



ARRL International DX Contest CW 2016 Results

By Matt Wilhelm, W1MSW

The sun is quieter, but we're still making QSOs.

Before every major contest, there is always speculation on how solar conditions and propagation will be during the upcoming event. Will this be “the one” with the best propagation? But in the years leading up to the solar minimum, the question turns to whether the high bands will open at all. That was certainly the fear for the 2016 ARRL International DX CW contest, Feb. 20 and 21. After a less-than-impressive peak of solar cycle No. 24, many participants wondered if this would be the year that 10 and 15 meters would go silent. In this contest designed for U.S. and Canadian stations to work the rest of the world, trying to cram all participants into 20 meters and below can be frustrating and certainly hampers a smaller, low power station's ability to find and hold a run frequency. Luckily, conditions held out this year and 1.85 million contacts were made by participants around the world.

Conditions

First, some comparisons to last year. A total 4,059 logs were submitted this year, which was down about six per cent. More impressive was that the QSOs logged were a 22 per cent reduction compared with 2015. Part of that can certainly be attributed to less-than-ideal 10 meter conditions. Happily, this story isn't all doom and gloom. Stations did report 10 meter activity between North America and Europe and Japan on both Saturday and Sunday, and although the band conditions were reduced, as Skip, N1IBM, said, “...guess we were lucky we had any opening.” With more than 35 per cent of the total contacts made on 15 meters, it was certainly the place to be and the soapbox comments and results agreed that conditions on both 10 and 15 meters were best on Sunday as we moved further away from a solar storm earlier in the week. With less activity on 10 meters, the percentage of contacts made on 15, 20 and 40 meters were up over last year with 80 and 160 meters staying about the same. Investing resources into improving low-band antennas as we approach the solar minimum will certainly be a strategy many stations will be looking at in upcoming years.



Dave, W9QL and his trusty, four-legged companion, Brett, teamed up for the contest to chase DX and make enough contacts to earn his DXCC award. [David Pritchard, W9QL, photo]

Participation

Having your call listed in the Top Ten boxes is a great accomplishment and it takes a certain level of competitiveness to make it there. These operators have worked incredibly hard to hone their skills and stations to be the best in their category and are certainly deserving of this recognition. Contest participants each have their own reasons for operating over the weekend that range from competing with their peers for a top spot to getting on-the-air to make a few contacts. Some participants focus on beating their past scores or accomplishing other goals they set for themselves before the contest and some are focused on making contacts to contribute to their club's aggregated score in the Affiliated Club Competition. Whatever the motivation for a station's participation, it is important to remember that the winner tables only represent a small percentage of the participants. For this year's ARRL DX CW, almost one-third of the logs submitted contained fewer than 100 contacts. Without participation from all types of testers, the operators listed in winner tables would have a very long and boring weekend.



The lush landscape surrounding TI5W on the north slope of Tenorio Volcano. This year N3KS, KL9A, and WX3B operated at the station and won the DX Multioperator, Single Transmitter, High Power and set the all-time record for the category. [Kamal Sirageldin, NK3S, photo]

Records

All-time records in W/VE were safe this year by a significant margin, but the same cannot be said for the DX records. In the DX Single Operator, High Power category, W2SC set the all-time record operating as 8P5A in Barbados. Tom was able to accomplish this despite struggling with software issues at the beginning of the contest. Not too far away in Aruba, John, W2GD, operating as P4ØW, broke the all-time record for Single Operator, QRP by nearly one million points. Important factors such as the lack of QRN, low signal absorption on 80 and 160, and diminished 10 meter propagation between EU and W/VE all fell into place for his outstanding effort, John writes. Further West, Kam, N3KS, Chris, KL9A and Jim, WX3B, operated from TI5W setting the DX record for Multioperator, Single Transmitter, High Power. The team reported it was plagued by RFI on most bands and multiple power outages leading up to the contest. The noise culprit turned out to be a bad streetlight sensor they were able to mitigate by modifying the low-band receive antennas and using the noise blanker on their transceiver. Fortunately, the power stayed on throughout the event. For a more complete look at the records, browse to the the records archive at www.arrl.org/contest-records, which are maintained by Bob Schreibmeier, K3PH.

Here at home

This year most W/VE categories had a well-defined winner. One exception was the close SOHP race between Alex, LZ4AX, operating as K3CR, and Kevin, N5DX, operating remotely with his call from N2QV. Both stations were neck and neck in QSO count throughout most of the contest, but on Sunday at 1500Z, Alex pulled ahead. A

significant lead in multipliers was enough to secure the win.

Single Operator, High Power

K3CR (LZ4AX, op)	5,780,583
N5DX	5,413,950
VY2TT	5,373,720
N2NT	4,980,456
K1ZZ	4,949,100
AA1K	4,473,360
N1UR	4,244,220
N2IC	4,196,370
W9RE	3,729,519
N9RV	3,472,524

In the Single Operator Unlimited High Power category, Frankford Radio Club members took the top three spots with a very close finish between first and second place. After log checking was complete, Chas, K3WW beat out Bud, AA3B, by a mere 70K points, which I'm sure will provide some good spirited intra-club competition that so many of us rely on to keep us in the chair during contests.

Single Operator, Low Power

W1UE	3,729,132
VE3DZ	2,930,445
WA1Z	2,830,800
N5AW	2,345,166
NA8V	1,630,581
N4TZ	1,545,804
K2PO	1,244,310
K5KU	1,191,078
W2ID	1,144,932
K1VSJ	1,110,108

Despite reporting difficult conditions on 10 meters, Dennis, W1UE, did an impressive job of producing a distinct win in the SOLP category from Greg, W1KM's, station in EMA. Dennis wrote that Greg's "new four-square on 160M is working truly great." That was well represented in Dennis' score with the highest number of 160 meter contacts and multipliers in both the SOLP and SOHP categories.

Single Operator Unlimited, High Power

K3WW	6,394,752
AA3B	6,325,407
N3RS	5,709,645
K6ND (K1XM, op)	5,354,640
K1RX	5,069,220
N4AF	4,790,430
AB3CX	4,726,512
VA2WA	4,464,072
KV2K (K2NG, op)	4,409,307
K1LZ	4,229,514

Single Operator Unlimited, Low Power

W4IX	2,969,415
W1MSW	1,977,996
W3KB	1,770,624
N4XL	1,714,656
KG4V (N1EN, op)	1,652,796
WO1N	1,639,950
VA3DF	1,592,745
W0UO	1,561,950
W9XT	1,508,931
AA4FU	1,318,248

incredible 2.7M win over 2nd place. Participation in the MSL category was down this year, but the stations that did compete put in the effort. KØUK was able to win big in Colorado, beating out other stations located in the Northeast. Multioperator efforts can be a fun way for friends to spend the weekend together playing radio, so if you're looking for something new to try, this category has plenty of room for teams looking for a place to compete.

Sometimes a change in plans works out for the better and that's exactly what happened for John, K4IX, operating in the SOULP category. "I originally planned on doing this as SOUHP from the NQ4I Station, but found out on Monday there were weather-related equipment issues and not enough time to get the station ready, so I decided to do it from my station, but low power," John wrote. Although it required him to work on his low-band antennas, he was able to crush the competition with nearly a 1M point lead between 1st and 2nd place.

Single Operator Unlimited, QRP

K9YC	388,020
VE3XT	42,465
K7MK	21,357
NA3E	17,100
VE9BWK	15,318
K4AHO	4,797
WA2NYY	1,539

And speaking of crushing the competition, the Multioperator categories were all won by significant margins this year. KI1G operated for the first time in the M2 category, which proved to be a good decision with a solid win from his Rhode Island station. The largest margin was established by W2FU operating MSH with an

Multioperator, Single Transmitter, High Power

W2FU	7,232,448
K2QMF	4,506,489
N1MM	4,438,518
W5MX	3,463,317
K3PH	3,249,900
W2XL	2,572,731
K6LL	2,273,808
K5UA	2,102,265
AD4ES	1,970,100
AC4CA	1,586,910

Multioperator, Single Transmitter, Low Power

K0UK	623,904
W3YI	382,104
W3WN	183,012
W4TG	181,440
N3ZV	105,300
N0CG	34,314
W1FM	8,901

Multioperator, Two Transmitter

K11G	8,934,618
NN3W	7,714,323
K8AZ	7,109,553
VE3JM	6,930,522
W1VE	6,125,328
K9CT	6,061,809
N0NI	5,600,955
W2CG	4,968,012
K4TCG	4,540,737
W2YC	4,490,892

Multioperator, Multitransmitter

W3LPL	13,700,160
K3LR	12,482,748
WE3C	11,422,500
NR4M	10,499,202
WK1Q	9,024,867
W4RM	7,659,603
W4AAW	5,518,584
K1KI	5,115,240
NE2V	4,392,360
N6WM	3,955,392

Probably the most significant win this year was W3LPL beating K3LR in the battle of the Multi-Multis. Tim's K3LR held onto the title for the last three years, but the Maryland team was able to win it back. Frank, W3LPL, attributed the win partially to this year's propagation that favored his station over his competition to the North. Frank says it is factors such as these that keep him interested in the game and coming back each year to try and win again.

Single Operator, 160 Meters

K1WHS	22,692
N2OO	15,624
N7GP	12,600
W4ZV	8,316
W4AA	8,316
W2VO	6,318
AG4W	6,201
W3GH	5,661
KN2T	4,320
W8TOP (W8UVZ, op)	4,224

Single Operator, 80 Meters

VY2ZM	208,527
W3BGN	99,897
K5RX	75,120
W1HI	40,548
W1XX	39,060
K4FJ	29,736
K1DM	24,111
KM4HI	22,176
K1MC	18,975
W1FQ	16,920

Single Operator, 40 Meters

W9SN	371,952
N5FO	241,758
W6YX (N7MH, op)	234,555
KA1IS	114,750
N9CO	107,136
WA1FCN	75,816
WC1M	70,686
W4SAA	61,620
W5TZC	50,616
WK4U	35,244

Single Operator, 20 Meters

N2MF	626,760
KD2RD	559,011
KVØQ	336,930
N4OX	158,745
N7CW	119,508
W2TF	115,515
NF8R	93,183
NK3U	72,072
K4TRH	55,200
N3GD	49,062

enough to allow the stations in this region to dominate the top spots in most of the categories.

Single Operator, 15 Meters

K3RV	585,519
NY3A	546,786
N7DD	428,400
N4WW (N4KM, op)	394,809
W6YA	354,816
K5WK	317,664
W2UP	303,930
K8AJS	257,400
W9ILY	254,205
W2AW (N2GM, op)	251,472

Single Operator, 10 Meters

K2SSS	62,220
N2PP	46,350
WB9Z	41,535
K9BGL	40,683
K2PS	28,800
W3DF	15,600
K3SWZ	14,580
W5GAI	10,701
KD5J	9,840
KN4Y	9,576

Single Operator, High Power

8P5A (W2SC, op)	7,548,552
TO7A (UT5UGR, op)	6,668,505
6Y1D (RA1A, op)	6,202,404
KP2M (KT3Y, op)	6,010,524
D4C (YL2KL, op)	5,828,427
CU4DX (EA5KA, op)	4,805,370
CR6K (CT1ILT, op)	3,858,990
KH7M (NA2U, op)	3,749,652
CR3A (OM3RM, op)	3,401,568
E7DX (E7ØT, op)	2,617,824

Single Operator Unlimited, Low Power

KP4KE	4,378,641
NP2P (N2TTA, op)	3,782,151
EF8R	1,773,696
CN8KD	1,344,150
EC4TA	915,687
F4DXW	909,144
DLØUM (DL7FER, op)	711,480
YO3JR	677,688
LU7HZ	547,740
DL1QQ	536,010

Around the world

The place to be for a winning score in the DX categories was certainly in the Caribbean and surrounding entities. In fact, only two categories were won from outside the Americas: CR2X operating Single Operator, 15 meters and Karel, OK2FD, operating in the new category this year, Single Operator Unlimited, QRP.

Single Operator Unlimited, High Power

V26M (N3AD, op)	5,191,725
G5W (G3BJ, op)	2,313,765
EF6T (EA3AIR, op)	2,176,500
SN7Q (SP7GIQ, op)	2,172,735
CE2MVF	2,095,218
IO1T (IZ1LBG, op)	1,904,952
OK7M (OK1DIG, op)	1,854,144
IR2C (IK2PFL, op)	1,852,560
EA5FV	1,719,480
EI5KF	1,331,172

Single Operator, Low Power

NP2X (K9VV, op)	4,610,385
KP3Z (NP4Z, op)	4,272,912
VP9/W6PH (W6PH, op)	3,811,890
NP3A	3,259,872
YV8AD	2,491,482
EF2A (EA2OT, op)	2,280,960
HI3TT	1,730,394
HI3Y	1,499,808
PY2NY	1,419,834
EIØDX (G4XUM, op)	1,410,918

While high band propagation from North America to Europe and Asia was not completely shut out, it was down

Like many of the W/VE Top Ten winners, the DX Single Operator categories were won with a significant margin. When N3AD says, “The V26B station performed flawlessly,” he’s not kidding. He completely crushed the competition in the category with a 2.8M lead over second place operating as V26M from the Antigua station. However, this was not the case for the Multioperator categories.

Single Operator, QRP

P4ØW (W2GD, op)	3,570,936
HB9BMY	227,664
S5ØXX	193,125
LZ2RS	116,706
EF7AAW (EF7AAW/QRP, op)	112,488
IK6FWJ	102,336
LU8ADX	96,030
IZ3NVR	92,247
JH1OGC	86,292
DKØPO	66,420

TI5W and ZF1A battled it out in the Multi-Single, High Power category with WRTC teammates Chris, KL9A, and Dan, N6MJ, on opposite sides of the field. If you worked either team over the weekend (and you probably did) you know both displayed impressive operating skills. Both teams worked the same number of multipliers, but in the end TI5W was able to put more contacts in the log and won with their record-breaking score.

Single Operator Unlimited, QRP

OK2FD	328,287
EA2DVR	6,615
PE2K	4,590
JK1TCV	3,927
UT0UM	3,744
R7RF/6	3,060
R7FO	2,808
JA7KBR	1,620
JR1LLD	189
LY2BGP	126

Single Operator, 160 Meters

HK1R	134,850
NP2J	88,086
YV1KK	83,985
CU2KG (OH2BH, op)	67,473
V31YN (DJ4KW, op)	38,148
HC2AO	31,602
HA8A (HA8DZ, op)	22,533
EU1WW (EU1W, op)	4,332
M5O (G3LET, op)	3,234
UY0ZG	756
8S0DX (SM0DSG, op)	756

Single Operator, 80 Meters

XE2X	209,745
CO2JD	152,703
KH6/WB4JTT (WB4JTT, op)	60,684
S52AW	54,120
YU6DX	41,652
YT3J (YT1AA, op)	29,016
DJ0MDR	24,570
LU1FAM	20,538
R7NW	19,278
DJ5EU	13,020

Single Operator, 40 Meters

P49Y (AE6Y, op)	338,001
6Y4K	310,680
HK3TU	241,020
IR1Y (IK1YDB, op)	210,984
S53A	203,727
S50C (S53RM, op)	196,479
YT7A	195,750
S51YI	180,090
XE2S	175,938

9A9R 173,520

Single Operator, 20 Meters

FY5KE (F6FVY, op) 421,083
SJ2W (SM2LIY, op) 302,808
TM6M (F1AKK, op) 288,042
OH8L (OH8LQ, op) 238,632
E11Y (SQ6MS, op) 232,227
GM5A 209,352
OK8NM (OM6NM, op) 206,607
S50K 204,480
LU5FF 204,045
RT0F 168,681

Single Operator, 15 Meters

CR2X (OH2PM, op) 323,460
TM5Y (F8DBF, op) 289,323
MM3T (GM0ELP, op) 251,517
E10PL (F5SDD, op) 243,180
VK2IA 229,158
CX2BR 195,660
TM0R (F5MNK, op) 192,420
IR1R (IK1HJS, op) 177,300
9A7V 175,320
LU6UO 173,283

Single Operator, 10 Meters

HK1X 336,123
CW4MAX (CX2DK, op) 280,440
TO1A (F5HRY, op) 273,060
LU5FC 261,540
LW6DG 252,048
P40LE (K2LE, op) 195,231
XR2K (CE2LML, op) 154,338
TI8/AA8HH 103,272
LW8DQ 96,102
PY2XC 58,320

Multioperator, Single Transmitter, High Power

TI5W 7,591,320
ZF1A 7,112,070
NP2N 5,400,612
KH6J 3,632,643
IR4M 2,933,304
IR4X 2,856,882
IO5O 2,057,250
DL1A 1,851,003

ES5Q	1,825,776
HG1S	1,813,650

Multioperator, Single Transmitter, Low Power

V31TP	5,591,466
PJ6A	5,356,539
VP5K	4,397,823
ZW8T	1,909,104
OL1C	632,790
CE1CA	444,600
ED4R	373,005
ET7L	183,312
YU2A	136,968
F8KLY	105,561

Multioperator, Two Transmitter

PJ4X	8,901,270
P4ØXM	8,476,512
T48K	7,595,616
VP2MWA	6,354,828
PS2T	5,574,807
PT5A	5,310,900
ED7P	4,002,786
LX7I	3,648,285
OL7M	2,561,976
HG7T	2,324,835

Multioperator, Multitransmitter

PJ2T	9,825,354
KH6LC	7,028,070
CR3W	6,156,906
9A1A	3,706,425
JA3YBK	2,397,600
JE1ZWT	1,360,077
LZ9W	147,345
GM9N	17,976
RW4CRV	4,386
UIØL	888



W2GD (left) and DL6RAI (right) performing tower work at P49V in Aruba during the week before the contest. The work was finished just in time for DH8BQA, DL5CW, DL5LYM, DL6RAI to operate the Multioperator, Two Transmitter P40XM together for the first time. [Oliver Droese, DH8BQA, photo]

Getting it right

One of the key factors in making it to the Top 10 table is accuracy and it can mean the difference between first and second place. But accuracy is not just for the call signs listed in the Top Ten. It's also one of the easiest and least expensive ways for casual operators and those new to contesting to improve their score.

Top Ten Golden Logs

N6MU	490
K2EP	416
OH3EX	371
DK3WW	364
SP1AEN	363
DL5KUD	360
HG8C	348
KIØI	325
DJ8RS	320
W2CCC (K2C)	304

How do you determine your accuracy in a contest? The answer is in your Log Checking Report or LCR, which can be found by logging into the ARRL website and visiting <http://www.arrl.org/contest-log-checking-reports>. ARRL

provides this report for logs you submit in most contests that it sponsors. The report contains a list of every error found in your log from cross-checking with logs submitted by other entrants. Studying the report after the contest can help you determine some of your operating weak points and areas where you can work to improve your copying skills. Your overall accuracy during the contest is quantified by your “error-rate” which is the percentage of contacts in your log with an error (after duplicate contacts are removed). The smaller the error-rate, the more accurate your log is and it provides a great metric to try and beat next year.

Accuracy leaders

So how accurate can one be? Although it might be hard to believe, there are some operators who turn in a perfect log, also known as a “Golden Log,” that has no detectable errors. Of course, achieving this with a log that contains only 10 contacts is not that large of a feat, but the Top Ten Golden Logs will have hundreds of contacts. This year the top Golden Log went to N6MU with 490 contacts.

But Golden Logs and error-rates only tell part of the story. It is important to take log size into account since maintaining a low error-rate while making 1,000 QSOs is much more difficult compared to a low error-rate maintained making 100 QSOs. That is where the Accuracy Index is used to compare the overall accuracy of the top operators in the contest. The Accuracy Index noted in the Accuracy Leaders Table rewards lower error rates for large logs. For two logs with equal error rates, the log with more verified contacts has a higher index. The following formula is used to calculate the Accuracy Index:

$$\text{Accuracy Index} = \log_{10}(\text{Good QSOs}) + 10 \times (1 - \text{Error Rate})$$

This levels the playing field and provides a much better insight into who the most accurate operators are in the contest.

Accuracy Leaders (Bold - new or tied record)**W-VE****Single-Op**

Call	Category	QSOs	Error %	Index
K3CR (LZ4AX, op)	SOHP	4125	0.9	13.525
K1ZZ	SOHP	3541	0.5	13.499
N2NT	SOHP	3781	1.2	13.458
N2IC	SOHP	3269	0.7	13.444
N5DX	SOHP	4013	1.7	13.433

Single-Op Unlimited

Call	Category	QSOs	Error %	Index
AA3B	SOUHP	3907	0.7	13.522
N3RS	SOUHP	3535	0.9	13.458
VA2WA	SOUHP	3009	0.7	13.408
AB3CX	SOUHP	3149	1	13.398
K6ND (K1XM, op)	SOUHP	3352	1.3	13.395

Multiop

Call	Category	QSOs	Error %	Index
W3LPL	MM	6887	1.7	13.668
K3LR	MM	6456	2.3	13.580
WE3C	MM	6178	2.2	13.571
WK1Q	MM	5120	1.4	13.569
K11G	M2X	5189	1.5	13.565

DX**Single-Op**

Call	Category	QSOs	Error %	Index
V26M (N3AD, op)	SOUHP	5106	0.7	13.638
KP4KE	SOULP	4361	0.8	13.560
G5W (G3BJ, op)	SOUHP	2971	0.6	13.413
EF6T (EA3AIR, op)	SOUHP	2929	1.1	13.357
IR2C (IK2PFL, op)	SOUHP	2587	0.6	13.353

Single-Op Unlimited

Call	Category	QSOs	Error %	Index
8P5A	SOHP	7175	0.7	13.786
KP2M (KT3Y, op)	SOHP	5728	0.4	13.718
TO7A (UT5UGR, op)	SOHP	6534	1.4	13.675
6Y1D	SOHP	5998	1.1	13.668
D4C (YL2KL, op)	SOHP	5801	1.3	13.634

Multiop

Call	Category	QSOs	Error %	Index
PJ2T	MM	9234	0.7	13.895
P4ØXM	M2X	8081	0.8	13.827
PJ4X	M2X	8452	1.2	13.807
TI5W	MSH	7178	0.7	13.786

Making the marquee

Seeing your call sign on the pages of a contest results article is certainly an exciting accomplishment and a nice reward for all the work before and during the contest. But how does one get there? Does it require spending tons of money on station and antenna improvements? That can certainly help, but it is important to improve operating skills as well. Practising copying call signs and exchanges before a contest, focusing on accuracy when you are copying calls and exchanges and studying LCRs from past contests to work on improving areas of weakness will all contribute to higher scores in the end. One of the major misconceptions about contesting is that all successful contest stations are large and expensive. The truth is there are also modest stations with skilled operators at the helm that make the Top Ten and Leaders tables as well.

See you in February!

With the HF contest season right around the corner, now is the time to make station improvements and to practice honing your operating skills. Set goals for yourself and don't forget to mark your calendars with February 22-23, 2017 when the ARRL International DX CW contest returns next year.

Regional Leaders

West Coast Region			Midwest Region			Central Region			Southeast Region			Northeast Region		
Pacific, Northwestern, and Southwestern ARRL Divisions; Alberta; British Columbia, and NT RAC Sections			Dakota, Midwest, Rocky Mountain and West Gulf ARRL Divisions; Manitoba and Saskatchewan RAC Sections			Central and Great Lakes ARRL Divisions; Greater Toronto Area, Ontario East, Ontario North, and Ontario South RAC Section			Delta, Roanoke, and Southeastern ARRL Divisions			New England, Hudson and Atlantic ARRL Divisions; Maritime and Quebec RAC Sections		
Call	Score	Cat	Call	Score	Cat	Call	Score	Cat	Call	Score	Cat	Call	Score	Cat
N9RV	3,472,524	SOHP	N2IC	4,196,370	SOHP	W9RE	3,729,519	SOHP	NR3X (N4YDU, op)	3,389,040	SOHP	K3CR (LZ4AX, op)	5,780,583	SOHP
K6XX	2,639,097	SOHP	WX0B (AD5Q, op)	3,086,424	SOHP	CJ3T			K5GO	3,128,364	SOHP	N5DX	5,413,950	SOHP
W7RN (N6TV, op)	2,302,416	SOHP	K3PA	1,790,724	SOHP	K1LT	2,704,248	SOHP	N8II	2,428,257	SOHP	VY2TT	5,373,720	SOHP
WJ9B	1,843,920	SOHP	WD5K	1,289,040	SOHP	K9MA	1,807,872	SOHP	K4AB	1,931,544	SOHP	N2NT	4,980,456	SOHP
AF6O	960,894	SOHP	W0ZA	796,824	SOHP	N8BJQ	1,445,499	SOHP	K4BAI	1,879,434	SOHP	K1ZZ	4,949,100	SOHP
K2PO	1,244,310	SOLP	N5AW	2,345,166	SOLP	VE3DZ	2,930,445	SOLP	K5KU	1,191,078	SOLP	W1UE	3,729,132	SOLP
VE7UF			NA0N	738,783	SOLP	NA8V	1,630,581	SOLP	K4SXT	811,296	SOLP	WA1Z	2,830,800	SOLP
(VE7JH, op)	859,278	SOLP	N1CC	556,776	SOLP	N4TZ	1,545,804	SOLP	N4CW	609,792	SOLP	W2ID	1,144,932	SOLP
N7ZG	778,392	SOLP	W5RYA	421,080	SOLP	K9QVB	829,896	SOLP	N4HA	360,036	SOLP	K1VJSJ	1,110,108	SOLP
WN6K	426,624	SOLP	NN5T	347,211	SOLP	KV8Q	755,811	SOLP	K1TN	334,314	SOLP	NB1N	1,041,615	SOLP
NN6CH	405,552	SOLP												
			K0PK	228,327	SOQR P	VE3VN	594,282	SOQR P	N4CF	186,813	SOQR P	N1IX	723,078	SOQR P
N7IR	426,420	SOQR P	N4IJ	178,398	SOQR P	KT8K	203,448	SOQR P	K8MR	157,950	SOQR P	K8CN	595,122	SOQR P
W6JTI	334,917	SOQR P	N0UR	63,030	SOQR P	W8RTJ	159,840	SOQR P	N4AU	130,011	SOQR P	N1TM	270,600	SOQR P
W6QU			WD0T	56,160	SOQR P	KB0KFX	30,780	SOQR P	K3TW	111,438	SOQR P	KU1N	161,868	SOQR P
(W8QZA, op)	115,500	SOQR P	KE0TT	37,947	SOQR P	VA3PCJ	27,600	SOQR P	K2YGM	95,064	SOQR P	K3WWP	151,200	SOQR P
KU7Y	66,192	SOQR P				AA9A (N9UA, op)	2,974,833	SOUHP	N4AF	4,790,430	SOUHP	K3WW	6,394,752	SOUHP
K2GMY	34,080	SOQR P	K5TR	2,445,381	SOUHP	K9NW	2,742,894	SOUHP	K5KG	3,736,494	SOUHP	AA3B	6,325,407	SOUHP
			NM5M	2,025,765	SOUHP	K9IMM	1,941,390	SOUHP	K0LUZ	2,277,828	SOUHP	N3RS	5,709,645	SOUHP
VE7CC	2,063,556	SOUHP	K0KX	1,960,083	SOUHP	N0IJ	1,688,625	SOUHP	K7BV	2,238,336	SOUHP	K6ND (K1XM, op)	5,354,640	SOUHP
KY7M	1,457,712	SOUHP	N5JR	1,467,180	SOUHP	VE3UTT	1,657,272	SOUHP	K5EK	2,034,912	SOUHP	K1RX	5,069,220	SOUHP
KA6BIM	1,391,058	SOUHP	W5GN	1,373,856	SOUHP	VA3DF	1,592,745	SOUHP	W4IX	2,969,415	SOUHP	W1MSW	1,977,996	SOUHP
W7VJ (N7NM, op)	1,213,920	SOUHP	W0UO	1,561,950	SOUHP	W9XT	1,508,931	SOUHP	N4XL	1,714,656	SOUHP	W3KB	1,770,624	SOUHP
KO7SS	1,139,472	SOUHP	AD1C	563,892	SOUHP	N8VV	743,400	SOUHP	AA4FU	1,318,248	SOUHP	KG4V (N1EN, op)	1,652,796	SOUHP
K6WSC	660,816	SOUHP	AA0AI	489,600	SOUHP	K8BKM	630,990	SOUHP	K3IE	1,042,548	SOUHP	W01N	1,639,950	SOUHP
W6AWW	321,048	SOUHP				VE3GFN	586,692	SOUHP	AD8J	985,932	SOUHP	VO1HP	1,272,456	SOUHP
W7VO	303,195	SOUHP	K0MPH	463,932	SOUHP				K4AHO	4,797	SOUHP	NA3E	17,100	SOUHP
AF6WG	269,325	SOUHP	KI0J	444,108	SOUHP	VE3XT	42,465	SOUHP	VE9BWK	15,318	SOUHP	VE9BWK	15,318	SOUHP
N6PN	240,543	SOUHP				W8TOP (W8UVZ, op)	4,224	SO-160	W4AA	8,316	SO-160	WA2NYY	1,539	SOUHP
			K5RX	75,120	SO-80	KE0L	1,716	SO-160	W4ZV	8,316	SO-160	K1WHS	22,692	SO-160
K9YC	388,020	SOUHP	NG0T	2,664	SO-80	W8JGU	9,804	SO-80	AG4W	6,201	SO-160	N2OO	15,624	SO-160
K7MK	21,357	SOUHP				N9TF	2,730	SO-80	KZ2I	918	SO-160	W2VO	6,318	SO-160
			N5FO	241,758	SO-40	AC8CE	2,232	SO-80	K2XN	4	SO-160	W3GH	5,661	SO-160
N7GP	12,600	SO-160	N0EI	108	SO-40				K4FJ	29,736	SO-80	KN2T	4,320	SO-160
K7CW	2,394	SO-160							KM4HI	22,176	SO-80			
W7FI	2,100	SO-160	KV0Q	336,930	SO-20									
W6RKC	2,016	SO-160	WU0A	24	SO-20									
K7HP	216	SO-160	W2UP	303,930	SO-15									
W9FI	7,425	SO-80				N9CO	107,136	SO-40						

K6AAM	6,885	SO-80	W5UR	239,598	SO-15	W8IQ	31,488	SO-40	KJ4EX	4,080	SO-80	VY2ZM	208,527	SO-80
NE7D	4,536	SO-80	(AA5B, op			K9CJ	28,272	SO-40	K9JU	1,650	SO-80	W3BGN	99,897	SO-80
W1PR	720	SO-80	@ AA5B)			W8UE	27,714	SO-40				W1HI	40,548	SO-80
W6YX (N7MH,			N5DO	216,918	SO-15	WO9S	9,546	SO-40	W9SN	371,952	SO-40	W1XX	39,060	SO-80
op)	234,555	SO-40	W7CT	199,872	SO-15	NF8R	93,183	SO-20	WA1FCN	75,816	SO-40	K1DM	24,111	SO-80
KA9A	17,649	SO-40	KZ5J	111,435	SO-15	W8GOC	31,464	SO-20	W4SAA	61,620	SO-40	KA1IS	114,750	SO-40
W7QDM	16,218	SO-40	VE5GC	924	SO-10	N9XX	29,601	SO-20	W5TZC	50,616	SO-40	WC1M	70,686	SO-40
N7QR	75	SO-40	NØJK	351	SO-10	K8AJS	257,400	SO-15	WK4U	35,244	SO-40	WB8BPU	25,200	SO-40
N3LGA	60	SO-40	NØTK	135	SO-10	W9ILY	254,205	SO-15	N4OX	158,745	SO-20	W2EG	22,935	SO-40
N7CW	119,508	SO-20	AC4CA	1,586,910	MSHP	W8WA	226,734	SO-15	NK3U	72,072	SO-20	VY2LI	9,804	SO-40
K6GHA	14,352	SO-20	KS5Z	536,760	MSHP	VE3TG	67,914	SO-15	K4TRH	55,200	SO-20	N2MF	626,760	SO-20
Ni6G	8,094	SO-20	KØZX	117,594	MSHP	KG9N	28,908	SO-15	N3GD	49,062	SO-20	KD2RD	559,011	SO-20
NO6X	2,691	SO-20	KØJE	99,918	MSHP	WB9Z	41,535	SO-10	N5PU	11,703	SO-20	W2TF	115,515	SO-20
VE7NI	105	SO-20	KØUK	623,904	MSLP	K9BGL	40,683	SO-10	K3RV	585,519	SO-15	AI3Q	48,204	SO-20
N7DD	428,400	SO-15	NØCG	34,314	MSLP	WD9EXD	8,532	SO-10	N4WW			N3XF	38,976	SO-20
W6YA	354,816	SO-15	NØNI	5,600,955	M2	N8XX	624	SO-10	(N4KM, op)	394,809	SO-15	NY3A	546,786	SO-15
K7MI	220,248	SO-15				KB8O	330	SO-10	K5WK	317,664	SO-15	W2AW (N2GM,		
K7WP	82,410	SO-15				W5MX	3,463,317	MSHP	WB4TDH	216,900	SO-15	op)	251,472	SO-15
WB6L	81,528	SO-15				K8AZ	7,109,553	M2	N1LN	99,360	SO-15	NA3D	233,700	SO-15
VE7YU	6,612	SO-10				VE3JM	6,930,522	M2	K2PS	28,800	SO-10	W2AW	173,145	SO-15
WD6DX	3,750	SO-10				K9CT	6,061,809	M2	W5GAI	10,701	SO-10	N1NK	168,714	SO-15
K6VHF	1,824	SO-10				W9VW	937,062	M2	KD5J	9,840	SO-10	K2SSS	62,220	SO-10
K7EPH	1890	SO-10				WØAIH	3,823,470	MM	KN4Y	9,576	SO-10	N2PP	46,350	SO-10
K6LL	2,273,808	MSHP							WM5DX	4,212	SO-10	W3DF	15,600	SO-10
K7RI	1,253,802	MSHP							K5UA	2,102,265	MSHP	K3SWZ	14,580	SO-10
W6RFU	932,640	MSHP							AD4ES	1,970,100	MSHP	WB2AMU	8,892	SO-10
W8TK	729,882	MSHP							K8LF	314,352	MSHP	W2FU	7,232,448	MSHP
VE7FO	10,152	MSHP							W4TG	181,440	MSLP	K2QMF	4,506,489	MSHP
N7AT	4,093,110	M2							N3ZV	105,300	MSLP	N1MM	4,438,518	MSHP
K7JR	1,377,918	M2							K4TCG	4,540,737	M2	K3PH	3,249,900	MSHP
N6WM	3,955,392	MM										W2XL	2,572,731	MSHP
N6XI	1,412,235	MM							NR4M	10,499,202	MM	W3YI	382,104	MSLP
									W4RM	7,659,603	MM	W3WN	183,012	MSLP
									W4AAW	5,518,584	MM	W1FM	8,901	MSLP
									W5RU	3,831,648	MM	K1IG	8,934,618	M2
												NN3W	7,714,323	M2
												W1VE	6,125,328	M2
												W2CG	4,968,012	M2
												W2YC	4,490,892	M2
												W3LPL	13,700,160	MM
												K3LR	12,482,748	MM
												WE3C	11,422,500	MM
												WK1Q	9,024,867	MM
												K1KI	5,115,240	MM