $14.95

*With USA made Silver/Teflon®/Gold Pin PL259 to male "N"*

FLEXIBLE 9913 strd BC cntr foil+95% braid 2.7dB 400MHz NC/DB/UV JKT.
200' $139.95 175' $123.95 150' $104.95 125' $89.95 100' $74.95 75' $59.95
50' $44.95 25' $29.95 15' $26.95 10' $23.95 6' $14.95 3' $13.95 1' $12.95

*RG142/U 50 OHM COAX ASSEMBLIES*

Double Silver Braid Shields, High Power Teflon® Dielectric & Jacket
3ft PL259 ea end $12.95/ea. 3ft "N" male ea end $19.95/ea. 3ft SMA Male to BNC Female $13.95ea.
6ft PL259 ea end $14.95/ea. 3ft R.A. BNC to "N" Male $19.95/ea.
18ft PL259 ea end $24.95/ea. 3ft R.A. BNC to "N" Female $19.95/ea.
3ft SMA Female to "N" Female $19.95/ea. 3ft R.A. SMA Male to "N" Female $19.95/ea.
3ft SMA Female to "N" Male $19.95/ea. 3ft SMA Male to "N" Male $19.95/ea.

HT Solutions: use any of these jumpers to improve & increase the life of your HT.
RG8 MINI (X) 6' PL259-male BNC 6' $9.95
RG58/U w/Right Angle Male BNC to SO239 3' $9.95
RG58/U w/Right Angle Male BNC to PL259 3' $9.95

Assemblies Discounted: visit our website www.cablexperts.com

All connector terminations are soldered, Hi-Pot® tested @ 5kv for one minute, continuity checked, ultra violet resistant heat shrink tubing, and red protective caps, which can also be used as a boot.

### CONNECTORS

***Both connectors fit 9913 types and LMR400*** MADE IN USA

PL 259 SILVER/*Teflon®*/GOLD TIP.....10PC $12.50.....25PC $27.50.....50PC $52.50....100PC $100.00
"N" (2PC) SILVER *Teflon®* /GOLD TIP...10PC $32.50.....25PC $75.00.....50PC $143.75..100PC $275.00
For our other connectors and adapters see http://www.cablexperts.com

### TINNED COPPER "FLAT" GROUNDING BRAID

1 INCH WIDE (equivalent to 7ga).....25FT $24.00.....50FT $47.00.....100FT $94.00
$^1/_2$ INCH WIDE (equivalent to 10ga)..... 25FT $14.00.....50FT $27.00.....100FT $53.00
$^1/_2$ INCH x 6FT Copper Plated Ground Rod w/clamp.....$7.00 each

### I.C.E. PRODUCTS

180A Beverage/Longwire matching unit.....$39.00/ea
348 Rotor cable Line filter.....$44.00/ea
303U Coax impulse suppressor 8 kW 1.5-200MHz.....$44.00/ea
516R Remote RF power switch for up to 6 antennas.....$184.00/ea
Individual Band Pass Filters.....$35.00/ea
Purchase two or more ICE units and enjoy a 10% discount.
All other I.C.E.s stocked.

**HELIAX® LDF** series from **ANDREW®** Corporation.

- **Premium electrical performance.**
- **100% RF shielding.**
- **50 Ω Impedance.**
- **Very Low Loss Foam Dielectric.**
- **Use "N" and/or UHF connectors.**
- **Termination price: $15.00/each.**

SEE YOU AT DAYTON!
Booths 175-187 North Hall

Prices do not include shipping. $20.00 minimum order.
Prices subject to change without notice.

## http://www.cablexperts.com

FAX: 847-520-3444
TECH INFO: 847-520-3003

416 Diens Drive,
Wheeling, IL 60090

HOURS: M-F 9AM-5PM CST.

***ORDERS ONLY:***

## 800-828-3340

For Complete Catalog Check Web Site or Mail Request.

Checkout our web site
www.cablexperts.com
Its updated weekly

*CABLE & WIRE CUT TO YOUR SPECIFIC LENGTH • WE STOCK AND INSTALL CONNECTORS TOO.*

Teflon® is a registered trademark of DuPont.

CABLE X-PERTS, INC.

***The National Contest Journal***
***Volume 28 Number 3 May/June 2000***

National Contest Journal (ISSN 0899-0131) is published bimonthly in January, March, May, July, September and November by the American Radio Relay League, 225 Main Street, Newington, CT 06111-1494. Yearly subscription rate is $18. Other rates are listed below. Periodicals postage paid at Hartford, CT and at additional mailing offices.
POSTMASTER: Form 3579 requested. Send address changes to: National Contest Journal, 225 Main St, Newington, CT 06111-1494

*Publisher*
American Radio Relay League
225 Main Street, Newington, CT 06111
Telephone: 860-594-0200
fax: 860-594-0259 (24-hour direct line)
Electronic Mail: *hq@arrl.org*
World Wide Web: *http://www.arrl.org/*

*Editor*
Dennis Motschenbacher, K7BV
4357 Appollonio Way, Carson City, NV 89704
*editor@ncjweb.com*

*NCJ WWW Page*
Bruce Horn, Webmaster
*http://www.ncjweb.com/*

*ARRL Officers*
President: Jim Haynie, W5JBP

*Executive Vice President:*
David Sumner, K1ZZ

*Contributing Editors*
Gary Sutcliffe, W9XT—Contest Tips, Tricks & Techniques
Ward Silver, N0AX—*NCJ* Profiles
Jon Jones, N0JK—VHF-UHF Contesting!
Carl Luetzelschwab, K9LA—Propagation
Dennis Motschenbacher, K7BV—Contest DX-Ventures
Joe Staples, W5ASP—International Contests
Joe Pontek, K8JP—The Contest Traveler
Sean Kutzko, KX9X—DXpedition Destinations
Wayne Matlock, K7WM—RTTY Contesting
Ron Stark, KU7Y—Contesting for Fun
Bruce Horn, WA7BNM—Contest Calendar

ARRL CAC Representative
Lew Sayre, W7EW
PO Box 3110, Salem, OR 97302
*lew@teleport.com*

North American QSO Party, CW
Bob Selbrede, K6ZZ
6200 Natoma Ave, Mojave, CA 93501
*cwnaqp@ncjweb.com*

North American QSO Party, Phone
Bruce Horn, WA7BNM
4225 Farmdale Ave, Studio City, CA 91604
*ssbnaqp@ncjweb.com*

North American QSO Party, RTTY
Ron Stailey, K5DJ
504 Dove Haven Dr, Round Rock, TX 78664
*rttynaqp@ncjweb.com*

North American Sprint, CW
Mark Obermann, AG9A
6713 Forestview, Ln, Niles, IL 60714
*cwsprint@ncjweb.com*

North American Sprint, Phone
Rick Niswander, K7GM
PO Box 2701, Greenville, NC 27836
*ssbsprint@ncjweb.com*

North American Sprint, RTTY
Wayne Matlock, K7WM
Rt 2, Box 102, Cibola, AZ 85328
*rttysprint@ncjweb.com*

Advertising Information Contact:
John Bee, N1GNV, ARRL; tel 860-594-0207;
fax 860-594-0259; *ads@arrl.org*

*NCJ* subscription orders, changes of address, and reports of missing or damaged copies should be addressed to ARRL, 225 Main St, Newington, CT 06111 and be marked ***NCJ* Circulation**. ARRL members are asked to include their membership control number or their *QST* mailing label.

Letters, articles, club newsletters and other editorial material should be submitted to *NCJ*, 4357 Appollonio Way, Carson City, NV 89704

The NA Sprint and NA QSO Parties are not sponsored by the ARRL.

Yearly Subscription rates: In the US $18
US, Canada and Mexico by First Class Mail $26
Elsewhere by Surface Mail $28 (4-8 week delivery)
Elsewhere by Airmail $36


In order to insure prompt delivery, we ask that you periodically check the address information on your mailing label. If you find any inaccuracies, please contact the Circulation Department immediately. Thank you for your assistance.

# TABLE OF CONTENTS

3 Editorial *Dennis Motschenbacher, K7BV*

## FEATURES

4 The Bavarian Contest Club's DXpedition to Pennsylvania *Charles Fulp, K3WW*
6 The RSGB Islands on the Air (IOTA) Contest *Chris Burbanks, G3SJJ*
9 Field Day in Europe *Heinrick "Hein" Langkopf, DL2OBF*
10 All-Time Field Day Records *Denis Catalano, W4DC*
12 Multi-Multi—No Limits? *Larry "Tree" Tyree, N6TR*
13 World Wide Young Contesters Club *Chris Hurlbut, KL9A*
14 The Monoband Log-Cell Yagi Revisited—Part 3 *L. B. Cebik, W4RNL*
19 WRTC2000—The US Guys *Dave Patton, NT1N*
21 Contest Club Finland's 6th International Contest Meeting in Helsinki, Finland *Ari Korhonen, OH1EH*
22 Simple Pleasures are the Best *Mark Beckwith, N5OT*
25 Quick and Easy Two Radio Switching *Bill Kennamer, K5NX*
26 *NCJ* Profiles—Robert Bajuk, S57AW *H. Ward Silver, N0AX*
29 Kid's Day—June 17, 2000 *Jean Wolfgang, WB3IOS*

## COLUMNS

27 Contest Calendar *Bruce Horn, WA7BNM*
28 International Contests *Joe Staples, W5ASP*
30 Contesting for Fun *Ron Stark, KU7Y*
32 Contest Tips, Tricks & Techniques *Gary Sutcliffe, W9XT*
34 VHF-UHF Contesting! *Jon K. Jones, N0JK*
35 RTTY Contesting *Wayne Matlock, K7WM*
37 Propagation *Carl Luetzelschwab, K9LA*

## CONTESTS

40 NAQP Records through August 1999 *Bob Selbrede, K6ZZ*
42 North American QSO Party (NAQP) RTTY Rules

## *NCJ* Advertising Index

American Radio Relay League: Cov II
Array Solution: 45
Atomic Time, Inc.: 9
Bencher, Inc.: 46
CABLE X-PERTS: 1
Clark Electronics: 13
Command Technologies: 44
ComTek Systems: 18
Dunestar Systems: 43
Force 12: 48
GAP Antenna Products: 45
Geo Distributing: 18
ICOM America Inc.: Cov IV
IIX Equipment Ltd.: 31
Kangaroo Tabor Software: 46
K0XG, R. Hassell-Bennett: 45
N4XM, XMatch Antenna Tuner: 43
NA Contest Logging Software: 33
Productivity Resources: 43
QSLs By W4MPY: 25
Roy Lewallen, W7EL: 46
Sommer Antennas: 44
Texas Towers: Cover III
Top Ten Devices: 41
W2IHY, Julius D. Jones: 47
World Radio Sport Team Championship 2000: 24
WriteLog for Windows: 27

# Editorial

**Dennis Motschenbacher, K7BV**
**k7bv@aol.com**

December 8th, 1999 is a day I will not forget for many years to come.

I started my day going to my doctor's office—at his request. I knew he had just received my blood work-ups from my annual physical so even I could figure out that his urgent call probably wasn't to swap contest stories (my doc is a ham). But I wasn't prepared to hear that he thought there were indications that I may have cancer and that we needed to do further testing to find out where it was.

I left his office in a daze, trying to figure out the answers to all the questions that screamed in my head. Like "*Tell the wife, don't tell the wife*." I did tell her that evening knowing she would know something was wrong. We sat together discussing the matter.

We were interrupted by a phone call that would swing my emotions far to the other end of the spectrum. Ralph, K9ZO, wanted to know if I would be his partner at WRTC2000. I guess I finally popped a fuse and water began to flow from my eyes as I tried to thank Ralph for the honor he was sharing with me, all the time silently wondering if I would be alive in July. My heart pounded in my chest as I unsuccessfully tried to decide if I should tell Ralph… and maybe lose what was most likely my one shot to make it to the *Big Game*.

I needed some time alone, after which I made a telephone call to my step-pop, Bob. He had been my biggest cheerleader and mentor since my first days struggling to stop drinking nine years ago. He has rejoiced right beside me with every little step I took rejoining "life" with all of its good days and bad days, all the time bravely dealing with his own cancer. Bob was absolutely tickled to hear about the call from Ralph but after I passed along the other news, all he could say was "Oh, God no" over and over. We agreed to talk later.

But his cancer suddenly won the war two days later in a shocking unexpected ugly final battle before we could again speak.

The next 30 days seemed like 30 weeks as my testing continued. I was going nuts trying to stay focused on my work and life in general. It was like somebody had pushed my "Hold" button. That is until I made a decision to take a few of my friends into my confidence regarding the matter, hoping to find a little comfort being able to laugh… and maybe cry, about the situation. And that is the point of why I am sharing all this with you.

Every single one of the names that came into my mind was a contester friend. I really did not realize until that moment just how full my life was with Amateur Radio friendships.

I am sure that my thoughts during those weeks were similar if not identical to those anyone else would have who was walking around pretty much convinced that the Big Contest was coming to an end a heck of a lot faster than expected.

Not wanting to waste a moment of time, I found myself spending a lot of quiet time reviewing the state of affairs of my personal life, my business, and my hobby. I was looking for the peace that I intuitively knew would come if I could believe that I had done all that was needing to be done so those areas could continue without my interplay if I had to quietly step out of the flow of things.

I also pondered how one does this dying thing with dignity and in a manner that would leave a smile instead of sadness. Fortunately, Bob had by example provided me with the some answers that will forever now be a part of me.

My businesses had a ton of insurance taken out on me and would probably be happy to have me out from under their fingernails—so that part of my life was handled. My dear loving Asian wife was strong and independent now because of all the work we have done to make her that way, so, though sad, I could still feel satisfaction that I had "succeeded" in that aspect of my life.

I did find peace knowing that the *NCJ*, which we share together, was doing fine, had a great staff of columnist and contest managers and wouldn't miss a beat. It would probably take these guys a couple issues before they would even know I was missing! I got just as much satisfaction from this fact as I did from the other two parts of my life because it meant that I finally believed that I had given something back to the hobby I loved and had taken joy from for so many years.

That hobby is really YOU—the radios, antennas and plaques on the wall are all just a function of YOU. What I found during those disturbing times was that I was very grateful for YOU. Without YOU, there was no hobby.

January 3rd came with the news that, almost without a doubt, my cancer scare was over. It took a week to screw my head back on so it once again would allow me to get back in gear working on those long-term DXpedition plans, antenna projects and, of course, breaking into cold sweats thinking about all the competition over in Slovenia in a few weeks.

I do all those things with a totally new prospective. Forgive me if I don't join in on some of the heated discussions that pop up on the reflectors from time to time about things that are so petty as to be humorous. I trust you will accept the fact that I am more interested in just enjoying the contest with YOU than some miniscule concern about an obscure rule here and there.

Thank YOU for the great times we have shared together over the years. And this *NCJ* ride with YOU will surely be a particularly satisfying memory for me forever.

73 Dennis Motschenbacher

### The New *NCJ* Web Site

I am continually humbled by the voluntary contributions of time and talent that are made by contesters that support the *NCJ*'s effort to bring fun and excellence to Amateur Radio contesting. I am proud and pleased to announce that one such contribution brings an **all-new *NCJ* Web site** into existence for your use and enjoyment.

Bruce Horn, WA7BNM, has spent months preparing the Web site—time away from the rig. And he tells me what you see today is only the beginning. We have several additional innovative ideas involving using the Web site to further increase the value of the *NCJ* magazine and NAQP and NA Sprint contests. Make regular visits to the new site so you do not miss them as they are implemented over the next several months.

Visit **http://www.ncjweb.com** soon, constructive comments are appreciated!

I trust that the readers will join me, the *NCJ* columnists and contest managers and the ARRL in thanking Bob, K2UT, for designing and maintaining the original *NCJ* Web site. Many of you took your first steps into contesting thanks to Bob's efforts to provide a place for everyone to learn about the magazine and contesting in general.

*Thank you*, Bob and Bruce.

### Jay, VY1JA—YT, ~~YU~~, ~~YUK~~, ~~NWT~~

Contesters all over the world celebrated Jay, VY1JA's, recent return to active contesting. Jay, who had become a popular and talented contester filling out so many Clean Sweeps, had to rather suddenly get off the air and liquidate his gear to deal with personal matters. Things have improved and he has returned!

He sends along this message:

"It is great to be back in the contests again. Thank you to all that helped so much.

In the last ARRL DX contests, a number of ops had a problem with their software again. I gave out YT or 'Yankee Tango' as the multiplier, and was again caught by ops that were frustrated because they could not get their software to accept YT. It takes time to suggest 'Try YU, YUK or VY1' until they finally have success—time that would have been better spent sending the YT multiplier to the other ops who are standing by listening to this repeated fiasco.

I have written in the past to the cq-contest reflector, RAC, ARRL, contest organizations, as well as *CT*, *NA*, *TR*, *Writelog*, and other contest software

**(Continued on page 11)**

# The Bavarian Contest Club's DXpedition to Pennsylvania

**Charles Fulp, K3WW**
k3ww@fast.net

*We read a lot of stories about DXpeditions to exotic places around the globe. This story is about a contest DXpedition to the USA by European operators!—'BV*

### K3WW Hosts a DXpedition

On April 8th, 1999 I received an e-mail from Bill, K3ANS. Our friend K2NJ had put out feelers for a place for Ben, DL6RAI, and Peter, DL2NBU, to operate the CQ WPX CW Contest. They would be touring the US after attending the Dayton Hamvention. I thought about it for a day and then sent Ben a message explaining that I usually don't spend much time in the WPX, but that I could host a M/S effort. I mentioned that my station is a little user-unfriendly, but that they were welcome to use it if they couldn't find a better alternative.

The next morning I got a reply. Ben had visited my station on a previous trip to our area—11 years ago—and thought it would be an interesting place to stage a M/S. He would discuss it with Peter. I let him know that I would start organizing the shack—just in case things worked out.

A few hours later Ben informed me that the operation was on. He asked about the second station equipment and about what they should bring. I sent a lengthy reply describing my equipment, antennas and software—and added a few thoughts on strategy. I also had checked past US M/S scores and activity. I mentioned that I thought many of the big stations would not be on, and that we had a chance of winning the US. My closing comment was that my enthusiasm was perhaps changing the operation from a social event to a competitive challenge too quickly. I told him there would be no pressure, but if they wanted to see just what they could achieve from here, I would try to make it fun.

Later that day another e-mail arrived from Ben. He agreed with my strategies. He also informed me that they would like to have me do some operating—making us a true three-man M/S. We exchanged another set of messages before the end of the day, and then planned to meet face-to-face in the Contesters Lounge at Dayton. After that, the only correspondence was a brief exchange on US licensing for Peter. New regulations made licensing simple.

At Dayton we went over our contesting philosophies—and found them amazingly similar. I am not a great student of propagation, especially conditions during the WPX CW. My past experiences indicated that 40 meters was the place to be whenever I could get any rate there, getting double points. The 10-minute rule would make going to a poor band to grab a multiplier or two a more complex strategic decision.

This was the first year in which QSOs with our own country would count for 1 point. All the software writers had new versions out to account for this, but I felt it would be best to run the contest on a version that we had used in the past. The guys were in full agreement, sharing my paranoia of the newest version of *any* software when planning a serious effort in a contest. We chatted a few times over the Dayton weekend and then went our separate ways. The plan was for them to spend the last few days before the contest staying in New Jersey, near K2NJ's, visiting New York City and Washington DC. They would show up at my home on the Friday afternoon before the contest started.

A few phone calls and relayed e-mails verified that they were visiting all over and working their way towards New Jersey, just across the river from my QTH. On the Friday of the contest weekend, I had a full day of patients scheduled in my dental office, which is right through the doorway from my basement shack. Ben and Peter arrived in mid-afternoon. I showed them the shack, turned the gear on, introduced them to my wife and returned to my patients.

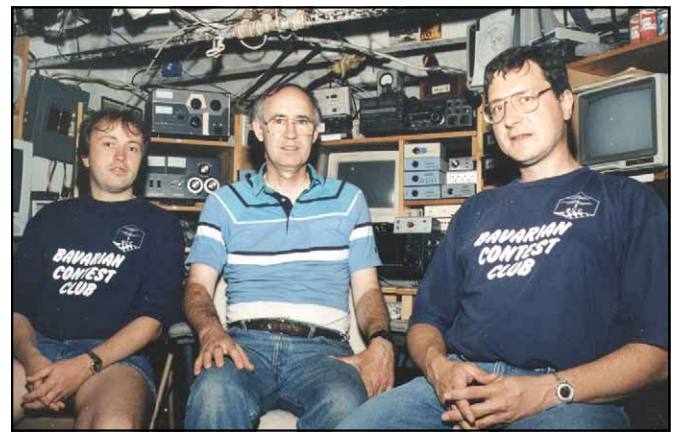
They quickly got settled into our guestroom and then spent some time familiarizing themselves with the station. I finished work around 5 PM. We did a little more preparation, found a great circle map to post, checked out the rotators and the switching, and took a supper break. My wife fed us well all weekend—but this was our last meal as a group until the contest ended. The contest starts at 8 PM in Pennsylvania, quite different than the start time in Germany—the wee hours of the morning.

### Ben's Perspective

It certainly is different here. In Germany, the contest begins at 2 AM local time. This usually means either making hectic preparations just before the contest or preparing ahead and getting up to start operating in the middle of the night. We certainly appreciated the Eastern US starting time.

We had an interesting tour through the US and Canada. We covered over 5000 miles and visited a number of hams

**A pre-contest strategy session. From left to right: Chas, K3WW; Ben, DL6RAI; and Peter, DL2NBU.**




**From left to right: Peter, DL2NBU; Chas, K3WW; and Ben, DL6RAI.**

**Peter, DL2NBU, and Ben, DL6RAI—the DL team at work.**

**Ben adds another QSO to the log.**

on our way from Dayton through W8, W9, VE3, W1, W2, W3 and W4. We traveled through sixteen states overall and enjoyed plenty of sightseeing. K3WW's station for the WPX Contest was our last stop before our planned departure back to Munich.

Both Peter and I are contest fanatics. We thought it would be interesting and a nice culmination of our tour to experience a contest from a different part of the world. CW WPX seems to be more popular in Europe than in the US. I personally consider it one of the major four contests (besides the CQ WW, ARRL DX and WAE).

Knowing the call K3WW from many years back (my first QSO with K3WW was in 1981—coincidentally on the Friday before WPX CW), I was anxious to have another look at the station that consistently bangs big signals into my headphones contest after contest. Recalling my previous visit in 1988, I remembered seeing lots of equipment set up in a half circle, computers, packet cluster, the Alt-F4 function—all incredible things back then. That earlier visit was at night, so I didn't have a chance to see the antennas. Chas's combination of three TH6/TH7 beams stacked on a single tower looks quite impressive—and seems to offer an ideal compromise for a one-tower system.

The most impressive thing about the shack is the overwhelming amount of equipment within the operator's reach. There are two completely independent stations, two computer screens and keyboards, rotator and StackMatch controls, a cross-over switch to swap antenna configurations between the radios—everything is optimized for single-op two-radio action.

Two big TV monitors raised our curiosity. Charlie's explanation made us laugh: They are used as big frequency displays for the IC-781s in the late hours of the night to make viewing easier and more comfortable.

**Peter tuning for multipliers.**

We began the contest on 15 meters with a short European run, but signals quickly disappeared. We switched to 40—the band was full of stations. Chas put in the first 15 minutes and then turned the station over to the DL team.

Fortunately we brought a keyer. At first I was having trouble with Chas's intelligent keyboard—he had the *CT* function keys redefined! It took us a while to set up the **INSERT** key the way we are used to. After that, everything went along very smoothly and we had little trouble.

We worked 4-hour shifts and kept CQing for the first 14 hours until things got slow. Then we picked up stations at a good rate using S&P—taking full advantage of the radios' band scopes. I had never seen this feature used to such an advantage before. (I don't own an ICOM radio. This feature really works well.) With two ops, one S&Ping and the other filling the band map on the other radio, we could bridge those slow times and keep the rate up.

At 1520Z we got back on 15 meters and alternated between running and S&Ping. We continued switching bands between 10, 15 and 20 quite often. The QSO counter indicated 1918 after 24 hours. This gave us hope of breaking 3000 Qs—but it would be work.

The JA signals sounded very unusual to our ears—more like the signals we are used to hearing at home from the US West Coast. The European openings seemed quite predictable to us—they were similar to the US openings that we experience from home. But the propagation to Asia was very different.

The further into the contest we went, the more often we changed bands. We are quite familiar with this strategy—we have used it often during the contests that we have entered in the M/S category from Germany. When the run rate drops below around 40 (depending on the contest, activity and propagation) this operating method typically results in more QSOs.

One has to recognize when it's time to CQ again. By 1200Z Sunday, 2568 QSOs were in the log. The 3000 mark was well within reach if conditions held up—and they did! We stuck with our frequent band changing strategy and crossed the 3000 Q line at 1955Z, four hours before the end of the contest. We finished with 3197 Qs, a net total of 3180 Qs and a score of about 8.2 M points. We are not sure if that was good enough, but it seems that we are still in the pole position for the US.

My most interesting observation on contesting from here was how dependent you guys are on European openings. Maybe this is particular to K3WW's location—since the JA's are so far from him. There is just nothing else besides Europe—and when the bands are dead toward Europe, there's not much you can do. This is in general true for Germany as well, but we still have all the Russian stations to work when the conditions deteriorate, and I feel that our JA path is a little more productive because it does not pass through the magnetic pole. Also, during our morning

**(Continued on page 11)**

# The RSGB Islands on the Air (IOTA) Contest

**Chris Burbanks, G3SJJ**
**IOTA Contest Manager**
**g3sjj@btinternet.com**

### A Bit of Background...

I have been licensed since 1963 and, like many UK amateurs, around that time was introduced to contesting through my local radio club. National Field Day was for many years my favorite event together with other domestic contests such as our 160- and 40-meter CW contests. More recently I have joined in several M/S and M/M ventures in the UK and also now enjoy the ARRL 10-Meter Contest.

In 1985, I was invited to join the RSGB's HF Contests Committee, sitting 'round the table with such well-known individuals as G6LX, G3FKM, G3HCT, G3SXW and G4BUO. I was appointed chairman in 1993 taking over from Dave Lawley, G4BUO, who presided over the introduction of the IOTA Contest. It is possibly a little more than a coincidence that I should become involved with this event, having spent many holidays with my wife on various Mediterranean islands (but without a radio!).

### The Birth of the IOTA Contest

The Committee organizes a number of domestic events. Occasionally we feel there is not enough support to continue with a particular event. This happened in 1992 when we took out the LF SSB Contest. In considering a replacement, it was agreed that the RSGB needed an international contest rather than another of the "World works UK" type of events that we already had.

The IOTA program was becoming established, and it seemed a good idea to form some kind of link to that. A Field Day style format would encourage operation from islands, so the 24-hour time span was allocated with a 1200Z starting time to give entrants a chance to travel to their chosen destination and set up the gear. Obviously that applies to central Europe—we actually didn't envisage it becoming quite so international!

Island references became the multipliers, eg EU114 for Sark, one of the UK Channel Islands, NA062 for the Florida Keys and even OC044 for Pitcairn Island. We were unsure at that stage just how the contest would take off so we decided to allow non-island to non-island contacts.

The scoring rules were "tweaked" last year to increase the difference between island and non-island QSOs—but it seems inevitable that this type of contact will be taken out completely at some stage. A further innovation was to limit multi-operator stations to two transceivers—one for run and the second solely to find and call new multipliers.

### So What *is* an Island?

This is perhaps not as easy to define as it sounds. There are two basic rules, 1—The island must be shown on a map with a scale of at least 1:1000000. 2—The island must, if it lies within 1 km (0.62 statute miles) of the mainland, be separated from it at all points by a minimum of 200 meters (219 yards) of sea at low tide. There are then closer definitions; for example, large islands with a size greater than 65000 square km, (25000 square miles) and also island groups.

Each listed island is given a reference consisting of a continental abbreviation —AF, AN, AS, EU, NA, OC, SA—plus a three digit number. The *IOTA Directory* describes all the criteria and lists the islands that have been given a reference. Revision work on the Directory is constantly in process—a new edition will be available in June this year. There are currently nearly 1200 island references.

More information and the full rules of the IOTA Award Program can be found by visiting the IOTA Web site at **http://www.rsgbiota.org**.

### And Which One Do We Choose?

One of the most exciting aspects of this contest is the choice of island locations available and the logistics of getting there. In the 1999 event, over two hundred islands were activated. Some of those islands were highly populated ones—such as the UK mainland, Ireland and Japan. Others were islands just off the coast of a mainland. The more adventurous amongst us activated some tough places where access was difficult and facilities were sparse.

A recent *NCJ* (January/February 2000) featured the story of VD7D and their Dundas Island operation. That one definitely comes under the last category!

By comparison, my own group, GU8D, had a less arduous journey and more home comforts. Leaving home on Wednesday evening, we drove for a couple of hours before staying over at a bed and breakfast. A further 2-hour journey on Thursday took us to the south coast of England. There we met up with the rest of the group and crossed over to Guernsey Island on a fast car ferry.

In good weather, the catamaran travels at around 40 knots. In bad weather it

**Chris, G3SJJ, operating the GU7D run station in the 1997 IOTA Contest.**


**Tony, G0OPB, relaxing after a session at the GU8D multiplier station.**

lurches rather than rolls. Not good! On landing, our gear was off-loaded on to the quayside. We parked the car, then loaded the gear and our group onto a small launch for the 30-minute trip across a stretch of water to our destination.

This is where the fun really began. Sark is a small island with an interesting history. It is about 3.5 miles long by 1.5 miles wide and has a population of 500. Cars are not permitted, although luggage and goods are transported by tractor. Horse and carriage, cycling and walking are the only forms of transportation available to visitors.

We loaded the equipment on to a tractor and watched it lurch up the steep hill. This could be a radio-less visit we feared! It took a 20-minute walk to get to the station location. Our hosts Eric, GU2FRO, and Penny had already helped unload the gear by the time we arrived at their house. After a short chat, we began unpacking and initial station assembly. It was then time to check in to our accommodations, freshen up and visit. We had arrived!

Friday was a busy day. We completed station assembly and testing. We selected "Permanent" as our entry class because although we brought the radios, amplifiers, computers and aerials with us, Eric kindly allowed us to use his 70-foot mast (complete with phased 80-meter delta loops) and his 40-foot mast for our A4S.

His workshop and annex became our shack, complete with domestic facilities. The *Dixcart Hotel* was our meeting place for meals and my love of red wine had not gone unnoticed. There were frequent calls of "*Another bottle of number 47, please!*"

Despite the dubious transport arrangements, the equipment had not suffered and we were able to begin our participation in the contest on time.

For our 2000 adventure, we have regrettably decided that the logistics of getting to Sark has been hampering our success. So this year we will be stationing ourselves at the Guernsey Radio Club. I am sure the wine and crab salads will be just as tasty.

### What About the Single Operators?

While so far I have described multi-operator stations island entries, there are of course single operator 12-hour, 24-hour, CW, SSB and mixed mode sections covering both island and non-island categories. There's something for everyone, in fact. We have introduced a 100 W DXpedition section that has proved very popular. If you don't want to carry a lot of equipment around then this is the category for you.

Felix, DL8OBC, is a keen supporter of the contest. See the sidebar for details of his 1997 effort from Helgoland Island.

Using an IC-735, an FL-2100B, a 3-element tribander at 30-foot and a Windom, Felix managed to key his way to 1st place in the 24-hour CW section with 1307 Qs and 146 M. Compare that with two years later when he had to compete against the well-known Finnish contester and DXer, Jukka, OH2MAM, operating from the purpose-built station on Aland Island, OH0Z. Jukka's impressive 2335 Q took him to the top of the listing.

This is a popular contest and quite rightly attracts top operators. The 24-hour SSB section in 1999 saw a head-to-head battle between Andy, G4PIQ—operating from M6T—and Robert, GI0KOW. They each used a pair of FT-1000MPs and had sufficient metal high in the air to make a big noise in any contest. Both entrants made over 2000 QSOs in the 24 hours—which is an achievement in itself considering the lengthy exchange required.

I happened to tune across Robert on our multiplier station and noted his relaxed but purposeful style. Here was someone who had planned his operating strategy and was quite obviously pacing himself, maintaining an average of 100 Qs per hour. Andy is also a competent operator and a very skilled engineer. His overall Q rate was slightly lower, but he used the two radios to great advantage—netting almost 40 more multipliers than Robert. The final results showed M6T with 2176 Qs and 304 M for a score of 4139568 and GI0KOW with 2489 Qs and 267 M for a score of 4124082. A separation of about 15000 points. That was close!

### We Mustn't Forget the Non-Island Guys

When discussing the various aspects of the IOTA Contest, it is easy to forget that the Contest also depends on participation from stations not on islands. In fact, two-thirds of the logs received are just that. We get excellent support from the former Russian countries (my apologies—but it is easier to describe them this way). A significant number of entries from Poland, Italy, Spain and Sweden are also evident.

Since I am writing for an American journal, I mustn't forget to mention the States and Canada. Thanks for your

**G3SJJ holds GU8D's A4S as G4TSH prepares the mount.**

### A Single Op Effort from Helgoland Island

*By Felix Riess, DL8OBC*

I decided to return to Helgoland Island in 1997, making it my third contest entry from EU127. The island is located in the North Sea about two to three hours from the mainland.

There is an Amateur Radio club on the island and quite a few of its members are active. Since the island is small and densely populated, it is difficult to find a place to operate from. Ulli, DL1LAO, suggested that I set up my station in the rooms of the island's fire brigade, which proved to be an excellent choice.

The station assembly work was finally completed on Saturday morning with just a few minutes to spare before the start of the contest.

During the contest, there were two fire alarms on the island. The first was when a ship caught fire in the harbor and the second was when a power line in the village had become too hot and was smoking. Each time, the entire Helgoland fire brigade assembled at the station and got their gear ready whilst I sat in the middle of the turmoil with my headphones on, keying the radio!

**The Radio Amateur Association of West Greece operating from Kalamos, EU052. From left to right: SV1SN, SV1CIF, SV1DHU, SV1DPJ and SV1CIB.**

**The CQ2P Pessegueiro Island (EU167) team. From left to right: CT1EEN, CT1EEB, CT1ENQ, CT1CJJ and ON5NT.**

support. You are in there but not as many of you as in the ARRL DX Contest, yet! (*We hope this article will rectify that situation, Chris.—'BV*)

There is one aspect of the rules that causes us some concern and that is non-island to non-island contacts. It is becoming apparent that these contacts don't really add any value to the contest. In fact, they are seen by many entrants as a negative aspect of the contest. The event has developed its own character and disallowing these contacts would seriously change that. In effect, it would hardly be worth a non-island station trying to maintain a run since most of the island guys would be CQing anyway. Your comments would be helpful.

### Other Possible Rule Changes

We currently allow only the multi-operator entrants to access the DX Cluster but have received many comments that we should open this up to single operators. I think this must happen but we also need to consider proliferation of the various categories with 12-hour/24-hour/CW/SSB/Mixed for both island and non-island already existing. The contest is still evolving but any further rule changes must be the last for some time. Again, your comments would be gratefully accepted.

### Logging Software

Throughout the early years of the IOTA Contest we have been keen to make sure that logging programs should follow the requirements of the contest rather than tailoring the rules to suit the whims of the programmers. That would be a case of the tail wagging the dog!

We were lucky that Paul O'Kane, EI5DI, was developing his *Super-Duper* contest logger at that time and took a keen interest in the introduction of the event. I feel that it must be placed on record that the IOTA Contest may not have been so successful had he not placed *SDI*, his IOTA version, in the public domain.

With many participants not being committed contesters, a program which will accept back to front exchanges, ie "EU005, 59 001" is most useful. In addition the ability to interpret E5 as EU005 and not as a different IOTA reference is also valuable. *SDI* does all this and yet is simple to set up and use.

*TR-Log* was the next program to provide support and is now used to great effect by the leading multi-operator group. With networking and Cluster facilities available, it is obviously useful for this section, but is more complex to configure. *NA* has recently added support and is probably a useful halfway house—easy to set up but not yet having the sophistication of *SD* or *TR-Log* for reversed exchanges.

### Awards

Perhaps one of the least developed aspects of the contest is the award situation. Just six trophies are available. Four of these will go to the multi-operator section and just two to single operators. We desperately need some more sponsors, particularly to encourage the single ops. Awards could be given by continent and section. It would also be good to have something for the non-island guys.

Results for the 1999 event and rules for this year's contest can be found on the RSGB HF Contest Committee's Web site, **http://www.g4tsh.demon.co.uk/HFCC/**. If you are interested in sponsoring an award, please e-mail me at **g3sjj@btinternet.com**.

### See You This Year?

Well, I hope this has given you some insight into what this exciting contest is all about. If you can get to an island July 29 - 30th, that would be great. You are assured of a big welcome. If you can't participate in your island DXpedition adventure, just jump in there and work some of those guys that have managed it.

Last year we reached the 1000 entry threshold. We trust that with just a modest increase from our North American friends, we can make it 1200 this year! ■

# Field Day in Europe

Heinrich "Hein" Langkopf, DL2OBF
DL2OBF@gmx.de

Field Day in Europe is a different affair than the version of Field Day that is familiar to North American hams. Here in Region 1, there are two official IARU Field Day Contests each year. A CW Field Day is held on the first full weekend of June (Saturday 1500Z to Sunday 1500Z). SSB Field Day is on the first full weekend of September (Saturday 1300Z to Sunday 1300Z). Most of the ham-populated countries around Europe hold their national competitions during the same periods. The traditional centers of high activity are the British Isles and Germany.

Participating stations sign /P and the exchange is simply the RST and a serial number. Everyone may work anyone else for QSO credit (with the emphasis on working other /P stations). The multipliers are the number of DXCC/WAE countries contacted per band.

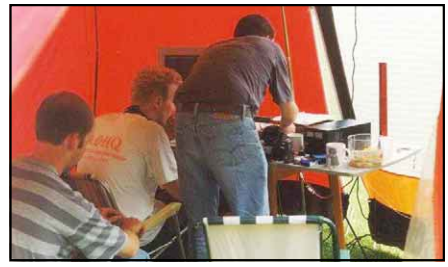
The German Field Day competition is organized by the DARC (*Deutscher Amateur Radio Club*), the national Amateur Radio society of Germany. As it is in North America, Field Day in DL is mainly a club and multi-op event. There is a single-op/QRP category—but normally there are very few participants. The multi-op categories are QRP, 100 W, 100 W restricted (only one antenna allowed and no packet cluster) and high power. The contest bands are 160 through 10 meters (with the exception of the WARC bands, of course).

The 100 W restricted category is becoming more and more popular each year, especially amongst serious contenders. Building a single antenna that is competitive from 160 through 10 meters seems to be an attractive challenge for many participants. Normally these stations are using some sort of Zepp antenna.

There are several other rules for participating stations. Station assembly and antenna erection cannot begin prior to 24 hours before the start of the contest. The rules include prohibitions against using permanently installed masts, antenna systems or buildings. The public power supply cannot be used. The groups must also register the place and category of the Field Day operation with the organizer at least two weeks before the contest.

This registration is required primarily because each year some of the Field Day sites are visited by hams representing the organizer. This visit takes place in order to verify that operations are according to the rules of the category in which they registered. The visits also serve as a great opportunity for the controller himself to see how the others are doing business and as a social activity.

**The site for the DL0HI/P Field Day operation—Hildesheim in the federal state of Lower Saxony.**



**The Field Day operators at DL0HI/P: Tom, DL2OAP; Hein, DL2OBF; and Dan, DL3OBQ.**

The goals set by the various stations taking part in Field Day cover the normal range. While some of Germany's Big Guns are out to win, there are also many local clubs who consider the event mainly as a chance to socialize, camp, barbecue—and to perhaps play just a little bit of radio.

As it is in North America, a lot of young hams take their first steps into contesting at Field Day, and for many of the older operators it is the only contest they participate in each year. Due to these considerations and the fact that many of the stations are using limited equipment, a W or VE QSO is always a greatly appreciated multiplier.

Please call a few stations or even try to get a run going on these weekends. You'll definitely be rewarded with some enjoyable operating, and you may even make some new friends who might recognize your call sign in the next ARRL DX or CQ WW Contests. ■

# All-Time ARRL Field Day Records

**Denis Catalano, W4DC**
CatalanoDE@NAVSEA.NAVY.MIL

ARRL Field Day 1999 was another great event—10 old records fell. Records were also established in two new classes. Field Day is an emergency exercise to many, a contest to some, but for all of us it's a chance to train new operators and introduce others to Amateur Radio. Take advantage of this opportunity in 2000!

The listing shows the class, the call sign, the year the record was set, the club or group name, the number of QSOs, the power level (5 = less than 5 W, 2 = less than 150 W, 1 = more than 150 W), the number of operators and the total score. (Commercial classes are not listed.)

| *Class* | *Call* | *Year* | *Name* | *QSOs* | *Power* | *Ops* | *Points* |
|---|---|---|---|---|---|---|---|
| 1A battery | WA1U | 95 | Above All Mtn Contest Team | 1173 | 5 | 10 | 10,960 |
| 1A | N5RR | 92 | Albuquerque DXA | 2870 | 2 | 28 | 8,550 |
| 2A battery | K0NA | 88 | Arapahoe RC | 2266 | 5 | 28 | 17,295 |
| 2A | KP2N | 93 | Virgin Islands ARC | 5252 | 2 | 16 | 15,580 |
| 3A battery | K4HAV | 84 | Chekaw ARS | 1629 | 5 | 17 | 18,610 |
| 3A | K5DX | 84 | Texas DX Society | 3756 | 2 | | 17,194 |
| 4A battery | WB8JBM | 83 | Northern Ohio ARS | 2029 | 5 | 127 | 17,345 |
| 4A | W3AO | 98 | Potomac Valley RC | 6697 | 2 | 15 | 19,366 |
| 5A battery | W3VPR | 84 | Anne Arundel RC | 2495 | 5 | 49 | 26,570 |
| 5A | W2GD | **99** | Cherryville Rpt Assoc | 6566 | 2 | 42 | 20,520 |
| 6A battery | NA4G | 91 | Raleigh ARS | 1340 | 5 | 30 | 11,270 |
| 6A | W4AT | 95 | Orlando ARC | 4735 | 2 | 71 | 15,434 |
| 7A battery | W4DW | 89 | Raleigh ARS | 1236 | 5 | 12 | 11,215 |
| 7A | W3AO | **99** | Potomac Valley RC 1 | 9163 | 2 | 17 | 26,224 |
| 8A battery | N6WG | 93 | Alameda County Rpt Club | 1205 | 5 | 35 | 9,815 |
| 8A | N6ME | 89 | Western ARA | 5390 | 2 | 55 | 14,772 |
| 9A battery | VE3NAR | 95 | Nortown ARC | 1105 | 5 | 30 | 7,930 |
| 9A | W4IY | 98 | Woodbridge Wireless | 6217 | 2 | 56 | 18,834 |
| 10A | W4IY | 85 | Woodbridge Wireless | 5067 | 2 | 67 | 15,474 |
| 11A battery | VE3NAR | 97 | Nortown ARC | 1170 | 5 | 36 | 9,465 |
| 11A | W4IY | 90 | Woodbridge Wireless | 4669 | 2 | 60 | 14,688 |
| 12A | W4IY | 88 | Woodbridge Wireless | 4791 | 2 | 55 | 13,646 |
| 13A battery | AA6CV | **99** | Conejo Valley ARC | 1142 | 5 | 30 | 9,880 |
| 13A | W4IY | **99** | Woodbridge Wireless | 7329 | 2 | 65 | 22,780 |
| 14A battery | AA6CV | 97 | Conejo Valley ARC | 1246 | 5 | 55 | 10,795 |
| 14A | N1NH | 94 | Nashua Area RC | 5930 | 2 | 103 | 18,710 |
| 15A battery | K6CAB | 88 | Conejo Valley ARC | 2920 | 5 | 34 | 21,015 |
| 15A | N1NH | 93 | Nashua Area RC | 5669 | 2 | 100 | 17,322 |
| 16A battery | AA6CV | 98 | Conejo Valley ARC | 1501 | 5 | 45 | 12,840 |
| 16A | WY8M | 94 | Utica Shelby ECA | 5917 | 2 | 295 | 21,468 |
| 17A battery | K6CAB | 89 | Conejo Valley ARC | 3119 | 5 | 40 | 23,685 |
| 17A | WY8M | 95 | Utica Shelby ECA | 3654 | 2 | 250 | 14,006 |
| 18A battery | K6CAB | 90 | Conejo Valley ARC | 2569 | 5 | 30 | 21,275 |
| 18A | K4GSO | 88 | Silver Springs RC | 2502 | 2 | 36 | 8,642 |
| 19A battery | KK8M | 98 | Utica Shelby ECA | 2233 | 5 | 177 | 18,650 |
| 19A | K2AA | 86 | South Jersey Radio Assn | 4320 | 2 | 65 | 13,178 |
| 20A battery | KK8M | **99** | Utica Shelby ECA | 2527 | 5 | 176 | 20,920 |
| 20A | N1NH | 96 | Nashua ARC | 6738 | 2 | 85 | 21,756 |
| 21A | W2RJ | 76 | Englewood ARA | 2845 | 2 | 55 | 10,186 |
| 22A battery | AD6T | 91 | Conejo Valley ARC | 2962 | 5 | 52 | 23,500 |
| 23A battery | K5DX | 89 | Texas DX Society | 3326 | 5 | 28 | 25,260 |
| 23A | K2KX | 78 | Englewood ARA | 2666 | 2 | 40 | 9,380 |
| 24A | N1NH | 95 | Nashua ARC | 6209 | 2 | 95 | 21,648 |
| 25A battery | K6CAB | 92 | Conejo Valley ARC | 2343 | 5 | 62 | 20,255 |
| 26A | N1FD | 98 | Nashua ARC | 8744 | 2 | 87 | 26,274 |
| 27A | N1NH | 97 | Nashua ARC | 6768 | 2 | 87 | 22,080 |
| 28A | N1FD | **99** | Nashua ARC | 7902 | 2 | 96 | 24,358 |

| Class | Call | Year | QSOs | Power | Ops | Points |
|---|---|---|---|---|---|---|
| 1B-1 battery | KW8N | 95 | 945 | 5 | 1 | 8,975 |
| 1B-1 | N0UR | **99** | 680 | 5 | 1 | 6,700 |
| 1B-2 battery | KW8N | 96 | 907 | 5 | 2 | 8,700 |
| 1B-2 | N4BP | **99** | 799 | 5 | 2 | 8,560 |
| 2B-1 battery | N6VT | 93 | 449 | 5 | 1 | 5,135 |
| 2B-1 | N6ZPX | 93 | 747 | 2 | 1 | 2,526 |
| 2B-2 battery | KW8N | 91 | 1148 | 5 | 2 | 8,915 |
| 2B-2 | W2GD | 88 | 2560 | 2 | 2 | 8,814 |
| 3B-1 | W9WI | 89 | 56 | 2 | 1 | 738 |
| 3B-2 battery | KW8N | 97 | 962 | 5 | 2 | 8,695 |
| 3B-2 | K5TA | 93 | 2137 | 2 | 2 | 7,000 |
| 4B-2 | KW8N | 98 | 1720 | 2 | 2 | 6,040 |
| 5B-2 | W8TQE | 89 | 272 | 2 | 2 | 1,212 |
| 1C | WA4VRN | 91 | 934 | 5 | 1 | 8,080 |
| 2C | N6BT | 80 | 1885 | 2 | 3 | 4,912 |
| 3C | WB4GQX | 76 | 836 | 2 | 3 | 2,162 |
| 4C | AC4OG | 92 | 389 | 2 | 24 | 792 |
| 5C | AB3A | 80 | 694 | 2 | 8 | 1,696 |
| 6C | VO1AA | 78 | 30 | 5 | 8 | 715 |
| 1D | NA5TX | **99** | 1450 | 2 | 1 | 5,800 |
| 2D | W4MYA | **99** | 4019 | 2 | 14 | 10,758 |
| 3D | K1AR | 78 | 3825 | 2 | 6 | 8,928 |
| 4D | N6TV | 92 | 2253 | 2 | 17 | 5,708 |
| 5D | W1AW | 91 | 1650 | 2 | 6 | 4,726 |
| 6D | W1AW | 95 | 3200 | 2 | 16 | 9,290 |
| 7D | W1AW | 94 | 2890 | 2 | 7 | 8,820 |
| 8D | KC4ZFX | 93 | 1490 | 2 | 8 | 4,388 |
| 9D | N6OP | 91 | 2849 | 2 | 22 | 8,206 |
| 1E | KR0B | 88 | 1525 | 5 | 3 | 11,490 |
| 2E | KR0B | 89 | 2000 | 5 | 5 | 13,975 |
| 3E | N0NI | **99** | 4421 | 2 | 6 | 12,480 |
| 4E | W3PP | **99** | 3720 | 2 | 8 | 10,504 |
| 5E | K5DX | 83 | 6019 | 1 | 50 | 7,987 |
| 6E | W0AIH | 95 | 5040 | 2 | 10 | 12,514 |
| 7E | W0AIH | 96 | 4170 | 2 | 8 | 10,292 |
| 8E | WU8A | 95 | 1963 | 2 | 21 | 6,474 |
| 9E | W8VND | 98 | 1634 | 2 | 19 | 4,192 |
| 13E | AA5EQ | 90 | 235 | 2 | 7 | 554 |
| 15E | K9GL | 82 | 8179 | 1 | 25 | 10,541 |

■

## The Bavarian Contest Club's DXpedition to Pennsylvania

(Continued from page 5)

hours (0800-1100Z) when conditions are poor to the US, we are used to working mults from Asia and the Pacific before we swing our antennas northwest again.

All in all it was quite an interesting operation and visit. We got to hear many interesting stories from Charlie about contesting, operating and the Frankfort Radio Club. We also enjoyed watching his fish! That may be one of Charlie's real secrets anyway: If the run dries up, he can go watch the fish in the tank for a while and then come back later for more pileup fun.

### K3WW's Closing Comments

It was a wonderful experience to be the host of a DXpedition. I am used to seeing many of my fellow FRC members pack up and leave for DXpeditions every contest season, but I never thought of hosting DX operators here. Ben and Peter got to experience what Europe sounds like from here, and I got the chance to see one of the world's best operating teams in action—in my own shack!

73, Chas, K3WW ■

## Editorial

(Continued from page 3)

producers, letting them know that the correct abbreviation for the Yukon Territory is YT, not YU or YUK and definitely not NWT! RAC and ARRL have changed the abbreviation in their rules from YU to YT as a result of the early messages sent out. (Thanks for the change). Some of the software manufacturers still have packages that do not accept YT for Yukon and need to be fixed.

I have a few suggestions...

Before the next contest that has YT as a multiplier, please make sure that you are using the current version of your software. This might require that you actually register it, which you should do if you are content with the package. Try it before the contest to insure that the software will take YT for Yukon Territory. If you find that your software doesn't, then send the supplier a message asking them to make the change. Let's inundate with e-mail those slow to make this change.

I am hoping that before the next contest and especially long before Sweepstakes, we have this fixed so that we can roll along without a QSL message depending on the op on the other end figuring out how to get YT into the computer.

In response to personal messages, my family and I are doing as well as can be expected under the circumstances... loosing 7 family members in less than a year and a half has taken its toll. We have just come out of quarantine for Whooping Cough.

I apologize for cutting my ARRL DX Phone operation short, but my voice was played out and I was having trouble concentrating due to the sickness. ARRL DX is not one of my favorites, but I did try to be there on all bands for a while. Many ops asked for band changes and that worked well. I hope that no one chased me without success."

—Jay, VY1JA

### This Just In—The Family *Did* Play Together

I have a correction for my "Young Contesters—The Promise of a Future" article that appeared in this year's January/February issue...

Do to a misunderstood e-mail exchange between myself and Ken, K7ZUM, I incorrectly reported that their family DXpedition to St Martin had to be cancelled at the last minute. Not so!

Ken and his sons Dustin, KD7BSW, and Jordan, KC7TWZ, did make it to the island for the 1999 CQ WW Contest and —signing FS/K7ZUM—managed a very impressive 4898 Qs and over 5 M points! As Ken puts it "Not bad for an old man and a couple of whippersnappers..." Nice work guys!

### Our Cover

This issue's cover photos feature Sark Island (EU114) and the GU8D team that was assembled for the 1999 running of the Radio Society of Great Britain's Islands on the Air (*IOTA*) Contest. In the foreground from left to right are Alistair, Louise and Penny (GU2FRO's XYL). In the background: G0OPB, Yvonne (G3SJJ's XYL), G4JQL, GU2FRO, G4DRS, F5SHQ, G4TSH and G3SJJ.

Chris Burbanks, G3SJJ, contest manager for the IOTA Contest, provides an excellent article, *The RSGB Islands on the Air (*IOTA*) Contest*, detailing the development and future of this contest. He also shares his experiences while participating in the Sark Island operation.

Be sure to set aside the weekend of July 29th and 30th 2000 and join in on the action of this exciting and expanding contest. ■

# Multi-Multi—No Limits?

Larry "Tree" Tyree, N6TR
n6tr@teleport.com

In the 1998 CQ WW CW contest, the Boring Amateur Radio Club put together a multi-multi operation. This multi-multi ended up being "illegal" and was listed as a check log in the results.

This was primarily because the 500-meter rule was violated. Two transmitters were located at the home of N6TR. The other transmitter was some *49 miles*

## Some Comments from Mark Beckwith, N5OT

I would like to share some thoughts about my experience operating K7RAT in the 1998 CQ Worldwide CW.

Ever since I was a contesting kid in the '70s, I have thought it would be fun to get a group of ops and stations together to team up as a sort of "poor man's multi-multi." My dream operation did not use one huge station on a big piece of land (owned by one ham bound for "multi owner burn-out"). Instead, the entry would use several different stations around the area scoring the effort similar to a "Classic Multi" effort—totaling all the QSOs and multipliers.

The advantages are noteworthy: (1) One super-ambitious station owner isn't needed to provide the momentum to get the effort up and running—and to maintain it. (2) The operational benefits of greater transmitter separation; one of the biggest challenges to the "Classic Multi." (3) An additional class of competition like this could result in more entries. Currently, we can almost count on our fingers the number of "Classic Multi" stations. There is potential for many more "station-operator consortiums" in an "Unlimited Multi" class. The field could be quite large, which could result in some keen competition. This seemed like a neat idea when I was a kid—but now with computers and amateur data links, it has become a fantastic idea.

At Tree's place that weekend, we took the chance to play and see what we could learn. We had no intention of competing with this effort; we were only testing theories and hardware.

Tree and I have operated contests side-by-side for many years. Recently, I emerged from a several-year period with radio on the back burner (you know, the *very* back burner!) I traveled from Oklahoma to Oregon to enjoy a fix of "the good old days." We found we still click together. Missing from the old days was David, AA6RX, who now lives in Mexico City. David had to work that weekend or he would have been there, too. New to my list of contest co-operators was W7EW, the venerable Dr. Big Gun—Lew Sayre.

We had two separate stations at Tree's—the two he uses for his Single-Operator Two-Radio setup. We put them on separate tables and used separate computers. There was not a single filter or coax stub in the place—just a bunch of cables and switches. It was flexible and easy to operate.

Here's where it gets interesting: Lew spent the contest *at his own home station*, linked to us by amateur packet. I don't mean packet cluster—we had a dedicated wireless data link between Tree and Lew's QTHs. Lew used the call K7RAT also. Our QSOs were shared with his computer and his with ours via our wireless data link. We chose not to "use packet" (ie DX spots) thinking it would be too challenging to try and break it all in at once. On Sunday afternoon, things had gone so well that we decided to wire in the packet cluster just to see what we were missing. Things got very fun after that!

We learned that the camaraderie that makes a memorable multi-multi was more than present in our operation. Although Lew was 50 miles away, he was at our fingertips (and we at his) all weekend—we had a keyboard channel between us and shared blow-by-blows on countless pileups and multipliers. We did all our "who's-on-what-band-at-what-time and who-sleeps-when" on the fly—no plan at all.

We even wound up with both sites in the same pileup at the same time more than once. We will never know which one of us got through, but we certainly both heard ourselves get worked!

So how did we do? We figured we had 1½ operators. Tree was sick as a dog with a 102-degree fever. Lew is a medical doctor and covered two separate emergency room shifts during the contest period. We also figured we had 1½ stations—Tree has not rebuilt from the ice storm that claimed his primary antennas on 40 and 20 meters. We still managed to turn in a respectable 4.3 million points; about half that of a nearby "Classic Multi"—W7RM—who had at least twice as many operators and twice (or more) as much total hardware.

### *Some Interesting Thoughts*

Remarkably, I have never met Lew face to face—but now we have operated elbow-to-elbow (using "virtual elbows") for a whole CQ Worldwide. I feel like we know each other now—even though he was never closer than an hour away. If it wasn't for a tight travel schedule we would have met for a post-contest dinner. I look forward to meeting Lew in person some day.

The technical and engineering challenges of successfully making a bunch of radios, amps and antennas all coexist at one location was notably absent—it wasn't necessary as it would have been for a "Classic Multi." This was superceded, though, by the challenge of networking the computers and sites so that all operators knew what was worked and what was needed on all bands, and who was where at all times.

I was the only one who experienced any traditional contest-weekend travel to get to a worthwhile operation. The other guys were preoccupied in various ways. Both approached the weekend as if they were getting on from home, yet both were pivotal in the effort. It strikes me that at a "Classic Multi," the very sick Tree would have bowed out and gone home. Lew's schedule would not have permitted him to participate at a conventional multi-multi as much as he did from his home in our scenario—especially if he had to travel over an hour each way—twice.

Therefore these guys got more bang for their contest effort buck than they would have trying to participate from a "Classic Multi."

It also strikes me that we have the operators and the stations in Oklahoma to mount an effort like this. If we want to take part in a traditional multi-multi, the nearest existing multi stations are hundreds of miles away in Missouri and Texas. How many other people are thinking the same thing as they read this?

Obviously, we needed to break plenty of contest rules to make this effort "competitive"—but competitive with what? I don't know what Tree put under "category of operation" on the Summary Sheet. We anticipate seeing K7RAT listed under "check logs."

We did this more for fun and to start a discussion. There are plenty of questions about where we did and did not cross acceptable lines—having two signals with the same call sign in the same pileup comes to mind as a place we should not go.

Another good question: how far can you stretch the 500-meter circle? My thought is to limit the consortium to one CQ Zone… Your thoughts?

*away* at the QTH of W7EW.

An RF link was used to extend the computer network so that the stations would have the same log information. This also allowed messages to be sent back and forth between the separate operations. Six meters was used for the link and it proved to be pretty reliable.

The operators were Mark, N5OT; Lew, W7EW; and me—Tree, N6TR (with pneumonia at the time). Mark did most of the operating—I was sick and Lew is allergic to CW and can only take small doses of it at a time. As a matter of fact, I think Lew would not have gotten on at all if we hadn't talked him into linking the stations.

Lew's station sports a 3-element 80-meter beam. I remember waking up just before sunrise and finding Mark on 40 meters and Lew on 160. The two stations both perform well on 160, so it was an easy call to ask Lew to QSY to 80 so he could smash pileups with his beam—located miles away—and leave 160 for me. He had been calling a JT1 on 160, but hadn't gotten through yet. Lew reluctantly QSYed to 80 and left the JT1 for me to work. It was great to put him into the log a few minutes later…

It is too bad that our score couldn't be counted as a club entry. It seems this kind of hookup would be a natural way for two medium-sized stations to put together a big score. Even with Lew's part time effort—and my minimal operating time, we combined for 1.5 million points per operator—higher than most classic multi-multis. If we had been single op entries, our collective scores would have certainly totaled less than the 4.5 million points our effort generated.

I hope we have set a positive example for this type of operating and that people will consider allowing it under some sort of "Unlimited Multi-Multi" category in the future.

73, Tree, N6TR ■

# World Wide Young Contesters Club

**Chris Hurlbut, KL9A (ex WL7KY)**
**wl7ky@gci.net**

Contesting will not be dead in twenty years. There are many young hams already on the contesting scene, as you saw in "Young Contesters—The Promise of a Future" in the January/February 2000 issue of the *NCJ*. It seems like every contest I do, I work lots of teenagers! Thanks to Thomas, OZ1AA, there is now a club for young contesters—World Wide Young Contesters (*WWYC*). The only requirement to be a member is that you must be under 30 years old.

Created in November 1999, WWYC has three main goals:

- Increasing contesting activity among "Generation Y"
- Have fun
- Give the Big Guns a run for their money in a few years

A few of the members are already doing that! As of January 17, there are 45 members from 14 DXCC countries and more are joining the club each day! We have a homepage set up with all the information: **http://home.swipnet.se/contest/wwyc/**. The WWYC also has an e-mail reflector. To subscribe, send an e-mail to **wwyc-request@contesting.com** and put the word SUBSCRIBE in the body of the message.

You're probably wondering, "Hey, how do I join this new club?" Just send an e-mail to Dimitar, LZ5AZ, at **dimitart@mbox.infotel.bg**. Include your name, call sign, age, e-mail address, and homepage URL if you have one. It's as easy as that!

I have had the opportunity to operate with a few young contesters, and I must say, watch out! Some of these guys are really good! A big thanks is due all of the more "senior" ops that have invited us kids to their stations to see what it's like to run with the big boys. Without you, we might have never gotten into contesting.

THANKS! ■

# The Monoband Log-Cell Yagi Revisited—Part 3: Some Practical Log-Cell Yagi Designs

L. B. Cebik, W4RNL
4134 High Mesa Dr
Knoxville, TN 37938
cebik@utk.edu

In this part of our visit to the log-cell Yagi, we shall look at some practical designs. The first two versions—using log cells of 2 and 3 elements, respectively—will involve casual designs, typical of those in some of the past literature. Then, we shall examine more complex designs using log cells with 4 and 5 elements, each carefully constructed on LPDA principles. In the process, we shall also look at a test we can perform to estimate the chances for a log-cell Yagi performing to its fullest potential.

Each of our design examples will use a reflector and a director in addition to the log-cell driver. Hence, the total element count will be two greater than the number of elements in the cell. As with all of the models in this series, the designs will be for 10 meters. Scaling to 20 meters in one direction and to 6 meters in the other direction are straightforward tasks.

All models will use uniform diameter elements. Actual element lengths will have to be lengthened if a builder chooses a tapered diameter schedule. Additionally, the builder will have to devise a plan for implementing the phase line associated with each log cell. High impedance lines can be fabricated from round wires. Low impedance lines may require the use of flat aluminum strap or of a double square boom to effect a satisfactory phase line.

### Casual 4- and 5-Element Log-Cell Yagis

Our initial models employ either 2 or 3 elements in the log cell, as illustrated in **Figure 1**. Both models use 200-Ω phase lines, with driver elements spaced a standard 2 feet apart. This spacing accords with a number of articles from the past, although the magic in its selection eludes me. The resulting 4-element log-cell Yagi is 96 inches (8 feet) long, while the 5-element log-cell Yagi is 138 inches long (11.5 feet). Coincidentally, these two lengths coincide closely with the lengths of the medium-bandwidth Yagis introduced in Part 1 as comparators for log-cell Yagis. You should keep the graphs for those antennas handy as we examine the two new designs. Both of the antennas in Figure 1 use 1-inch diameter elements.

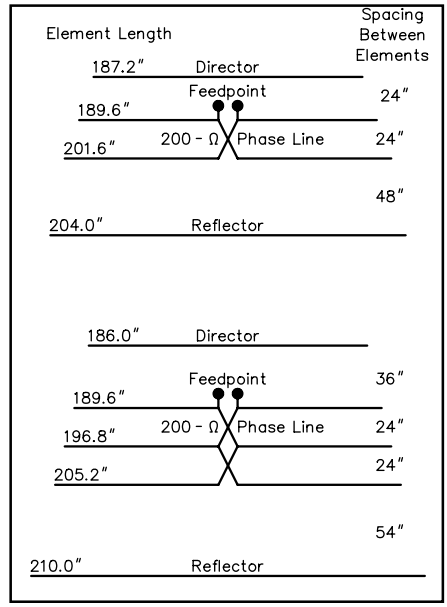



**Figure 1—Outlines of 4- and 5-element 10-meter log-cell Yagis.**

Both log-cell Yagis exhibit very smooth gain curves over the first MHz of 10 meters, as demonstrated in the frequency sweep graph shown in **Figure 2**. The 4-element antenna with only 2 elements in the cell has the lower gain level, as one might expect. It coincides roughly with the gain curve for the 8-foot 3-element Yagi of Part 1. The 5-element antenna provides only about a half dB of additional gain. In contrast, the 3-element Yagi of the same boom length in Part 1 provides an average free-space gain of about 8 dBi, another half dB greater than the log-cell Yagi with the same boom length.

**Figure 3** shows that the two log-cell Yagi designs provide fairly mediocre front-to-back ratios. Nowhere in the specified bandwidth does the front-to-back ratio of either antenna reach 18 dB. (In contrast, both Yagi designs exceed 20 dB front-to-back ratio for most of the first MHz of 10 meters.) Where the log-cell Yagis have an advantage is in the feedpoint impedance. Both designs, as illustrated in **Figure 4**, provide less than 2:1 50-Ω SWR from 28 to 29 MHz. By way of contrast, the two Yagi designs require a beta match or comparable network to yield similar results.

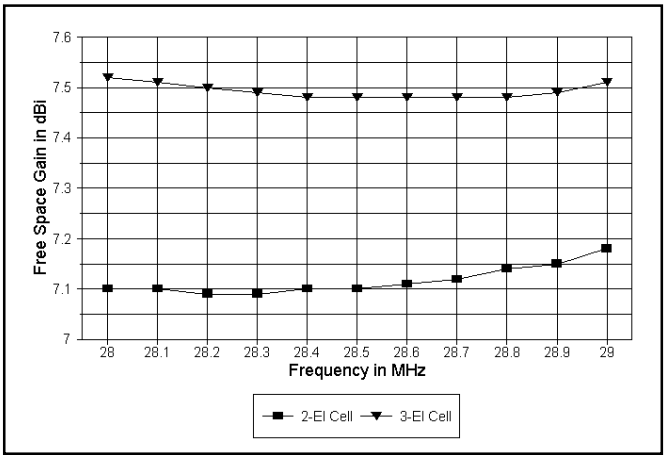



**Figure 2—Frequency sweep of the free-space gain of "Short Cell" 4- and 5-element log-cell Yagis (with 2 or 3 elements in the log cell itself) from 28-29 MHz.**

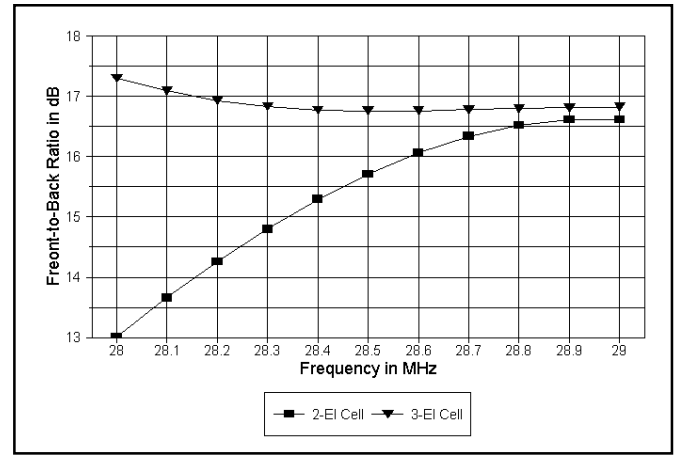



**Figure 3—Frequency sweep of the front-to-back ratios of "Short Cell" 4- and 5-element log-cell Yagis (with 2 or 3 elements in the log cell itself) from 28-29 MHz.**

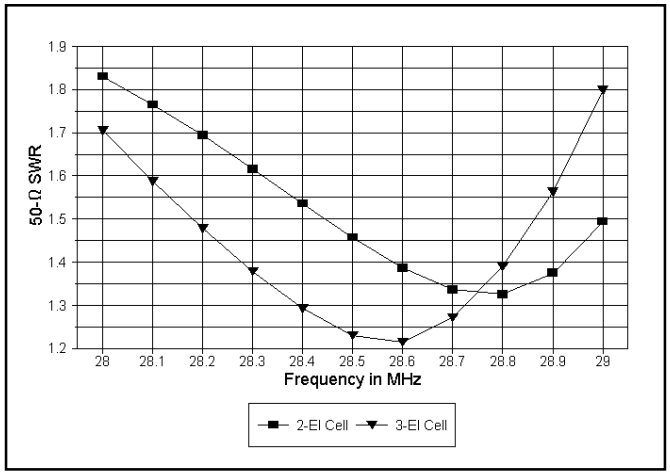



**Figure 4—The 50-Ω SWR curves of 4- and 5-element log-cell Yagis (with 2 or 3 elements in the log cell itself) from 28-29 MHz.**

**Table 1**
**2- and 3-Element Log Cell Independent Performance**

| *Frequency (MHz)* | *28.0* | *28.5* | *29.0* |
|---|---|---|---|
| 2-Element Log Cell: | | | |
| Free-Space Gain (dBi) | 4.58 | 4.70 | 4.83 |
| Front-to-Back Ratio (dB) | 6.88 | 7.21 | 7.48 |
| Feedpoint Impedance (R +/- *j*X Ω) | 13 + *j*0 | 12 + *j*5 | 11 + *j*11 |
| 3-Element Log Cell: | | | |
| Free-Space Gain (dBi) | 7.09 | 6.93 | 6.74 |
| Front-to-Back Ratio (dB) | 11.6 | 11.9 | 12.0 |
| Feedpoint Impedance (R +/- *j*X Ω) | 11 – *j*22 | 9 – *j*8 | 8 + *j*3 |

**Table 2**
**4-Element Log Cell Independent Performance**

| *Frequency (MHz)* | *28.0* | *28.5* | *29.0* | *29.5* |
|---|---|---|---|---|
| Free-Space Gain (dBi) | 7.24 | 7.47 | 7.47 | 7.29 |
| Front-to-Back Ratio (dB) | 17.7 | 14.0 | 12.8 | 13.1 |
| Feedpoint Impedance (R +/– *j*X Ω) | 95 – *j*2 | 39 – *j*11 | 39 + *j*12 | 75 + *j*4 |
| 50-Ω SWR | 1.90 | 1.41 | 1.42 | 1.51 |

The two log-cell Yagis, then, require extra elements to provide performance that fails to equal the performance of well-designed 3-element Yagis. One only skirts the issue by saying that the failure results from casual design, since that statement gives no clue of how to distinguish casual from careful design. However, there is a fairly simple modeling test we can perform as a measure of a log-cell Yagi's performance.

If we extract the log-cell driver elements from the overall antenna, we may model them independently. In a well-designed log-cell driver, the array will show fairly high gain and a feedpoint impedance that does not depart radically from the values obtained when the driver is part of the total log-cell Yagi.

**Table 1** provides values for the 2- and 3-element log cells extracted from the antennas we have been examining. The checkpoints at 28, 28.5 and 29 MHz for both cells show fairly low gain, with the 2-element cell especially low. (Although registered for reference, the low front-to-back ratios are of no concern in this test.) The feedpoint impedances of the cells are roughly one-fourth the values obtained for the complete antennas. We shall want to keep these figures in mind as we check more complex and more carefully designed log-cell drivers.

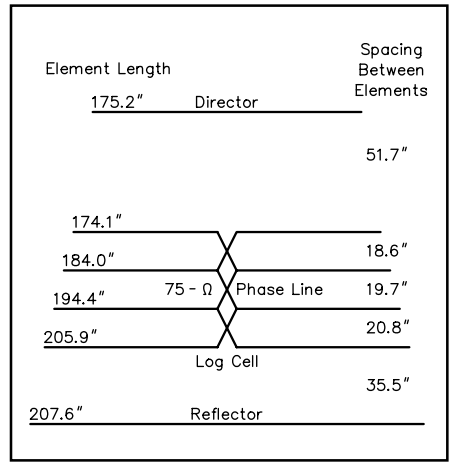



**Figure 5—The outline of a 6-element 10-meter log-cell Yagi.**

### A 6-Element Log-Cell Yagi

The 6-element log-cell Yagi, with a 4-element log cell, shown in **Figure 5**, is adapted and scaled from the Rhodes and Painter log-cell Yagi for 20 meters that appears in *The ARRL Antenna*

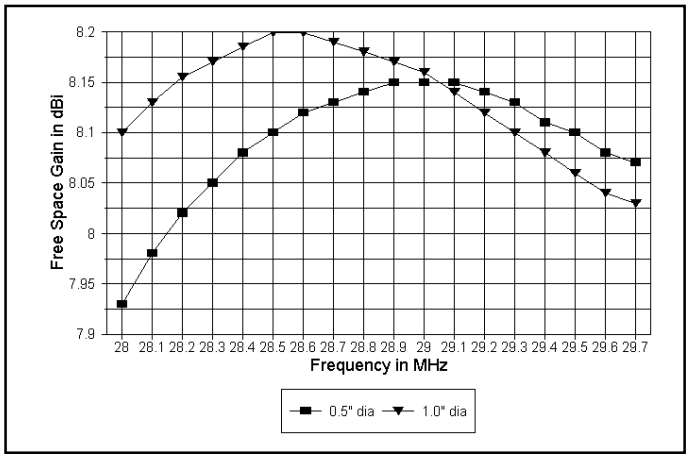



**Figure 6—Frequency sweep of the free-space gain of 6-element log-cell Yagis (with 4 elements in the log cell itself) with element diameters of 0.5- and 1-inch from 28-29.7 MHz.**

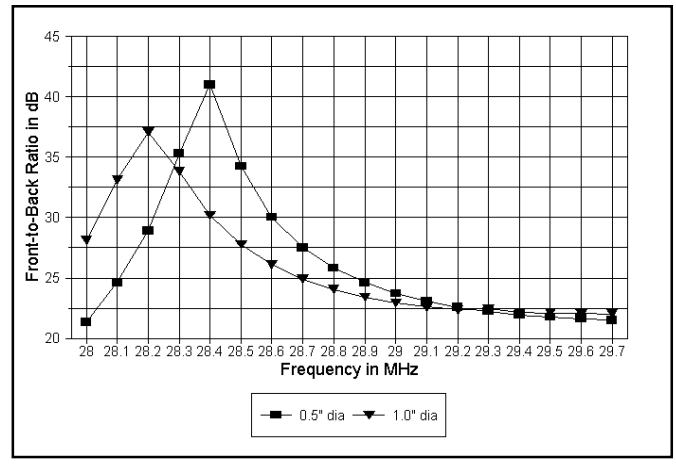



**Figure 7—Frequency sweep of the front-to-back ratios of 6-element log-cell Yagis (with 4 elements in the log cell itself) with element diameters of 0.5- and 1-inch from 28-29.7 MHz.**

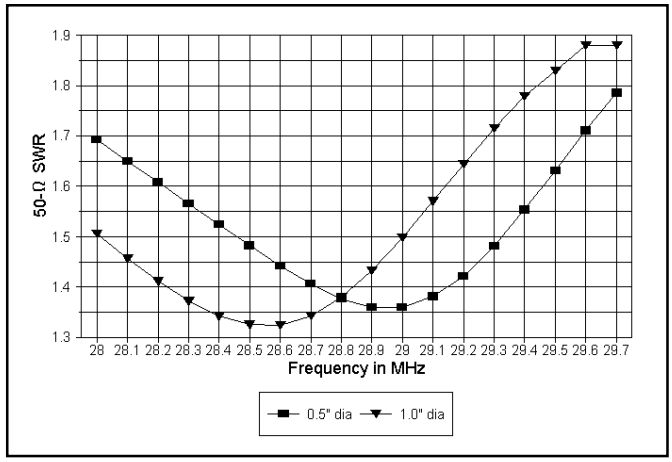



**Figure 8—The 50-Ω SWR curves of 6-element log-cell Yagis (with 4 elements in the log cell itself) with element diameters of 0.5- and 1-inch from 28-29.7 MHz.**

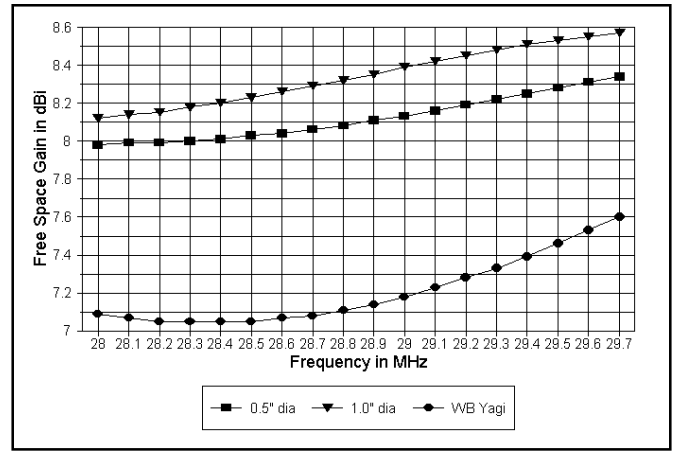



**Figure 10—Frequency sweep of the free-space gain of 7-element log-cell Yagis with element diameters of 0.5- and 1-inch from 28-29.7 MHz. For comparison, values are also given for a 4-element wide-band Yagi.**

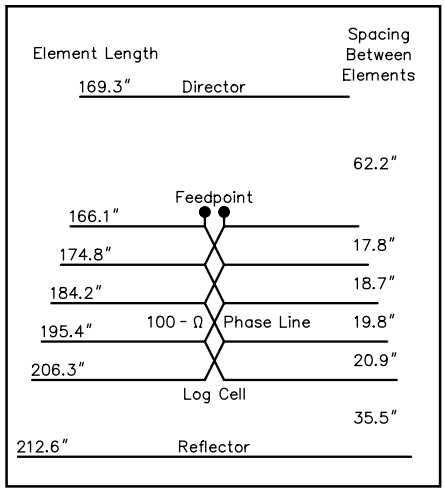



**Figure 9—The outline of a 7-element 10-meter log-cell Yagi.**

**Table 3**

**5-Element Log Cell Independent Performance**

| Frequency (MHz) | 28.0 | 28.5 | 29.0 | 29.5 |
|---|---|---|---|---|
| Free-Space Gain (dBi) | 7.31 | 7.38 | 7.42 | 7.43 |
| Front-to-Back Ratio (dB) | 12.0 | 12.4 | 13.4 | 15.2 |
| Feedpoint Impedance (R +/– *j*X Ω) | 34 – *j*6 | 46 + *j*14 | 80 – *j*1 | 46 – *j*27 |
| 50-Ω SWR | 1.51 | 1.37 | 1.60 | 1.77 |

*Book*.[1] The log cell has been designed according to LPDA principles, using an element length and spacing ratio of approximately 0.95. This ratio, when applied to a pure LPDA, tends to produce more gain but a lesser front-to-back ratio than lower numbers—for example, the value of 0.90 used in the LPDA design we examined in Part 2. The higher ratio value also produces a shorter cell for the same number of elements. The entire antenna, including the reflector and director, requires a 12.2-foot boom, nearly as long as the 4-element medium-bandwidth Yagi presented in Part 1 as a potential comparator.

If we extract the log cell from the antenna, we obtain the checkpoint values recorded in **Table 2**. Note the relatively uniform gain across the entirety of 10 meters, as well as the 50-Ω SWR values. According to our test, this log cell promises to form the basis of a good antenna that may be useful across all of 10 meters.

Before we look at the modeled performance figures, we should note an additional dimension of this antenna. The phase line impedance is low (75 Ω). In addition, if we use different element diameters, we obtain results that change to a degree that is greater than the changes we might expect in a Yagi using the same two element diameters. The effects of element diameter on the log cell driver (or on LPDAs) are significant. Therefore, the performance graphs for this antenna will record values for both 1/2-inch and 1-inch diameter elements.

Free-space gain figures appear in **Figure 6**. The fatter element model not only shows a gain peak that is lower in frequency than the thinner version, but as well its peak gain values are higher. Moreover, the curve is flatter. The gain values rival those of the 3-element medium-bandwidth Yagi on a 12-foot boom, but do not match the values for the 4-element medium bandwidth Yagi on the 13-foot boom. Both of the Yagis, of course, only covered the first MHz of 10 meters.

The front-to-back values are less radically different, as illustrated in **Figure 7**. Essentially, the thinner version is capable of a higher peak front-to-back ratio. However, both versions of the antenna exhibit better than 20 dB front-to-back ratio across the 28 to 29.7 MHz span.

Both versions of the antenna exhibit acceptable SWR curves across all of 10-meters, as shown in **Figure 8**.

### A 7-Element Log-Cell Yagi

The bandwidth of 10 meters presses the 4-element log cell to its limits, although the 6-element log-cell Yagi does manage to cover the band with good gain, good front-to-back values, and a direct 50-Ω feed system. We can improve upon the design by adding one more element to the log-cell to obtain the design shown in **Figure 9**. The 5-element log cell for this antenna uses the same tapering ratio for elements in the log cell. However, using an additional element allows the longest element to be a bit longer and the shortest element to be a bit shorter. The cost is a longer boom, about 14.6 feet long in this case. The phase line is 100 Ω.

**Table 3** provides a look at the performance of the log cell independently of the entire antenna. Gain is even more uniform across the band than for the 4-

[1]Notes appear on page 18.

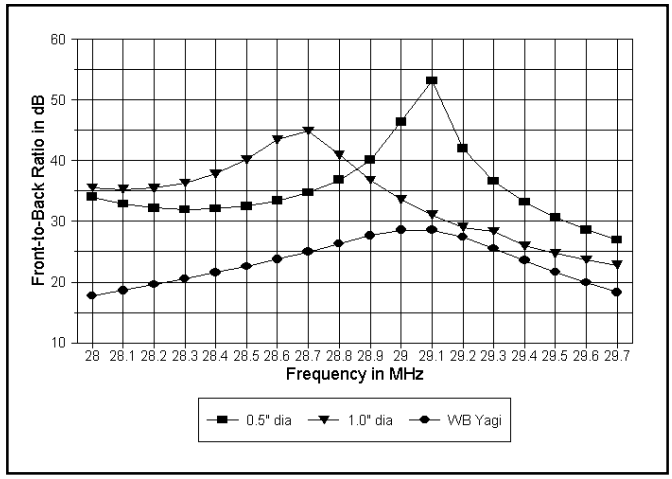



**Figure 11—Frequency sweep of the front-to-back ratios of a 7-element log-cell Yagis with element diameters of 0.5- and 1-inch from 28-29.7 MHz. For comparison, values are also given for a 4-element wide-band Yagi.**

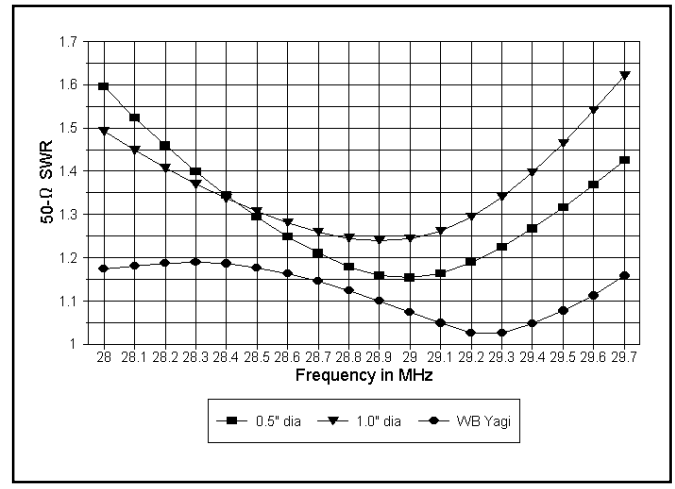



**Figure 12—The 50-Ω SWR curves of 7-element log-cell Yagis with element diameters of 0.5- and 1-inch from 28-29.7 MHz. For comparison, values are also given for a 4-element wide-band Yagi.**

element log cell, with acceptable 50-Ω SWR figures. Once more, the front-to-back figures are unimportant in this context, since the parasitic elements will establish those values in the final antenna. In fact, the log cells used in these antennas are designed for gain rather than for a balance of operating characteristics (just as was the case for the 2-element cell in the 3-element array examined in Part 2). We should expect the overall antenna to reflect the potentials of the log cell.

**Figure 10** shows the free-space gain of two versions of the resulting log-cell Yagi, one using 1/2-inch diameter elements, the other using 1-inch diameter elements. For contrast, values are also shown for the 4-element wide-band Yagi, introduced in Part 1. We should expect lesser performance from this 8-foot boom Yagi. If you desire, you may substitute the values for the 8-foot-boom LPDA.

The differences between the half-inch and one-inch versions of the log-cell Yagi are even more dramatic than for the preceding model, with nearly 0.25 dB differential in gain in places across the band. Values for the half-inch model are similar to those for the 3-element 12-foot boom medium-bandwidth Yagi, but the log-cell Yagi covers the entire 10-meter band. The one-inch model shows only slightly less gain than the 4-element medium-bandwidth Yagi. For either model, the gain curve is very smooth, illustrating the benefit of the extra element in the log cell.

One reason for adding the wide-band 4-element Yagi to the graphs is that it demonstrates the incremental improvement in front-to-back ratio provided by the 7-element log-cell Yagi all across the band, as shown in **Figure 11**. Because no element length adjustments were made when changing element diameters, the half-inch model exhibits the superior curve, with a front-to-back ratio better than 30 dB up to 29.5 MHz. The one-inch model, with a few added adjustments, can replicate the half-inch model curve, but with a slightly lower peak value. If you refer to the azimuth "snapshot" in Part 1 of this series, you will also learn that the rear quadrants show a very well-behaved rear lobe with no major quartering side lobes to falsify the impression left by the 180-degree front-to-back values.

The 50-Ω SWR curves, shown in **Figure 12**, demonstrate that the 7-element log-cell Yagi has a smoother curve than its 6-element counterpart. The curve for the version using 1-inch diameter elements is flatter, but does not dip quite so low as the curve for the half-inch version. However, adjustments to the exact phase-line characteristic impedance would likely permit either curve to bottom at close to 1:1 SWR. The phase-line characteristic impedance selected for the models represent a standard number, but actual construction would permit refinements.

### Summing Up So Far

The development of a log-cell Yagi requires careful attention to the design of the log-cell driver to obtain optimal results. Well designed log-cell Yagis are capable of good gain, but their chief operating characteristics that fall into the range of excellence (when compared to other available designs) are the front-to-back ratio and the operating bandwidth. As the 6- and 7-element log-cell Yagis demonstrate, the antenna type is capable of well over 6% frequency coverage in a monoband design.

Designing a log-cell Yagi for gain as we cross into Y2K appears to be an exercise in futility. Although Yagi design in the late 1970s and early 1980s had yet to reap the benefits of computerized optimization, current Yagi design can provide as much or more gain for a given boom length than log-cell designs. The Yagis have the additional advantage of mechanical simplicity, since they do not require the precision construction of a phase line to interconnect the elements in the log cell driver.

An interesting example of this point can be found by modeling the 5-element log-cell driven Yagi in Orr and Cowan.[2] The antenna uses a 2-element log-cell with a reflector and 2 more directors. This design on a 21-foot boom is capable of a peak free-space gain of about 9.5 dBi, with a very sharp peak in both the operating characteristics and the SWR curve. The rear lobes were acceptable but the front-to-back ratio exceeded 20 dB for only a narrow bandwidth.

I had occasion to study 5- and 6-element 20-meter Yagis of existing design.[3] The boom lengths range from 45 to 55 feet, corresponding to 22- to 27-foot booms on 10 meters. All of the designs were capable of a free space gain of 10 dBi across all of 20 meters, with better than a 20 dB front-to-back ratio. Some, such as the NW3Z/WA3FET OWA 6-element design, were capable of exceptionally low 50-Ω SWR values all across the band. In fact, the OWA

design can be scaled readily for 10 meters and provide 1 MHz coverage on a 24-foot boom.[4]

As a gain enhancement, the log-cell driver technique has very limited utility amid current Yagi technology. Its chief merits involve operating bandwidth and front-to-back ratio. However, even here, its utility may be limited when the complexity and weight of the array are factored into antenna design and construction decisions. The medium-bandwidth Yagis described in Part 1 as comparators are fully adequate to provide full coverage of all of the upper HF bands except 10 meters. Only if weight is no concern and if extra front-to-back performance is a necessity on 20 or 15 meters would a log-cell Yagi such as the 6- and 7-element designs seem justified.

The natural home of the log-cell Yagi in Y2K is at 10 meters and above, where the bandwidths are more than 3% or so of their center frequencies. However, as we increase frequency, the materials we use for antenna elements increase in diameter relative to a wavelength. So even at VHF, the fat elements of Yagis can provide a wider operating bandwidth that often precludes the need for log-cell technology.

These notes are far from exhaustive, and my summary is based only on a few hundred models, the best of which have appeared in this series. Since antenna enthusiasts have an endless appetite for experimentation, it would not surprise me to see these analyses supplanted in the future by better and more ingenious log-cell Yagi designs.

One perennial direction of experimentation that we have not examined is the effect of setting the antenna elements into a forward swept Vee. Perhaps we can overstay our welcome for one more part in this series, devoted to this one topic, in order to discover whether "V" means "victory" or only half of a "virtual reality."

**Notes**

[1]P. D. Rhodes, K4EWG, and J. R. Painter, W4BBP, "The Log-Yagi Array," *QST*, Dec 1976. The main elements of this article are reprinted in *The ARRL Antenna Book*, 18th Edition, pp 10-25 to 10-27.

[2]W. I. Orr, W6SAI, and S. D. Cowan, W2LX, *Beam Antenna Handbook*, pp 251-253. For a 6-meter adaptation, see John J. Meyer, N5JM, "A Simple Log-Yagi Array for 50 MHz," *Antenna Compendium*, Volume 1, pp 62-63.

[3]See "Modeling 6 Long-Boom Yagis" at my Web site, **http://www.cebik.com**.

[4]A model of a 10-meter version of the NW3Z/WA3FET OWA is reported in Cebik, "The OWA for 10, 6 and 2 Meters," *AntenneX*, Aug 1999. ■

# WRTC2000—The US Guys

Dave Patton, NT1N
nt1n@arrl.org

You might have asked yourself: "What does it take to be a WRTCer?" There are plenty of obvious answers that immediately spring to mind. These include "great operator, wins contests, likes both modes, doesn't cheat and knows a lot of stuff." Every one of the operators selected to represent US teams in Slovenia possesses these basic traits. But what about the "other" stuff? Are these guys truly "demigods" who rule Earth, or are they actually real human beings who may be more like you and me than most of us would guess?

I wondered about that, so I surveyed our 26 illustrious representatives, and 14 responded (54 percent). Obviously you will not want to read too much into these results as they are truly intended for fun only, however there are a couple of categories that are relevant, can be averaged, and do have meaningful content. The results follow.

### Winning

My first question requested a summary of contests won by each participant. So much of what we do in contesting revolves around winning and/or "making the (top ten) box." As you might have guessed, our WRTCers have won their share of contests. Among the 14 respondents: The CQ WW CW Contest—there were two first places from DX locations and three wins from Stateside. In the CQ WW SSB Contest there were two from DX locations and one from the US. The ARRL Sweepstakes CW Contest has been won eight times by respondents, the ARRL DX CW 'test has been won five times from the DX side, and once from the US. The ARRL DX SSB Contest was won once each from the DX side and from the US. The CW Sprint has been won a minimum of ten times, and the IARU HF Championship four times. There are many, many top-ten finishes in all contests and obviously placing high in regional competition is common. But, just so we all feel better, there are at least five WRTCers who have NEVER won a contest! This fact reveals that you don't have to win to get a WRTC slot, and it also shows that you can be recognized as a great operator without winning major titles.

### Age

I didn't need a survey to determine the ages of the competitors. The average age of the 26 men is 46.8 years. The range is from 34 to 58, a span of nearly a quarter of a century—a whole generation. I did not ask for the year first licensed, but it is obvious from my Sweepstakes memories and personal knowledge that the WRTCers have each been licensed a minimum of 20 years. The lesson to learn from this topic is that if you are young or middle-aged, just getting started, or have been going at it for 20 years, there is still plenty of opportunity for you to make the grade as a WRTCer for future events. I personally know of several contesters in their 60s, and some young contesters, who would make formidable WRTC contestants.

### Personal

Are these guys married? Do their spouses put up with this stuff? For our average respondent, the answer is yes. Only three are not presently married while four have been divorced. This divorce rate, 29 percent, is nearly half that of the national average. Interestingly, lots of comments were received along with this question's answers indicating that those divorces were really miserable! And, those presently married commented that they were married to absolute "saints"—all around great ladies with lots of patience. Following this thread further, I wondered how many spouses were licensed—further research indicated three. I didn't ask if the single guys felt that they had an advantage or disadvantage—and they didn't volunteer any further information.

### Profession

Driven, successful contesters are often equally successful in the real world. Competition and drive are natural attributes across the board. Being hams also often equates to technical professions and this holds true with our WRTCers—at least five are engineers. Other professions listed include computer analyst, teacher/coach, retail consultant, telecommunications sales, management consultant, small business owner, investment adviser and marketing director.

### Music

I have found that contesters—especially CW aficionados, really like music. I asked for musical preferences and six preferred some variety of Rock, two went for Oldies, one guy is into Country and Western, one is a fan of Electronica and two didn't have any particular preference (although one said anything BUT Country!).

### The Ride

What do these guys drive? My personal observations on contester's wheels runs the gamut. There is a definite correlation between hams and vehicles, and some guys really like to tinker with cars and some like to own and drive fast cars. Others, on the other hand, choose a cheap, reliable car that allows them to spend more money on other things—including ham radio. Most WRTCers have shown a clear allegiance to no-nonsense reliability in that four of them drive Honda Accords as their primary vehicles. Other reported makes and models reveal an economical approach to car ownership: Plymouth Horizon, Toyota Corolla, Toyota Pick-up, Honda Civic, Mitsubishi Galant, Subaru Outback and Mercury Villager. While not exactly moving into the "Sultan of Brunei" category of car ownership, three guys listed cars just a step above the previous class: Mercury's Grand Marquis, and BMW's M3 and 533i.

### Cereal

Can you be a contester and not eat breakfast cereal? It didn't seem possible to me, and true to my guess, only one guy did not like the stuff. Just like the Frosted Flakes TV commercials, a couple of the replies I received were along the lines of "don't tell anybody, but I REALLY like... " Oatmeal was mentioned three times as a favorite, while Frosted Mini Wheats captured two spots, as did granola. Also mentioned were Raisin Bran, Special K, Life, "many cereals," and "anything loaded with sugar." The exception? One individual responded that he ate a bean burrito every morning. Gotta try that!

### Dog and Cat

Do they have them in the house? Yes—seven WRTCers have dogs, and four have cats. Two respondents have both. A couple of guys said they had one of the two, and made it quite clear that they would never even consider having the other. One guy wanted me to take his dog. Five guys had NEITHER a cat nor a dog. One guy lost custody of his pet in his divorce! Read into these answers what you will.

### Eyes

I have noticed that most contesters seem to need glasses. Eight of the 14 respondents are nearsighted, and four are farsighted. Three lucky guys do not need vision correction. What does this prove? Probably nothing.

### Accident Prone?

How many WRTCers have ever broken an arm or a leg? Those were the two specific body parts about which I asked. Three of the 14 respondents had indeed broken an arm or a leg. Several others

reported breaking other parts of their bodies. Contesters, being a competitive breed, must try to win at everything, so just simply breaking an arm or a leg isn't good enough. Others, obviously disappointed at having nothing broken to report, shared tales of nasty sprains, profuse nosebleeds, infected hangnails, painful paper cuts, etc.

**Tower Work**

Although not *necessarily* related to the previous topic, I wondered how many of our WRTCers did tower work. Twelve of the 14 responded YES (some with multiple exclamation points). Not that it makes a whole lot of difference in operator quality, but there seems to be a strong trend towards the best operators in the country doing their own tower work. There have always been debates about the value of guest operating from stations where the guest operator doesn't have to do the tower and antenna work. That probably doesn't happen as often as we are all led to believe. Every WRTCer has guest operated someplace—yet nearly all of them do tower work. Alternatively, the WRTCers who do not do tower work may have the right idea! That hasn't stopped them from making the grade.

**CW Speed**

It's hard to achieve the level of a WRTCer without being skilled in both modes. I asked "how fast can you comfortably and accurately operate CW during a contest?" The answers ranged from 35 to 60 WPM, with an average of 44.6 WPM. I also wondered about "rag chew speed?" These ranged from 25 to 55 WPM with an average of 38.8 WPM—often the reported limiting factor was sending ability! The key bit of information to come from this topic is "yes, you really have to know the code to be a WRTCer."

**DXing**

This one was interesting to me. I wondered how many of our guys hold an actual 5BDXCC. Four of the 14 do. The other ten emphatically said that they did not, most adding a comment such as "*DXCC—what's that?*" to their answer. It seems that if you like DXing, you *really* like it. The other guys just don't care about their country count—they are strictly very serious contesters. Interestingly, being as competitive as they are, the guys without 5BDXCC also often added comments like: "No, I don't have the award, but I've worked everything anyway!"

**The Other Side**

Have these guys *been* DX then? Have they traveled to the other side and run the masses? Of course they have. Every one of them has been DX—and been DX in contests I might add. As competitive as they are, the WRTCers also provided unsolicited reports of the places from which they have operated and when, just to drive the point home.

**Favorite Contests**

Can there really be a favorite single contest listed? Of course not—so I asked our guys to list the two contests that they would operate each year if that was all they were allowed. Naturally, some of the guys couldn't accept that qualification and listed many more—being competitive and all. But the responses did lead to some strong conclusions: CW contests are the most preferred—along with international competitions. The CQ WW CW Contest was listed eight times followed by the CQ WPX CW and ARRL Sweepstakes CW Contest four times each. Listed twice each: the North American Sprint CW, the IARU HF Championship, the Sweepstakes SSB, and the CQ WW SSB. Contests receiving one vote were Field Day, the Florida QSO Party, the NAQP, and the ARRL CW DX Contest.

**QSO Machines**

Ever wonder why the QSL Bureaus are so loaded-up? WRTCers make a LOT of QSOs. I asked the guys for rough estimates of how many QSOs they have made in contests in their radio careers. My gut feeling is that their estimates are probably a bit low! The range reported was from 25000 to 700000 QSOs with an average of 265000. Figuring out how many QSOs you made as an operator at a multi-operator event is challenging. Obviously, what we can take from this exercise is that practice is good—and lots of practice is better!

**Call Signs**

I like call signs. For fun I asked the competitors what they thought was the best call sign in the world, and if that one was not a US call sign, then also include what they thought was the best US call sign. Listed twice as the best call sign in the world was K1AR. That is hard to dispute. Other calls listed as best in the world were: 9K9K, W7RM, JY1, N2AA, I3LID, F6BEE, EA2IA, 8P9Z, M0O, K6LA and ZD8Z. The best calls in the US included: K9K, W8IZ, WO0DY, N2AA, K3WW, W0OF and K1ZZ.

**Linguistics**

Nearly all of the other competitors in Slovenia are multi-lingual. How do our US WRTCers stack-up in the foreign language department? Not well. Two of the fourteen respondents reported being conversational in another language besides English and CW (German and French). Not a huge disadvantage by any means—especially at WRTC2000—but we all know the advantage of being able to speak Japanese or Spanish nowadays!

**The Best**

Finally, I asked the competitors to list who they believed were the top ten operators within the US and outside of the US. I qualified this question with the added requirement that they not do any research to determine their answers. I wanted it to come from ingrained experience. Some of the reports were not complete, so the numbers of votes will not necessarily add up.

The US WRTCers listed these US operators as among the ten best (call and number of votes):

| | |
|---|---|
| N5TJ | 13 |
| K1AR | 13 |
| N6TR | 11 |
| K1TO | 11 |
| W4AN | 10 |
| K5ZD | 9 |
| N2IC | 9 |
| KQ2M | 7 |
| NT1N | 7 |
| N5KO | 7 |
| W2GD | 6 |
| N2NT | 5 |
| K6LL | 4 |
| W0UA | 4 |
| N9RV | 4 |
| KW8N | 4 |
| K1DG | 3 |
| K3ZO | 2 |
| W9RE | 2 |
| AG9A | 2 |
| N6KT | 2 |
| K1ZZ | 2 |
| K1KI | 2 |
| N6RT | 2 |

Receiving one vote each: WE9V, K9PG, K7SS, K7JA, W4ZV, N5RZ, K3LR, N6AA, K3WW, N6MJ, K5GN, K4BAI, N6IG, W9WI, K8NZ, N2NC, N6TJ, W3LPL, W6OAT, N6TV and K6NA.

*DX Stations*

| | |
|---|---|
| CT1BOH | 12 |
| VE3EJ | 8 |
| OH2MM | 8 |
| G3SXW | 5 |
| G4BUO | 5 |
| DL6FBL | 4 |
| OH2BH | 3 |
| 9A3A | 3 |
| ZS6EZ | 3 |
| SP7GIQ | 2 |
| JA8RWU | 2 |
| S50A | 2 |
| JH4NMT | 2 |
| OK1RI | 2 |
| LY1DS | 2 |
| DL1IAO | 2 |
| 9V1YC | 2 |

Receiving one vote each: RA3AUU, I2UIY, JA5DQH, NP4Z, YT1AD, GI0KOW, GW4BLE, HA0DU, RW1AC, VA7RR, UA9BA, GI0NWG, OH1JT, OH2IW, VR2BG, G3TXF, S53R, OH1NOA, 9H1EL, OH1XX, G3SWH, JH7PKU, OH2KI, VE3UZ, DL2CC, F6BEE, VK6HD and KL7RA.

I hope you all enjoyed reading this. The WRTCers from the US will definitely have their work cut out for them in Slovenia. Competition will be fierce and the beer—I mean *the blood* will flow. 73 and GL to all! ■

# Contest Club Finland's 6th International Contest Meeting in Helsinki, Finland

Ari Korhonen, OH1EH
ari.korhonen@satshp.fi

January is the regular time for CCF's annual Contest Meeting. This year the meeting was held at the Finnish Broadcasting Company's headquarters in Helsinki. The unofficial program began on Friday evening, when most of the 50 foreign visitors arrived. The swapping of contest stories continued late into the night. Saturday morning the gang headed towards the fantastic FBC facility, where the official program began at 11 AM. Total attendance exceeded 140 contesters from all over the world.

An All-Star cast had been lined up and the crowd enjoyed the following presentations among others:

*CN8WW Multi/Multi* by DL6FBL
*A Short Study of Stacked Yagis* by WX0B
*Contesting at High Level* by CT1BOH
*The Great 160 Shootout* by W2GD
*V26B Multi/Multi* by DL6LAU
*EA8BH CQ WW SSB* by OH2BH
*E44DX* by OH1RY.
*HC8N* by N5KO

Meeting photos and presentations can be found at **http://www.contesting.com/ccf**. Check them out.

The next meeting will take place on the third weekend of January, 2001. *Mark your calendars now!*

**Finnish WRTC team Ari, OH1EH, and Timo, OH1NOA.**

**Juha, OH1JT, and Andy, UA3AB.**

**Tom, N9NC, and Harry, RA3AUU.**

**Andy, ES2NA; Toivo, ES2RR; and Pertti, OH2RF.**

**Martti, OH2BH, and Jose, CT1BOH.** ■

# Simple Pleasures are the Best

**Mark Beckwith, N5OT**
swca@ionet.net

Contesters become *formerly serious* for any number of reasons. I am *formerly serious* because of a lack of money and a lack of time. I hope one day this changes and I can become *serious* once again. I keep thinking it will be "soon." Trouble is I have been thinking it will be "soon" for far too many years.

I want to buy some property. Not just any property—but property for the *ultimate-ham-station-of-all-time*. This is not something most ranchers understand; nevertheless, it is mostly ranchers who own what I need.

Recently I got lucky and convinced one to sell me some of it. There remained only one hesitation on my part before closing the deal. I wanted to see what the place "plays like" on the air. I would hate to buy a piece of property that turned out to be a lousy radio location. I talked the owner into letting me test-drive his real estate by playing my favorite game out in his pasture. No matter how good a site could be in theory; to me there is no substitute for solid experience.

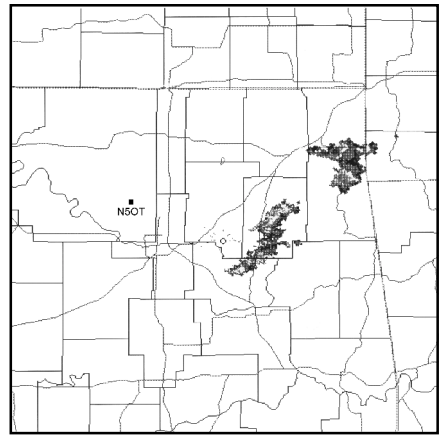
My plan included using a helium balloon to erect a 160-meter antenna for the ARRL 160-Meter Contest. I would compare how this worked against (1) past experiences (after contesting for a few years, most of us develop a pretty good sense of "this is a great location"), and (2) I would compare notes, signal reports, etc, with the other "serious" guy in town—my friend K5KA. I figured if I could get on the air for at least a few hours making a hundred QSOs or so, I would know better just how good a place it was.

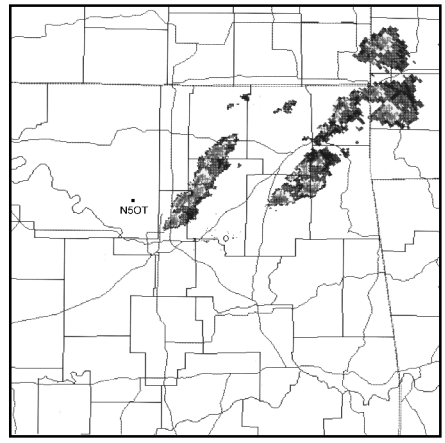
I got the flu really bad just before the CQWW. After the CQWW, I was on the mend. Bright and early Monday, I ordered wire and the balloon, and made arrangements to rent a 4 kW generator. I located helium in town. Tuesday I bench-tested the transceiver and amp that had been sitting on the shelf in the garage for months. I spent the rest of the night (until 7 AM) working on a project at work.

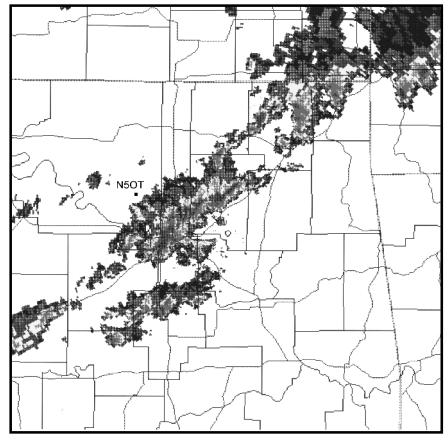
All this proved too much too fast—I suffered a flattening relapse Wednesday—we're talking *flattened in bed*. Wednesday my wire (#18 Silky from The Wireman—10 ounces for 130 feet) arrived. Thursday night I configured and tested *TR-Log*. Friday my balloon arrived. Weak and miserable, I stumbled through the business day until afternoon when I could turn my thoughts toward an evening of digging weak signals out of the noise.

Bouncing with renewed energy, I packed my truck for a manly night up against the elements—it was supposed to rain later in the night. By 4 PM I was on my way to pick up the generator and the helium. Just before 5, I was driving up to the break in the fence where I could open up the barbed wire and let myself onto the property.

At last I was ready to park, unload and start doing all that Field Day stuff that makes you know you are a ham. Of course, the wind was howling, there was only 15 minutes of daylight left, and the contest had been going strong for almost an hour.




With great precision I executed each step that I had crafted in my imagination all week. First unload the generator—second, run the power distribution. I find that I brought the wrong #$%^& Twistlock connector—this one fit the last generator just fine. A little work with pliers, a hacksaw and a file and "voila," there's 240 V at the amp plug in the cab.

Next, lay out this wire and cut it to length... done! Slip an insulator on the single radial, and the ever-necessary fisherman's swivel on the vertical radiator, a little soldering (in the dark), and now the antenna is ready to be bolted to the makeshift support attached to the hitch ball on the truck bumper. This will keep the single elevated radial at least 8 feet above the ground—the other end is tied off to a convenient existing support. So far so good. All that remains is to fill the balloon, tie it off, attach the wire, and fly it. This all comes off per the plan. The antenna is up and looks good (nowhere near vertical in this wind, but nobody has to know).

The final job is to set up a contest station in the cab of my full-sized pickup. The Alpha fits nicely in the driver's seat facing the passenger side—where I will operate. The TS-950 rests solidly on the hump facing up. A little coax, a few control cables, and now I am keying the rig and finding the antenna is fine as built, no adjustments needed—if anything 20 kHz high in resonance, but I used all the wire, so that's going to have to do. The SWR is not prohibitive.

### On the Air

I take a deep breath, spin to the bottom and S&P my way to the top. The rate meter climbs—30... 60... 70... 80... 90 QSOs per hour without even calling CQ. Everyone seems to copy me just fine. I think this will work quite well. Gosh, 25 states worked already? I think it is time for a CQ. I (very gentlemanly) search for a place to dig in. 1848 turns out to be the frequency of choice and I cast my line. The rate meter climbs to 80 and 90 (glad to see I can do as well CQing as S&Ping!), then it shoots over 100—to 120... 130... 140... 150 and beyond (highest number I saw was 154)! Between transmissions there are 3 or 4 stations calling almost every time. I would say this is not only a good location but a great antenna, too. I am having the time of my life parked out in the middle of a pasture in the dark, contesting from the cab of my truck.

Then the S-meter pins—it is Ken,

K5KA, who has answered my CQ—glad to know he is on at the same time. Can't wait to find out what he thinks of my signal and this pileup…

All too soon, I can not ignore the frequent crashes in my headphones that confirm the forecasted incoming storms are approaching. I only hope they come and go quickly. I switch off the AGC and continue to copy through the lightning, but after another 10 or 15 minutes of this, as the lightning gets nearer, I am asking for fills in almost every QSO—the rate meter is back in the 70s. I am weak and tired, and this is no fun anymore. I have 2 hours 3 minutes on the air and 184 QSOs. This will do nicely. The lightning is visible on the horizon. I think, even if this is all I get done tonight, I have learned the answer. I jump out of the cab, flashlight in hand, and go shut down the generator thinking I'll get some rest, and maybe the bands will quiet down later in the night.

**Oh the Humanity!**

What followed was a tribute to good luck—but mostly just a tribute to plain old foolhardiness. The weather got worse and worse. I was sick and weak. Sleeping on top of your Alpha in a pickup truck cab is not the most comfortable under the best of conditions. I slept nevertheless. Wrapped in layers of clothes and a sleeping bag, I would awaken every hour or so to the howling wind, flashes of lightning, crashes of thunder, and the sound of rain beating on the cab. Every once in a while I would catch an eerie glimpse of the 4-foot balloon whipping through the night sky, backlit by flashes of lightning (the coax had been

## Some Tips for Assembling Your Own 160-Meter Balloon Supported Vertical

Some years ago, I put up a 160-meter balloon vertical for a contest and it worked really well. It had a single horizontal elevated quarter-wave radial and a single quarter-wave vertical radiator per ON4UN design recommendations. The entire assembly was #16 antenna wire with the vertical wire being held aloft by a 4-foot diameter helium balloon.

I purchased the balloon and rented the helium tank from a local party store.

When I got the bug in my ear to try this a second time, I started by posting an inquiry on the Internet. I assumed there must now be cheaper sources that had already been discovered by my fellow contesters. Maybe not as many people do this as I thought, because I got only one response directing me to a fellow in Arizona who sells ready-made kits. I did get numerous e-mails, though, saying "When you find out, let me know."

After the contest turned into an adventure, K7BV asked me to tell the story and also summarize what I learned about getting the antenna together.

*Wire*

In a nutshell, #18 Silky from The Wireman **http://www.thewireman.com** is excellent wire—strong, yet light and easy to handle. It weighs about 5 ounces for a 160-meter quarter-wave vertical.

While you're there, you will have to keep currents from flowing on your coax, so grab one of his ferrite bead balun kits. I bought a bunch of these years ago, built them all, and they come in handy ALL THE TIME. And they're *CHEAP*. I won't detail other sources of wire here since sources are widely known. Wireman's "Silky" is my first choice, though.

*Balloons*

Then, you will need a balloon. I did an Internet search for "large helium balloons" and came up with a number of sources with wildly varied claims about lifting capabilities. However, it was not difficult or expensive to play it safe. The smallest lift claimed for the smallest balloon was 2 pounds for a 4-footer. I figured since this was about 6 times the actual wire weight involved, I would be okay with a 4-foot diameter balloon because the added lifting capability would keep the wire more vertical more of the time (wind, you know).

Edmund Scientific **http://www.edmundscientific.com** offered one for $18.95 but they were out of stock. Mr. Balloon **http://www.misterballoon.com/jumbolatexprice.html** sells 3-foot (too small) and 5-foot diameter balloons. Their 5-foot balloons are $25. I called and ordered one. They shipped it Priority Mail for $7, charging it all to my credit card over the phone.

I could not remember what I paid for the 4-footer I used from the party store, so I stopped by and checked—it was $20. I figured I could always use a spare (and a contingency if the other one did not arrive in time) so I purchased one. As things turned out, the Mr. Balloon shipment was a day late, so I wound up using the backup balloon—the exact same type 4-foot balloon I used years before with heavier (#16) wire.

Other sources? The following offer more expensive and/or bigger balloons than I needed, but they may have just what *you* are looking for:

**http://www.balloonideas.com/AdBalloons.html**
**http://www.advertisingballoons.com/heliumballs.htm**
**http://www.blimpy.com/balloons/balloons.html**

So, the local party store provided the least expensive out-of-pocket option at that moment, but if it turns out Mr. Balloon sells 4-foot balloons, they could well be cheaper—especially in quantity (the 5-foot balloons were $20 if you bought five). My guess is they would probably furnish 5 to 10 balloons for a $7 shipping fee.

Attach the top of the vertical to a fisherman's swivel, and then tie some decent leader to the swivel. Tie the opposite end of the leader to the inflated balloon. Be careful to control the balloon or you could be really unhappy… So far I am 2 for 2 in this department.

*Helium*

There are a number of ways to get helium. One option is to inflate your balloon where the helium is and then attempt to transport the balloon to the antenna site. This seemed impractical to me, so I opted to get the helium and take it to the antenna site instead.

I did not know anything about what I was doing the first time I used a balloon for an antenna support (ie how much the balloon requires, and how much comes in a tank) so I rented a big, full welding-style cylinder (from the party supply store). My thinking was I did not want to come up short on gas as the sun was going down and the signals were coming up. They charged $25 for renting the cylinder and $5 for each 100 pounds (psig) used. That 4-foot balloon used 200 pounds (psig) out of the available 2000, so the total fee was $35 upon return. Including the cost of the balloon, my first "skyhook" cost me $55 total.

This time I rented a "half bottle." The cylinder was full sized but only half full. It did the trick and it cost a straight $25 (no "per unit pressure" charges) and I could have kept the cylinder the whole weekend (actually, I could have kept it a month). The company supplied the regulator (valve which fills the balloon). I found this rental helium at my local welding supply shop. I am sure you can too. Total for this balloon antenna support this time—$45.

Any questions? Feel free to e-mail me at:
**swca@ionet.net**

disconnected from the radio long ago and thrown outside).

Then my fear became reality. At about 1 AM the downpour redoubled, the noise in the cab was deafening. I sat up. I watched the windswept balloon dip lower and lower in the sky, as the rain pummeled it relentlessly. Helplessly, I watched as the valiant neoprene sphere, its tether snagged in scrub, bobbed just feet above the ground. In that moment I knew I was off the air for the night. The very next flash revealed no trace—the balloon was gone. The cursed weather had robbed me of my magic antenna. I was tired and defeated, and now I realized just how foolish it was to be sitting out in a field with thunderstorms at severe limits all around me.

**The Great Escape**

I sat in my truck and poured a stiff cup of coffee—which I had been saving for later in the night—and thought about my situation. I switched on the AM radio and checked the weather. There was no end of this in sight. Some of the storms were showing rotation (very unusual for December). My first thought: My wife must be mortified, knowing what I was doing. Second: Uncertainty whether the truck will get out of this swamp. My third thought was that I'd better try to get packed up and out of here. At the moment I was *Tornado Bait*.

My fourth thought was that the 4 kW generator undoubtedly came out of the truck easier than it would go back in… *sheesh*. The rain lessened. I crossed my fingers, jumped out of the truck and used a couple of 2 x 4s to make a ramp. Everything was so wet, well, it just sort of slid right up. That was easy. I jumped back in the cab to dry out and wait for another break. While I waited I dismantled the gear in the cab—easy from the outside through open doors, but difficult when you need to stay *inside* the truck!

The rain subsided, and once more I was out of the truck—this time collecting antenna wires. I walked the radiator down to the burst balloon—what a shame—and collected all the parts and packed them up. Likewise I walked down the elevated radial and dismantled it all.

Everything was loaded in about an hour, the weather was easing up, and I was ready to attempt my getaway. It came off without a hitch. I guess that big ol' generator in the back helped keep the tires sticking. Before long, I was on the pavement heading back home, riding a rush of testosterone and adrenaline.

One of the things I like about this property is that it is only 15 miles and 20 minutes from home. Soon, I was making the familiar turn onto the street where I live. Moments later, having whispered a relieving "Honey, I'm home," I slipped under the steaming cascade of the most welcome hot shower I have ever had the pleasure of enjoying. I was lucky to be home.

This was so cool I think I'll have to try it *again!* ■

*FAA regulations for flying tethered balloons—those under five pounds in weight—are clear. No person may operate a kite or balloon in a manner that creates a hazard to persons, property or other aircraft.*

*Avoid all dangerous situations; operation near airports, in wet or stormy weather, near electric power lines, over public streets or areas congested with people or at extreme heights.—Ed*

# Quick and Easy Two Radio Switching

Bill Kennamer, K5NX

There's no doubt that the only way to win contests these days is by using two radios. Adding just three contacts per hour over 40 hours can make a difference of 120 QSOs—and no telling how many of these will be multipliers. Since I've found that often that's just about the total my low-powered station might make on the lower two bands during a DX contest, it's certainly worthwhile to learn to use two radios, even if I don't get full effectiveness out of them.

As most of us are using computers these days, it's lots easier than before to use two radios. My computer controls the radio's frequencies through serial ports, and I have two parallel ports to key the radios. Another serial port would work just as well for keying the radio. I have two keyer paddles, and the software has paddle port capability. There's no need for a switchbox to do anything except switch the audio.

Since I'm pretty simple-minded, this switchbox is, too. This is an adaptation of something that appeared in Dave Pruett's (K8CC) "Contest Aerials" column in the September/October 1990 issue of the *NCJ*. Dave switched a lot more stuff than I need to. I wanted the switch to turn off the audio of the main radio while it was transmitting, and switch it to the secondary radio. Since there is a quality difference between the radios (FT-1000MP and FT-847), the secondary radio would never be used as a run radio. All switching and keying, other than the audio, is handled by the computer or by having redundant keyers, PTT, mikes, etc.

In operation, the audio of the FT-1000MP goes to J2, audio from the FT-847 goes to J3, and the headphones are connected to J1 (see **Figure 1**). When S1 is closed, receive audio from the FT-1000MP is normal. However, upon transmit, the TX Gnd inside the FT-1000MP is activated and pulls K1 in. Receive audio then comes from the FT-847. This is less confusing to me than trying to mix audio from two radios in one small brain. If a station answers on the main radio, I work it. If not, and I've found something on the second radio I work it. To use the second radio (you don't want it switching back and forth if you're trying to work the JT1 on 80), just depress S2. It grounds the relay, completing the circuit, and only the second radio audio comes through while S2 is depressed. Using a footswitch to perform the S2 function is optional. If you use an amplifier, be sure the amp key line switches at the same voltage as the relay voltage. An SB-220 (115 V dc relay), for example, won't work without modification to drop the voltage seen at the relay port. Also, if you want to prevent the amp from keying when you press S2, make S2 a DPDT switch, and break the amplifier key line while it's depressed.

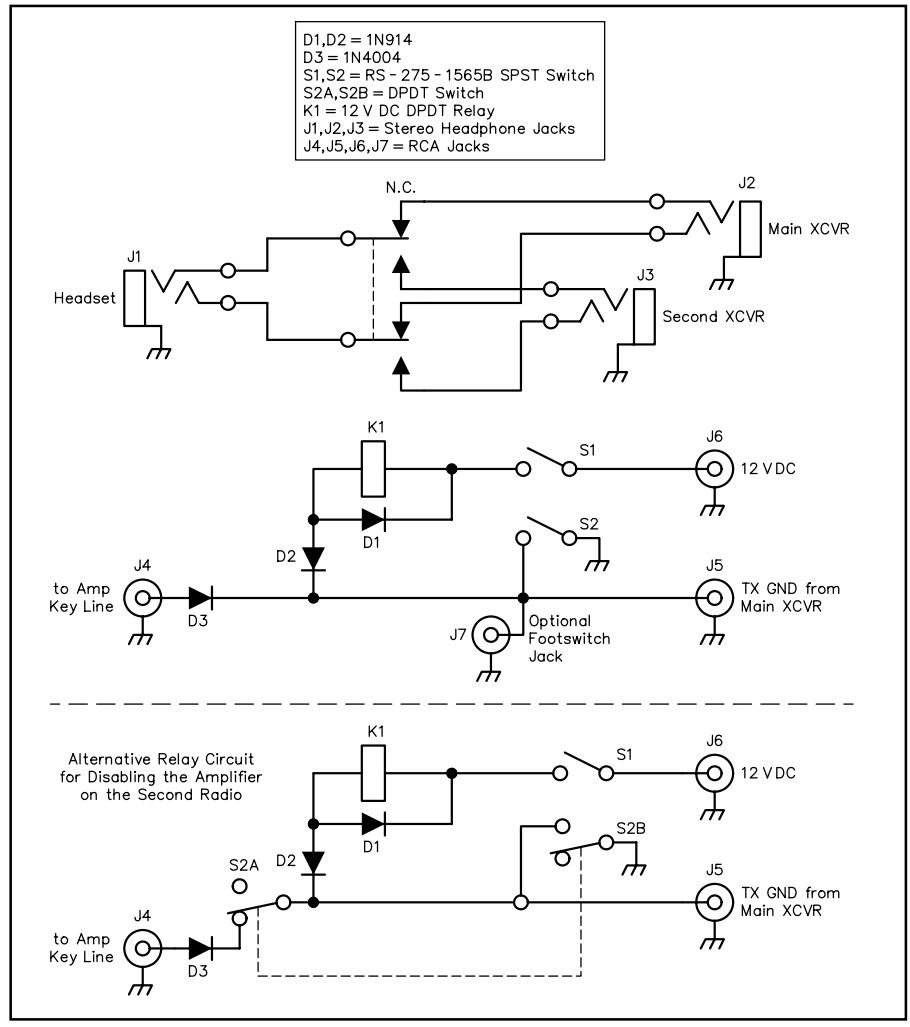



**Figure 1**

Note that the relays are wired to switch stereo. Since I usually use both receivers in the FT-1000MP during the contest, it was necessary to make accommodations for that. Most switching arrangements I've seen don't.

I actually found everything in my junk box except the switches. They're the expensive part, about $6 total. ■

# *NCJ* Profiles—Getting Ready for WRTC2000—Robert Bajuk, S57AW

H. Ward Silver, N0AX
hwardsil@wolfenet.net

Contesters worldwide are excited about the World Radiosport Championship (*WRTC*), to be held in Slovenia this July. Robert Bajuk, S57AW, is in the middle of WRTC organizing. I know his life is pretty frantic right now.

"Organization of WRTC2000 is going full speed with monthly meetings tackling numerous problems. We hope to leave a lasting impression of the WRTC2000 in the minds of contesters. The national and wild card teams are selected. Lots of hard work is being done at the station sites for the competition and the accommodations in Bled. We are also continuing to secure donations."

Robert's primary job is publicizing the WRTC. "I am responsible for providing timely information and maintaining our Web site: **http://wrtc2000.bit.si/**. We invite all contesters to join us from July 5 to the 11th and meet face-to-face with the famous hams they've worked on the air. I can hardly wait to see my old friends from WRTC-96." This is one of the best parts of the WRTC—putting a face on a name and call sign and sharing a handshake with the friends we've worked so many times.

When Slovenia was announced as the host of this year's WRTC, I'm sure many wondered how such a small country could put on such a large event. Enthusiasm, that's how! "Slovenia is one of the smallest countries in Europe—approximately the size of New Jersey, with a population of 2 million. It has about 7000 hams with some one hundred of those active in major contests." That's about 25% more hams per capita than in the US, and a *much* higher percentage of contesters. (To be as well represented proportionally, the US would need 10000 active contesters!)

What's contesting like from Slovenia? Not many hams outside Central Europe are familiar with the geography. "Slovenia is rich with mountain peaks—and many have amateur antennas on top. Even with average antennas one can rack up very good scores from this part of Europe (45 degrees north, 15 degrees east). The USA is easy to work on the higher bands in the afternoons. JA comes in loud just after sunrise. Many European and DX stations can be worked at night on 80 and 40 meters. Operators visiting from overseas will be surprised by the number of stations they will hear from the ex-USSR and European states."

"This will be the first WRTC to be held in Europe—giving a slight advantage to the locals. The important headings are northwest to the USA and northeast to Japan. Teams will operate from carefully selected contest locations using 100 W and equivalent tribander Yagis and Windom antenna systems. Huge pile-ups are guaranteed! Ted, S51TA, as S50HQ, made 2200 QSOs in the 1999 IARU HF Championship. I think the best WRTC teams will surpass that number." The winning totals in San Francisco were in the mid to high two thousand point range, so this event is shaping up as another rate festival.

**Robert Bajuk, S57AW**

What about S57AW's personal history? "I was introduced to ham radio at 15 as a pupil in Ljubljana. During one of the long, boring afternoons in the dormitory, I was looking out the window and noticed a strange antenna (it was a 2-element triband quad). I paid a visit to the radio club (YU3DMU) where I soon discovered the charm of radio and decided to learn more about it. Shortly afterward I earned a Novice license that permitted VHF operation and privileges on certain HF bands when operating from the club station. HF was more interesting to me—within a year I passed my General and got my first call sign, YT3VV. I spent many nights operating the club's barefoot IC-745 and using homemade wire antennas."

"I became S57AW in 1992, the year after Slovenian independence. Vito, S56M, dragged me into the CQ WW SSB Contest in 1993. He was already an experienced contester and a good teacher! We competed single or multi-op in many contests. I also learned a lot from old-timers Tine, S50A; Mario, S56A; and others. Top scores were achieved beginning with an 80-meter EU record in the WPX SSB Contest using a 2-element homemade quad. I also took part in efforts from S50G, S50Q and S55T. Lots has changed in my 14 years of ham radio—but I am eternally grateful to my XYL Suzanne for her deep understanding and support."

Robert is typical of the young contesters in Europe—joining multi-operator teams and doing a little traveling. "During WRTC-96 I operated as a guest of Duane, W6REC, with Drago, S50Q. I went to Albania in 1999 with S51F and operated with our friend, ZA/S51PF for the CQ WW SSB and CW Contests. We used a tribander and Windom antennas, just as the WRTC teams will use. The pileups were huge."

The Central European contesting experience is very different than that in the US—probably due to the land prices and the population density. Clubs are much more popular and numerous. "Most S5 contesters are members of the Slovenia Contest Club. I like the teamwork you have with a good crew. We are currently building a new station with S50Q, S51F and S56M. Plans are sky-high and I hope you will soon hear strong S50Q signals in the contests. The monoband antennas should be finished this year. Ham radio brings me a lot of pleasure, relaxation and camaraderie; and provides opportunities to meet people and hone my operating techniques. I enjoy designing antennas

and testing computers—but I *don't* like tower climbing, HI!"

If the Slovenian experience is any indication, contesting is in good shape in Central Europe. "Hams know how interesting our hobby is, although it takes a lot of time and sacrifice. Young hams are not easy to attract and that worries me. With the Internet, mobile phones and other digital communications, ham radio is not that attractive to the young. We have daily debates about the meaning of ham radio in the third millenium, the need to learn Morse code, harmful radiation, etc."

"We should emphasize quality work with the young which would trigger interest. While we read about the lower number of hams, the number of contest QSOs is increasing and there are lots of new call signs. I think that the fear of decline is superfluous—ham radio is a love for technique and camaraderie, and these will not disappear soon."

"Let me relay an interesting saying from S56M: '*Man made rockets and went to the Moon, but athletics and the 100-meter sprint are still the queens of sports, so we will continue the fight on the 'stone waves'* (a popular slang term for the shortwaves in S5) *for a long time.*'" Long live the stone waves! See you in Bled this July! ■



# Contest Calendar

**Compiled by Bruce Horn, WA7BNM**

Here's the list of major contests to help you plan your contesting activity through August 2000. The Web version of this calendar is updated more frequently and lists contests for the next 12 months. It can be found at: **http://www.hornucopia.com/contestcal/**.

As usual, please notify me of any corrections or additions to this calendar. I can be contacted at my callbook address or via e-mail at: **bhorn@hornucopia.com**. Good luck and have fun!

**May 2000**

| | |
|---|---|
| 10-10 Int. Spring Contest, CW | 0001Z, May 6 to 2400Z, May 7 |
| 902/1296/2304 MHz Spring Sprint | 0600Z-1300Z local, May 6 |
| Indiana QSO Party | 1400Z, May 6 to 2300Z, May 7 |
| Massachusetts QSO Party | 1800Z, May 6 to 0400Z, May 7 and 1100Z-2100Z, May 7 |
| ARI International DX Contest | 2000Z, May 6 to 2000Z, May 7 |
| Connecticut QSO Party | 2000Z, May 6 to 0400Z, May 7 and 1200Z-2000Z, May 7 |
| VOLTA WW RTTY Contest | 1200Z, May 13 to 1200Z, May 14 |
| FISTS Spring Sprint | 1700Z-2100Z, May 13 |
| CQ-M International DX Contest | 2100Z, May 13 to 2100Z, May 14 |
| 50 MHz Spring Sprint | 2300Z, May 13 to 0300Z, May 14 |
| CQ VHF Spec. Mode Activity Weekend | 1800Z local, May 19 to 2400Z local, May 21 |
| Major Six Club Contest | 2300Z, May 19 to 0300Z, May 22 |
| EU Spring Sprint, CW | 1500Z-1859Z, May 20 |
| Baltic Contest | 2100Z, May 20 to 0200Z, May 21 |
| 2000 6M Activity Contest | 1800Z-2200Z, May 23 |
| CQ WW WPX Contest, CW | 0000Z, May 27 to 2400Z, May 28 |
| QRP ARCI Hootowl Sprint | 2000Z-2400Z local, May 28 |
| MI QRP Club Memorial Day CW Sprint | 2300Z, May 29 to 0300Z, May 30 |

**June 2000**

| | |
|---|---|
| WW South America CW Contest | 0000Z, Jun 3 to 1600Z, Jun 4 |
| IARU Region 1 Field Day, CW | 1500Z, Jun 3 to 1500Z, Jun 4 |
| QRP TAC Sprint | 1800Z-2359Z, Jun 3 |
| ANARTS WW RTTY Contest | 0000Z, Jun 10 to 2400Z, Jun 11 |
| Portugal Day Contest | 0000Z-2400Z, Jun 10 |
| QRP Day Contest | 0700Z-1200Z, Jun 10 |
| Asia-Pacific Sprint, SSB | 1100Z-1300Z, Jun 10 |
| TOEC WW Grid Contest, SSB | 1200Z, Jun 10 to 1200Z, Jun 11 |
| ARRL June VHF QSO Party | 1800Z, Jun 10 to 0300Z, Jun 12 |
| All Asian DX Contest, CW | 0000Z, Jun 17 to 2400Z, Jun 18 |
| Kid's Day Contest | 1800Z-2400Z, Jun 17 |
| West Virginia QSO Party | 1800Z-2400Z, Jun 18 |
| Marconi Memorial HF Contest | 1400Z, Jun 24 to 1400Z, Jun 25 |
| ARRL Field Day | 1800Z, Jun 24 to 2100Z, Jun 25 |

**July 2000**

| | |
|---|---|
| RAC Canada Day Contest | 0000Z-2359Z, Jul 1 |
| Venezuelan Ind. Day Contest, SSB | 0000Z, Jul 1 to 2400Z, Jul 2 |
| MI QRP Club July 4th CW Sprint | 2300Z, Jul 4 to 0300Z, Jul 5 |
| IARU HF World Championship | 1200Z, Jul 8 to 1200Z, Jul 9 |
| WRTC2000 | 1200Z, Jul 8 to 1200Z, Jul 9 |
| CQ Worldwide VHF Contest | 1800Z, Jul 8 to 2100Z, Jul 9 |
| QRP ARCI Summer Homebrew Sprint | 2000Z-2400Z, Jul 9 |
| SEANET WW DX Contest, CW | 0001Z, Jul 15 to 2359Z, Jul 16 |
| Pacific 160M Contest | 0700Z-2330Z, Jul 15 |
| North American QSO Party, RTTY | 1800Z, Jul 15 to 0600Z, Jul 16 |
| Six Club Sprint | 2300Z, Jul 15 to 0400Z, Jul 16 |
| Colombian Ind. Day Contest | 0000Z-2400Z, Jul 16 |
| Venezuelan Ind. Day Contest, CW | 0000Z, Jul 29 to 2400Z, Jul 30 |
| Russian RTTY WW Contest | 0000Z, Jul 29 to 2400Z, Jul 30 |
| IOTA Contest | 1200Z, Jul 29 to 1200Z, Jul 30 |

**August 2000**

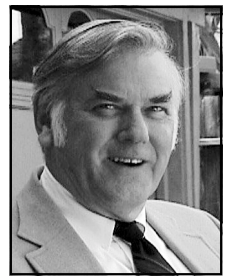
| | |
|---|---|
| 10-10 Int. Summer Contest, SSB | 0001Z, Aug 5 to 2400Z, Aug 6 |
| European HF Championship | 1000Z-2200Z, Aug 5 |
| North American QSO Party, CW | 1800Z, Aug 5 to 0600Z, Aug 6 |
| ARRL UHF Contest | 1800Z, Aug 5 to 1800Z, Aug 6 |
| YO DX HF Contest | 0000Z-2000Z, Aug 6 |
| QRP ARCI Summer Daze SSB Sprint | 2000Z-2400Z, Aug 6 |
| WAE DX Contest, CW | 0000Z, Aug 12 to 2400Z, Aug 13 |
| W/VE Islands Contest | 1600Z, Aug 12 to 2359Z, Aug 13 |
| SARTG WW RTTY Contest | 0000Z-0800Z and 1600Z-2400Z, Aug 19 and 0800Z-1600Z, Aug 20 |
| SEANET WW DX Contest, SSB | 0001Z, Aug 19 to 2359Z, Aug 20 |
| ARRL 10 GHz Cumulative Contest | 0800Z-2000Z local, Aug 19 and 0800Z-2000Z local, Aug 20 |
| Keyman's Club of Japan Contest | 1200Z, Aug 19 to 1200Z, Aug 20 |
| Oregon QSO Party | 1400Z, Aug 19 to 0400Z, Aug 20 |
| North American QSO Party, SSB | 1800Z, Aug 19 to 0600Z, Aug 20 |
| TOEC WW Grid Contest, CW | 1200Z, Aug 26 to 1200Z, Aug 27 |
| SCC RTTY Championship | 1200Z, Aug 26 to 1200Z, Aug 27 |
| Ohio QSO Party | 1600Z, Aug 26 to 0400Z, Aug 27 |

■

# International Contests

Joe Staples, W5ASP
w5asp@aol.com

## The Contest Season


W5ASP

For at least as long as I can recall, the prevailing wisdom has been that the "Contest Season" lasted from late October (CQ WW Phone) through March including the last full weekend in May (CQ WPX CW). During this period most of the major contests, ie the WW, SS, ARRL DX, WPX, the 10-Meter, and the 160-Meter Contests are thrust upon the intrepid contester in rapid succession. This left the better part of seven months to rest, relax and get ready for the next contest season.

Getting ready included not only the antenna work and the refurbishing of the station, but in many cases the accumulation of goodwill credits within the family to be drawn upon later. Well, yes, there is Field Day ('though not a contest), and enough other planned activities (IARU, WAEDX, All Asian, etc) to keep up your skills and check your progress. The off-season has indeed been a good time to savor the past and look ahead to the future.

In recent years this contrast between seasons has become blurred and, in the case of the more serious operators, has simply vanished. The growth of interest and the level of participation in the secondary contests have changed things. There is really no significant period of respite—if one is seriously committed to the contest game. Radio Sporting is a year-round affair with few discernible breaks in the schedule. (If you question this reality, just listen to the complaints of the "anti-contest" crowd.) Whether or not this is a good thing depends upon how you choose to participate.

There are those who thrive upon operating every contest on the docket, full bore, all bands, all modes, with dedication and zeal. Many are among the movers and shakers of the contest world. They are most often among the victors—and deservedly so. Surprisingly enough, there doesn't seem to be a significant "burn-out" rate. What drop-out there is comes more often from outside influences—job, family, health. Generally speaking they are in there, rain or shine, setting the pace and spreading the good word. However, this inspired group of contesters accounts for only a fraction of the total number of those who claim contesting as their operating preference.

By far the majority of operators approach contesting in a far

### 1999 RSGB Islands-on-the-Air (IOTA)

**Island Multi-Operator—24 Hour Mixed Mode**

| | *Call* | *QSOs* | *Mults* | *Points* | *IOTA* |
|---|---|---|---|---|---|
| 6 | WP2Z | 2,768 | 290 | 5,005,110 | NA106 |
| 22 | CY9CWI | 1,505 | 177 | 1,614,771 | NA094 |
| 23 | W7W | 1,382 | 182 | 1,461,642 | NA169 |
| 26 | AA1IZ | 1,128 | 188 | 1,405,488 | NA148 |
| 28 | W4T | 1,382 | 168 | 1,330,056 | NA076 |
| 34 | VD7D | 1,136 | 149 | 1,101,408 | NA118 |
| 44 | N3OC/P | 1,177 | 120 | 816,840 | NA139 |
| 54 | KI6T/P | 695 | 123 | 547,227 | NA066 |
| 67 | VO1SDX | 844 | 88 | 255,552 | NA027 |
| 76 | K7PAR/7 | 34 | 18 | 2,574 | NA065 |

**Island Single-Operator—24 Hour Mixed Mode**

| | | | | | |
|---|---|---|---|---|---|
| 1 | CF7ZO | 1,359 | 173 | 1,787,955 | NA036 |
| 13 | K1VSJ | 680 | 91 | 330,876 | NA046 |
| 23 | WP4LNY | 250 | 36 | 59,256 | NA099 |

**Island Single-Operator—24 Hour CW**

| | | | | | |
|---|---|---|---|---|---|
| 15 | KE8M/4 | 588 | 65 | 205,920 | NA062 |

**Island Single-Operator—24 Hour SSB**

| | | | | | |
|---|---|---|---|---|---|
| 16 | VE1JS | 741 | 119 | 572,985 | NA127 |
| 20 | KP4AH | 890 | 108 | 504,792 | NA099 |
| 29 | KW1DX | 362 | 76 | 176,472 | NA137 |
| 34 | WB2KHO | 130 | 74 | 103,452 | NA026 |
| 42 | VO1RE | 84 | 25 | 13,050 | NA198 |
| 43 | KL7/NO7F | 174 | 15 | 12,870 | NA059 |

**Island Single-Operator—12 Hour Mixed Mode**

| | | | | | |
|---|---|---|---|---|---|
| 10 | N2US/P | 239 | 66 | 115,434 | NA083 |

**Island Single-Operator—12 Hour CW**

| | | | | | |
|---|---|---|---|---|---|
| 10 | VP9/N0ED | 835 | 50 | 183,450 | NA005 |
| 16 | KH6/W3LPL | 636 | 45 | 141,480 | OC019 |
| 30 | N4H | 351 | 44 | 79,068 | NA067 |
| 55 | VE7/N7OU | 107 | 12 | 8,880 | NA036 |

**Island Single-Operator—12 Hour SSB**

| | | | | | |
|---|---|---|---|---|---|
| 4 | KP2/AA1BU | 911 | 101 | 580,188 | NA106 |
| 34 | NN2C | 103 | 63 | 72,387 | NA026 |
| 40 | W1/VA3PL | 194 | 35 | 40,530 | NA055 |
| 51 | VE7XO | 654 | 66 | 17,334 | NA036 |
| 66 | AA2WN | 14 | 14 | 1,708 | NA140 |

**World—24 Hour Mixed Mode**

| | | |
|---|---|---|
| 5 | W1NG | 1,825,824 |
| 22 | K4BAI | 477,135 |
| 32 | N6VR | 358,680 |
| 38 | W5FO | 239,568 |
| 47 | KD7H | 173,817 |
| 53 | AA1SU | 77,231 |
| 62 | N4MM | 48,515 |
| 72 | W4NTI | 1,680 |

**World—12 Hour Mixed Mode**

| | | |
|---|---|---|
| 7 | N8II | 752,400 |
| 15 | WB2YQH | 309,636 |
| 16 | N4UH | 269,448 |
| 44 | W6FA | 67,704 |
| 56 | WB0YJT | 41,031 |
| 60 | W6ISQ | 29,274 |
| 74 | K0COP | 7,011 |
| 75 | NM1K | 2,457 |

**World—24 Hour CW**

| | | |
|---|---|---|
| 39 | K9QVB | 160,896 |

**World—12 Hour CW**

| | | |
|---|---|---|
| 67 | K2SX | 63,726 |
| 109 | WA2VQV | 8,496 |
| 124 | KC2AFK | 1,980 |
| 132 | W7/JR1NKN | 1,030 |

**World—24 Hour SSB**

| | | |
|---|---|---|
| 14 | KA1UQ | 367,539 |
| 21 | W4RA | 247,086 |
| 34 | VO1BC | 139,590 |
| 37 | N0ISL | 130,977 |
| 38 | K6ACZ | 128,061 |
| 40 | KG0ZI | 117,810 |
| 45 | VE3ZZ | 97,686 |
| 52 | AA7KE | 64,512 |
| 65 | W8TTS | 22,077 |
| 66 | N9TU | 21,984 |
| 68 | KC8HWV | 11,760 |
| 69 | N2LQQ | 8,208 |

**World—12 Hour SSB**

| | | |
|---|---|---|
| 43 | WA1MKS | 79,758 |
| 70 | KD2N | 42,347 |
| 82 | WB1GEX | 35,760 |
| 101 | W1ENZ | 21,582 |
| 109 | AJ3M | 13,700 |
| 119 | VE3SYB | 9,900 |
| 122 | W7KEU | 8,190 |
| 147 | VE6JY | 420 |

less structured way. They are usually aware of the various impending contests and are reasonably familiar with the rules and special aspects of each event. They seldom aspire to the lofty levels of achievement presented in the magazines, newsletters, reflectors, etc. Yet in a sense they are the fuel upon which most contests run. All too often the more avid contesters tend to overlook this difference, and assume that everyone is pursuing the same goals. While the year-round challenge of contesting may be an attractive scenario for them, it may not suit everyone's taste and, in fact, can prove to be a negative to others.

While participation in any contest is certainly a positive experience both to the individual and to those others involved, it is equally true that taking part in every contest isn't for everyone. More emphasis needs to be placed upon contest selection, the choice of entry category, and the best use of one's available time during the event. The focus should be upon the quality of the contest activity rather than the quantity. Perhaps some open dialog along these lines would improve everyone's enjoyment of our sport. I would certainly be open to a guest article pro or con, preferably both.

### Upcoming International Contests

| | |
|---|---|
| ARI Italian International DX Contest | 06-May-00 |
| CQ-M International DX Contest | 13-May-00 |
| Baltic Contest | 20-May-00 |
| South American CW Contest | 03-Jun-00 |
| Portugal Day Contest | 10-Jun-00 |
| Top of Europe Grid SSB Contest | 10-Jun-00 |
| All Asian DX CW Contest | 17-Jun-00 |
| Marconi Memorial Contest | 24-Jun-00 |
| RAC Canada Day Contest | 01-Jul-00 |
| Venezuela SSB Contest | 01-Jul-00 |
| IARU HF Contest | 08-Jul-00 |
| Columbian Independence Contest | 15-Jul-00 |
| SEANET DX Contest | 15-Jul-00 |
| Venezuela CW Contest | 22-Jul-00 |

Notes: With few exceptions, logs and summary sheets must be postmarked within 30 days of the contest.

### CQ-M DX Contest 1999

North America

**Single operator—Multi-band**

| *CW* | | *SSB* | | *Mixed* | |
|---|---|---|---|---|---|
| N4BP | 303996 | N8WTH | 189 | W7GG | 105633 |
| VA3UZ | 247035 | – | | VE6JO | 76275 |
| N6AW | 234899 | – | | N4MM | 21070 |

| | | |
|---|---|---|
| **Multi operator - Multi-band** | KT0R | 105800 |
| **Single operator - 7 MHz CW** | KR1G | 16308 |
| **Single operator - 14 MHz CW** | N1XS | 6156 |

| *Call* | *Entry* | *Result* | *QSOs* | *Score* | *Mult* |
|---|---|---|---|---|---|
| **Alaska** | | | | | |
| WL7KY | SOMB-CW | 55545 | 286 | 805 | 69 |
| **Canada** | | | | | |
| VA3UZ | SOMB-CW | 247035 | 683 | 1915 | 129 |
| VE3UOL | SOMB-CW | 41318 | 198 | 566 | 73 |
| VE3IAY | SOMB-CW | 32428 | 175 | 484 | 67 |
| VE3ZT | SOMB-CW | 25344 | 140 | 384 | 66 |
| VE3VIG | SO-14-CW | 3772 | 56 | 164 | 23 |
| VE6JO | SOMB-MIX | 76275 | 370 | 1017 | 75 |
| **USA** | | | | | |
| N4BP | SOMB-CW | 303996 | 750 | 2068 | 147 |
| N6AW | SOMB-CW | 234899 | 493 | 1459 | 161 |
| K3JT | SOMB-CW | 198616 | 586 | 1628 | 122 |
| KM5G | SOMB-CW | 178310 | 594 | 1621 | 110 |
| K3WW | SOMB-CW | 161880 | 499 | 1420 | 114 |
| WD4AHZ | SOMB-CW | 108000 | 364 | 1000 | 108 |
| N4AF | SOMB-CW | 90048 | 328 | 938 | 96 |
| K2SX | SOMB-CW | 55840 | 255 | 698 | 80 |
| KE8M | SOMB-CW | 40392 | 203 | 612 | 66 |
| KR1G | SO-7-CW | 16308 | 168 | 453 | 36 |
| N1XS | SO-14-CW | 6156 | 88 | 228 | 27 |
| K9GY | SO-14-CW | 3450 | 58 | 150 | 23 |
| N8WTH | SOMB-SSB | 189 | 9 | 27 | 7 |
| W7GG | SOMB-MIX | 105633 | 387 | 1067 | 99 |
| N4MM | SOMB-MIX | 21070 | 144 | 430 | 49 |
| WO4O | SOMB-MIX | 9193 | 119 | 317 | 29 |
| N6RT | SOMB-MIX | 4368 | 68 | 168 | 26 |
| K3WWP/QRP | SOMB-QRP | 4611 | 54 | 159 | 29 |
| W7/JR1NKN | SOMB-QRP | 345 | 16 | 23 | 15 |
| KT0R | MOMB | 105800 | 421 | 1150 | 92 |

# Kid's Day—June 17, 2000

**Jean Wolfgang, WB3IOS**
**Educational Programs Coordinator**
**ARRL Field & Educational Services**
**860-594-0219**
**jwolfgang@arrl.org**

Kid's say the "darndest" things! If you want to hear just what they're saying, join us on June 17, 2000 for Kid's Day. Between 1800 and 2400Z you will hear young people chatting with both adults and other kids. This event is a painless way for your kids, or someone else's, to experience the fun and excitement of Amateur Radio.

**Purpose:** Kid's Day is intended to encourage young people (licensed or not) to enjoy Amateur Radio. It can give young people hands-on on-the-air experience so they might develop an interest in pursuing a license in the future. It is intended to give hams a chance to share their station with their children.

**Date:** June 17, 2000.

**Time:** 1800Z to 2400Z. There is no limit on operating time.

**Suggested Exchange:** Name, age, location and favorite color. You are encouraged to work the same station again if either operator has changed. Those looking for contacts can call "CQ Kid's Day."

**Suggested Frequencies:** 28350 to 28400 kHz, 21380 to 21400 kHz, 14270 to 14300 kHz and 2-meter repeater frequencies with permission from the particular repeater's sponsor. Observe third-party traffic restrictions when making DX QSOs.

**Reporting:** Logs and comments may be posted on the Internet to **kids@contesting.com**. You may review these postings at **http://www.contesting.com/kids/**. Those without Internet access may forward comments to the Boring Amateur Radio Club.

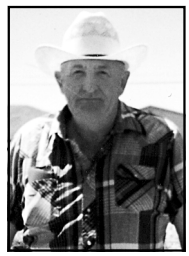
**Awards:** All participants are eligible to receive a colorful certificate (it becomes the child's personalized sales brochure on ham radio). Send a 9 × 12-inch SASE to:

Boring Amateur Radio Club
Kid's Day Certificate
PO Box 1357
Boring, OR 97009

For additional information on Kid's Day, please visit **http://www.jzap.com/k7rat/**. ■

# Contesting for Fun

Ron Stark, KU7Y
ku7y@dri.net


KU7Y

*This is Ron's last column for the* NCJ. *I have had many long conversations with Ron concerning the importance of this column in the magazine. I will miss his passion and personal philosophy for contesting—"just for the fun of it." All contesters should consider the message given in this column when Ron started out—"This is just a hobby!"*

*Thank you, Ron. We will look forward to many contest QSOs with you as you wander this country of ours that you love so much—'BV*

**Hi All,**

Carol and I have just moved into our RV in preparation for my retirement at the end of September. We will then travel all around the western US. I am going from that very nice Force 12 C4SXL at 85 feet and the DX77 at 30 feet to a screwdriver mobile antenna on the 30-foot 5th wheel. The FT-1000MP is being replaced with a little FT-100. Along with that I will be changing from a full-time Web connection to the Internet to just getting e-mail via HF packet!

Doing this column has been one of the highlights of my amateur career, but I will not be able to stay in touch and keep the column interesting. Bob Patten, N4BP, has agreed to take over. I'm sure that he will do a super job.

I want to thank everyone for your support over the years. I would also like to put you all on notice that I will soon be looking for places to operate from!

Brian Kassel, K7RE, provides an interesting low-power contesting story below. It is about a trip he took with Bob Patten, N4BP, to C6A. Thanks, Brian!

## QRP Contesting from the "Other End" of the Pileup

*By Brian Kassel, K7RE*

How many times have you tuned past a great pileup and wondered what it would be like to be at the other end? I got an opportunity to experience that thrill courtesy of Bob Patten, N4BP. He announced in August 1999, via e-mail, that he wanted to get a small group together for a C6A (Bahamas) effort for the CW ARRL International DX Contest, to be held in February 2000. Bob had already lined up a hotel.

I ran across Bob many times during previous QRP and other contests. I had done many portable and mobile contests myself, but I always yearned to be a rare one at the other end. I quickly requested that he add my name to the short list.

### Planning Via the Internet

We did our planning via e-mail. As the weeks passed by, one by one the other operators were forced to drop out for one reason or another. Finally, only Bob and I remained.

We decided to be as low impact and as lightweight as possible. For antenna supports, we would use two DK9SQ 33-foot collapsible fiberglass masts. One would hold up Bob's 80-meter inverted-V antenna. He planned to enter as 80-meter single band, owing to his previous success of winning the 40-meter single band position. The other mast would support a 33-foot wire, which, with 2 radials and an automatic antenna tuner, would cover 15 and 40 meters very easily—along with other bands in a pinch. I had planned to do a QRP only effort, possibly on all bands, but that decision was made for me later on by the Murphy man himself.

The masts and antennas would be mounted to existing vent pipes that were known to be located on the hotel's roof. We were even promised the services of the hotel's maintenance man to help set up the antennas!

We would bring most of our own food in the form of freeze-dried items such as pasta, instant oatmeal, rice, etc. These would be supplemented with "Power Bars" and assorted low-fat munchies. Canned goods were too heavy, and the room would have no refrigerator for storing fresh foods. Bob had a single burner backpack type of stove that was very light and used lightweight gas cylinders. With the unit's companion pot, we would be able to cook all meals simply by adding water and heating. To save some weight on my trip to meet Bob in Florida, I purchased my food there after I arrived.

I planned to bring my Elecraft K-2; Bob would bring his ICOM IC-706MkII. In view of the fact that we would probably be operating concurrently, Bob purchased band-pass filters for the bands that we would be using in the contest, 80 through 10 meters, from ICE. In the interest of cost, we didn't get filters for the WARC bands.

It's interesting to note that all of these decisions were discussed and finalized via e-mail. We only met briefly at a ScQRPion meeting many months earlier, and then only long enough to shake hands. We would be living together in tight quarters for 6 days. Hey, there have been marriages that haven't even lasted that long!

### The Camaraderie Begins

Finally the big day arrived. I flew in to the Ft Lauderdale airport on February 12th and was met by Bob. Since it was a seven-hour trip from my home near Phoenix, with three stops, and NO meals, I was very anxious to indulge in Julie's (Bob's wife) chicken dinner. Those five bags of peanuts, and of course the smiles that I got from the airline attendants, just couldn't compare.

Immediately after dinner, Bob and I headed off to his well-appointed shack to participate in the 4-hour NA Sprint contest. I expected to see some top-notch operating—and I wasn't disappointed. The upcoming trip would be worthwhile if only to see Bob perform his magic from C6A.

We laid out all of our equipment, hooked it up, and made sure everything played together. Bob and I tuned up the 80-meter antenna, and discovered that his DK9SQ mast had split near the top of one of the sections. It turned out that Bob apparently had an older model that didn't include the metal rings near the top of each large section like mine had. We decided to run to the hardware store and pick up a few hose clamps for both of our masts. We wanted to avoid any inadvertent mast problems in the Bahamas.

### The Fun Begins

We boarded our 2-engine puddle jumper aircraft for the trip to Freeport. The transportation was, well, a little primitive. Let's just say that I was surprised to find out that I didn't really need goggles and a scarf!

Bob had previously told me several horror stories concerning the customs at Freeport. We were all puckered up and ready to do battle, only to be whisked right through, without so much as opening our bags!

### Would Our Good Fortune Hold?

After a short taxi ride we arrived and checked into the hotel. We soon found out that not only was our room not ready, but the maintenance man no longer worked there! Had our good fortune run out already?

Bob worked his charm and we were soon on the roof with a capable fellow named Burbie. Ninety minutes later we had the antennas up and the coax runs hidden under some duck tape where they entered our room.

We quickly unpacked the rigs and

tuned up on several bands. It was time to exercise those C6A callsigns. Bob had been fortunate enough to get a "real" call—C6AKQ—while I had to sign C6A/K7RE—a tongue twister to be sure.

After having worked several hundred stations, there came a loud knock at the door. A TVI complaint had been lodged by not only one, but by several guests! We quickly turned on our TV set and verified that we were getting into more than a few channels with Bob's 100 W, *and* with my K-2 running only 5 W!

Given our relatively low power and very clean transmitters, and considering the fact that we were using external band-pass filters, we were dumbfounded at the tremendous interference. In our tests we found that there were 3 bands we could operate with minimal TVI. Guess which bands that they turned out to be? Yep, the WARC bands—30, 17 and 12 meters! Of course absolutely no contesting is allowed on any of those bands.

Bob's operation on 80 would be only at night, so maybe we could squeak by since most folks would be asleep during the bulk of his operation. I was QRP anyway, so I would stay on 15 meters where the TVI was minimal. No daytime operation on 40, 20 or 10 meters would be practical with the level of TVI that we were creating.

We had about 3 days before the beginning of the contest, which we had planned to use to work a few DX stations. Bob and I had never really been on 12 meters, so we decided to load up on that band and have a few nice rag chews. After all, our friends in Europe should still be at work at that time. Bob called one CQ. After 300 QSOs he finally got up. Where did all of these stations come from? We had pileups out to 5 kHz at times! Bob asked me if I wanted to knock out a few while he got a little chow.

Okay—I guess... I sat down in front of a radio that is largely menu driven, the IC-706, which I had never operated before, a computer that I never used, and software that I was totally unfamiliar with, confronted with what seemed like every DX station that ever existed. Nervous, me? Nah!

I stumbled through as best as I could, at times I was totally overwhelmed. After a while though, I got the hang of it. Man, all of that pre-planning and tons of e-mail messages were paying off! When 12 finally died, we switched to 17 meters, then down to 30. The results were always the same: huge pileups. The single band filters worked wonderfully when we were both on the non-WARC bands. I highly recommend them for any multi-transmitter setup.

I wound up with 638 QSOs during the days preceding the contest, some with the 100 W IC-706, some with the K-2 at 5 W. Most were made with the 33-foot wire vertical. Bob ended up with 1997 QSOs before the contest. Of course we took a few walks around the area and enjoyed the sun for a bit as well.

### 2000 ARRL DX CW

After the WARC band pileups, the actual contest operating seemed a bit tame, but it was great fun nevertheless.

Bob's final tally, all on 80 meters, was 977 QSOs and 57 multipliers, running 100 W.

I wound up with 522 Qs and 48 multipliers, all on 15 meters using the K2 at 5 W.

The day following the contest we broke down the station and re-packed (a much easier task with most of our food gone). We did manage to enjoy three meals out—two in the hotel restaurant and one in the local marketplace, where we picked up a few souvenirs for the folks back home.

Our trip back was anti-climatic. We discussed how we could get the TVI problem fixed by long distance. Bob will try to work something out via e-mail back to the hotel, but the prospect of the hotel operators and the cable company working it out seems pretty slim.

Next year I plan to participate in the all band QRP category. If Bob wins the 80-meter single band spot, it's hard saying what he will shoot for next.

We may just attempt a camp-out operation on a C6A beach if the TVI problem is not resolved. One thing is for certain; we'll keep our powder dry and try not to shoot ourselves in the foot in the meantime. We have to remain small and stealth-like if we hope to swim with the Big Guns again next year.

73, Brian, K7RE

Thanks, Brian. I hope to run into you, Bob, and all the rest of you on the air.

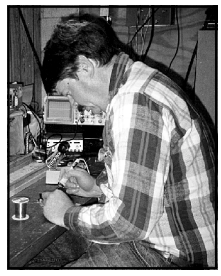
73, de Ron, KU7Y ■

# Contest Tips, Tricks & Techniques

Gary Sutcliffe, W9XT
w9xt@qth.com

## Design Your Own Contest!

If you could design the perfect contest, what would it be like? Who could you work? What bands and modes would be included? How long would it last? How would the score be calculated? That is the question that was posed to the readers of CTT&T this time around.



W9XT

There were a few themes that appeared several times in the responses. One is a QSY rule similar to the one in the Sprints. In the Sprints you can solicit only one contact before you have to QSY. In practice you answer a CQ, work that station, and then call CQ. You work one station, and relinquish the frequency to the station just worked. Paul, K5AF, explained the purpose of this rule the best. "No one gets to 'own' a frequency, everyone has to S&P, and a very clear protocol has to be followed by anyone who wants to be competitive."

W5ASP had a QSY suggestion that required you to QSY at least 10 kHz on the hour and half-hour.

I think that a rule that limited when you can call CQ would be interesting. If the number in your call is odd, you can only call CQ the first 30 minutes of the hour. If it is even, you can call CQ only during the second half of the hour. You can S&P at any time. If everyone exclusively called CQ during their time slot, they would miss the opportunity to work half of the stations in the contest, ie all the other even (odd) stations. Deciding when to CQ would be a major tactical decision. Of course SO2R (single op two radios) ops would not have to make that decision.

Several readers liked the idea of using grid squares in HF contests. That is the standard for VHF contests, of course. It eliminates much of the advantage of being in a rare state or country. It also eliminates much of the disadvantage of being in a large geographical region where multipliers are far away. While being in a rare grid is still somewhat of an advantage, it is not as good as being the only one on from Delaware or North Korea. Being in CM96 is better than being "just another W6."

The grid square exchange allows another twist in scoring based on distance. Distant contacts are worth more than local ones. The concept only became practical with the use of computers to do the calculations. To my knowledge, this was first used in the Stew Perry Top Band Challenge. On 160 meters, one must decide if they should work several local contacts or spend the time trying to work a few distant stations. In this contest there are no multipliers, so a distant station also being a rare multiplier is not a factor. It is uncertain how this would work out on bands like 15 or 10 where it is often more difficult to work a station a few hundred miles away than one on another continent.

W1HIJ had a rather unique twist on the grid square multiplier plan. Bill would like to see grid squares only count once, not once per band, but would like to see each new grid count as two after some limit, say 50 or 75. Bill reasons that this will give an extra reward for searching out multipliers.

Shorter contests seemed to be popular. 12- and 24-hour contests were requested the most. Most of these also had mandatory off times as well. KQ6ES was the only one who gave a reason for short contests. John thought that a 24-hour DX contest puts a premium on knowledge of propagation and planning. In a 24-hour contest, you don't get a second chance for an opening to a distant region.

The ability to work both DX and same country contacts was another popular theme. This increases the number of possible contacts. It is a nice remedy for those slow Sunday afternoons. K5AF said that the perfect contest should afford opportunities for more QSOs than could possibly be made in the allotted time. Paul went on to say that the contest must also require selective listening for multipliers to maximize your score.

Some readers had comments regarding penalties for mis-copied calls or exchanges. Most thought that you should only lose that QSO. There was a lot of discussion about this on the Internet contest forums recently. This was brought out by some contests penalizing a broken call/exchange by removing three good contacts. One school of thought said that was excessive. The other side said that the purpose of a contest was to improve operating skills and that you should be penalized for not getting it right. My own feeling on the subject is that there should be a penalty above removing the one bad QSO. Otherwise you reward the sloppy operator. On the other hand, three QSOs is too steep. I think you would scare off a lot of beginning contesters who found that their score was cut in half, or worse yet, resulted in a negative number!

### Some Unique Ideas

K5AF suggests a contest that turns everything upside down. S&P contacts would be worth double points. Paul would also like to see the hunters become the hunted. Give more points for working low power stations. Contacts with QRP stations would be worth 3 points, low power stations would be worth 2 points, and high power stations would be worth just one point.

This is also interesting because it rewards those with the skill to pull out the weak signals. Right now, the QRP station often gets extra points for running low power, but the higher power stations are actually penalized for working weak stations because it often takes more time to complete the contact.

KM5FA would like to see an all-band VHF/UHF version of the Sprints. Ken notes that there are several VHF Sprint- like contests, but they are single band. Unless you get a good band opening or live in a VHF hot bed, it gets pretty boring after the first hour. With an all band effort, the entire contest would be fun.

Ken likes the 0000Z to 0400Z Saturday night format. Like most VHF contests, one could work the same station on each band with grid squares being the multipliers. Ken suggested holding this contest in the spring since there are few VHF contests then, and the possibility for openings exists.

K6CTA suggests an International QSO Party. It would be similar to the NAQP but have Sprint QSY rules. It would last 12 hours, and you could operate 10 hours. Ed did not specify what hours the contest should be held.

Barry, N1EU, likes the tribander/single-element category. Currently the WPX is the only contest with this, which makes it his favorite contest. He goes on to explain that it gives small guns a chance in their own category. Barry also likes incentives for low band contacts, which would have higher QSO points.

N5ECT had a suggestion that would prove educational and help ensure that the rules are being followed. Doug's idea is that by placing in the top 5% in a contest you would agree to allow observers in future contests. Anyone could request to be an observer. The observers would learn contesting techniques.

Doug goes on to say that with computer log checking, about the only way to cheat is to run power in excess of entry class or legal limit. An independent observer would eliminate that.

Gordon, N7VY, would like to see a contest on the WARC bands. He feels this would level the playing field since most hams have not optimized antennas

on these bands. Countries would be the multipliers, and maximum power would be low, maybe even QRP.

W5ASP had a number of interesting and unique rules in his "Ultimate Contest" besides his QSY rule mentioned earlier. One is that you would select three of the six bands (160-10 meters) for your final score. Joe would also require that logs be e-mailed within 48 hours.

KQ6ES liked the idea of the antenna type being part of the exchange. John would like to know what everyone is using for antennas. He suggested simple, standard abbreviations for the antenna types. One interesting side effect is that you might have different exchanges for each band. John thinks that such a contest would make for some very interesting post-contest analysis.

K4TMC would like to see a 15-meter contest similar to the ARRL 10-Meter Contest. Henry thinks it might only be held in years with low sun spot numbers, but it should not replace the 10-meter contest in those years.

### Does the Ultimate Contest Already Exist?

K9SD thinks the ultimate contest already exists—the IARU Contest. Sam likes the 24-hour format where you can work both DX and stateside. He also likes the fact that it is held in July. He really dislikes the CQ WW CW contest being held on Thanksgiving weekend.

After nearly 30 years of contesting, I find myself enjoying contests where strategy is more important than just sitting on a frequency and hitting the F1 key. You should have times where calling CQ is the best strategy and others that test your S&P skills. I like it when you can work both domestic and DX stations and get a lot of multipliers. You should be able to work each station on both CW and phone, with a higher QSO value for CW. You should have some off times, but it should be important to operate both the fast and slow times in order to win. Knowledge of propagation must be a key factor in winning. Of course that contest already exists! It is the ARRL 10-Meter Contest!

Yuri, K3BU (VE3BMV), says that the ultimate contest will have its first running later this year in the Tesla World Cup 2000. Basically you work anyone once per band and exchange grid squares. Multipliers are grid strips in latitude. For example the multiplier for EN53 would be EN5. FN27 would be FN2, etc. The interesting part is that you work phone the first day, and CW the second. The TC 2000 has just about every com-bination of categories you can imagine. You can operate single mode or combined.

One of the more interesting rules is that for single op categories you must operate from your own station. Guest single operator and packet assisted are in a separate category.

The contest runs on September 30th and October 1st, 2000. You can find more details at **http://members.aol.com/k3bu/TeslaCup.htm**.

Of course the Ultimate Contest can never really exist. Most operators have their favorite contest. Generally it is one that they do well in. The format tends to match well with their skills, interests and station capability. Someone designing their own contest would tend to take advantage of their strengths and minimize the perceived advantages of the competition. The good news is that there are a lot of contests with a good mix of formats. Operate the ones you like the best!

As usual, this column only works because of those who contribute their ideas. This month I would like to thank KM5FA, KQ6ES, K3BU, K4TMC, KM5FA, K6CTA, K9SD, N1EU, N5ECT, N7VY and W5ASP.

### Topic for July-August 2000 (Deadline May 3, 2000)

*State QSO Parties and similar contests.*

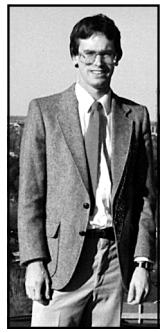
State QSO Parties and other smaller contests can be a lot of fun, but require different skills and techniques than the larger contests. What tips can you share about operating them? Which state QSO Parties do you operate—and why?

Send in your ideas on these subjects or suggestions for future topics. You can use the following routes: Mail—3310 Bonnie Lane, Slinger, WI 53086. E-mail—**w9xt@qth.com**. Be sure to get them to me by the deadline. ■

# VHF-UHF Contesting!

Jon Jones, N0JK
n0jk@hotmail.com

## The "Best 6-Meter Rig" Update


N0JK

There are a number of new HF/VHF radios on the market that cover 6 meters and show a significant performance improvement over older generation rigs. The ICOM IC-706MKII is a real step up from the original '706. I recently bought one for use on DX-peditions. It has a decent 6-meter receiver. It also has 2 meters in the box (and even 70 cm with the "G" model) making it a great choice for a Rover rig. It packs a lot of performance into a very small package.

The Kenwood TS-570S has received great reviews from 6-meter users and is reasonably priced. AB7RG observes: "Way to go Kenwood! The DSP works very well, about as well as my ICOM IC-756, not quite equal, but once again it's pretty close. I bought this radio to use as a secondary rig—mainly for DXpedition/field use. It's perfect for that, for the first time user, or for the amateur on a budget. Spend a few extra dollars and get a new rig with all the bells and whistles I say. You'll be much better off with this radio than with just about any used rig. The price makes this the best buy for your dollar! In my review of the '756 I said I'd give it ten plus stars —this one earns at least nine!" Many other ops have noted that the '570 is a good value.

The Alinco DX-70TH has been discounted heavily recently. It is a good "all purpose" radio but the receiver may not hold up under heavy contest QRM.

If you already own a decent HF rig, using a transverter is a cost-effective option. Ten-Tec sells a 20-meter to 6-meter transverter with an output of 10 W. The kit sells for just under a hundred dollars. This will get you on 6 meters with the capabilities of your HF radio at a very reasonable expense. They also make a 2-meter to 6-meter transverter (and a 10-meter to 2-meter transverter).

The Drake TR-6 transceiver was one of the best "tube radios" on 6 meters in its day and, especially with Sherwood filters installed, is still a real contender today. Used radios have gone up a lot as collectors bid them up, but you may still find a TR-6 at a reasonable price.

A good on-line source for reviews on a variety of Amateur Radio equipment is available at **http://www.eham.net/reviews/?category=All**.

### VHF Contest Operation

*By Mark Wasserbauer, N2YB*

(Our thanks to The Rochester VHF Group's *Contest Corner* for this material.)

#### The Saturday Morning of the Contest

Turn on your station and make a final check of all equipment including rotators. Check for unusual propagation, ie Tropo, Es on 6 meters, etc. The 2-meter band is the most popular band in most parts of the country to start the contest. 6 meters is also a good choice, especially in the mid-section for the June contest.

#### The Contest

Be sure to remember to move stations from band to band. Ask during every QSO with a new station "any other bands?" Try to tap every potential QSO from each new station—the first time you work them. Don't "set up a sked" to work someone on a higher band later if you can avoid this. My experience is that many ops "forget the sked" or conditions change and you can't make the QSO. A Rover can move on to another grid or a portable station may tear down. (*An exception would be a big multi-op station that is on for the whole contest.—'JK)*

Keep a "need list" for the higher UHF and microwave bands and stay alert! Probably the single most important factor is to be able to take advantage of sudden changes in propagation. (*A brief Es opening, long meteor burst or tropo enhancements are examples.—'JK*)

The overall goal is to simply work as many as you can, as fast as you can, on as many bands as you can! There will come a time to make a choice between working one station or another. It is better to work *one* than *neither.*

Operate as much of the contest as you can. If your operating time is limited, try to peak and concentrate your efforts during times of high activity. N2YB identifies four blocks of time that are peak periods on the East Coast for VHF contesting. These times correlate pretty well with activity periods here in the Midwest—Es can extend these.

1) The first four hours of the Contest. Many ops get on at the start to see what is going on.

2) 0000 to 0400Z. Many stations come on in the evening after dinner and others "settle in" to start looking for distant grids.

3) Sunday morning. Often a morning tropo peak, and good meteor/iono-scatter conditions. In populated areas a good number of FM Rovers may appear on the air.

4) The last four hours of the contest. Don't give up! If equipment fails, use planned work-arounds. Dig, scratch, claw—every QSO is important. A new grid can make the difference.

#### Post Contest

Don't forget to submit your log on or before the due date. The ARRL is now enforcing the 30-day limit for log submission. Clearly mark on the summary sheet your power level and operating class. Many logging programs use high power/unlimited as the default.

If you are submitting your score for a club entry remember to indicate that on the summary sheet and send a summary sheet to the contest committee for your club.

Good Luck!

Thanks, Mark. You can view pictures of my 6-meter activity from Barbados at **http://communities.msn.com/6MDX**.

73, Jon, N0JK ■

## Shorts

### Free WRTC2000 Contest Logging Software

Paul O'Kane, EI5DI, has developed yet another version of his popular *SD* contest logging software—*SDW*.

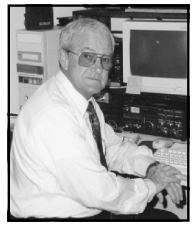
*SDW* is a freeware package specifically designed for use in this July's WRTC2000. It's intended for single-operator unassisted entries and runs on any PC operating under *MS-DOS* or *Windows 3.11*, *95*, *98* or *NT*.

*SDW* offers real-time editing of your complete log, together with ASCII logs for ease of maintenance. It's the only contest logger to provide instant dupe checking, beam headings and multiplier/band analysis as you type in the call sign prefixes—there's no need to touch another key!

For more information on *SDW* and to download your copy, visit Paul's Web site: **http://www.ei5di.com/**.

# RTTY Contesting

Wayne Matlock, K7WM
k7wm@i10net.com


K7WM

In the last column, we spoke briefly about the importance of selecting and wearing comfortable clothing during a contest to make the long hours in front of your rig as enjoyable as possible. This time we talk about using contesting as a means of building your DXCC totals.

Let's say that after reviewing your obligations, you determine that you will not be able to devote the necessary time to a particular contest for an all-out effort. Instead, you decide to pick and choose the times you will operate so that you can work as many new countries as possible. With limited operating time, this is a good choice since lots of DX stations operate contests because they know there will be lots of contacts available. What you want to do is be one of those contacts.

The first thing one should do is check the propagation forecast for the date of the contest. WWV at 18 minutes after the hour gives an up-to-date forecast. The various DX-Clusters have propagation figures to work with also. From these, you can pretty much determine what the propagation numbers are going to be during the contest.

With the aid of a gray line predictor, one can have a good idea of when the DX will be on and what possible frequencies they will be using. There are several gray line programs out; the one I have been using for the past umpteen years is *Geoclock*. I bought the original *DOS* version and still run it in a *DOS* window, but J.H. Ahlgren has a *Windows* version, and a shareware version is available.

*Geoclock* has a continuous moving gray line and shows the world at a glance. Many maps and other features useful in Amateur Radio are supplied with the program. A well-known contester has shown me how to edit out the city names that appear on the map and replace them with the call of the first station I work there. Of course, when you get up into the Honor Roll status area, you might get a little short of room—unless you display the map on a 17-inch monitor.

Now that you have done all your homework, assembled your tools and your battle plan is laid out, jump into that contest!

Naturally, the first thing you stumble across is a DX station you would really like to bag BUT he is searching and pouncing (S&P). Never, never ever call a DX station that is answering someone else's CQ. Your call will be imprinted forever in the CQer's memory, written on the wall, and used as a topic of uncomplimentary conversation at every opportunity. Remember—this is a contest and there are serious contesters fighting it out.

If the DX station answers a CQ at the bottom end of the band, that means he is probably working up the band. Take off and find the first hole up the band, point your beam at him, (if you have a beam) and start CQing. He will find you. If you hear the DX at the top end of the band, he is probably working down the band, so take off and find the first hole down the band and start CQing. While you are trying to finesse that particular station, another piece of juicy DX may come back to your CQ.

Tuning around later, you hear a desired DX station calling CQ. He is open game for everybody because he is operating simplex—no split receive and transmit frequencies. The din is probably thunderous. Lots of contesters forget they are contesting and turn into a rabid DXer instantly when rare DX appears on the band. They end up losing a lot of valuable time (time = contacts) trying to work the DX.

If the DX station is calling CQ, he's not going anywhere because he's looking for points and mults. Try him a couple times and if you strike out, put him in one of your memories and move on. Come back to him every so often and see if the thundering herd has thinned down. You will be surprised at how many other DX stations you will pick up while the group is locked into trying to break a simplex pileup.

After you have cleaned the band, start following the gray line and calling CQ along it, using the band you feel fits the propagation opportunities best. If you end up not having any luck, drop down a band and give it a try. You're not locked into running a frequency on a band, so look around. Sometimes, even with the best of information, you will find DX showing up where it isn't "supposed" to be. That is one of the things that makes contesting so much fun…

It's not unusual to work 50 or more DX stations in RTTY contests. On some occasions you can work DXCC during the more popular RTTY contests. So, get in there and start your own climb up the DXCC Honor Roll while you enjoy all the fun contesting has to offer!

### Doing the 2000 WPX from Texas at W5KFT

Like the old adage says, "My, my, how time flies when you're having fun." It's hard to believe that it had been over 2 years since I have been to "The Ranch" to operate a contest. Along about September/October of 1999, (the last century), I was asked if I would be interested in operating the 2000 CQ/RJ WPX contest from The Ranch with Ron, K5DJ, and Bruce, WT4I. I had operated at The Ranch on several other occasions so it didn't take a lot of effort or exercising the little gray cells on my part to make up my mind.

A brief description of The Ranch is in order. It has to be one of the most beautiful contest operating sites in the world and is the home of Bryan Edwards, W5KFT. All the towers and antennas are maintained by Station Master extraordinaire, George Fremin, K5TR. It sits on approximately 2300 acres bordering Lake Buchanan deep in the heart of Texas. All kinds of wild critters roam freely about and are easily viewable from your operating position. (This "feature" has distracted me more than once and I have been accused of missing a mult or two because of it.)

There is also a herd of Red Brangus cattle on The Ranch that is watched over by Leonard, a huge Red Brangus Bull. When you see Leonard and wonder where he is going, you can assume it's wherever Leonard wants to go. There are a lot of stories about Leonard that I won't cover here but he is always a subject of conversation…

Everything freely comes and goes. In the evening time, most come to the lake to water just as the gray line is peaking. Osprey are continually circling looking for a meal and lights are visible from the boats headed back into their respective harbors and from other homes situated along the opposite shores.

The Ranch proper sits among huge oak trees with manicured lawns and is accessible by crossing a "cattle guard" installed to keep the cattle out and let the traffic in (rubber tired type). The entire ranch complex is fenced with the main ranch house sitting in the center of the fenced area, (to keep Leonard and his friends out) with a guest house on one side and the radio house on the other. All of the buildings have full view of Lake Buchanan and the surrounding

countryside. The radio house is called the "little house"—that's what it is —considering the references nearby. The radio house comes complete with kitchen, bathroom, 3 double beds, air conditioning and lots of radios and amps.

To get from here to there requires about a three-hour drive to Phoenix and a two-hour flight to Austin. Ron met Bruce and me at the airport and our adventure began. After a short stop at Ron's home to pick up some gear and say hello to his better half, Wanda, we hit the grocery store to pick up some food and liquid refreshments. Next stop—"The Ranch."

It was dark when we arrived at —and Texas dark is *really* dark. We half expected to find Leonard lying across the road again blocking our path but the 2-mile trip into the shack was uneventful. Actually it was kinda anti-climactic—we were looking forward to a Leonard adventure.

We unloaded the truck and then sat on the porch watching the lights on Lake Buchanan and listening to the quiet. It was about this time that Bruce and I noticed there was something in the clean, dry air besides clean, dry air. It was the beginning of pine pollen season and to allergy sufferers like Bruce and I, misery had just started. I made a quick check of what was in the medicine bag and took one of each. The next 3 days were spent with burning eyes, sore throat from coughing, worn-out nose from blowing and constant sneezing. Chalk it up as a contesting experience.

The next morning a survey was taken of all towers and antennas. Again, an anti-climactic event. No turkey buzzards were covering the antennas, danger-ously drooping the elements. We just found all the towers and antennas sitting there waiting for the RF to flow. We decided to set the station up and get it ready so everyone started assembling coax, fittings, computer cords, etc.

Before lunch everything was ready to go. We flipped a coin to see if we wanted to stay at The Ranch, where I would prepare something to eat, or go into Coopers to either have steaks, ribs or sausage. Bruce never did let me see the coin but I lost the coin toss (he said). I guess peanut butter, mayo and baloney sandwiches didn't interest them much. So it was on to Coopers for a filling lunch prior to the start of the contest.

**Leonard's Revenge**

Ron said he would take a different road back into The Ranch in hopes of not seeing Leonard. No such luck. Just as we rounded the final turn before crossing the cattle guards, guess what, there was Leonard blocking the entrance and not appearing to be movable. Now, Ron's truck is red. Leonard was looking at it like he had seen it somewhere before and was trying to make his mind up about something. I nervously told Ron that Leonard was getting close to remembering the last time we were out at The Ranch.

He tried to deafen poor ole Leonard with his horn in hopes of making him move from the road. A Texas standoff was going on and the only thing in our favor was we had plenty of room to maneuver this time. This cattle guard is the only entrance to The Ranch via vehicle and at this point in time, there were no volunteers willing to walk in to the shack.

We could see recognition begin to simmer in Leonard's eyes at about the same time as a whole bunch of female type cattle walked out of the brush down at the other end of the fence headed for water. Leonard suddenly had several things on his mind and thankfully getting even with a red truck wasn't one of them. He majestically moved off toward the herd of cattle and the truck whimpered on to the shack. I suggested that the truck should be repainted at the first opportunity or at least before another trip was made to The Ranch. One of these days Leonard was going to even the score…

**Let the Fun Begin!**

The contest started with an adrenaline rush. Everything and everywhere was wide open. Go for it! A loud scream emitted from one of the positions as someone noticed networking was not networking. Arrrrgh! Frantic checks of cables, fittings, etc, revealed nothing amiss and then I remembered the last contest. I hate those little 50 Ω terminating resistors on the BNC networking cables. Replaced one and Eureka, we be in business! Nothing replaces experience.

We decided we would work the 3-hour-on and 3-hour-off routine and things were going extremely well. The two stations were logging 3 to 5 contacts a minute and we could already picture plaques hanging on the walls and new records being set. Things slowed down a little early in the AM so only one operator was needed to watch both stations. The on/off shifts were shortened to 2 hours.

**Ol Sole Gets Even for Leonard**

Just about the time the path to Europe was going to open, all the towers and antennas fell down… or at least it seemed that way. All the radios, amps, computers, etc. were working fine—but there was just no RF to be found. Puny signals were wafting in and a punier signal was wafting out.

We tuned to WWV and our worst fears were realized. A big solar storm had hit and its duration was going to be 7 to 9 hours. With our peak operating time shot and our heads laid on the countertops, we weathered it out. The sugarplums that were dancing in our heads were slowly disappearing.

We figured HC8N and P40K were going great guns—something had to be done. We went to the low bands to try and pick up what we could. Some progress was made but things were very, very slow. Along about sundown, the action started picking up on 80 and 40 meters. Some ground was being made up but then the Saturday night blahs hit and things went dead slow again.

One operator at a time stayed at it all night. Come sunup, things opened up again. At this point we were about 300 QSOs behind last year's Ranch team effort but we were not doing badly with mults. Borrowing an adage from another well-known contester, K3MM, "*Never, never give up,*" we figured we would give it our best shot. The remainder of the contest was spent in "catch-up" mode—with me coughing, sneezing and blowing. We finished with about 200 QSOs less than the previous year's effort but found ourselves with about 30 more mults. The final tally was 2216 QSOs and 650 mults for a total score of 3059550 points.

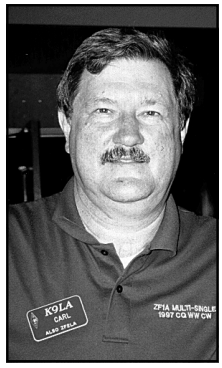
With nothing left to do but break the station down and sit on the porch and relax, we did just that. We would have to be up early the next morning for the trip to the new distant Austin airport. We discussed next year—everybody knows that our effort and score will be bigger and better.

That's all for this issue. Any and all comments and suggestions are gratefully accepted. I can be reached at lonesome Cibola, **k7wm@i10net.com**… See you on the air. ■

Carl Luetzelschwab, K9LA
k9la@gte.net

# Propagation Planning for the WRTC Teams

I received an unexpected phone call the other night from Romeo. He wanted to know if I'd be his partner in the WRTC contest in July if he was invited. Wow—I almost fell off my barstool with excitement. He also mentioned something about using the assigned S5 call but operating from somewhere else to be more competitive. Hmmm... that sounds kind of funny. Guess I better check that out before I make a commitment. Regardless of that little minor issue, I jumped right in with the propagation planning.



**K9LA**

The first order of business is to get the "big picture"—in other words, to take a look at propagation paths from S5 to other parts of the world in relation to the auroral zones. With the Cycle 23 maximum at hand, there will be a much greater chance of disruptive magnetic storms (as can be seen from Figure 2 of my March/April *Propagation* column). But this is tempered with the fact that WRTC is in July, one of the quietest months for such storms (see Figure 2 in the January/February column).

**Figure 1** (in this issue) shows this big picture in relation to the auroral zones using *DXAID*[1]. This is for a K-Index of 2, which is considered to be quiet conditions. It's readily apparent which paths may be affected if the magnetic field becomes active. These are paths that go to the US Midwest all the way through to paths that go to the US West Coast (including KH6 and KL7). If the K-Index becomes elevated enough (to 5 or 6), even the US East Coast may be affected. This suggests that I should put together propagation predictions for two values of the K-Index—one for a low K-Index (2 is a good choice) and one at an elevated K-Index (5 is a good choice). When the contest is at hand, a quick check of the K-Index will give an idea of which plan to follow.

With a general idea of which paths to worry about, the second order of business is to run propagation predictions in order to eventually come up with a band plan. This is not a tough job—but it can be tedious. And the

[1]*DXAID*, Peter Oldfield, poldfield@montrealonline.com

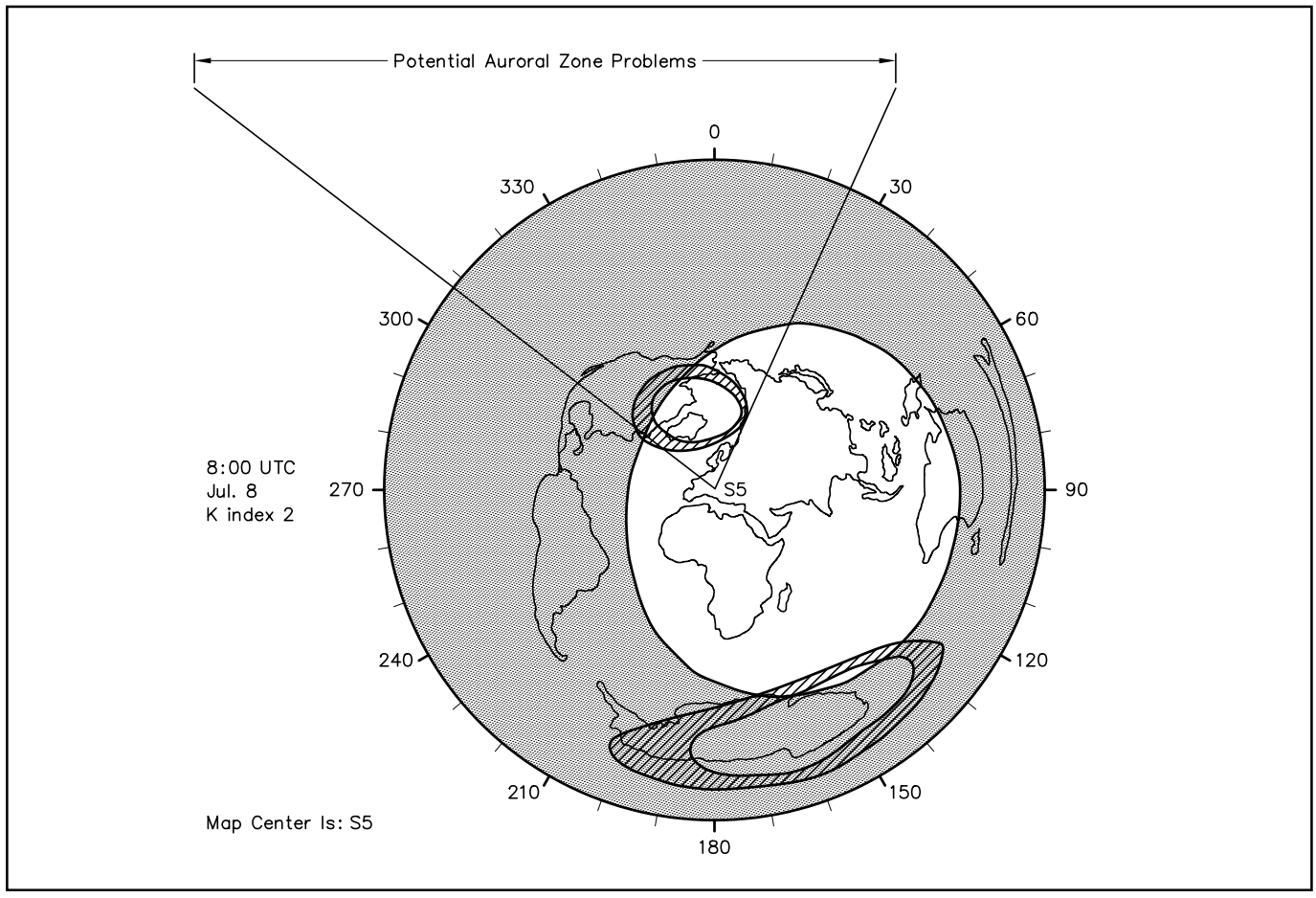



**Figure 1—Paths potentially effected by Auroral activity.**

strategy is all-important. Before jumping into this task, let's think about this a bit. What propagation predictions do we need? Here's where knowledge of the WRTC contest rules comes in handy. The WRTC is run in conjunction with the IARU HF World Championship. Most of the rules come from the IARU rules, with WRTC adding in some additional rules specifically for the WRTC teams.

The WRTC teams will use only 80, 40, 20, 15 and 10 meters. They are limited to 100 W output. The antennas will be a *W*indom for 80 and 40 meters at about 40 feet and a 3-element tribander for 20/15/10 also at about 40 feet. They will be allowed to operate only 20 hours of the 24-hour IARU contest period. The point value of a QSO depends on the ITU zone and the continent of the station contacted, with QSOs with other continents favored. ITU zones and the IARU member-society HQ stations are multipliers. Although the two-person WRTC teams are allowed to have two radios, only one can be transmitting at any given time. The other radio can be on, but only for listening. The final score will be the sum of points achieved in four different standings: CW and SSB pile-up simulation (propagation planning doesn't help here), number of CW contacts, number of SSB contacts (I think this says SSB and CW points are equal) and number of multipliers.

After considering the above rules, a general strategy emerges. Since only one radio is allowed to transmit at a time, a plan between running and hunting for multipliers must be developed. A plan between CW and SSB must be developed. To maximize QSO points when running, the station needs to be on the bands at the times that favor propagation to the favored continents based on the point structure. To maximize multipliers when multiplier hunting, the station operators need to know worldwide propagation.

Ok, now it's time to run all the predictions. You can use your favorite program, or you can take advantage of the work that Dean Straw, N6BV, did that's included on the *ARRL Antenna Book* CD. Dean ran *IONCAP* predictions from all over the world to everywhere else in the world. In this case, the predictions for YU can be used—that's close enough to S5. Choose the YU predictions for July and for the ap-propriate smoothed sunspot number for July of 2000. And finally, adjust the predictions for the power level and antennas to be used. All of these issues are explained in the text on the CD.

**20 Meters: Jul., Yugoslavia (Belgrade), for SSN = Very High, Sigs in S-Units. By N6BV, ARRL.**

| | UTC --> | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zone | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| KL7 = 01 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| VO2 = 02 | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 8 | 9 | 9 | 9 | 9 | 8 | 6 | 6 | 1 | 2 | 3 | 9 | 9 | 9 | 9+ | 9+ | 9+ | 9+ |
| W6 = 03 | 9 | 9 | 9 | 9 | 9 | 9 | 9+ | 9 | 9 | 8 | 5 | 5 | 6 | 7 | 6 | 6 | 8 | 6 | 6 | 5 | 4 | 6 | 7 | 8 |
| W0 = 04 | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 9 | 8 | 7 | 8 | 6 | 6 | 6 | 5 | 4 | 5 | 6 | 6 | 7 | 8 | 8 | 9 | 9+ |
| W3 = 05 | 9+ | 9+ | 9+ | 9 | 9 | 9 | 8 | 8 | 7 | 6 | 8 | 8 | 7 | 5 | 4 | 6 | 7 | 7 | 6 | 9 | 9 | 9+ | 9+ | 9+ |
| XE1 = 06 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 6 | 5 | 5 | 4 | 3 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 6 | 9 | 9+ |
| TI = 07 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 8 | 6 | 5 | 2 | 1 | - | - | 1 | - | 1 | 3 | 7 | 9 | 9+ | 9+ |
| VP2 = 08 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 8 | 7 | 4 | 2 | 2 | 1 | 1 | 4 | 5 | 8 | 9 | 9+ | 9+ | 9+ | 9+ |
| P4 = 09 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 8 | 7 | 4 | 2 | 1 | 1 | 1 | 1 | 2 | 6 | 8 | 9 | 9+ | 9+ | 9+ |
| HC = 10 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 7 | 5 | 2 | 1 | - | - | - | - | - | 1 | 4 | 7 | 9 | 9+ | 9+ |
| PY1 = 11 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 8 | 8 | 6 | 2 | 1 | - | - | - | - | 2 | 7 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ |
| CE = 12 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 8 | 4 | - | - | - | - | - | - | - | 1 | 3 | 7 | 9 | 9+ | 9+ | 9+ |
| LU = 13 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 8 | 1 | 6 | 1 | - | - | - | - | - | - | 2 | 7 | 8 | 9+ | 9+ | 9+ | 9+ |
| G = 14 | 9+ | 9+ | 9 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| I = 15 | 1 | 1 | 1 | 1 | - | 7 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 9 | 9 | 9 | 8 | 8 | 5 | 3 | 1 |
| UA3 = 16 | 9 | 8 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 |
| UN = 17 | 9+ | 8 | 9+ | 9+ | 9+ | 9+ | 9 | 8 | 6 | 8 | 8 | 9 | 9+ | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| UA9 = 18 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 6 | 7 | 9 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| UA0 = 19 | 9 | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 8 | 9 | 8 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 |
| 4X = 20 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| HZ = 21 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 8 | 8 | 8 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| VU = 22 | 9+ | 9+ | 9+ | 9+ | 9 | 8 | 6 | 5 | 3 | 3 | 4 | 7 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| JT = 23 | 9+ | 9 | 9 | 9 | 9 | 8 | 7 | 6 | 6 | 7 | 8 | 9 | 8 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| VS6 = 24 | 9 | 9 | 8 | 6 | 3 | 1 | 1 | 1 | 2 | 3 | 4 | 6 | 8 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| JA1 = 25 | 8 | 7 | 6 | 6 | 5 | 5 | 5 | 6 | 6 | 6 | 8 | 8 | 8 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 |
| HS = 26 | 9+ | 9+ | 9 | 8 | 4 | 2 | 1 | - | 1 | 2 | 4 | 5 | 7 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| DU = 27 | 9 | 8 | 7 | 4 | 1 | 1 | 1 | 1 | 2 | 4 | 5 | 7 | 8 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| YB = 28 | 9+ | 9 | 8 | 5 | 1 | - | - | - | - | 1 | 1 | 3 | 6 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| VK6 = 29 | 9+ | 9 | 8 | 4 | - | - | - | - | - | - | - | - | 4 | 7 | 8 | 9 | 9 | 9 | 9 | 9+ | 9 | 5 | - | 7 |
| VK3 = 30 | 8 | 1 | 1* | 1* | 1* | 2* | 2* | 2* | - | - | - | - | - | 1 | 7 | 6 | 9 | 9+ | 9+ | 9+ | 9 | 5 | 9+ | 9 |
| KH6 = 31 | - | 3 | 6 | 7 | 8 | 9 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 9 | 8 | 6 | 4 | - | - | - |
| KH8 = 32 | - | - | 2* | 5 | 9 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 5 | 8 | 9 | 9 | 9 | 8 | 7 | - | - | - |
| CN = 33 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| SU = 34 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| 6W = 35 | 9+ | 9+ | 9 | 8 | 5 | 3 | 9 | 9+ | 8 | 7 | 6 | 4 | 4 | 3 | 5 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| D2 = 36 | 9+ | 9+ | 9+ | 9+ | 9 | 9+ | 9 | 8 | 5 | 2 | 1 | 3 | 4 | 6 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| 5Z = 37 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 6 | 2 | 1 | 5 | 5 | 7 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| ZS6 = 38 | 9+ | 9 | 5 | - | 5 | 9 | 8 | 5 | 1 | - | - | - | 1 | 2 | 6 | 8 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| FR = 39 | 9+ | 9+ | 9 | 9+ | 9+ | 8 | 5 | 1 | - | - | - | 1 | 3 | 6 | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ |
| FJL = 40 | 7 | 5 | 3 | 2 | 2 | 6 | 9 | 9+ | 9+ | 9 | 9 | 9 | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 8 | 8 |
| Zone | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| | UTC --> | | | | | | | | | | | | | | | | | | | | | | | |

Expected signal levels using 1500 W and 3-element Yagis at 100 feet at each station.

**Figure 2—Propagation predictions for multiplier hunting.**

**Jul., Yugoslavia (Belgrade), for SSN = Very High, Sigs in S-Units. By N6BV, ARRL.**

| | 80 Meters | | | | | | | 40 Meters | | | | | | | 20 Meters | | | | | | | 15 Meters | | | | | | | 10 Meters | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UTC | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | UTC |
| 0 | 9+ | 1 | 9 | 9+ | 9+ | - | 8 | 9+ | 8 | 9 | 9+ | 9+ | 3 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | - | 8 | 9+ | 9+ | 9+ | 8 | 9 | 2 | - | 7 | - | - | - | - | 0 |
| 1 | 9+ | - | 9 | 9+ | 9+ | - | 9 | 9+ | 5 | 9+ | 9+ | 9+ | - | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 9+ | - | 6 | 9+ | 9+ | 9+ | 8 | 8 | 2 | - | 4 | - | - | - | - | 1 |
| 2 | 9+ | - | 9 | 9+ | 9+ | - | 9 | 9+ | 1 | 9+ | 9+ | 9+ | - | 9+ | 9 | 9 | 9+ | 9+ | 9+ | 8 | 9+ | - | 6 | 9+ | 8 | 9+ | 8 | 4 | 2 | - | 1 | - | - | - | - | 2 |
| 3 | 9+ | - | 9 | 9+ | 8 | - | 9 | 9+ | - | 9+ | 9+ | 9+ | - | 9+ | 9 | 8 | 9+ | 9+ | 9+ | 7 | 9+ | - | 9 | 9+ | 8 | 9+ | 9 | - | 2 | - | - | - | - | 1 | - | 3 |
| 4 | 9+ | - | 8 | 9+ | 3 | - | 8 | 9+ | - | 9 | 9+ | 9 | - | 9 | 9+ | 8 | 9+ | 9+ | 9+ | 9 | 9+ | 1 | 8 | 8 | 9 | 9+ | 8 | 1 | 2 | 8 | - | 1 | 9 | 6 | - | 4 |
| 5 | 9+ | - | - | 9 | - | - | 5 | 9+ | - | 9 | 9+ | 5 | - | 9 | 9+ | 7 | 9+ | 9+ | 9+ | 9 | 9+ | 2 | 9 | 9 | 8 | 9+ | 8 | 7 | 2 | 7 | - | 6 | 9+ | 6 | - | 5 |
| 6 | 9+ | - | - | 6 | - | - | 1 | 9+ | - | 7 | 9 | - | - | 8 | 9+ | 8 | 9+ | 9+ | 9+ | 8 | 9+ | 7 | 9 | 9 | 9+ | 9 | 8 | 8 | 2 | 7 | 2 | 7 | 9+ | 5 | - | 6 |
| 7 | 8 | - | - | - | - | - | - | 9+ | - | 2 | 7 | - | - | 5 | 9+ | 8 | 9 | 9+ | 9 | 8 | 9 | 8 | 9 | 9+ | 9+ | 9+ | 8 | 2 | 2 | 7 | 5 | 8 | 9+ | 5 | - | 7 |
| 8 | 5 | - | - | - | - | - | - | 9+ | - | - | 3 | - | - | 2 | 9+ | 8 | 9 | 9+ | 8 | 8 | 9 | 8 | 9 | 9 | 9+ | 9+ | 9 | 1 | - | 6 | 1 | 8 | 9+ | 7 | - | 8 |
| 9 | 2 | - | - | - | - | - | - | 9+ | - | - | - | - | - | - | 9+ | 8 | 8 | 9+ | 9 | 7 | 9 | 8 | 9 | 9 | 9+ | 9+ | 9 | 3 | - | 8 | 6 | 8 | 9+ | 8 | - | 9 |
| 10 | 1 | - | - | - | - | - | - | 9 | - | - | - | - | - | - | 9+ | 8 | 7 | 9+ | 9 | 7 | 9 | 8 | 9 | 9 | 9+ | 9+ | 9 | 6 | - | 8 | 6 | 8 | 9+ | 9 | - | 10 |
| 11 | 1 | - | - | - | - | - | - | 9 | - | - | - | - | - | - | 9+ | 9 | 5 | 9+ | 9 | 7 | 8 | 8 | 9 | 9 | 9+ | 9+ | 9 | 8 | - | 9 | 8 | 8 | 9+ | 8 | 1 | 11 |
| 12 | 1 | - | - | - | - | - | - | 9 | - | - | 1 | - | - | - | 9+ | 8 | 2 | 9+ | 9+ | 8 | 8 | 7 | 9 | 9 | 9+ | 9+ | 9 | 8 | - | 7 | 8 | 9 | 9+ | 4 | 1 | 12 |
| 13 | 2 | - | - | - | - | - | - | 9+ | - | - | 2 | - | - | - | 9+ | 9 | 2 | 9+ | 9+ | 9 | 8 | 6 | 9+ | 9 | 9+ | 9+ | 9 | 9 | - | 8 | 8 | - | 9+ | 3 | 4 | 13 |
| 14 | 5 | - | - | - | - | - | - | 9+ | 1 | - | 4 | 5 | 1 | - | 9+ | 9 | 1 | 9+ | 9+ | 9 | 8 | 5 | 9+ | 9 | 9+ | 9+ | 9+ | 9 | 2 | 8 | 8 | - | 9+ | 2 | 1 | 14 |
| 15 | 8 | - | - | - | 1 | - | - | 9+ | 4 | - | 9 | 8 | 4 | - | 9+ | 9+ | 1 | 9+ | 9+ | 9+ | 8 | 5 | 9+ | 8 | 9+ | 9+ | 9+ | 9 | 2 | 8 | 8 | 1 | 9+ | 3 | - | 15 |
| 16 | 9+ | - | - | 8 | 5 | - | - | 9+ | 8 | - | 9+ | 9 | 8 | - | 9+ | 9+ | 4 | 9+ | 9+ | 9+ | 9 | 5 | 9+ | 8 | 9+ | 9+ | 9+ | 9 | 2 | 8 | 9 | 2 | 9+ | 5 | - | 16 |
| 17 | 9+ | 6 | - | 9+ | 8 | 6 | - | 9+ | 9 | - | 9+ | 9+ | 8 | 1 | 9+ | 9+ | 7 | 9+ | 9+ | 9+ | 9 | 5 | 9+ | 9 | 9+ | 9+ | 9+ | 8 | 2 | 8 | 9 | 4 | 9+ | 5 | - | 17 |
| 18 | 9+ | 8 | - | 9+ | 9 | 8 | - | 9+ | 9 | 1 | 9+ | 9+ | 9 | - | 9+ | 9+ | 9 | 9+ | 9+ | 9+ | 9 | 5 | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 2 | 7 | 9 | 9 | 9 | 4 | 1 | 18 |
| 19 | 9+ | 8 | - | 9+ | 9 | 8 | - | 9+ | 9 | 4 | 9+ | 9+ | 9 | 1 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 5 | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 2 | 5 | 9+ | 9 | 9 | 4 | 2 | 19 |
| 20 | 9+ | 8 | - | 9+ | 9+ | 8 | - | 9+ | 9 | 7 | 9+ | 9+ | 9 | 6 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 4 | 9+ | 9+ | 9+ | 9+ | 9+ | 9 | 2 | 6 | 9 | 9 | 8 | 1* | 2 | 20 |
| 21 | 9+ | 8 | 6 | 9+ | 9+ | 8 | - | 9+ | 9 | 8 | 9+ | 9+ | 9 | 8 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 2 | 9 | 9+ | 9+ | 9+ | 6 | 9 | 2 | - | 9 | 8 | 7 | 2* | 1 | 21 |
| 22 | 9+ | 8 | 8 | 9+ | 9+ | 2 | 3 | 9+ | 9 | 9 | 9+ | 9+ | 9 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | - | 8 | 9+ | 9+ | 9+ | 7 | 9 | 2 | - | 8 | 5 | 4 | 1* | - | 22 |
| 23 | 9+ | 6 | 8 | 9+ | 9+ | - | 6 | 9+ | 9 | 9 | 9+ | 9+ | 8 | 9 | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | 9+ | - | 6 | 9+ | 9+ | 9+ | 9+ | 9 | 2 | - | 8 | 3 | - | 2 | - | 23 |
| | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | EU | FE | SA | AF | AS | OC | NA | |

**Figure 3—Propagation predictions for running.**

There are two formats available for the results. One format is one page per band of predicted signal levels to each CQ zone versus UTC. **Figure 2** shows this format for one band—20 Meters. This data could be used for the multiplier predictions. The other format is a one-page summary of predicted signal levels by band to each continent versus UTC. **Figure 3** shows this format. This data could be used for a run station plan.

A couple comments are in order about the ARRL predictions. The predicted signal levels are median values, which means they should occur on half of the days of the month—on some days the signal level will be higher and on some days the signal level will be lower. The predictions also assume that the MUF (*maximum usable frequency*) is always high enough. This means the predictions could be somewhat optimistic in terms of the higher frequency bands being open or not—this is ok, as I think it's better to predict an opening and not have it happen than to not predict an opening and have it happen. Finally, these predictions assume the geomagnetic field is quiet. To cover the elevated K-Index aspect, I also ran the same predictions using another propagation program that allows input of the K-Index.

From all of the above, I came up with a plan of attack for the times of running versus the times of multiplier hunting, a plan of attack for CW versus SSB, and a plan of attack for the 4 hours of OFF time. I even have a general idea of what to do in case the K-Index goes up. One caveat here—since I did all this planning in late February based on the initial release of the WRTC rules, I may have to re-visit the plan if I find out later that I misinterpreted the rules.

All in all, I guess I can say I'm ready to go. I even packed an antenna tuner and some ferrite beads in case of problems with the 80/40-meter Windom antenna—I don't know if the rules allow that, but we'll be prepared. So now I'll just sit here, play with *PED* and *RUFZ*, and wait for a phone call from Romeo. Think I should hold my breath? ■

# NAQP SSB Records through August 1999

Compiled by Bob Selbrede, K6ZZ
k6zz@ccis.com

### Single Operator Records

| Area | Call | Score | Year |
|---|---|---|---|
| CT | K8HVT/1 | 90,552 | 01/93 |
| MA | K1VUT | 133,363 | 01/99 |
| ME | KN1M | 76,560 | 01/91 |
| NH | WA1LNP | 179,983 | 01/99 |
| RI | WZ1R | 137,555 | 01/92 |
| VT | WT1L | 148,856 | 01/92 |
| NJ | WA2MKM | 74,358 | 01/93 |
| NY | N2BA (K8HVT) | 149,100 | 01/92 |
| DE | WN3K | 124,410 | 08/94 |
| MD | KE3Q | 165,912 | 01/97 |
| PA | WR3G | 246,339 | 01/92 |
| AL | K4AB | 248,970 | 01/97 |
| FL | K4XS | 282,124 | 01/99 |
| GA | KM9P/4 | 246,018 | 01/92 |
| KY | KT4ZX | 189,675 | 01/99 |
| NC | K4MA | 169,506 | 01/98 |
| SC | W4OC | 164,724 | 01/99 |
| TN | K4WX | 247,690 | 01/99 |
| VA | K1GG | 198,850 | 01/99 |
| AR | K5OY | 210,588 | 01/99 |
| LA | AE5T | 132,600 | 01/98 |
| MS | W5XX | 128,778 | 01/98 |
| NM | AA5B | 279,565 | 01/92 |
| OK | N5CG | 197,340 | 01/92 |
| TX | N5RZ | 242,928 | 01/91 |
| CA | N6UR (KR6X) | 303,563 | 01/93 |
| HI | KH6ND | 138,996 | 08/99 |
| AK | WL7KY | 104,754 | 01/99 |
| AZ | K6LL/7 | 322,788 | 01/99 |
| ID | W7ZRC | 98,552 | 08/96 |
| MT | W7MMQ | 213,624 | 01/98 |
| NV | K5RC/7 | 236,742 | 01/99 |
| OR | AI7B | 180,455 | 01/96 |
| UT | WE7B | 88,872 | 01/92 |
| WA | W7WA | 271,072 | 01/99 |
| WY | WC7S | 57,081 | 01/91 |
| MI | WA8ZDT | 234,362 | 01/94 |
| OH | KW8N | 247,257 | 01/99 |
| WV | N8II | 143,850 | 01/93 |
| IL | W9RM | 224,576 | 01/99 |
| IN | W9RE | 181,125 | 08/98 |
| WI | WE9V | 244,032 | 01/99 |
| CO | K0GU | 244,571 | 01/95 |
| IA | N0AV | 220,896 | 01/99 |
| KS | N0BIW | 134,495 | 01/97 |
| MN | AA0SQ | 125,388 | 08/96 |
| MO | KI0MB | 122,244 | 01/99 |
| ND | ND1H/0 | 80,785 | 01/94 |
| NE | KV0I | 107,820 | 01/91 |
| SD | WD0T | 228,459 | 01/99 |
| NS | VE1MQ | 27,120 | 01/91 |
| QC | VE2AWR | 27,816 | 01/98 |
| ON | VE3EJ | 245,079 | 01/99 |
| MB | VE4VV | 207,828 | 01/99 |
| SK | VE5SF | 201,612 | 01/99 |
| AB | VE6FU | 120,020 | 01/99 |
| BC | VE7CFD | 146,030 | 01/99 |
| NWT | VE8JL | 13,532 | 01/99 |
| NB | VE9AA | 233,100 | 01/99 |
| LAB | No logs Submitted | | |
| YT | VY1JA | 14,756 | 08/94 |
| PEI | VY2SS | 115,040 | 01/93 |
| NU | No Logs Submitted | | |
| C6 | KN4UG/C6A | 53,888 | 01/99 |
| KP4 | W8HNI/KP4 | 9,652 | 01/93 |
| PJ7 | PJ7/AB6FO | 69,273 | 08/95 |
| TG | TG9AJR | 29,082 | 01/92 |
| VP2E | VP2EXX | 18,620 | 01/91 |
| VP5 | VP5V | 213,110 | 01/93 |
| VP9 | WA1AWJ/ VP9 | 7,920 | 01/92 |
| XE | XE2DV | 211,312 | 01/96 |
| ZF | ZF2NT (N6NT) | 263,579 | 01/99 |

### Highest Non-North American Score

| Call | Score | Year |
|---|---|---|
| S51CK | 15,132 | 08/99 |

### Top 10 Single Operator Scores

| Call | Score | Year |
|---|---|---|
| K6LL/7 | 322,788 | 01/99 |
| N6UR (KR6X) | 303,563 | 01/93 |
| K6LL/7 | 300,150 | 01/94 |
| N6RO | 290,408 | 01/99 |
| K6LL/7 | 290,232 | 01/98 |
| K6ZZ | 284,874 | 01/99 |
| K4XS | 282,124 | 01/99 |
| AA5B | 279,565 | 01/92 |
| K4XS | 277,728 | 01/93 |
| W7WA | 271,072 | 01/99 |

*Most QSOs*: K6LL/7—1454 (01/99)
*Most Multipliers*: WR3G—271 (01/92)

### Top 3 Multioperator Scores

| Call | Score | Year |
|---|---|---|
| WB5VZL | 598,404 | 01/94 |
| WB5VZL | 471,276 | 01/96 |
| W0AIH | 463,681 | 01/94 |

### Top 3 Team Scores

| Team | Score | Year |
|---|---|---|
| Southern California Contest Club (K6LL, K6ZZ, N6ED, N6KI, K6RO) | 1,239,392 | 01/99 |
| Northern California Contest Club (N6RO, ZF2NT(N6NT), K5RC, K6BZ, N6EE) | 1,147,869 | 01/99 |
| Southern California Contest Club (K6LL, AD6DO, K6RO, W6KY, WA7BNM) | 992,364 | 01/98 |

# NAQP CW Records through August 1999

Compiled by Bob Selbrede, K6ZZ
k6zz@ccis.com

### Single Operator Records

| Area | Call | Score | Year |
|---|---|---|---|
| CT | K8HVT | 125,424 | 01/91 |
| MA | K1VUT | 151,296 | 08/97 |
| ME | NY1E | 81,096 | 01/91 |
| NH | WA1LNP | 124,542 | 01/99 |
| RI | K1IU | 72,124 | 01/96 |
| VT | AA1SU | 66,603 | 01/99 |
| NJ | N2NC | 244,062 | 01/99 |
| NY | KA2AEV | 100,648 | 01/91 |
| DE | N8NA | 91,767 | 01/98 |
| MD | K3MM | 224,280 | 01/99 |
| PA | AA3B | 161,993 | 08/97 |
| AL | K4AB | 173,116 | 01/98 |
| FL | K4OJ | 203,090 | 01/98 |
| GA | K4AAA (N4VJ) | 263,801 | 01/97 |
| KY | K4FXN | 165,436 | 01/99 |
| NC | NY4A (N4AF) | 169,274 | 01/97 |
| SC | W4OC | 152,490 | 01/99 |
| TN | N4ZZ | 206,100 | 01/98 |
| VA | K7SV | 157,614 | 01/97 |
| AR | K5GO | 169,857 | 01/97 |
| LA | W5WMU (K5GA) | 131,253 | 01/95 |
| MS | W5XX | 151,900 | 01/98 |
| NM | K7UP (KN5H) | 203,812 | 01/98 |
| OK | N5OT | 155,250 | 01/97 |
| TX | N5TJ | 308,257 | 01/98 |

| Area | Call | Score | Year |
|---|---|---|---|
| CA | N5KO | 258,825 | 01/98 |
| HI | KH6ND | 63,840 | 08/99 |
| AK | WL7KY | 45,250 | 01/99 |
| AZ | K6LL | 236,844 | 01/99 |
| ID | W7ZRC | 179,196 | 01/99 |
| MT | K7BG | 68,667 | 08/97 |
| NV | K5RC | 250,498 | 01/99 |
| OR | K7RAT (N6TR) | 250,318 | 01/99 |
| UT | NG7M | 168,000 | 01/99 |
| WA | N0AX | 179,568 | 01/99 |
| WY | WC7S | 58,656 | 01/94 |
| MI | W8MJ | 176,700 | 01/99 |
| OH | N9AG | 146,081 | 01/98 |
| WV | WA8WV | 120,650 | 01/99 |
| IL | K9OM | 170,940 | 01/98 |
| IN | W9RE | 176,715 | 01/98 |
| WI | K9MA | 158,486 | 01/98 |
| CO | N2IC | 225,502 | 01/93 |
| IA | N0AV | 158,239 | 01/99 |
| KS | W0UY | 120,400 | 01/99 |
| MN | K0SR | 134,070 | 01/99 |
| MO | KM0L | 127,070 | 01/98 |
| ND | WB0O | 162,840 | 01/98 |
| NE | KV0I | 133,666 | 01/91 |
| SD | WD0T | 174,384 | 01/93 |

| Area | Call | Score | Year |
|---|---|---|---|
| NS | VE1BN | 8,378 | 01/94 |
| PQ | VE2AWR | 85,172 | 01/98 |
| ON | VE3EJ | 189,472 | 01/98 |
| MB | VE4VV | 149,350 | 01/99 |
| SK | VE5SF | 79,636 | 01/99 |
| AB | VE6EX | 133,749 | 01/99 |
| BC | VE7NF | 59,492 | 01/99 |
| NWT | VE8/AC5BR | 3,784 | 08/96 |
| NB | VO1SF | 33,536 | 01/93 |
| LAB | No Logs Submitted | | |
| YT | VY1DX (K6LA) | 20,625 | 08/99 |
| PEI | VY2SS | 64,124 | 01/92 |
| NU | No Logs Submitted | | |
| HH | HH2PK | 56,991 | 01/93 |
| HI | HI8DMX | 20,984 | 01/91 |
| HP | HP1AC | 2,590 | 08/99 |
| HR | HR3/K9BG | 792 | 01/97 |
| I | IK0HBN | 3,690 | 08/97 |
| KP2 | WP2/K9BG | 170,355 | 01/98 |
| KP4 | KP4/AA5DX | 115,756 | 01/96 |
| VP2E | VP2EXX | 5,880 | 01/91 |
| XE | XE2DV | 84,672 | 08/99 |

**Highest Non-North American Score**

| | | |
|---|---|---|
| G3FXB | 23,331 | 08/92 |

**Top 10 Single Operator Scores**

| Call | Score | Year |
|---|---|---|
| N5TJ | 308,257 | 01/98 |

| Area | Call | Score | Year |
|---|---|---|---|
| NM5M | 270,325 | 01/98 | |
| K4AAA (N4VJ) | 263,801 | 01/97 | |
| N5KO | 258,825 | 01/98 | |
| W4AN | 253,890 | 01/98 | |
| K5RC | 250,498 | 01/99 | |
| K7RAT (N6TR) | 250,318 | 01/99 | |
| N2NC | 244,062 | 01/99 | |
| N6RO | 242,064 | 01/99 | |
| N5TJ | 241,072 | 01/97 | |

*Most QSOs*: N5TJ—1097, (01/98)
*Most Multipliers*: N5TJ—281, (01/98) and KM9P—281 (01/93)

**Top 3 Multioperator Scores**

| Call | Score | Year |
|---|---|---|
| N5TJ | 482,142 | 01/99 |
| K7UP | 418,111 | 01/99 |
| W4AN | 413,595 | 01/99 |

**Top 3 Team Scores**

| Team | Score | Year |
|---|---|---|
| TACO Uno (N5TJ, NM5M, N6ZZ, WB5B) | 898,272 | 01/98 |
| South East Contest Club (W4AN, K4AB, K4NO, AA4GA, K4BAI) | 890,792 | 01/98 |
| Southern California Contest Club (AD6DO, K6LA, K6LL, W6KY, N5OT) | 857,744 | 01/98 |

# North American QSO Party (NAQP) RTTY Rules

**1) Eligibility:** Any licensed radio amateur may enter.

**2) Object:** To work as many North American stations as possible during the contest period.

**3) North American Station:** Defined by the rules of the CQ WW DX Contests with the addition of KH6.

**4) Contest period:** Third full weekend in July (1800Z July 15 to 0600Z July 16, 2000).

**5) Entry Classification:**

**a) Single Operator:**

i) One person performs all transmitting, receiving, spotting, and logging functions as well as equipment and antenna adjustments.

ii) Use of helpers or spotting nets is not permitted.

iii) Only one transmitted signal allowed at a time.

iv) May operate 10 out of the 12 hours of the contest. Off times must be at least 30 minutes in length.

**b) Multi-Operator Two-Transmitter:**

i) More than one person performs transmitting, receiving and logging functions, etc.

ii) A maximum of two transmitted signals at any given time, each on a different band. Both transmitters may work any and all stations.

iii) Shall keep a separate log for each transmitter.

iv) Each transmitter must have at least 10 minutes between band changes.

v) May operate for the entire 12 hours of the contest.

**6) Output power:** Must be limited to 100 W for eligible entries. Use of external amplifiers capable of more than 100 W output is not allowed.

**7) Mode:** RTTY only.

**8) Bands:** 80, 40, 20, 15 and 10 meters only. You may work a station once per band.

**9) Exchange:** Operator name and station location (State, Province or Country) for North American stations; operator name only for non-North American stations. If the name sent is changed during the contest, as sometimes happens with multi-operator stations, the name used for each QSO must be clearly identified in the log.

**10) Multipliers:** Are US States (including KH6 and KL7), Canadian Provinces/Territories (British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, PEI, Labrador, Yukon, NWT and Nunavut) and other North American countries. Newfoundland counts as Labrador, and District of Columbia counts as Maryland. Non-North American countries, maritime mobiles and aeronautical mobiles do not count as multipliers, but may be worked for QSO credit.

**11) Valid Contact:** A valid contact consists of a complete, correctly copied and legibly logged two-way exchange between a North American station and any other station. Proper logging requires including the time in UTC and the band for each contact. Regardless of the number of licensed call signs issued to a given operator, one and only one call sign shall be utilized during the contest by that operator.

**12) Scoring:** Multiply total valid contacts by the sum of the number of multipliers worked on each band.

**13) Team Competition:** You may wish to form a team with fellow NAQP participants. If so, your team must consist of 2 to 5 single operator stations whose individual scores are combined to produce a team score. Although clubs or other groups having more than 5 members may form multiple teams, there is no distance or meeting requirements for a team entry.

Teams must be registered with the contest manager prior to the start of the contest. Team registration information must be in written form (mail or e-mail) and must include the name, the call sign of the operator, and the call sign of the station operated if the operator is a guest at a station other than his own (eg WF1B op at K1NG). Use the log submission address given below for team registration notification.

Log submission: Entries must be postmarked no later than 30 days after the contest to be eligible for awards. All logs containing more than 200 QSOs, which were generated with a computer program, must be submitted on 3.5-inch floppy disk or via e-mail. If paper logs are submitted, please submit originals. Sample log sheets and a summary sheet may be obtained with an SASE to the appropriate contest manager. These forms are also available on the *NCJ* Web site.

A proper entry consists of: (1) a summary sheet showing the number of valid contacts and multipliers by band, total contacts and multipliers, total score, team name (if applicable), power output, name, call sign and address of the operator, station call sign and exchange (name and location) sent during the contest; and (2) a complete legible log of all contacts.

Logs and summary sheets submitted on floppy disk or via e-mail must be in ASCII text format. Name your files with your call sign (ie yourcall.SUM and yourcall.LOG). Please do not send binary files produced by a contest logging program (eg yourcall.BIN, yourcall.QDF, etc). Use of the Cabrillo log format for electronic log submissions is encouraged and may be required in the future.

Send logs to: Ron Stailey, K5DJ
504 Dove Haven Dr
Round Rock, TX 78664-5926 USA
e-mail: **rttynaqp@ncjweb.com**.

**15) Disqualification:** Entries with score reductions greater than 5 percent may be disqualified. Any entry may be disqualified for illegibility, illegal or unethical operation. Such disqualification is at the discretion of the contest manager.

**16) Awards:** A total of five plaques will be awarded for the high score in each of the categories given below. If a plaque is not sponsored, the winner may purchase it. Certificates of merit will be awarded to the highest scoring entrant with at least 200 QSOs from each State, Province or North American country. Certificates of merit will also be awarded to the overall second and third place finishers in the multi-operator category for each mode.

Plaques will be awarded as follows:

| *Category* | *Sponsor* |
|---|---|
| Single Op, North America | Glenn Vinson, W6OTC |
| Single Op, DX | Will Angenent, K6NDV |
| Multi-Op, North America | *RTTY* by WF1B |
| Multi-Op, DX | *Writelog* for *Windows* |
| Best name used in North America | Eddie Schneider, W6/G0AZT (Name must be rated PG and contain no more than 10 letters.) |

Revised 12-March-2000 ■

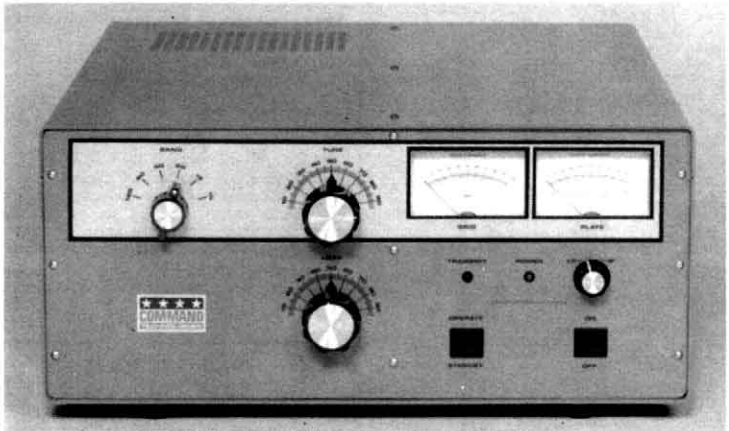
# COMMANDER AMPLIFIERS

**HIGH POWER HF**
COMMANDER HF-2500
COMMANDER HF-2500E

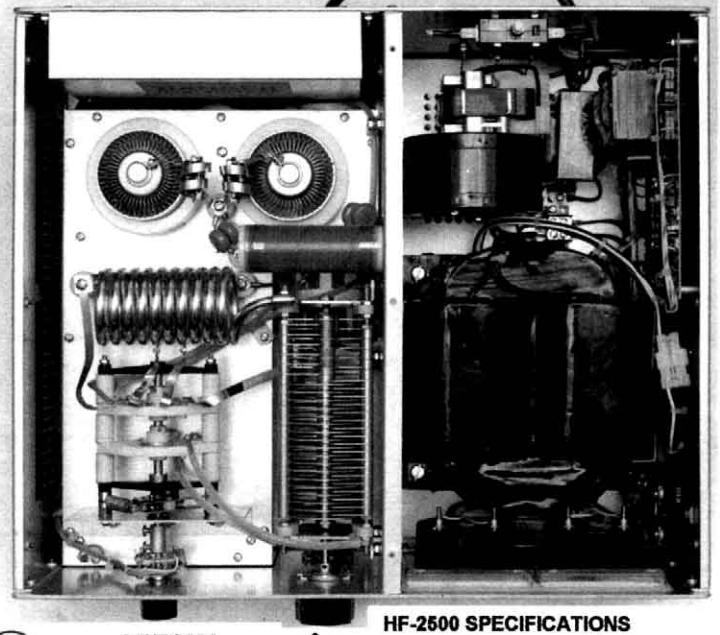
GENUINE Eimac INSIDE

**HIGH POWER VHF**
COMMANDER VHF-1200
COMMAND II VHF

## POWER YOU CAN TRUST



COMMANDER HF-2500



**HF-2500 SPECIFICATIONS**
2 - 3CX800A7 EIMAC TRIODES
1500 WATTS OUTPUT (NO TIME LIMIT)
160 - 10 METERS (WITH LICENSE)
200/234 V. 50/60 Hz AT 20 AMPS.
AUTO RESET GRID TRIP PROTECTION
PRICE $3095.00 US$
FOR QSK ADD $250.00

**SPECIAL**
COAXIAL DYNAMICS
PEAK READING 83000A
WATTMETERS
$340.00
With Element Purchase

**Ham Radio's BIG SIGNAL Store**

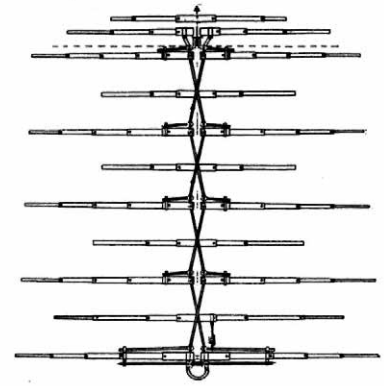
**MADE IN USA BY HAMS FOR HAMS ™**

COMMAND TECHNOLOGIES

Command Technologies, Inc.
1207 West High Street P.O. Box 7082
Bryan, Ohio 43506
**Toll Free USA 1-800-736-0443**
Phone 419-636-0443 Fax 419-636-2269

**HOMEPAGE www.bright.net/~cmdrtech**

## In The Final Analysis Quality Is Less Expensive



**Our Top Performer: XP80 Beam Series**
**10-12-15-20m with add-on: 6+17+30+40m**
**26ft/8m Boom 1x50 Ω Coax Feedline**

**It has the Same Outstanding Performance**
on 20 m ..... as a 5 Element Full Size Beam
on 15 +17 m .....as a 5 Element 5/8λ Beam
on 10 + 12 m ..... as two (!) 5-Element Full Size Beams
.....Side by Side
on 6 m ..... as a 3-4 Element Yagi
on 30 and 40 m ..... as a Rotary Dipole or much better
all comparisons typical

**No Traps, No Pattern-and Therefore Gain-Degrading By Unused Elements and Feeder Lines. Impressive Mechanical Quality. Our Smaller Beam Series:**
**XP40/XP50/XP70 8/15/20ft 2.4/4.4/6 m Boom**
**Our HF Verticals: 25 or 50 ft (7.5/15m) high, All Frequencies - No Traps**
**Beams from $450 Verticals from $260**

SOMMER
Sommer Antennas
P.O. Box 710
Geneva FL 32732-0710
http://www.sommerantennas.com
e-mail: sommer@sommerantennas.com
407-349-9114 fax 407-349-2485

## Are You An ARRL Volunteer Examiner?

If you're 18 or older, and a qualified **General**, **Advanced** or **Extra** class licensee, you're invited to join us. For details call:

**1-800-9-ARRL-VEC**

ARRL VEC

## Ham Radio Saves the Day!

*Be it hurricanes, earthquakes or international intrigue!*

**Get 5 shows on one videotape – only $12 including shipping and handling. See:**

http://www.arrl.org/ead/videos.html
ARRL EAD 860-594-0267


WXØB
ARRAY SOLUTIONS

**New** ***Introducing WXØB StackMaster***

***Now you can stack and phase up to FOUR monoband antennas, and choose all combinations between them to steer your takeoff angle.***

- **Pushbutton Electronic Switch now incorporates the ability to lock out any hot switching by utilizing your PTT signal. Incorporates very high power relays for reliability and isolation.**
- **Grounds unused antennas.**
- **Controlled 50 ohm impedances throughout the product as in all our products.**
- **Dual feedline option.**
- **Utilizes four 1/4 wave stubs (supplied or you can build your own). Stubs we supply are professionally built, trimmed, and tested. Made of the finest coax we can find.**

***Look for complete details on our web site.***

## *WXØB StackMatch*

***Phase and Stack 2 or 3 monoband or multi-band antennas on HF to 6 Meters***

- Switch between all combinations of antennas.
- Dual feedline option works for both StackMatch and StackMaster.
- Control switch with LED stack indicators.

## *Mini StackMatch*

***The same wide band transformer without the relay switching***

## *Sixpak*

***6 antenna to 1 or 2 radio controller***

The SixPak is a high isolation relay matrix which can be configured in two ways.

- 6 X 2 matrix for 6 antennas and 2 radio operation. Includes safety lockouts.
- 6 X 1 matrix for a remote antenna switch. *It includes a water resistant box, and controller switch.*

## *High Power Baluns*

***4:1 and 1:1 baluns for HF antennas***

1.8-30MHz operation, 5KW CW, SO239 or N connectors. Thes make great replacements for those pesky tri-band beam baluns that fail.

***email: wxøb@arraysolutions.com***
***www.arraysolutions.com***
***972.203.8810 • FAX 972.203.8811***

# ARRAY SOLUTIONS

**350 Gloria Rd., Sunnyvale, TX 75182**

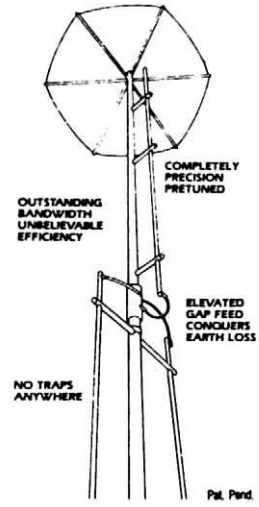
*All major credit cards accepted..*

---

THE ANSWER IS GAP TECHNOLOGY • THE ANSWER IS GAP TECHNOLOGY • THE ANSWER IS GAP TECHNOLOGY

**Q A backyard antenna for the low bands at a low cost?**

**A Yes...the answer is GAP'S revolutionary Voyager.**




If you're looking for an antenna that can outperform the others and give you the edge, you're looking for a GAP. The GAP Voyager DX-IV is not another "add a kit" antenna for 160 meters. It is the first antenna manufactured specifically to provide efficient low band operation from the typical backyard without a huge investment in time, money and space. The Voyager is the *first and only* antenna to cover the entire 75/80m under 2 to 1. Put it up. Turn it on. No tuning. No frustration. GAP delivers everything but the hassles. And — GAP delivers at a fraction of the cost of the "so-called" competition.

**The Voyager DX-IV**
160m 80m 40m 20m

**$399**
plus shipping

**All out efficiency.**
**All out performance.**
**GAP gets it all out.**

99 North Willow Street
Fellsmere, FL 32948

**(561) 571-9922**
Commercial Frequencies Available

GAP
ANTENNA PRODUCTS

THE ANSWER IS GAP TECHNOLOGY • THE ANSWER IS GAP TECHNOLOGY • THE ANSWER IS GAP TECHNOLOGY

---

# *K0XG Systems.*

K0XG@Contesting.com
*(319)355-7451*

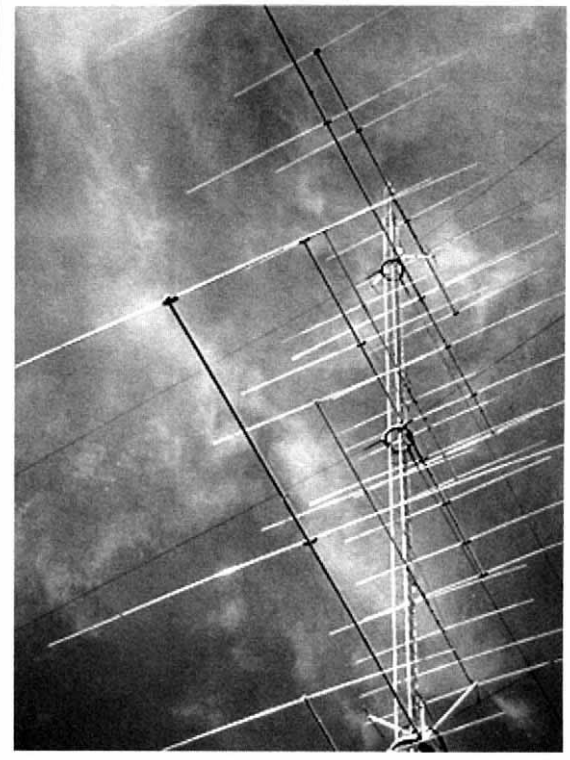
**Rotating tower parts for both HF and VHF applications.**

**Guy ring bearings.**

**Ground mounted rotors.**

**Elevated rotors.**

Complete range of Hot dipped galvanized parts.



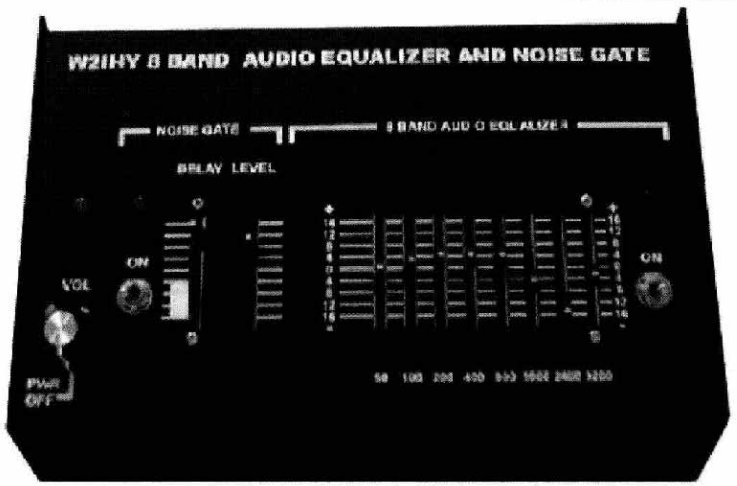
**Dayton spaces 1526 -1527**

**Visit our web site at:- www.qth.com/k0xg**

# W2IHY 8 BAND AUDIO EQUALIZER AND NOISE GATE

## Make <u>your</u> mic sound <u>REALLY GOOD</u>

## Have <u>audio that stands out from the crowd</u>




**PRICE $229.99 Assembled**
**Cable to radio $15.00 plus $8.00 S&H**
**Mail Orders and Inquiries to:**
**Julius D. Jones**
**19 Vanessa Lane**
**Staatsburg, NY 12580**
**Tel 1-914-889-4933**
**1-914-8894253 (after 7PM E.S.T)**
**E Mail W2IHY@prodigy.net**

**8 Band Graphic Equalizer**
- Bands: 50 Hz., 100 Hz., 200 Hz., 400 Hz., 800 Hz, 1600 Hz., 2400 Hz, 3200 Hz.
- Equalizer Bypass (on/off)

**Noise Gate** (Say goodbye to background noise)
- Adjustable level (threshold) and delay
- LED Noise gate level indicator
- Noise gate Bypass (on/off)

**Mic Input**
- Bottom accessible gain control
- **Selectable mic Input impedance** (200 ohm, 600 ohm, HI-Z)
- Wide Range of connectors
  - **8 Pin Mic** connector (selectable Yaesu, ICOM, Kenwood) (adapters available to support all other 4 and 8 pin mic's)
  - **XLR** (female) **connector**
  - **RCA connector**

**Dual Selectable Mic outputs**
- Allows you to connect to two different radio's
- Bottom accessible level control
- LOW - Z (balanced and unbalanced) and HI-Z outputs

**Built in Monitor**
- 1/4" rear accessible jack
- Front panel mounted volume control

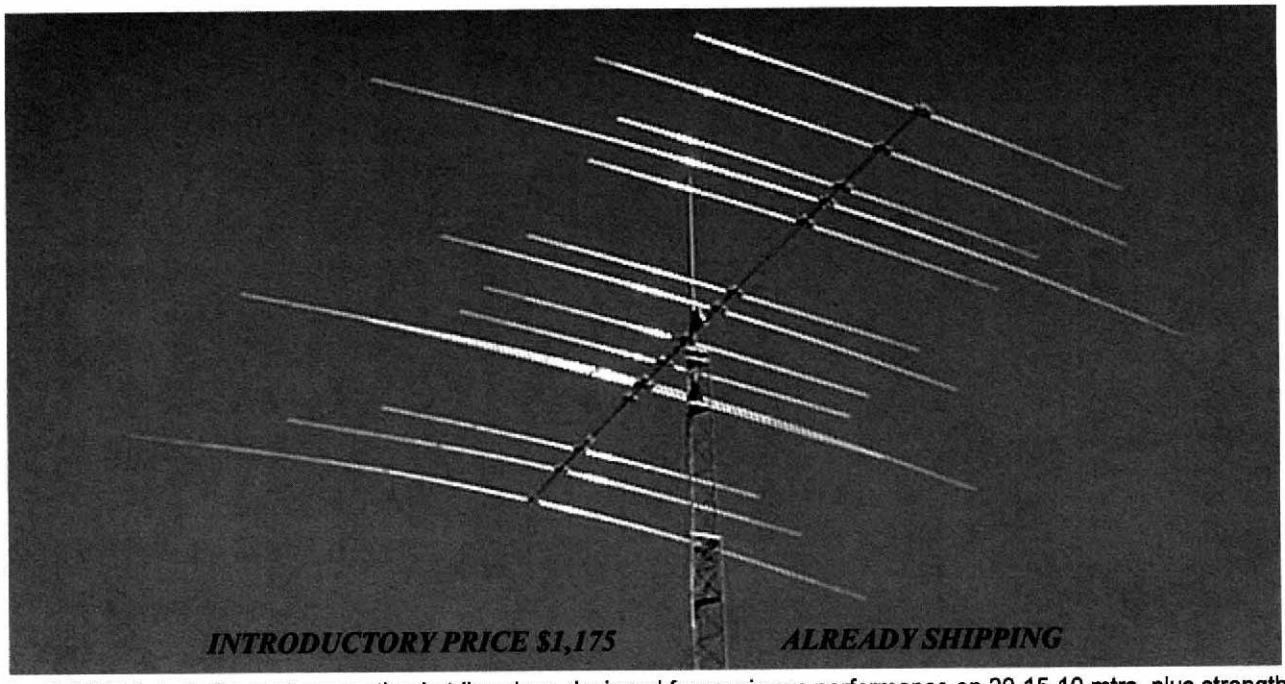
**NEW HOME PAGE ADDRESS http://pages.prodigy.net/w2ihy**

**Prices include power supply and a 30 day money back guarantee**

# C-31 XR

## The Magnum Tribander that has no equal

*> Based on our proven C-3, multi-monoband, no trap design*
*> Highest gain, superior patterns, stepped gain for stacking*
*> Wide-spaced 3el 20 & 4el 15, 7el on 10 mtrs, all full size*
*> Single feedline OR individual feedlines, your choice*
*> 5KW, 100 mph standard, 31' tapered boom*
*> Less than 100 in/lbs mast torque @ 70 mph*
*> 30" open space for side mounting*
*> Fast, "plug and play" assembly*




The **C-31XR** is truly the next generation in tribanders: designed for maximum performance on 20-15-10 mtrs, plus strength, ease of assembly, low mast torque, side mounting and stacking. The **C-31XR** is 3 monoband Yagis overlaid on the same boom. There is a wide spaced 3el 20, a wide spaced 4el 15 and 7 elements for 10 mtrs. The gain target to beat was our own **C-3**, which was shown to have the most gain across 20 & 15 mtrs according to independent testing by K7LXC and N0AX. We did it! The **C-31XR** exceeds the **C-3** on 20, 15 and 10 mtrs. F/B and side nulls are exactly what you would expect: excellent. There is nothing better than the **C-31XR.**

**C-31XR**

31' boom, 14 elements, 85 lbs, 10.5 sqft, 100mph, 5KW, single feedline, no traps, all elements full size

Call or write for a comprehensive brochure on the **Force 12** product line. The brochure includes true specifications and explanations of terms. For the best $10.00 you will ever spend ($12.50 w/postage), ask for the book entitled, **ARRAY OF LIGHT (Straight talk about Antennas and Related Information)**. These 76 pages are a compilation of practical subjects, questions and answers, installation tips, operating helps and data on antenna design including a section on traps.

**Force 12 - Proudly brings you the future. Electrically and mechanically superior. If it's riveted, it's a Force 12! There are more than 60 antennas to meet your needs and your dreams!!**

Force 12
*Antennas and Towers*

Order line: **800.248.1985**, Technical **805.227.1680,** FAX **805. 227.1684**
Force 12 East: **Natan Huffman, W6XR (607) 275-9747**
Internet: force12e@lightlink.net; www.QTH.com/force12

***Why imagine the ultimate when you can have it?***

FORCE 12, Inc.
P.O. Box 1349, Paso Robles, CA 93447

# SAVE BIG ON ANTENNAS, TOWERS & CABLE

## TELESCOPING ALUMINUM TUBING

DRAWN 6063-T832

| | | | |
|---|---|---|---|
| .375 | $.60/ft | 1.375" .. | $1.55/ft |
| .500" | $.70/ft | 1.500" .. | $1.75/ft |
| .625" | $.80/ft | 1.625" .. | $2.00/ft |
| .750" | $.90/ft | 1.750" .. | $2.25/ft |
| .875" | $1.00/ft | 1.875" .. | $2.50/ft |
| 1.000" | $1.10/ft | 2.000" .. | $2.75/ft |
| 1.125" | $1.25/ft | 2.125" .. | $3.00/ft |

**In 6' or 12' lengths, 6' lengths ship UPS. Call for 3/16"& 1/4" rod, bar stock, and extruded tubing.**

## CUSHCRAFT ANTENNAS

| | |
|---|---|
| X7/X9 | $569/819 |
| XM240 | $599 |
| R6000/R8 | $269/389 |
| A50-3S/5S/6S | $89/139/219 |
| AR2/ARX2B | $45/65 |
| AR270/AR270B | $69/99 |
| ARX270U/ARX270N | $219/219 |
| 13B2/17B2/26B2 | $119/199/329 |
| 719B/729B | $115/179 |
| A270-6S/A270-10S | $59/79 |

**Please call for more Cushcraft items**

## FORCE 12–MULTIBAND

| | | |
|---|---|---|
| C3 | 10/12/15/17/20m, 7 el | $529 |
| C3E | 10/12/15/17/20m, 8 el | $559 |
| C3S | 10/12/15/17/20m, 6 el | $469 |
| C3SS | 10/12/15/17/20m, 6 el | $459 |
| C4 | 10/12/15/17/20/40m, 8 el | $669 |
| C4S | 10/12/15/17/20/40m, 7 el | $579 |
| C4SXL | 10/12/15/17/20/40m, 8 el | $849 |
| C4XL | 10/12/15/17/20/40m, 9 el | $939 |
| C19XR | 10/15/20m, 11 el | $849 |
| C31XR | 10/15/20m, 14 el | $1129 |

**Please call for more Force 12 items**

## TRYLON "TITAN" TOWERS

**SELF-SUPPORTING STEEL TOWERS**

| | | |
|---|---|---|
| T200-64 | 64', 15 square feet | $989 |
| T200-72 | 72', 15 square feet | $1199 |
| T200-80 | 80', 15 square feet | $1449 |
| T200-88 | 88', 15 square feet | $1699 |
| T200-96 | 96', 15 square feet | $1989 |
| T300-88 | 88', 22 square feet | $1979 |
| T400-80 | 80', 34 square feet | $1899 |
| T500-72 | 72', 45 square feet | $1849 |
| T600-64 | 64', 60 square feet | $1789 |

**Many more Trylon towers in stock!**

## BENCHER / BUTTERNUT

| | |
|---|---|
| Skyhawk, Triband Beam | $919 |
| HF2V, 2 Band Vertical | $219 |
| HF5B, 5 Band Minibeam | $429 |
| HF6VX, 6 Band Vertical | $299 |
| HF9VX, 9 Band Vertical | $349 |
| A1712, 12/17m Kit | $54 |
| CPK, Counterpoise Kit | $129 |
| RMKII, Roof Mount Kit | $159 |
| STRII, Roof Radial Kit | $125 |
| TBR160S, 160m Kit | $119 |

**More Bencher/Butternut–call**

## M2 VHF/UHF ANTENNAS

**144–148 MHz**

| | |
|---|---|
| 2M4/2M7/2M9 | $89/109/1119 |
| 2M12/2M5WL | $149/189 |
| 2M5-440XP, 2m/70cm | $129 |

**420–450 MHz**

| | |
|---|---|
| 420-470-5W/420-450-11 | $119/89 |
| 432-9WL/432-13WL | $169/219 |
| 440-18/440-21ATV | $119/139 |

**Satellite Antennas**

| | |
|---|---|
| 2MCP14/2MCP22 | $155/209 |
| 436CP30/436CP42UG | $209/249 |

## ROHN TOWER

| | |
|---|---|
| 25G/45G/55G | $79/179/229 |
| AS25G/AS455G | $39/89 |
| GA25GD/45/55 | $68/89/115 |
| GAR30/GAS604 | $35/24 |
| SB25G/45/55 | $39/89/109 |
| TB3/TB4 | $85/99 |
| HBX32/HBX40 | $349/439 |
| HBX48/HBX56 | $589/699 |
| HDBX40/HDBX48 | $549/699 |
| BXB5/6/7/8 | $39/49/59/59 |

**Please call for more Rohn prices**

## US TOWER

| | |
|---|---|
| MA40/MA550 | $659/1055 |
| MA770/MA850 | $2359/3649 |
| TMM433SS/HD | $1139/1379 |
| TMM541SS | $1499 |
| TX438/TX455 | $1069/1319 |
| TX472/TX489 | $2649/4599 |
| HDX538/HDX555 | $1379/1919 |
| HDX572MDPL | $6329 |

**Please call for help selecting a US Tower for your needs. Shipped factory direct to save you money!**

## COMET ANTENNAS

| | |
|---|---|
| GP15, 6m/2m/70cm Vertical | $149 |
| GP6, 2m/70cm Vertical | $149 |
| GP9, 2m/70cm Vertical | $179 |
| B10NMO, 2m/70cm Mobile | $36 |
| B20NMO, 2m/70cm Mobile | $49 |
| SBB2NMO, 2m/70cm Mobile | $39 |
| SBB5NMO, 2m/70cm Mobile | $49 |
| SBB7NMO, 2m/70cm Mobile | $75 |
| Z750, 2m/70cm Mobile | $55 |
| Z780, 2m/70cm Mobile | $69 |

**Much more Comet in stock–call**

## M2 ANTENNAS

**50–54 MHz**

| | |
|---|---|
| 6M5/X6M7 | $199/279 |
| 6M2WLC/6M2.5WLC | $419/529 |

**10/12/15/17/20m HF**

| | |
|---|---|
| 10M4DX, 4 Element 10m | $379 |
| 12M4DX, 4 Element 12m | $379 |
| 15M4DX, 4 Element 15m | $419 |
| 17M3DX, 3 Element 17m | $379 |
| 20M4DX, 4 Element 20m | $499 |

**More M2 models in stock–please call**

## GLEN MARTIN ENGINEERING

**Hazer Elevators for 25G**

| | |
|---|---|
| H2, Aluminum Hazer, 12 sq ft | $359 |
| H3, Aluminum Hazer, 8 sq ft | $269 |
| H4, HD Steel Hazer, 16 sq ft | $339 |

**Aluminum Roof Towers**

| | |
|---|---|
| RT424, 4 Foot, 6 sq ft | $159 |
| RT832, 8 Foot, 8 sq ft | $229 |
| RT936, 9 Foot, 18 sq ft | $389 |
| RT1832, 17 Foot, 12 sq ft | $499 |

**Please call for Glen Martin info**

## UNIVERSAL ALUMINUM TOWERS

| | |
|---|---|
| **4**-40'/50'/60' | $519/739/1049 |
| **7**-50'/60'/70' | $939/1369/1789 |
| **9**-40'/50'/60' | $729/1049/1469 |
| **12**-30'/40' | $559/869 |
| **15**-40'/50' | $969/1399 |
| **23**-30'/40' | $859/1289 |
| **35**-30'/40' | $979/1509 |

**Bold in part number shows wind-load capacity. Please call for more Universal models. All are shipped factory direct to save you money!**

## DIAMOND ANTENNAS

| | |
|---|---|
| D130J/DPGH62 | $79/139 |
| F22A/F23A | $89/119 |
| NR72BNMO/NR73BNMO | $39/54 |
| NR770HBNMO/NR770RA | $55/49 |
| X200A/X300A | $129/159 |
| X500HNA/700HNA | $229/369 |
| X510MA/510NA | $189/189 |
| X50A/V2000A | $99/149 |
| CR627B/SG2000HD | $99/79 |
| SG7500NMO/SG7900A | $75/112 |

**More Diamond antennas in stock**

## MFJ ANTENNAS

| | |
|---|---|
| 259B Antenna Analyzer | $219 |
| 1798, 80–2m Vertical | $239 |
| 1796, 40/20/15/10/6/2m Vert. | $179 |
| 1793, 80/40/20m Vertical | $159 |
| 1792, 80/40m Vertical | $145 |
| 1788, 40–15m Loop | $399 |
| 1786, 30–10m Loop | $349 |
| 1780, 14–30 MHz Loop | $229 |
| 1768, 2m/70cm Beam | $65 |
| 1762, 3 Element 6m Beam | $65 |

**Big MFJ inventory–please call**

## COAX CABLE

| | |
|---|---|
| RG-213/U, (#8267 Equiv.) | $.36/ft |
| RG-8X, Mini RG-8 Foam | $.19/ft |
| RG-213/U Jumpers | Please Call |
| RG-8X Jumpers | Please Call |

**Please call for more coax/connectors**

## TIMES MICROWAVE LMR® COAX

| | |
|---|---|
| LMR-400 | $.59/ft |
| LMR-400 Ultraflex | $.89/ft |
| LMR-600 | $1.19/ft |
| LMR600 Ultraflex | $1.95/ft |

## TOWER HARDWARE

| | |
|---|---|
| 3/8"EE / EJ Turnbuckle | $10/11 |
| 1/2"x9"EE / EJ Turnbuckle | $15/16 |
| 1/2"x12"EE / EJ Turnbuckle | $17/18 |
| 3/16" / 1/4" Preformed Grips | $4/5 |

**Please call for more hardware items**

## HIGH CARBON STEEL MASTS

| | |
|---|---|
| 5 FTx .12" / .18" | $35/59 |
| 10 FT x .12" / .18" | $65/110 |
| 15 FT x .12" / 17 FT x .18" | $95/180 |
| 20 FT x .12" / .18 | $120/199 |
| 12 FT x .25" / 24 FT x .25" | $189/359 |

## GAP ANTENNAS

| | |
|---|---|
| Challenger DX | $259 |
| Challenger Counterpoise | $25 |
| Challenger Guy Kit | $14 |
| Eagle DX | $269 |
| Eagle Guy Kit | $22 |
| Titan DX | $299 |
| Titan Guy Kit | $22 |
| Voyager DX | $389 |
| Voyager Counterpoise | $49 |
| Voyager Guy Kit | $38 |

**Please Call for Delivery Information**

## LAKEVIEW HAMSTICKS

| | | | | | |
|---|---|---|---|---|---|
| 9106 | 6m | 9115 | 15m | 9130 | 30m |
| 9110 | 10m | 9117 | 17m | 9140 | 40m |
| 9112 | 12m | 9120 | 20m | 9175 | 75m |

**All handle 600W, 7' approximate length, 2:1 typical VSWR ... $24.95**

## HUSTLER ANTENNAS

| | |
|---|---|
| 4BTV/5BTV/6BTV | $129/169/189 |
| G6-270R, 2m/70cm Vertical | $149 |
| G6-144B/G7-144B | $109/159 |

**Hustler Resonators in stock–call**

## ANTENNA ROTATORS

| | |
|---|---|
| M2 OR-2800P | $1095 |
| Yaesu G-450A | $239 |
| Yaesu G-800S/SDX | $319/399 |
| Yaesu G-1000DXA | $479 |
| Yaesu G-2800SDX | $1069 |
| Yaesu G-550/G-5500 | $289/589 |

## ROTATOR CABLE

| | |
|---|---|
| R51(#20)/R52 (#18) | $.22/.32/ft |
| R61 (#20)/R62 (#18) | $.28/32/ft. |
| R81/82/83/84 | $.25/.39/.52/.85/ft |

## PHILYSTRAN GUY CABLE

| | |
|---|---|
| HPTG1200I | $.39/ft |
| HPTG2100I | $.52/ft |
| PLP2738 Big Grip (2100) | $5.50 |
| HPTG4000I | $.79/ft |
| PLP2739 Big Grip (4000) | $7.65 |
| HPTG6700I | $1.15/ft |
| PLP2755 Big Grip (6700) | $10.95 |
| HPTG11200 | $1.55/ft |
| PLP2558 Big Grip (11200) | $16.50 |

**Please call for more info or help selecting the Phillystran size you need.**

**WEEKDAY HOURS: 9AM–5PM CST**

**SATURDAY HOURS: 9AM–1PM CST**

**CREDIT CARDS: M/C, VISA, DISCOVER**

# TEXAS TOWERS

A Division of Texas RF Distributors, Inc. • 1108 Summit Avenue, Suite #4 • Plano, TX 75074

# (800) 272-3467

**LOCAL CALLS: (972) 422-7306**

**EMAIL ADDRESS: sales@texastowers.com**

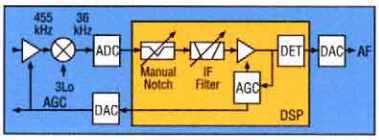
**INTERNET ADDRESS: www.texastowers.com**

# ICOM IC-756PRO

## This is not your father's HF rig. This is all new, 32-bit DSP digital processing.

### THE GREATEST THING TO HIT HF SINCE...

This is not a simple upgrade of ICOM's classic IC-756. The new IC-756PRO sets a new standard in ham radio design and construction. At the heart of the 'PRO is a 32-bit (not 16-bit) floating point DSP unit that operates at an unrivaled processing speed.




**DSP IN THE IF, BEFORE THE AGC** *Dual loop digital AGC eliminates strong signal pumping.*

### THE DX ADVANTAGE YOU'VE ALWAYS WANTED

Faster processing means finer incoming signal sampling, and finer sampling means clearer, crisper reception...with almost no background noise.

### YOU'LL NEVER BUY ANOTHER FILTER

The IC-756PRO features 41 built-in, front panel selectable levels of DSP filtering. There's no additional filters or high stability crystal oscillators to buy, because none are needed. It's like going from Zero-to-Contesting in seconds flat. Our filters are the sharpest–more selective than any crystal or mechanical filters. The selectivity lets you pull out the weak signals like never before.

### CDs VS VINYL ALBUMS

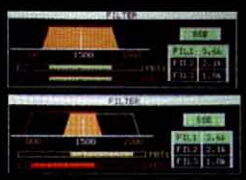
Remember the first time you heard CD sound quality in a headphone? The 'PRO's audio quality will knock your socks off. You've got to hear this rig to believe it.

Customize the screen's look by changing colors, fonts, brightness, contrast, and more.

Keep tabs on memory channels with an alpha-numeric readout of mode, frequency, filters & more.

A digital voice recorder has 4 slots for RX and 4 for TX, each 15 seconds long–a contesting bonus!

Copy RTTY DX without firing up your computer. A dual auto peak filter makes it easy.



Visual indicators of filter selection let you tweak the band pass. Choose from 31 steps of 100Hz between 3600–600Hz and 10 steps of 50Hz between 500–50Hz.

If the AGC is too fast or too slow, make it "just right" with a quick settings change. Use different settings for different modes.


**EASY TO USE, EASY ON THE EYES** *The IC-756PRO's front panel is well laid out and easy to control. The TFT LCD display is easy to see from wide angles, day or night. This handsome rig will look at home in any home or shack.*

## SPECS & FEATURES

*Subject to change without notice or obligation*

**Transmit:** ..... All Amateur HF, 6 Meters
**Receive:** ..... 0.03 – 60 MHz
**Mode:** ..... USB, LSB, CW, RTTY, AM, FM
**Power:** ..... 5–100W (5–40W AM)
**Power Supply Requirement:** ..... 13.8VDC, 23A
**Memory Channels:** ..... 101 Total
**Size & Weight :** .... 13.4(W) x 4.4(H) x 11.2(D) in. 340(W) x 111(H) x 285(D) mm., 21 lb / 9.6 kg

- **5" TFT Color LCD**
  - Wide viewing angle, more information
  - Adjustable colors and settings
- **32 Bit Floating Point DSP Processor**
  - Digital AGC loop operation
  - Digital IF filter, 41 selectable bandwidths
  - Built-in RTTY demodulator / dual peak APF
  - Built-in microphone equalizer
  - Manual notch function
- **8 Channel Digital Voice Memory**
- **Digital Twin Pass Band Tuning**
- **Built-In Auto Antenna Tuner**
- **Dual Watch • VOX**
- **Triple Band Stacking Register**
- **Built-In Memory / Electronic Keyer**
- **Independent RIT / ΔXT Control**
- **2 TX/RX, 1 RX Only Antenna Connectors**
- **100% Duty Cycle**



Whether it's voice, visual, CW or data, the IC-756PRO offers the details and performance capable of topping the contest charts. Contact your ICOM dealer today, or call for a brochure. **425-450-6088**

**Are you a PRO?**

ICOM®

**www.icomamerica.com**