Amateur Radio http://www.cq-amateur-radio.com GOMINIUNICATIONS & TECHNOLOGY AUGUST 2007

HOT Stuff at Dayton Hamvention, p. 28

- First Time QSL Manager, p. 13
- SSB Results, 2006 CQ World Wide DX Contest, p. 18
- Riley Says: "Lighten Up!" p. 32

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On the Cover: Students from Auburn University in Auburn, Alabama, prepare to launch a balloon carrying ham radio to the edge of space. See "VHF-Plus," page 83, for details.



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This October, 2007 is the 35th Anniversary of our ham radio adventure and I am deeply thankful for the overwhelming support our fellow hams have given us.

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Thank you again for your tremendous support!

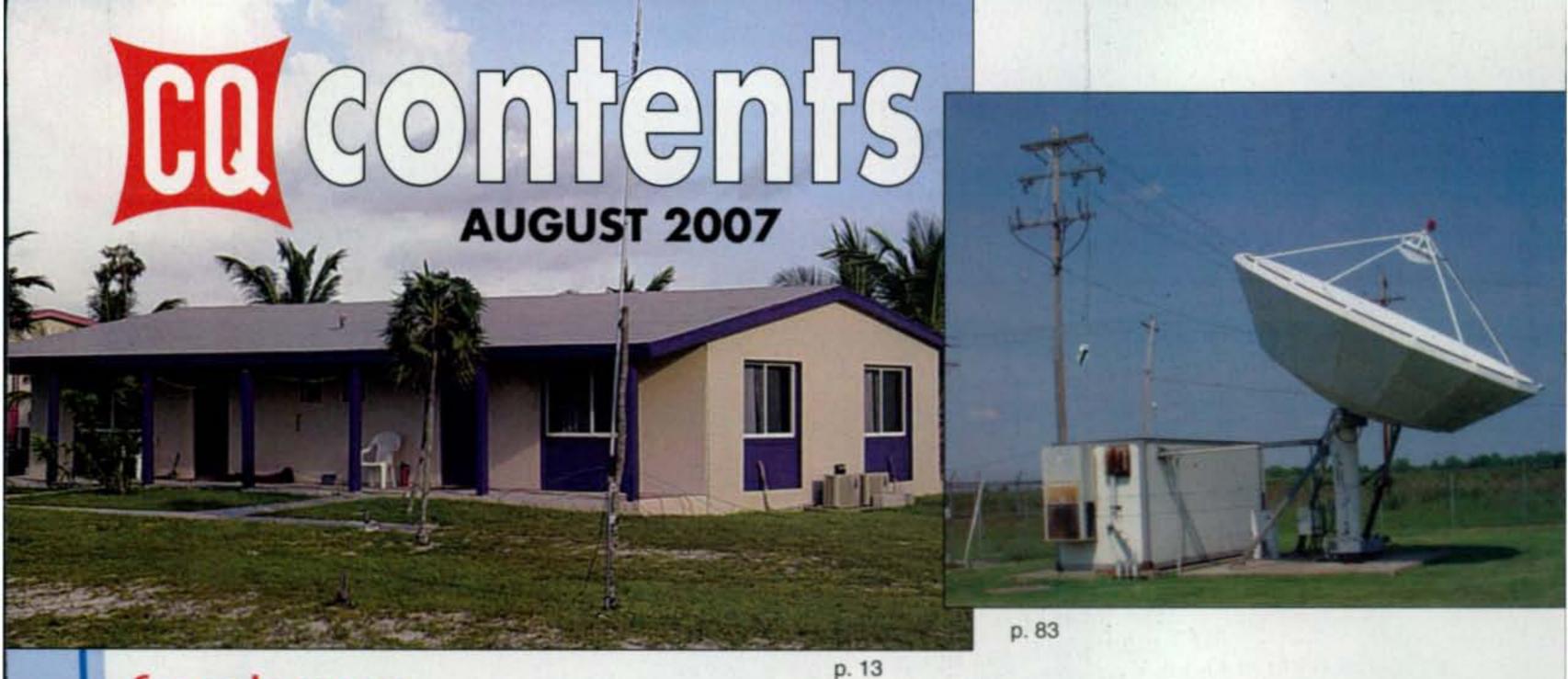
73s,



Martin E Ing KSELI

Martin F. Jue, K5FLU President and Founder MFJ Enterprises, Inc.

P.S. Come and help us celebrate our 35th Anniversary, September 7 & 8, 2007.
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By John Dorr, K1AR

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2007 inductees

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ON THE COVER: Members of the Auburn University Student Space Program launch high-altitude balloons with ham radio aboard and are building a satellite. Story on p. 83. (Cover photo by Steve Martinez)

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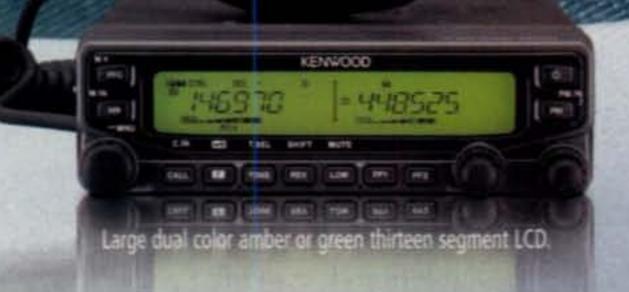
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BPL Battle Continues on Several Fronts

There are developments in Congress, the federal courts, and at the FCC in the ARRL's ongoing battle against interference caused by Broadband over Power Lines, or BPL. On Capitol Hill, Sen. Mark Pryor (D-AR) has introduced S. 1629, the Senate version of a bill previously filed in the House by fellow Arkansas Rep. Mike Ross. The bill would require the FCC, within 90 days, to study specific factors relating to interference by BPL to licensed radio users, and to report back to Congress with options for "new or improved rules" to "prevent harmful interference to public safety and other radio communication systems." The bill is in committee in both houses.

At the U.S. Court of Appeals in Washington, the ARRL has filed a brief outlining its arguments for having the court review the FCC's decisions on BPL. Among the League's arguments is that, by permitting unlicensed users to operate in bands already occupied by licensed users even if they cause interference, the FCC is reversing "nearly seven decades of consistent statutory interpretation ... without so much as acknowledging the reversal, let alone justifying it." The FCC had until July 2 to respond to the ARRL's brief.

Meanwhile, the ARRL Letter reports that the League has again called on the FCC to shut down a BPL system in Briarcliff Manor, New York that it says has been out of compliance with the terms of its experimental license for more than two and a half years. On May 21, the FCC called on the system operator to demonstrate that it's complying with all the terms of its license, but the ARRL called the move "too little, too late." No response as yet from the FCC.

New Chapter in Ham "Identity Theft" Case

If you're a regular reader, you'll recall a bizarre FCC enforcement case in which Frank C. Richards of New York allegedly tried to "steal" the ham license of Frank C. Richards, KB4VU, of Florida by filing to change the address for KB4VU from Florida to New York and change the callsign to the next systematically assigned call. Now, it seems, the New York Richards has taken and passed his Technician Class license exam, but the FCC is saying "not so fast." It has designated Richards' license application for hearing, saying the record raises questions as to "whether he possesses the requisite character qualifications to be a Commission licensee."

The same questions are raised regarding the application of Jack Sharples for a new amateur license. According to the FCC, Sharples, who applied for his license in 2005, is a twice convicted child-sex offender and has been designated by the state of Florida as a sexual predator. While noting that his convictions—in 1996 and 1999—were more than seven years ago, the FCC says "the nature of his criminal misconduct and the fact that the amateur radio service is particularly attractive to children call into serious question whether he should be permitted to obtain an amateur radio authorization." His application was also designated for a hearing.

One more application designated for hearing was the renewal application of David Castle, WA9KJI. Castle, the Commission says, has caused intentional interference, transmitted without communicating with any particular station and used "slanderous, harassing and indecent language on amateur frequencies." This continuing misconduct, says the FCC, raises questions as to his qualifications to remain a Commission licensee.

Additional and updated news is available on the Ham Radio News page of the CQ website at http://www.cq-amateur-radio.com. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.

Trying to Resolve the "Pave Paws" Dilemma

The ARRL is working with the FCC and the Department of Defense (DoD) to try to resolve interference problems between more than 100 amateur repeaters on the 70-centimeter (440 MHz) band and the Air Force's "Pave Paws" radar system. According to the ARRL Letter, the Pave Paws system is used, among other things, to detect waterlaunched missiles, and is in use around the clock. Government radiolocation has the primary allocation on 70 centimeters and hams are secondary, meaning we cannot cause interference to this system. After talking with DoD and the FCC, the ARRL sent a letter to the owners/trustees of all the repeaters near two Pave Paws installations, asking them to immediately reduce power to 5 watts transmitter power output. The letters also stated that the ARRL would provide the DoD with Longley-Rice calculations (a method of predicting signal loss over irregular terrain) for all affected repeaters by June 15. Those calculations would then be jointly reviewed by DoD, the ARRL, and the FCC to determine any additional measures that may be required for each individual repeater, with the goal of resolving all interference by August 1 while permitting all of the repeaters to remain in operation.

State Legislative Action Affecting Hams

Governor Brad Henry of Oklahoma has signed a law enacting the FCC's "PRB-1" antenna rules for amateurs into state law. The new law defines amateur radio antenna support structures as "removable" structures for assessment purposes and states, "A municipal ordinance regulating amateur radio antenna or amateur radio antenna support structures shall comply with the requirements of 47 C.F.R., Section 97.15(b) ... by allowing for the erection of an amateur radio antenna or an amateur radio antenna support structure at a height and dimension sufficient to accommodate amateur radio service communications." The law takes effect November 1.

At press time, North Carolina's legislature was poised to give final approval to a similar bill, with the added provision that a city or county may not restrict amateur antenna installations to heights below 90 feet "unless the restriction is necessary to achieve a clearly defined health, safety, or aesthetic objective..."

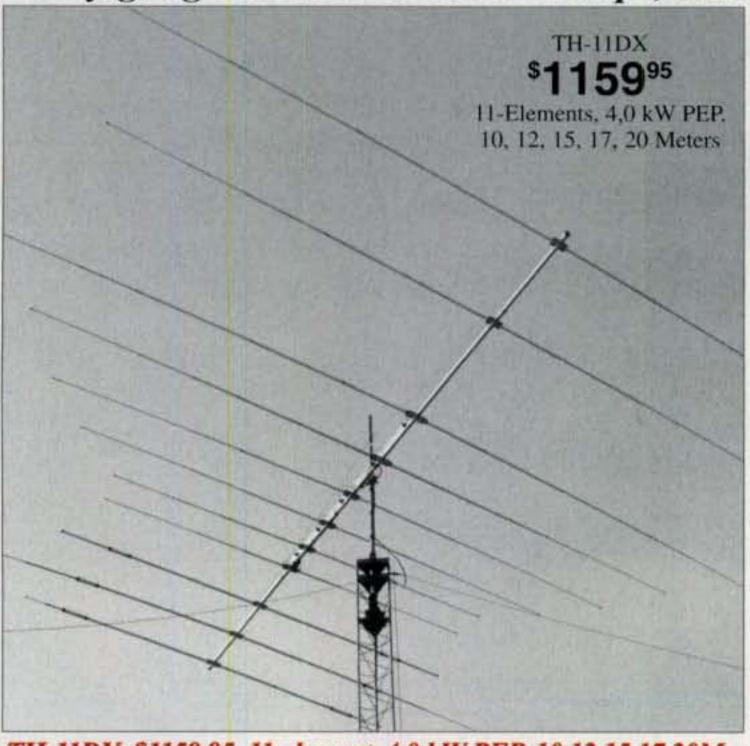
In New Jersey, the legislature was "fast-tracking" a bill designed to restrict text-messaging while driving, but whose original language banning the use of all "electronic communications devices" threatened to outlaw mobile ham rigs. ARRL Northern New Jersey Section Manager Bill Hudzik, W2UDT, reports that hams were able to get the sponsor to add language specifying that "electronic communications devices do not include amateur radios." It remains unclear how CB radios and scanners would be affected.

PVRC Forfeits Sweepstakes Victory

The Potomac Valley Radio Club (PVRC) has voluntarily forfeited the Club Gavel Award for the 2006 ARRL Sweepstakes contest after discovering that some participating members were spread out over too great an area. Club president Jim Nitzberg, WX3B, explained in a letter to members (posted on the PVRC website) that club competition rules clearly state that all participants must be within 175 miles of "a center," and that close examination of participants' locations showed that "there was measurable activity that occurred from areas that were clearly beyond any ... competition boundary." Subtracting the scores of those stations resulted in "losing the contest by a wide margin," Nitzberg reported. He emphasized that this was an internal decision, "consistent with our high ethical standards," and that the club had not been challenged or asked to forfeit. He concluded by congratulating the new gavel winners, "our worthy competitors and good friends at the Northern California Contest Club."

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Every part is selected for durability and ruggedness for years of trouble-free service.

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For just \$339.95 you can greatly increase your effective radiated power and hear far better!

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exclusive BetaMATCH™, stain-

sion clamps and BN-86 balun.

Also standard is Hy-Gain's

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room to spare -- turning radius is

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is ideal for DXpeditions. Rotates

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2"O.D. mast. Stainless steel hard-

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Features Hy-Gain BetaMatch™

Ruggedly constructed, topperforming, compact 6 foot boom, tight 14.3 foot turning radius. Installs almost anywhere. Rotate with CD-45II or HAM-IV. BN-86 balun recommend.

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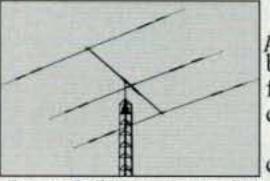
Revolutionary 4-element compact tri-bander lets you add 40 or 30 Meters! Has 14 foot boom and tight 17.25 feet turning radius. Fits on roof tri-pod, mast or medium duty tower.

Hy-Gain's patented broadbanding Para Sleeve gives you less than 2:1 VSWR. 1.5kW PEP. BetaMATCH™ provides DC ground to eliminate static. Includes BN-86 balun. Easily assembled.

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Compact 3-element 10, 15, 20 Meter Tri-Bander For limited space . . . Installs anywhere . . . 14.75 ft turning radius . . . weighs 21 lbs . . . Rotate with CD-45II, HAM-IV



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Tooled manufacturing gives you Hy-Gain guyed TV pole, roof tri-pod durability with 80 MPH wind survival.

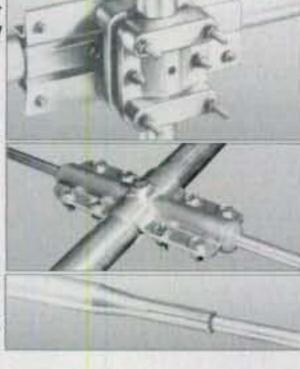
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TH-11DX	11	For Gain and	4000	10,12,15,17,20	12.5	100	24	37	22	88	1.9-2.5	T2X	\$1159.95
TH-7DX	7	F/B ratio-See	1500	10, 15, 20	9.4	100	24	31	20	75	1.5-2.5	HAM-IV	\$869.95
TH-5MK2	5		1500	10, 15, 20	7.4	100	19	31.5	18.42	57	1.5-2.5	HAM-IV	\$759.95
TH-3MK4	4.7	• www.hy-gain.com	1500	10, 15, 20	4.6	95	14	27.42	15.33	35	1.9-2.5	CD-45II	\$469.95
TH-3JRS	40	• Hy-Gain catalog	600	10, 15, 20	3.35	80	12	27.25	14.75	21	1.25-2.0	CD-45II	\$359.95
TH-2MK3	2	Call toll-free	1500	10, 15, 20	3.25	80	6	27.3	14.25	20	1.9-2.5	CD-45II	\$369.95
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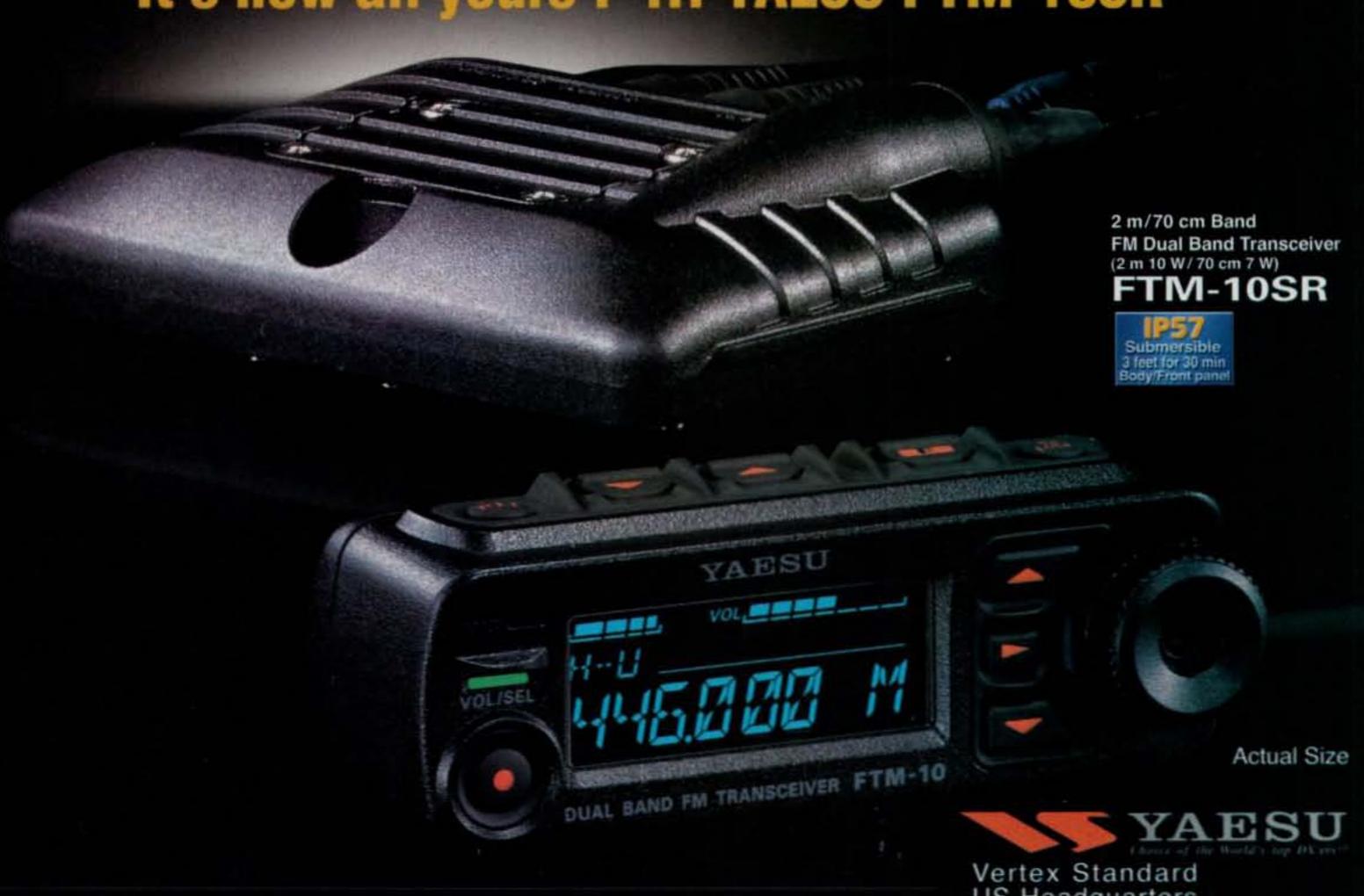
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Ultra-Compact (1.9" x 3.2" x 0.9") and Light Weight! (4.6 oz)

Rugged Aluminum Die-cast Chassis



1.5 W Output w/Internal Battery (70cm : 1W) 3W Output w/External DC (70cm : 2W)

High-Capacity Super-thin tiny Lithium-ion Battery with Charger(supplied)



The optional FAB-37 permits convenient replaceable AA battery operation ("AA" x 3)

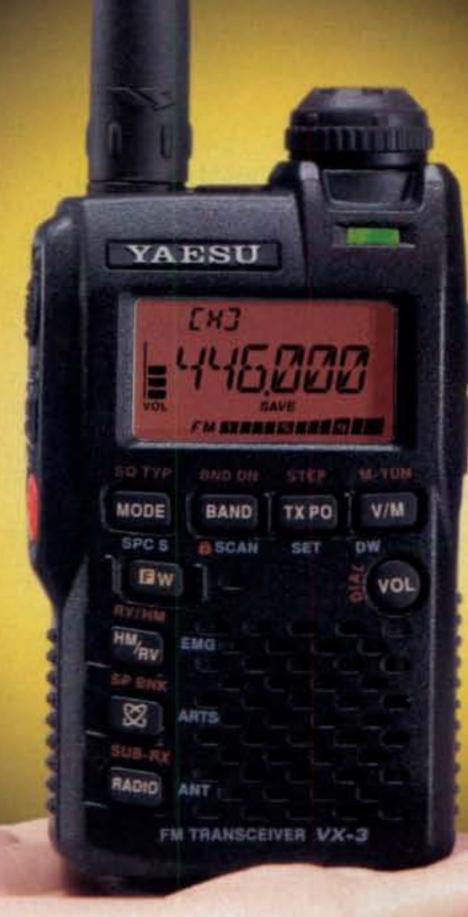
Special Memory Banks: WX Broadcast, VHF Marine, Short-wave Broadcast Stations

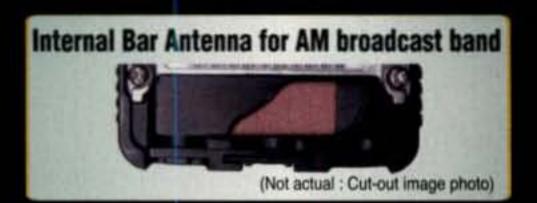
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Designated earphone jack for FM broadcast band reception



Sub RX function: Listen to your favorite AM or FM Stereo Broadcast Station and monitor the Amateur Band at the same time

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CW Learning and Training feature

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US Headquarters 10900 Walker Street Cypress, CA 90630 (714)827-7600 BY RICH MOSESON, W2VU

Something Old, Something New . . .

omething Borrowed, Something Blue. No, I'm not getting married (my wife wouldn't like that idea), nor am I—yet—planning a wedding for either of my children. But a cartoon in an old issue of *CQ*, my yearly new product tour at Dayton, and a chance QSO on 40 meters kind of got me going on that theme.

On the air the other day for one of my all-too-rare CW QSOs, I talked with K9TTM, who was running a vintage Heathkit DX-60 transmitter and a Collins 75S3B receiver. I can't speak for the receiver, but the DX-60 sounded great—perhaps better than the DX-60s I remember using and hearing back in the '70s.

It's interesting that he was running both Heathkit and Collins gear, since they were the impetus for an interesting discussion I had at Ham-Com in Dallas in mid-June. A ham was looking through our book, Heathkit —A Guide to the Amateur Radio Products, and lamenting Heath's departure from the ham radio world.

"Well, those folks are doing a pretty good job as their spiritual successors," I said, pointing across the aisle to the Elecraft booth.

"Oh, but they're so expensive," the ham replied.

"Are they really?" I asked. "Let's find out." Having wireless internet access in the convention center, I fired up my laptop and went to the U.S. Bureau of Labor Statistics inflation calculator website (http://data.bls.gov/cgi-bin/cpicalc.pl). We started entering the listed prices of various Heathkits along with the years they were introduced and seeing what they would cost today. A retired Collins engineer joined the discussion and gave us the price of a KWM-1 when it was introduced. Into the inflation calculator it went, and guess what? Today's top-of-the-line \$10,000-\$15,000 transceivers are right in line with what a KWM-1 would cost in 2007 dollars. And the Elecraft kits started to look like real bargains.

I don't remember exactly which Heathkits we looked up, but one of my finds in the Ham-Com flea market was a stack of old *CQ*s, and I bought three of them for 50 cents apiece (double the cover price of the oldest one). Wow! There were some great values back in the "good old days" (or were there?). For example, in 1946, a brand new Hallicrafters S-38 receiver set you back only \$39.50! And a Globe Trotter transmitter from World Radio Labs was \$59.95 as a kit and \$75.00 factory-built. Prices were a little higher by 1951, when a Johnson Viking I transmitter cost \$209.50 and a Hallicrafters S-76 receiver sold for \$169.50.

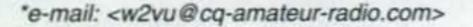
But let's plug those prices into the inflation calculator. The S-38, in 2007 dollars, would cost you \$421. And that's just a receiver! Add the \$59.95 Globe Trotter (\$640 today for a kit, \$800 wired) and that not-too-fancy station would cost you between \$1000 and \$1200 today. Looking at the 1951 gear, the Viking I would now go for \$1675 and the S-76 would be \$1355—or about \$3000 for the pair in today's dollars. You can get some very nice gear today for \$3000, and something equivalent to the S-76/Viking combo would probably be under \$2000.

Something New (and Something Blue)

There was no shortage of "new" stuff at this year's Dayton Hamvention®. In fact, there was so much new stuff introduced at Dayton that we had to split our annual "Hot Stuff at Hamvention®" roundup into two parts —radios and amplifiers this month (pg. 28), antennas and accessories next month. Among those new radios is an HF transceiver from Hilberling, a German company new to the U.S. ham market, for which the buyer has the choice of three cabinet colors—black, red, and, yes, blue! See "Hot Stuff..." for details.

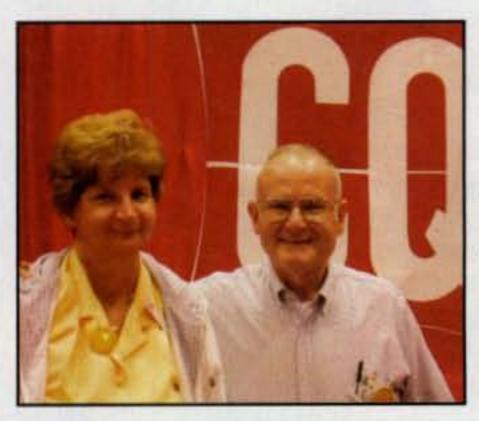
Something Borrowed

For more than a quarter century now, we've been borrowing some time every month from Karl Thurber, W8FX, who started out as our antennas columnist in 1980 and has been here every month since, most recently as editor of our "What's New" column. And while it makes us a bit blue, Karl has decided that





This cartoon from the October 1951 issue of CQ led me to the general theme for this month's editorial.



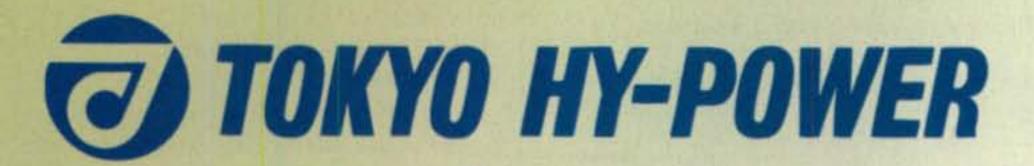
Karl Thurber, W8FX, seen here with his wife, Millie, is retiring as a CQ columnist after 27 years.

after 27 years, the time has come for him to pass along the pen to someone else. Karl's final column appears in this issue. We'll be introducing his successor next month. Karl, mere words (even in print) are not enough to thank you for your time, effort, and friendship over the years. Our columnists are CQ's lifeblood, and having people of your caliber, month after month, year after year, is part of what makes it so much fun to be this magazine's editor. On behalf of all of our readers and editors, past and present, thank you, Karl, for a job well done.

Closing Note

Our discussion earlier about how much things cost in the past vs. the present brings us to one closing note. The combination of the latest postal increase and higher fuel costs passed along in the prices of paper and ink (and just about everything else one buys today) is forcing us to raise our subscription price for the first time in nearly seven years. First-class postage has gone up 24% in that time period (second class, which we use, has gone up even more), and we all know the price of gasoline has gone up a whole lot more than that. As of next month's issue, a one-year subscription to CQ will cost \$36.95, or \$5 more than it does now. The bind-in card elsewhere in this issue will give you more details, along with a final opportunity to subscribe or renew at the current price.

73, W2VU





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HF 750W Linear Amplifier



Features

- Our solid-state broadband design engineers worked to make the HL-1.2 KFX, the lightest and most compact self-contained 750W out amplifier in the industry. This world-class compact 750W HF amplifier is the easiest to handle and operate, and is perfect for DXpedition also..
- The broadband characteristics require no further tuning once the operating band is manually selected.
- Full break-in CW mode compatible, using high speed antenna relays.
- The fan's quiet operation allows for even the weakest DX signals to be heard.

Specifications

Freq.: 1.8-28 MHz all HF amateur bands including WARC bands, complies with new FCC rules

Mode: SSB, CW, RTTY RF Drive: 75-90 W

Cooling Method: Forced Air Cooling

Output Power: SSB 750W PEP max. CW 650W RTTY 400W

AC Power: 1.4kVA max. AC 110/115/120/220/230/240 V

Dimension & Weight:

9.1 x 5.6 x 14.3 inches (WxHxD), Approx. 33 lbs.



HL-350VDX

VHF 330W Amplifier

Features

144 MHz band 330W amp for RF drive of 10W. 25W, and 50W. Multimeter for power out, auto-SWR, DC line voltage etc. GaAs Low noise RX pre-amp included.

Specifications

Freq. Band: 144-148 MHz amateur band.

Mode: FM/SSB

DC Power: 13.8V 48A max. (negative ground.)

RF Out: 330W max.

RF Drive: 10W/25W/50W (Manual select)

In/Out Connectors: Type N

Others:

Low noise RX pre-amp., Meter for RF out,

auto SWR etc.

Protection for DC reverse polarity, high SWR etc.

Terminal for remote controller (HRC-60)

Dimension & Weight: 9.6 x 3.9 x 14 inch (WxHxD).

approx. 12.5lbs.



HC-1.5KAT

HF 1.5kW Auto **Antenna Tuner**

Features

- A high power HF auto antenna tuner designed to work with Tokyo Hy-Power HL-1.5KFX and HL-2.5KFX linear amplifiers.
- When interconnected with these THP amplifiers, the band change is automatically made through the band data signal from the radio and the amplifier. It also works with other amplifiers as well, if band setting only is made manually.

Specifications

Freq. Range: 1.8~29.7 MHz

Output Impedance Range: 12.5~200 Ω: Reduced range at lower band edges

Maximum Handling Power: 1.5kW (P.E.P./CW): ŘTTY 1kW Input Impedance: 500 Tuning Power: 50W (80W max.)

Tuning Time: 1 sec. (typ.)

2.5-4 sec. (max.) under worst SWR condition DC Power Voltage: DC 12V~14V: from External

AC adaptor (1.5A)

Display: LCD Module: 16 characters x 2 rows Driving Motors: Stepping Motors for Two Air Variable: 0.25 deg. resolution/step

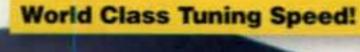
Matching Algorithm: Analog Control with MPU:

Phase and |Z| Magnitude Detected

Dimension & Weight: Approx. 8 x 5.6 x 12 inches

(WxHxD), 11lbs.

Output Connectors: Three SO-239's





HC-200AT

HF/50MHz 200W Auto **Antenna Tuner**

Features

- HC-200AT works with variety of antennas, tuning with lightning speed.
- Large analog meter automatically displays SWR status as well as forward power.

Specifications

Freq. Range: 1.8~54 MHz

Impedance Range: 5~500 Ω (3.5~54 MHz) /

15~500 Ω (1.8MHz)

Handling Power: 200W max. PEP/CW

Input Impedance: 50Ω (SO-239)

Output Connectors: Two SO-239's and one wire

antenna terminal

Tuning Time: 1.5 sec (typ.), 4 sec max, 0.2 sec for

memory tuning mode

DC Power: 12~14 V 0.8A max. 0.1A after tuning

is finished.

Dimension & Weight: 7.7 x 2.4 x 9.5 inches

(WxHxD), approx. 2.3lbs.

Optional Parts: Radio Interface Cable (ICOM)

HTC-100AT/ICOM5(17ft.) HTC-100AT/ICOM10(33ft.)

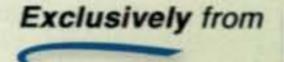
HBL-100: 1:4 Balun (Unbal. to Balance, current type)



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Mid-Atlantic1-800-444-4799 Northeast1-800-644-4476 New England/Eastern Canada1-800-444-0047 The following Special Event stations are scheduled for

August:

N1P, commemorating the 400th anniversary of the Popham Colony, from near the original colony site, Phippsburg, Maine; Merrymeeting ARA; 1601Z August 17 to 2359Z August 19 on SSB 7.262 and 3.985 MHz, CW 7.032 and 3.532 MHz, other bands/modes possible. For certificate send QSL and SASE to Joseph B. Randall, W1ZE, 1 Smithfield Crossing, Phippsburg, ME 04562 (www.ks1r.net).

NA2DX, from International Lighthouse/Lightship Weekend, Sea Girt Lighthouse, New Jersey; North American DX Assn. and Neptune ARC; 1300Z August 18 to 2100Z August 19 on 7.260 and 14.260 MHz. For QSL send QSL and #10 SASE to NADXA,

P.O. Box 359, Bradley Beach, NJ 07720.

N4J, from Farm Day at Thomas Jefferson's Poplar Forest, Forest, Virginia; Lynchburg ARC; 1400–2200Z August 18 on 7.260, 14.260, 14.070 PSK, 21.360, 28.460 MHz. Send QSL and SASE to Dick Hiner, W4HMK, 9485 Battler Ct., Columbia, MD 21045.

N7C, from The Navajo Code Talkers, Widow Rock, Arizona; 1400–0000Z daily, August 11–14, on 14.265 and 7.265 MHz ±. QSL to Herb Goodluck, N7HG, P.O. Box 3611, Widow Rock, AZ 86515.

W8AL, from Pro-football Hall of Fame Festival, Canton, Ohio; Canton ARC; 1300Z August 3 to 2359 August 6 on 7.265, 14.265, 21.365, 28.365 MHz. For certificate send QSL 9×12 SASE with 80 cents postage to Donald E. Perry, WQ8J, 968 Culverne Ave. NW, Massillon, OH 44647 (www.w8al.org).

W8VY, commemoration of the founding of the Kalamazoo ARC in 1932, Kalamazoo, Michigan; 1700Z August 18 to 0500Z August 19 on SSB 7.275 and 14.250 MHz, CW 3.575 and 10.110 MHz, PSK31 21.070.15 MHz. QSL via John Mathieson, KC8ZTJ, 1926

Lauralwood, Portage, MI 49002 (www.w8vy.net/75).

NØC, from dedication of the Center of the National Monument, Belle Fourche, South Dakota; 1400–2300Z August 20–22 on 14.240/.040, 7.240/.040, 3.855/.555 MHz, and PSK. For certificate send QSL and SASE to Craig Nickisch, WØWN, 316 Yellowstone Place, Spearfish, SD 57783.

WØZSW & WØEQO, from celebration of 40 years of Handihams, Minnesota; 9 AM August 25 to 9 PM August 27, central time, on SSB 14.340 and 7.240 MHz ±, CW 14.140 and 7.040 MHz ±. For certificate send QSL and SASE to Handihams, c/o Avery Finn, 3915 Golden Valley Rd., Golden Valley, MN 55422.

The following hamfests, etc., are slated for August:

Aug. 3–5, WIMU 2007 Four-State Convention, Virginian Lodge, Jackson, Wyoming. For more information, ontact Eugene or Carol McWherter, <n7ovt@arrl.net> or <kc7llw@arrl.net>, or go to <home.comcast.net/~wimuhamfest/>. (Exams)

Aug. 4, **U.P. Hamfest**, Joseph Heiman Center, Bay de Noc Community College, Escanaba, Michigan. Contact Richard Thompson, N8OYR, e-mail: <n8oyr@dcars.org>; <www.dcars.

org>. (Talk-in 147.24+, 107.2 Hz)

Aug. 5, Bolingbrook ARS Hamfest & ARRL Illinois State Convention, Bolingbrook High School, Bolingbrook, Illinios. Contact Tom Ballard, N9LJY, 630-739-3740 (before 9 PM Central); <www.k9bar.org>. (Talk-in 147.33+, 224.54–)

Aug. 17–19, Duke City Hamfest & ARRL Rocky Mountain Division Convention, University of New Mexico Continuing Education Center, Albuquerque, Mew Mexico. Contact Mike Pendley, K5ATM, 505-238-6060, e-mail: <k5atm@arrl.net>; <http://www.dukecityhamfest.org>. (Talk-in 145.330–, 100 Hz PL; exams)

Aug. 18–19, Huntsville Hamfest & ARRL National Convention, Von Braun Center, Huntsville, Alabama. Contact Don Tunstill, W4NO, e-mail: <donstill@hamfest.org>; <www.hamfest.org>. (Exams) See us at the CQ Booth.

Aug. 19, Adams, MA Hamfest, Adams Agricultural Fairgrounds, Bowe Field, Adams, Massachusetts. Contact Al Vigiard, K1SAV, e-mail: <k1sav@nobarc.org>, 413-743-1619, <www.nobarc.org/hamfest. htm>. (Talk-in 146.91, PL 162.2; exams)

Aug. 19, Lapeer County ARA Hamfest & Computer Swap, Lapeer Center Building, Lapeer, Michigan. Contact Bill Miller, KD8VP, e-mail: <kd8vp@arrl.net>, 810-797-5329, <www.w8lap.com>. (Talk-in 146.620– 100 Hz tone)

Aug. 26, East Central Illinois Hamfest, Vermilion County fairgrounds, Oakwood, Illinios. Contact Josh Kittle, N9WEW, e-mail: <n9wew@arrl.net>, 217-442-0578, <http://www.vcara.org>. (Talk-in 146.820, PL 88.5)

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A publication of



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Offices: 25 Newbridge Rd., Hicksville, NY 11801, Telephone 516-681-2922; Fax 516-681-2926. E-mail: cq@cq-amateurradio.com. Web site: www.cq-amateur-radio.com. CQ (ISSN 0007-893X) is published monthly by CQ Communications, Inc. Periodical postage paid at Hicksville, NY 11801 and additional offices. Subscription prices (all in U.S. dollars): Domestic-one year \$31.95, two years \$57.95, three years \$83.95; Canada/Mexico-one year \$44.95, two years \$83.95, three years \$122.95; Foreign Air Post-one year \$56.95, two years \$107.95, three years \$158.95. U.S. Government Agencies: Subscriptions to CQ are available to agencies of the United States government including military services, only on a cash with order basis. Requests for quotations, bids, contracts, etc., will be refused and will not be returned or processed. Entire contents copyrighted by CQ Communications, Inc. 2007. CQ does not assume responsibility for unsolicited manuscripts. Allow six weeks for change of address.

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Postmaster: Please send change of address to: CQ Amateur Radio, 25 Newbridge Rd., Hicksville, NY 11801

our readers say

"Secret Society" Response

We heard from many readers in response to June's editorial about secrecy at the ARRL. Many letters were quite long and, in some cases, we could only print excerpts. Here is a sampling:

Editor, CQ:

Thanks for enlightening folks about the ARRL. I got into ham radio in 1938 and I have a long memory of those guys saying that we "owe" our radio privileges to "them." A 180 - egree flip is nothing; they have done some 360s and 720s and ...

Another gang with the same mentality is the Red Cross. Of course there is some good accomplished, but my experiences with those folks, like with the ARRL, "you don't get much bang for your buck."

Bob "Plum" Plumskey, W6LAC

Editor, CQ:

As larger non-profit organizations go, I'd give the ARRL an "A" for openness—and for vetting directors for real and potential conflicts of interest. Yet, with a broad brush you smeared the League and its board for not keeping you in the loop on a couple of politically sensitive negotiations? I've come to expect that sort of mindless League bashing from a few anonymous bloggers, but not from CQ. And you call that Zero Bias?

Walt Stinson, WØCP (Walt is a former ARRL Director)

Editor, CQ:

I have read your article and found it to be a really great read. This is the reason that I stopped my subscription to QST years back. The ARRL does not represent radio amateurs, but their own around the Secret Offices at headquarters. I wish that all hams would read your writings. Thanks.

George Crenshaw, K6VX

Editor, CQ:

Congratulations on your June editorial! I've been an ARRL member continuously since 1952 and a staffer during the John Huntoon and Dick Baldwin management era under ARRL presidents Bob Denniston and Harry Dannals ... Your editorial was spot on and overdue.

Bill Smith, WØWOI Former ARRL HQ staffer and "World Above" QST Editor

Editor, CQ:

Having been on the Board of AMSAT for a number of years, I had always thought the League Board operated in generally the same fashion. For example, the AMSAT Board meetings are not only open to the general membership, they are, or were while I served, open to the general public, too! The only exceptions were when private matters such as staff pay or delicate negotiations required some discretion in regards to information...

Not so with the League! I am currently an Assistant Director ... comparable to being a member of a senator's staff. Now my director is an outstanding and dedicated individual to the cause and I have no doubts about his work ethics. Nonetheless, my recent request to attend the Board meeting at my own expense simply to observe ... was met with complete silence.

John Champa, K8OCL Former ARRL HSMM Working Group Chair

Editor, CQ:

A brief note to say "bravo" for your June CQ magazine and online editorials. Living in Washington, DC and working in the telecommunications regulatory arena, I am continuously amazed by the League's miscues, inaction, or general ignorance. While their staff here is talented and well-respected, the organization as a whole seems to have little sense of politics, how government runs, and how to get what you want on your terms. I've been to too many ARRL gatherings here to believe that this will change anytime soon.

Eric Rosenberg, W3DQ

Editor, CQ:

This month's article on the "Secret Society" took some courage to publish, but it needed to be said and it was fully correct.

Hal Kennedy, N4GG



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the ID-800H mobile



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have just finished answering all the direct QSL requests for the C6APR and W2GJ/C6A QSL cards. Most of those seeking a card have filled out the cards correctly, but there were a few areas for improvement. I have chased DX QSLs for over 30 years, and I just learned a few new things by being a QSL manager. I also had some observations as I processed the incoming cards and answered the e-mail queries.

For the 2006 IOTA (Islands On The Air) contest, Pete Radding, W2GJ, and "Randy" Hargenrader, K4QO, using the call C6APR, activated Crooked Island, Bahamas, IOTA NA-113. For lighthouse enthusiasts, the QSOs were also good for Bird Rock Lighthouse, BAH-005 (photo A). Just after the contest, there was a great 6-meter opening and more than 300 stations worked grid FL22. There were also excellent grey-line conditions on 40 meters CW. They also handed out C6 on the "WARC bands"—30, 17, and 12 meters. This was the first DXpedition for W2GJ and K4QO together, and my first time as a QSL manager for a DX station.

For the 2006 CQ World-Wide DX SSB Contest Pete, Randy, and I went to the same location, the Crooked Island Lodge, Pittstown Point, Crooked Island, Bahamas http://www.pittstownpoint.com/ (photo B). On this trip, using the call W2GJ/C6A, W2GJ and K4QO also activated Castle

Island Lighthouse, BAH-001 (photo C) for the first time ever. After the contest we made a limited number of RTTY QSOs (because of rig problems) and did CW grey-line DXing as well as working the WARC bands. We also monitored 6 meters during the entire time, but the opening of the prior trip never materialized.

Back Home—The Real Work Begins

For many of the stations who contacted us, this was a new country, a new band-country, a new mode, and/or a new grid. The QSL cards poured in. As I processed the incoming cards (photo D), I made these observations:

*Roughly 99% of direct QSLs came with an SASE (self-addressed, stamped envelope) or an SAE (self-addressed envelope) with either an IRC (International Reply Coupon) or US\$1 enclosed. That was highly considerate and appreciated. Some envelopes even arrived with an extra dollar or an extra IRC. Thanks for the unsolicited donations above and beyond the return postage. A two-sided, photo DXpedition QSL card is expensive!

Virtually all of the cards (photo E) were properly filled out. Everyone was clear about the mode, band/frequency, date (i.e., spelling out the month, using a Roman numeral for the month, and/or having the date block contain DD MM YYYY). Probably the print format by the QSL suppliers has solved this

^{*202} Huntington Rd, Summerville, SC 29483 e-mail: <k3ixd@arrl.net>



Photo B- The group's operating location at Crooked Island Lodge on Crooked Island in the Bahamas. That's an R5 multiband vertical antenna in the foreground.

area of confusion. I don't remember that anyone used their local time instead of GMT (Zulu). However, one ham did forget to write in the QSO time altogether.

There was one DXer who became impatient when I didn't respond with a month. He sent a follow up SASE with a card made out to him; all I had to do was sign the card and put it in the envelope and mail it back to him. I understand the county hunters often do this, although this card was for a 6-meter QSO. For the 1% who didn't send an SASE, per our policy as stated on <www.qrz.com>, your card was sent via the QSL bureau system.

Other reasons, beyond cost, for sending an SASE were that it is very time consuming to address outgoing envelopes and there was not enough space on our two-sided QSL cards for both the report and the address.

I haven't used self-sealing envelopes in the past, but I came to really appreciate them. Sealing hundreds of envelopes becomes tiring. The self-sticking ones were welcomed and I am going to get some for my direct QSLing.

Today computers are used for logging, tracking awards, and printing labels. If you used a portable or mobile designator when working us, please use that call on your QSL card. With computers, "W1XXX" isn't the same as "W1XXX/2." It takes extra time to look for possible matches. Remember that no QSL manager wants to return your card with "Sorry, not in the log." You don't need to get a separate set of cards for portable and/or mobile work. It is permissible to add a "/2" or "/mobile," etc., in ink to your callsign. For the couple of hams who sent 6-meter QSL cards without their grid on the card, remember that DXpeditions and DX stations are also interested in VUCC. If you forgot to have it printed on your card, or you are new to 6-meter grid chasing, it is OK for you to write it in, using ink. (We encourage everyone to include their grid on their QSL cards as an aid to those stations pursuing not only the VUCC award on VHF, but also the CQ DX Field Award on HF and VHF.—ed.)

Envelopes get separated from the incoming QSL cards. Sometimes it is by accident. The system I used was to queue the return envelopes in one box, while the cards were queued in a separate box. Therefore, please put your call on the return envelope. If you didn't, I did, since I don't know that "John Doe" is W1XXX. (In some countries, having a callsign on an envelope is an invitation to have the envelope stolen by those looking for a dollar bill or an IRC presumed to be inside or for unwanted government scrutiny. If a station outside the U.S. or Canada has not included a callsign on a return envelope, it is probably for a good reason, and the QSL manager should find a different notation method for these cards, such as a sticky note with the call that can be removed from the envelope before mailing.—ed.)

For a first-time DXpedition group, we wanted a very nice photo card. The delays in getting the card for the first trip were numerous! After trying three local printers, none of which could get the colors right, we went with a commercial QSL card printer. My thanks to all for

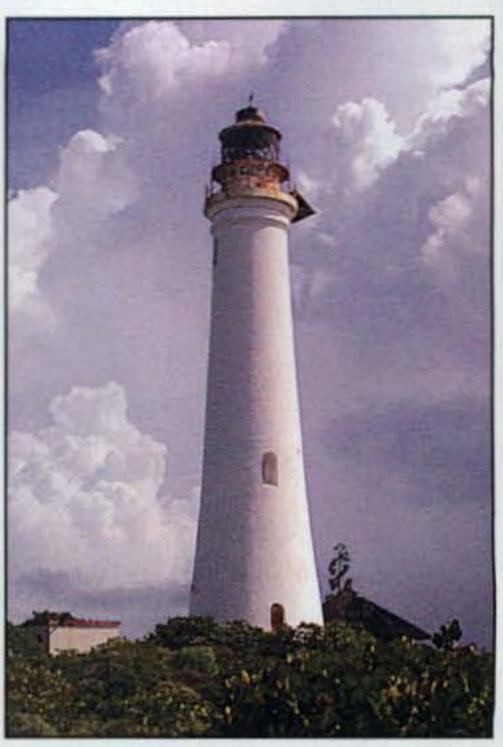


Photo C— The Castle Island Lighthouse (BAH-001) activated during the second trip. This time the group actually operated from the lighthouse grounds.

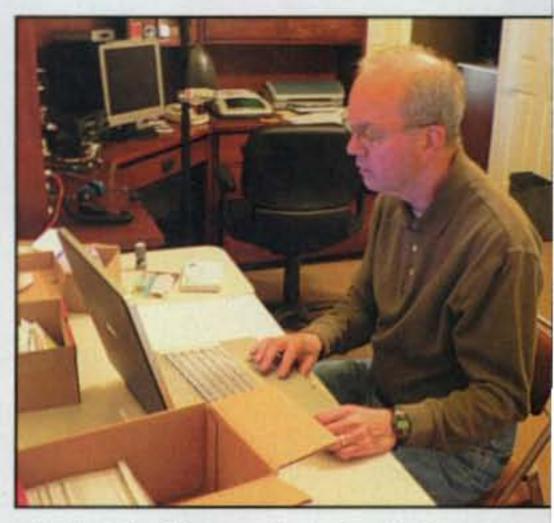


Photo D- The author, back home again, scans the log as he works on responding to QSL cards.

patiently waiting for the IOTA contest C6APR card, especially to the newer hams working C6 for the first time and on the quest to obtain DXCC or 6-meter VUCC. We were smarter regarding the second trip's QSLs and they were sent out in much less time.

I can empathize with those who sent an e-mail asking about the status of their QSL—i.e., "Was it received?" or "Had I mailed them one?" I had nice e-mail exchanges with them. I do remember what it was like to be working towards DXCC and VUCC. In fact, I am working on my own RTTY DXCC now. The days drag by, waiting for return cards. Thanks for waiting.

INTRODUCING OMNI-VII



Imagine a rig

Imagine a rig...sitting on the desk in your ham shack. After tuning to a clear frequency, you call CQ and are working stations all over the country from the peace and quiet of...a hotel room hundreds of miles away from your QTH.

Introducing OMNI-VII, the world's first completely Ethernet-remoteable HF transceiver. Just plug OMNI-VII directly into your high-speed router in the ham shack (no computer required) and control it remotely over the Internet from a high-speed data connection. We even provide the software ready to use – at no additional charge. Easy!

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Photo E- Shoeboxes of QSLs, The box on the left contains completed cards heading out to QSL bureaus, the center box contains incoming cards waiting to be processed, and the right-hand box contains blank C6APR QSL cards.

I do have to admit that I, as the QSL manager, made mistakes, too. One was that somehow only two of the three cards for one station were sent, yet the software showed three labels were printed for him. He sent a nice inquiring e-mail about the missing card. I replied and sent him the missing QSL the next day.

While I could easily keep track of the incoming QSLs, since I am only handling one DX station's QSLs, one very considerate ham deserves special mention. He is John, K4OP. He sent three separate envelopes, each with a single QSL card, an SASE, and a dollar bill. Some QSL managers handle many active DX stations and require only one card per envelope. I didn't, so I put the extras into one of his SASEs

along with his three QSLs. He also enclosed a short, typed note thanking QSL managers and explaining he was helping offset expenses.

For some of those whose card was returned with "Sorry, not in the log," I had several polite e-mail exchanges. We hope to work them on a future trip to C6.

Regarding bureau cards, hopefully no one sent a bureau card to the C6 bureau, since we don't have any envelopes on file there. To aid QSLers, we did put the QSL instructions on QRZ.com http://www.qrz.com/, the IK3QAR QSL manager page http://www.golist.net/fr_index.htm, etc. Our DXpedition announcements were in many DX bulletins. Many cluster spots listed the QSL route, as

Photo F— Some of the nicest and most interesting QSLs received were taken by the group to be passed around at their local ham group's weekly Saturday morning breakfast. After all, what good is having really cool QSLs if you can't show them off?

well. If you are going to QSL, use those references. It will help ensure that you get a card in return.

Nearly six months after the first DX-pedition, 30 cards arrived via the bureau. I had gotten a bureau mailing earlier, so the cards were not in queue very long waiting for my envelope to fill up. Hopefully everyone is following our guidance on http://www.qrz.com/w2gj and http://www.qrz.com/k3ixd and did not send any cards to W2GJ via the bureau. He hasn't gotten any bureau cards in years.

Nearly seven months after the first DXpedition and four months after the second DXpedition, I received an envelope of cards from the WF5E QSL Service http://www.qsl.net/wf5e/>. It contained 15 cards, one of which was from an SWL. While a very few managers won't accept QSLs from the WF5E's QSL Service, I have used him and his predecessors for many years. This a great service for DX QSLing started by W3KT, then taken over by N7RO, and now continued by Les Bannon, WF5E. I have found this QSL service to be reliable and effective. The downside is that it is slower than QSLing direct, but it is inexpensive and it's faster than sending cards via the bureau.

It has been enjoyable processing those 99% of QSLers who make the manager's job easier. Hopefully the others will change their procedures when QSLing other DX stations. All three of us enjoyed looking at the cards received, reading the notes on them, and especially looking at the customized cards. The really impressive ones were taken to the local, weekly Saturday morning breakfast and passed around (photo F).

Becoming a QSL manager has let me see QSLing practices from the other side and has given me some new insights into the process. I hope that I have passed on some QSLing tips that will be useful for you next time you work a DX station or DXpedition. The three of us-Pete, W2GJ, Randy, K4QO, and I—hope to go on more DXpeditions. When we do, I plan to continue to be the team's QSL manager. As a holder of WPX with numerous endorsements, WAZ, 5BWAS, 5BDXCC, 6M VUCC, and the Challenge award, I believe that serving as a QSL manger is one way of returning a little something to the hobby.

Thanks to Pete, W2GJ, for asking me to participate in his idea for a DX-pedition, and for his handling of the logistics for both DXpeditions. Also thanks to both W2GJ and K4QO for reviewing this article and providing valuable comments.

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ring gear gives extra strength up to 100,000 PSI for maximum reliability. New indicator potentiometer. New ferrite beads reduce RF susceptibility. New Cinch plug plus 8-pin plug at control box. Dual 98 ball bearing race for load bearing strength and electric locking steel wedge brake prevents wind induced antenna movement. North or South center of rotation scale on meter, low voltage control, max mast size of 21/16 inches.

HAM IV and HAM V Rotator Specifications 15 square feet Wind Load capacity (inside tower) Wind Load (w/mast adapter) 7.5 square feet Turning Power 800 in.-lbs. Brake Power 5000 in.-lbs. Brake Construction Electric Wedge dual race/96 ball bearings Bearing Assembly Mounting Hardware Clamp plate/steel U-bolts Control Cable Conductors 26 lbs. Shipping Weight 2800 ft.-lbs. Effective Moment (in tower)

HAM-V



For medium antenna arrays up to 15 square feet wind load area. Similar to the HAM IV, but includes DCU-1 Pathfinder digital control unit with gas plasma display. Provides automatic

operation of brake and rotor, compatible with many logging/contest programs, 6 presets for beam headings, 1 degree accuracy, auto 8-second brake delay, 360 degree choice for center location, more!

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MSHD, \$99.95. Heavy duty mast support for T2X, HAM-IV and HAM-V. MSLD, \$39.95. Light duty mast support for CD-45II and AR-40.

TSP-1, \$34.95. Lower spacer plate for HAM-IV and HAM-V.

Digital Automatic Controller



Automatically controls T2X, HAM-IV, V rotators. 6 presets for favorite headings, 1º accuracy, 8-sec. brake delay,

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For large medium antenna arrays up to 20 sq. ft. wind load. Available with DCU-1 Pathfinder digital control (T2XD) or standard analog control box (T2X) with new 5-second brake delay and new Test/Calibrate function. Low temperature grease, alloy ring gear, indicator potentiometer, fer-

tiometer wires, new weatherproof AMP connectors plus 8-pin plug at control box, triple bearing race with 138 ball bearings for large load bearing strength, electric locking steel wedge brake, North or South center of rotation scale on meter, low voltage control, 21/16 inch max. mast.

rite beads on poten-

TAILTWISTER Rotator Specifications Wind load capacity (inside tower) 20 square feet Wind Load (w/ mast adapter) 10 square feet Turning Power 1000 in.-lbs. Brake Power 9000 in.-lbs. Electric Wedge

T-2X

\$699⁹⁵

T-2XD

with DCU-1

Brake Construction Triple race/138 ball brngs Bearing Assembly Mounting Hardware Clamp plate/steel U-bolts Control Cable Conductors Shipping Weight 31 lbs. 3400 ft,-lbs. Effective Moment (in tower)

> AR-40 **AR-40**

For compact antenna arrays and large FM/TV up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Fully automatic control -- just dial and touch for any desired location. Solid state, low voltage control, safe and silent operation. 21/16 inch maximum mast size. MSLD light duty lower mast

AR-40 Rotator Sp.	ecifications
Wind load capacity (inside tower)	3.0 square feet
Wind Load (w/ mast adapter)	1.5 square feet
Turning Power	350 inlbs.
Brake Power	450 inlbs.
Brake Construction	Disc Brake
Bearing Assembly	Dual race/12 ball bearings
Mounting Hardware	Clamp plate/steel bolts
Control Cable Conductors	5
Shipping Weight	14 lbs.
Effective Moment (in tower)	300 ftlbs.

support included.

AR-35 Rotator/Controller



For UHF, VHF, 6-7995 Meter, TV/FM antennas. Includes automatic controller, rotator,

mounting clamps, mounting hardware. 110 VAC. One Year Warranty.

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For antenna CD-45II arrays up to 8.5 sq. feet mounted inside tower or 5 sq. ft. with mast adapter. Low temperature grease good to -30 F degrees. New Test/Calibrate function. Bell rotator design gives total weather pro-

tection, dual 58 ball bearing race gives proven support. Die-cast ring gear, stamped steel gear drive, heavy duty, trouble free gear train, North center scale, lighted direc-\$107995 tional indicator, 8-pin plug/socket on control unit, snap-action control switches, low voltage control, safe operation, takes maximum mast size to 21/16 inches. MSLD light duty lower mast support included.

CD-45II Rotator Sp	pecifications
Wind load capacity (inside tower)	8.5 square feet
Wind Load (w/ mast adapter)	5.0 square feet
Turning Power	600 inlbs.
Brake Power	800 inlbs.
Brake Construction	Disc Brake
Bearing Assembly	Dual race/48 ball brings
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight	22 lbs.
Effective Moment (in tower)	1200 ftlbs.

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HDR-300A

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potentiometer wires reduce RF susceptibility, new longer output shaft keyway adds reliability. Heavy-duty self-centering steel clamp and hardware. Display accurate to 1°. Machined steel output.

HDR-300A Rotator S	Specifications
Wind load capacity (inside tower)	25 square feet
Wind Load (w/ mast adapter)	not applicable
Turning Power	5000 inlbs.
Brake Power	7500 inlbs.
Brake Construction	solenoid operated locking
Bearing Assembly	bronze sleeve w/rollers
Mounting Hardware	stainless steel bolts
Control Cable Conductors	7
Shipping Weight	61 lbs.
Effective Moment (in tower)	5000 ftlbs.

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Results of the 2006 CQ WW DX SSB Contest

BY BOB COX,* K3EST

Expanded CQ WW Contest Results on the Web

A few additional elements of our contest reporting are on the CQ website, including **Station Operators** of Multi-Op stations and expanded **QRM**.

To view these additional and expanded elements of the 2006 CQ WW SSB results, go to http://www.cq-amateur-radio.com/cqwwhome.html, then click on "Expanded Results, 2006 CQ WW SSB" and select the category you want to see. You may also get there by going to our home page at http://www.cq-amateur-radio.com, clicking on "Contest Rules & Info," then clicking on "CQ World Wide DX Contest" and selecting "Expanded Results, 2006 CQ WW SSB."

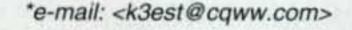
he 2006 CQ WW DX SSB Contest once again made its own propagation. All over the world as the starting hour approached final preparations were being made to take part in contesting's big event—the CQ WW. The time before the contest is utilized differently depending on where you are located. In Japan a contester is just getting up after a night's sleep. In California, a contester is perhaps taking off work a few hours early in order to start at 4 PM. In A6-land, the entrant is waking up at 2 AM to get ready for the 4 AM start. In Europe, where the contest starts between midnight and 2 AM, a participant may have had to stay awake from Friday morning until 2 AM. No matter what the local time is where you live, everyone started the 2006 CQ WW fun at the same world time. The sun was predicted to not cooperate and the sunspot cycle was rapidly approaching bottom. That did not stop over 25,000 operators from going all out to enjoy the weekend.

As you have probably noticed, when you tune across the bands on most days you hear activity here and there and a lot of empty space. The CQ WW changes all that. You may have to tune for several minutes in order to find a place to call CQ. This worldwide event brings out many, many contesters trying their hand at working stations. An hour before zero UTC on Saturday, you can feel the ever-increasing crescendo of activity as contesters try out the conditions and their stations. At 0000 UTC the bands explode with activity.

The CQ WW is a fantastic competition, which brings out the best in amateur radio: team work, station construction, antenna erection, and operating skills. The CQ WW is a celebration of ham radio skill and effort. Each year a new group of hams discovers the CQ WW, and they begin to develop friendships that will last a lifetime. Both new hams and old who try the CQ WW often become addicted. Below are the results of the 2006 CQ WW SSB. Everyone who enters the contest ends up taking away memories and vivid experiences.

High Power All Band

John, W2GD, pushed P40W to the top of the pile. Winning the toughest category by 1.5 million points is not easy. In addition, he also had the most single operator QSOs in the contest. John travels to Aruba so often to operate it might as well be his second home, and he comments, "For an absentee station owner like myself the problems are further compounded when it is only possible to visit the station a few times each year. Every trip becomes an adventure, never knowing exactly what you will find working (or broken) upon arrival." It seemed to work quite well, John. Jorge, EA9LZ, really put in a great effort to take second place from Ceuta. Jorge made a lot people happy by passing out the EA9 multiplier. Olli, OHØXX, operating from OA4WW, was just behind in third place. Olli can be found these days as HP1WW.





John, KK9A, was world #1 Single Op, All Band, low power as P40A.

European top honors went to CU2A operated by Timo, OH2UA. Timo comments," It was one of the toughest contests for me so far. Before the contest I got the flu and only a couple of hours after the beginning of the contest I felt like losing my voice. I was quite sure not to be able to make a full 48 hours, but fortunately I was wrong." OE4A was operated by Braco, OE1EMS. The hard work of building up this super station paid off with a big signal. Pasi, OH6UM, talked OH8X to third place under less-than-favorable conditions.

It has been a long time since the first two positions in the U.S. were filled by stations not from New England. Richard, NN3W, took top honors in the U.S. from the N3HBX super station located just over the Potomac River in Maryland. Not far away was Ken, K4ZW, who always ends up at or near the top. He took second place. Third place went to Randy, K5ZD/1, who always makes a big score.

Masa-san, JH4UYB, was #1 in Asia and Japan from his hilltop QTH. Al, F5VHY (NH7A), made a big noise from 6W1RY, and John, VE3EJ, broke into the world top ten.

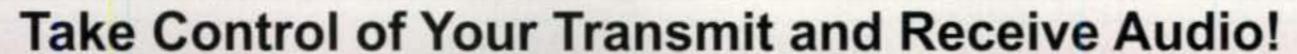
The continental winners were: North America VE3EJ, Africa EA9LZ, Asia JH4UYB, Europe CU2A (OH2UA), Oceania AH7C, South America P40W (W2GD), Japan JH4UYB, and U.S. NN3W.

Low Power All Band

If you want to go on a DXpedition and carry everything in one suitcase, barefoot is the way to go. A small transceiver, wire and vertical antennas near a beach somewhere and you are all set. If you choose the right QTH, you can run stations almost as fast as the higher powered stations.

Located on the northwest tip of Aruba is the station of P40A. John, KK9A, has now taken back-to-back world low power trophies. This is quite an achievement. Second place went to Ted, HI3TEJ. Ted is an enthusiastic ham on all levels. Third place world went to 9N7JO! A fine job was turned in by Stig, LA7JO. His excellent skills were enhanced by the Nepalese altitude, allowing him to put a rare one in many logs.

CT6A operated by José, CT1CJJ, was first place in Europe. This is the second year in a row that José took the plaque. Second place went to Dan, LY6M, and third place went to Zlatko, 9A2EU. In the U.S., we have another repeat winner—Ed, N1UR. However, this is Ed's third year in a row! Second place went to Texas, where Marvin, N5AW, put his considerable skills to work. Rounding out in third place was Peter, K2PS.



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VP9I, 7Z1SJ, and 3XM6JR all did an excellent job to finish in the world top ten from interesting locations.

The continental winners were: North America HI3TEJ, Africa CN8SG, Asia 9N7JO (LA7JO), Europe CT6A (CT1CJJ), Oceania YB4IR, South America P40A (KK9A), Japan JA7LMZ, and U.S. N1UR.

QRP

The CQ WW offers QRPers a very good opportunity to work rare DX that would otherwise prove elusive. This category sharpens your searching skills and the rewards are very satisfying. The world winner this year is a real dedicated QRPer. Bill, W8QZA, even states, "I only operate QRP." Bill talked TI5N to the #1 position. Taking second place in the world, and first place in the U.S., was Chris, KA1LMR. Chris's multiplier count was outstanding. The third spot went to DF1DX, helping out the Rhein-Ruhr DX Association.

Second place in the U.S. was taken by Anthony, K8ZT, another committed QRPer. Third place with under 5 watts was Tom, N1TM. Following DF1DX, who was #1 Europe and #3 in the world, in second place Europe and #5 in the world was Simone, IK5RUN, who turned in a fine effort. Third place in Europe and #6 in the world was Angel, EA3FF. Special mention must be made of the fine score of Izuno-san, JR4DAH, #4 in the world and #1 in Asia. Toiling away a long way from anyplace was Tom, VK4HTM, the #1 Oceania entry.

The continental winners were: North America TI5N (W8QZA), Africa EA8IK, Asia JR4DAH, Europe DF1DX, Oceania VK4HTM,

South America LW3DC, Japan JR4DAH, and U.S. KA1LMR.

Assisted

There are lots of reasons to enter the Assisted category. If you are casual contester, you can make the most of your time. If you want to help your club, assisted allows you to maximize your effort. Finally, if you just want the challenge of pushing QSOs and knowing when to use packet, then this category is for you.

The number one scorer was Mike, operating as FM/K9NW. Taking advantage of his location and racking up the largest QSO total in this category, Mike took away the trophy. Ondra, OK1CDJ, traveled to Algeria to activate 7W2W. He pushed this interesting call to world second place. Third place was taken by Wanderley, PY2MNL, operating from ZX2B.

In Europe there was a real battle in central Italy. The final #1 position went to IR4M operated by Fulvio, IK4MGP. What a beautiful setting for a contest station. Second place went to the famous water-tower QTH of IR4T operated by Fabio, I4UFH. Third place went to World-Wide Young Contester, Philippe, LX2A, operating his contest call of LX7I.

In the U.S. John, WE3C, took first place. He really made the difference in the multiplier department. Second place went to perennial top finisher Rick, KI1G, while third place also went to a long-time Assisted top scorer, Charles, K3WW. Special mention should be made of the great job turned in by two stations: RG9A (UA9AM) and 9M6DXX.

The continental winners were: North America FM/K9NW, Africa 7W2W (OK1CDJ), Asia



Alex, PA1AW, talked 5Z1A into a lot of logs.

RG9A (UA9AM), Europe IR4M (IK4MGP), Oceania 9M6DXX, South America ZX2B (PY2MNL), Japan JF2SKV, and U.S. WE3C.

Multi-Single

The Multi-Single category attracts the second largest group of contesters, after low power. You can bring a group of friends together to have a good time. You can also bring a group from France, travel to French Guiana, put in a lot of work, and you have this year's winner of the Multi-Single trophy, FY5KE. Operating not far from the European space port at Kourou, they outdistanced the competition by 3.5-million points. In second place was CN3A, an all Italian team plus CN8WW. They did a remarkable job. Third place went to the Russian team on Cyprus using 5B/AJ2O. They were also #1 in Asia. In Europe the number one score went to Radio Club Porec, 9A1P. Second place went

TROPHY WINNERS AND DONORS

SINGLE OPERATOR
World All Band
P40W (Opr. John Crovelli, W2GD)
Donor: Dave Rosen, K2GM
WA2RAU and W2SKE Memorial

P40A (Opr. John Bayne, KK9A) Donor: Slovenian Contest Club

World QRP
TI5N (Opr. William Parker, W8QZA)
Donor: Jeff Steinman, N5TJ

World Assisted FM/K9NW (Opr. Michael Tessmer, K9NW) Donor: N1JJ Johnson Joules Contest Club

U.S.A Richard F. Di Donna, NN3W Donor: Potomac Valley R.C. – KC8C Memorial

> U.S.A Low Power Edward Sawyer, N1UR Donor: North Coast Contesters

U.S.A QRP Christopher M. Merchant, KA1LMR Donor: Patrick Collins, N8VW

U.S.A. Zone 3
Mitch Mason, K7RL

Donor: Dave Pruett, K8CC & Greg Surma, K8GL

U.S.A. Zone 4
Mike Wetzel, W9RE
Donor: Dave Pruett, K8CC & Greg Surma, K8GL

John Sluymer, VE3EJ
Donor: Contest Club Ontario
VE3WT Memorial

Caribbean/C.A. Ted Jimenez, HI3TEJ Donor: Alex M. Kasevich, VP2MM

CU2A (Opr. Toni Linden, OH2UA)

Donor: Potomac Valley R.C. – W4BVV Memorial

CT6A (Opr. José Manuel Farto Lopes, CT1CJJ)
Donor: Scott Jones, N8OA & Tim Duffy, K3LR

Russia Igor I. Burykh, UA3QDX Donor: Roman Thomas, RZ3AA

Africa
Jorge Taboada Pareja, EA9LZ
Donor: Gordon Marshall, W6RR

Asia Masaki Masa Okano, JH4UYB Donor: 2 AM Dayton Pizza Gang

Japan Yasuyuki Inoue, JR1AIB Donor: Tack Kumagai, JE1CKA

Japan Low Power Fumi Konno, JA7LMZ Donor: Western Washington DX Club

Oceania Tetsuo Tanaka, AH7C Donor: Northern California DX Club

South America
OA4WW (Opr. Olli Rissanen, OHØXX)
Donor: Yankee Clipper Contest Club

SINGLE OPERATOR, SINGLE BAND World – 28 MHz Juan Manuel Morandi, LU1HF Donor: Joel Chalmers, KG6DX

World – 21 MHz ZX5J (Opr. Sergio Almeida, PP5JR) Donor: Bob Naumann, W5OV

World – 14 MHz
5Z1A (Opr. Alex Van Hongel, PA1AW)
Donor: North Jersey DX Assn. – K2HLB Memorial

World – 7 MHz OK5R (Opr. Jiri Sanda, OK1RI) Donor: Fred Laun, K3ZO – K7ZZ Memorial

World – 3.7 MHz CN2R (Opr. James Sullivan, W7EJ) Donor: Fred Capossela, K6SSS World – 1.8 MHz VY2ZM (Opr. Jeffrey Briggs, K1ZM) Donor: Robert Wruble, W7GG

USA – 28 MHz Charles Dietz, W5PR Donor: Donald Thomas, N6DT

> USA – 21 MHz Larry Pace, N7DD Donor: Worldradio

USA – 14 MHz
Daniel Handa, W7WA
Donor: Southern California DX Club

USA - 7 MHz Zeljko Repic, W2/T98T Donor: Stanley Cohen, W8QDQ

USA - 3.7 MHz Joseph Gagliardi, AA1BU Donor: Alex Jozsa, KG1E

USA – 1.8 MHz Theodore Demopoulos, KT1V Donor: N1JJ Johnson Joules Contest Club

Carib./C.A.(14 MHz)
Hugo Bergamo, XE1CQ
Donor: Nate Moreschi, N4YDU

Europe – 28 MHz Danijel Voncina, S58D Donor: Charles Dietz, W5PR

Europe – 21 MHz 9A1A Donor: Tine Brajnik, S50A

Europe – 14 MHz Daniel Horvat, T93M Donor: Charlie Wooten, NF4A

Europe – 7 MHz Ivica Matkic, T96Q* Donor: John Warren, NT5C

Europe – 3,7 MHz Ranko Boca, YT6A Donor: Ted Demopoulos, KT1V

SN2B (Opr. Kaz Drzewiecki, SP2FAX) Donor: Robert Kasca, S53R

Oceania (14 MHz)
KH7Q (Opr. James Neiger, N6TJ)
Donor: Bruce D. Lee, KD6WW

Asia – 14 MHz Vakhtang Mumladze, 4L8A Donor: Al Teimurazov, 4L5A – JA4FWM Memorial

> Japan – 21 MHz Shinya Hatakenaka, JA5FDJ Donor: CQ magazine

Japan – 14 MHz Hiroyuki Inaba, JS3CTQ Donor: Take Yokoyama, JL1BLW

MULTI-OPERATOR, SINGLE TRANSMITTER World FY5KE (Oprs: F1HAR, F5HRY, F5MZN,

F6FGZ, F6FVY, FY5FY)
Donor: So. Calif. DX Club – W6AM Memorial

U.S.A. K1KI (Oprs: K1KI, K1CC, KM1P) Donor: Carolina DX Association

Carib./C.A. 6Y1V (Oprs: KY1V, K1LZ, W2GB, CT1ILT, K3LP, PY5EG) Donor: Bob Raymond, WA1Z

Africa
CN3A (Oprs: I2WIJ, IK2QEI, IK2SGC, IK8UND, IZ2FFK, IZ4DPV, CN8WW)
Donor: CQ magazine

Asia
5B/AJ2O (Oprs: RX9TL, UA2FZ, RW4RW,
RW3QC, UA9CDV, RA3AUU)
Donor: Edward L. Campbell, NT4TT
AA6BB and KA6V Memorial

Japan JA7YAA (Oprs: JHØNZN, JE7HLZ, JG7PSJ, JO7DJT, JO7FTJ, JI5RPT, JJ5DWF) Donor: Bob Epstein, K8IA 9A1P (Oprs: 9A1UN, 9A2CW, 9A2RD, 9A3ASF, 9A4M, 9A5CW, S55M (9A8WW), S59KW)

Donor: Bob Cox, K3EST

Oceania
AH2R (Oprs: JI3ERV/NH2C, JR7OMD/WI3O, JG3RPL/N1BJ, JE8KKX/AH2K, KH2/JH7QXJ)
Donor: Junichi Tanaka, JH4RHF

South America
PJ4E (Oprs: KØRAY, NØKE, NØVD, WA4PGM)*
Donor: Victor Burns, KI6IM
The Cuba Libra Contest Club

MULTI-OPERATOR, TWO TRANSMITTERS
World
3V6T (Oprs: YT1AD, YU1AU, YU1DW, YU1KX,
YZ1EW, 4N1EA, 4N1NM, RX9UA, N2OW,
Lotfi-3V8BB, Alea-3V8BB)
Donor: Array Solutions

U.S.A.
N3RS (Oprs: N3RS, N3RD, N3ED, N3NA,
N2SR, W8FJ, N3DXX, K3IPK)
Donor: Kimo Chun, KH7U & Mike Gibson, KH6ND
Dan Robbins, KL7Y Memorial

Europe IR4X (Oprs: I4EAT, I4IKW, I4AVG, I4VEQ, I4TJE, I4IND, IZ3EYZ, IK2NCJ, IZ4BOY, N5GN) Donor: Aki Nagi, JA5DQH

Oceania
VK4WR (Oprs: VK4WR, ZL2MF, VK4FI, VK4TU, HA3LN)
Donor: Japan CQ Ham Radio

MULTI-OPERATOR, MULTI-TRANSMITTER
World
CT3YA (Oprs: CT3BD, CT3DL,
CT3DZ, CT3EE, CT3EN, CT3HK, CT3IA,
CT3IQ, CT3KU, CT3KY, CT3YA,
CT3NT, CT1BOP)
Donor: Dave, W6NL & Barb, K6BL Leeson

U.S.A.
K3LR (Oprs: K3LR, N2NC, K8CX, W9ZRX,
K8GL, W2RQ, KI4MTU, K3LA, N9RV, K1AR,
K3UA, N2NT, N3SD, N3GJ, LU7DW,
LW8EXF, WA4ILO)
Donor: Jim Lawson, W2PV Memorial

Europe
DR1A (Oprs: 5B4AFM, DB6JG, DF6JC,
DG3FK, DH1NFL, DJ7EO, DK1FW, DL1EJA,
DL2AA, DL6FBL, DL6LAU, DO1ET,
HA1AG, PA1TT)

Japan JA3YBK (Oprs: JG3KIV, JG3MRT, JG3WDN, JI3OPA, JP3PZD, JH4NMT, JR4ISF, JF4FUF,

Donor: Finnish Amateur Radio League

JS1PWV)
Donor: Ryozo Goto, JH3JYS

CONTEST EXPEDITIONS
World Single Operator
6W1RY (Opr: Al Crespo, F5VHJ)
Donor: National Capitol DX Assn.
Stuart Meyer, W2GHK Memorial

World Multi-Single CN3A (Oprs: I2WIJ, IK2QEI, IK2SGC, IK8UND, IZ2FFK, IZ4DPV, CN8WW) Donor: Gail Schieber, K2RED

World Multi-Multi
XX9C (Ops: XX9TAC, XX9TDC, XX9TDS,
XX9TEG, XX9TIA, XX9TJA, XX9TIB, XX9TJG,
XX9TKK, XX9TLO, XX9TMY, XX9TNI, XX9TPT,
XX9TPX, XX9TSA, XX9TTR, XX9TTK, XX9TRR,
XX9TUI, XX9TUQ, XX9TVR, XX9TREM, XX9TYYW,
XX9TTEK)

Donor: Tachio Yuasa, JA9VDA

SPECIAL CQ AWARD XF4DL (Oprs: DF7TH, DJ5IW, DK2WV, DL3DXX, XE1AY, XE1FRF, XE1GRR, XE1UN, XE2K) Donor: CQ magazine

*second place



Bill, W8QZA, took TI5N to #1 world QRP.



Tetsuo, AH7C, Single Op, All Band, took first place in Oceania.



Olli, OHØXX, was world #3 Single Op, All Band, high power as OA4WW.

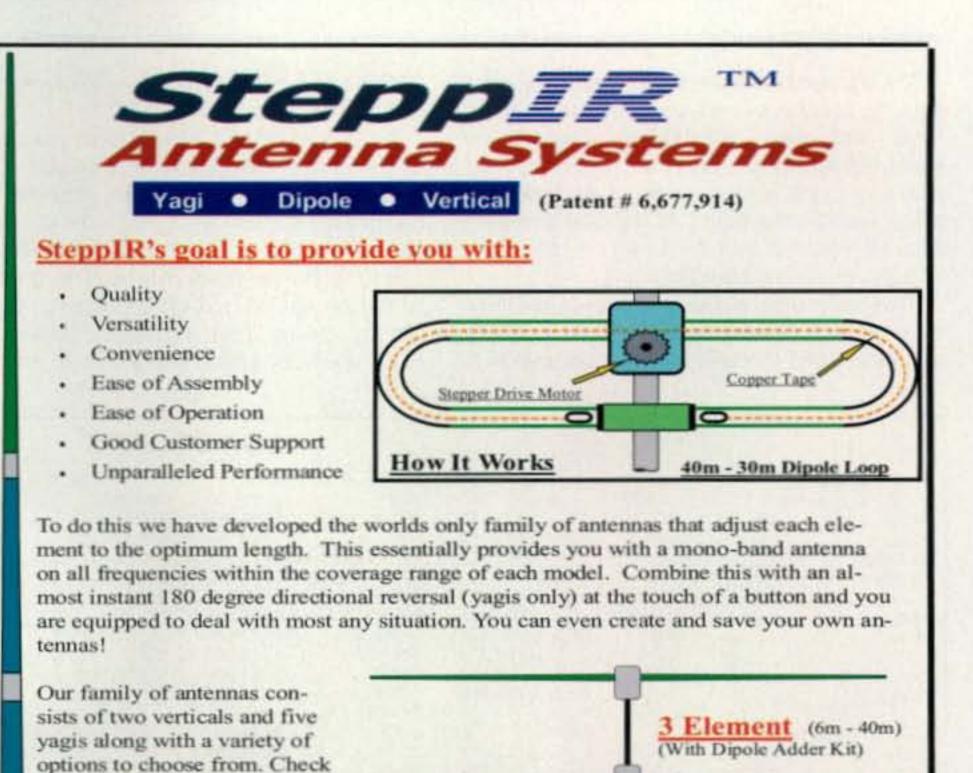
to the Slovak Contest Group, OM8A; what an antenna farm on the group's website! Third place in Europe went to the East Cork Radio Group, EI7M.

Here in the U.S. Tom's crew at K1KI took away the top spot. The fight for the next two positions was very tough between two stations from Texas. K5NA edged out K5TR for second place. AH2R continues to do an outstanding job from zone 27, and JA7YAA repeated as the top Multi-Single in Japan.

The continental winners were: North America 6Y1V, Africa CN3A, Asia 5B/AJ2O, Europe 9A1P, Oceania AH2R, South America FY5KE, Japan JA7YAA, and U.S. K1KI.

Multi-Two

3V6T operated by a Yugoslavian team finished first in the world. They commented, "We used new hardware this time, some new antennas, and new towers, too." EA8AH fielded quite an



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experienced team, with perhaps 15 CQ WW single operator championships among them. They won the second-place position Third place went to long-time top finisher, IR4X. They also finished first in Europe. Second place in Europe went to 9A7A, the Varazdin Contest Team. Third place went to the top score in zone 16, the UU7J contest team located in the eastern Crimea.

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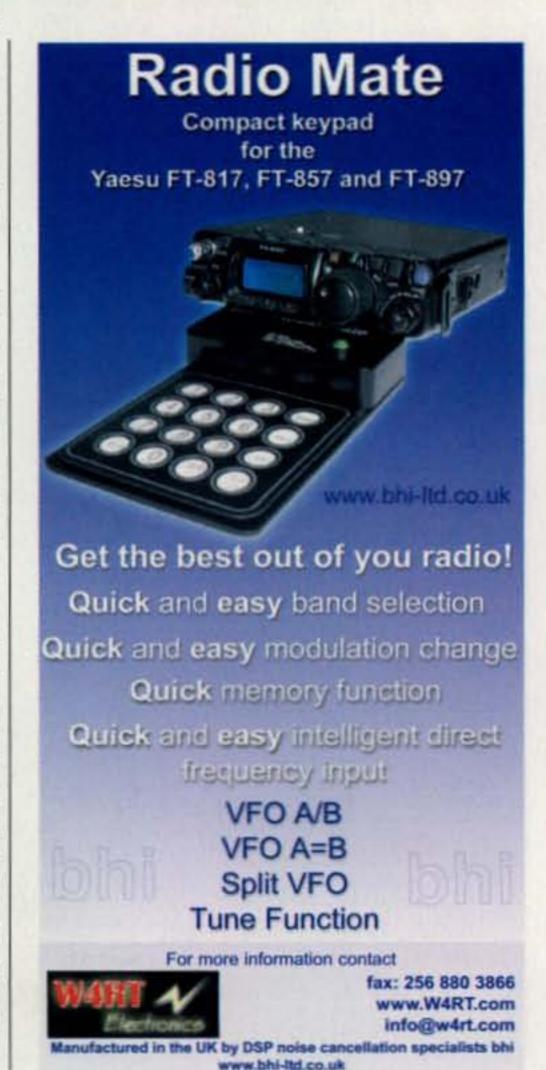
Sig's crew at N3RS dominated the M2 category in the U.S. What a fantastic, very professional effort they turned in. Second place was a real battle between the Winston Salem Courteous Operators Club, W4WS, and the W4RM crew. When the smoke settled, W4WS won second place over third-place W4RM.

The continental winners were: North America VP5DX, Africa 3V6T, Asia B7P, Europe IR4X, Oceania VK4WR, South America PS2T, Japan JA6ZPR, and U.S. N3RS.

Multi-Multi

A lot of hard work, months and months of planning, is the standard for the Multi-Multi category. Integrating the stations together and connecting them to the internet without a hitch is not an easy task. Many entries in this category have operators come from all over the world.

Reprising their role as the number one Multi-Multi in the world was the team at CT3YA. The Madeira Team was made up of 99% CT3 stations. Their location overlooking the ocean sure helped their fine effort. Finishing in the second position in the world was CT9L, a team headed by the Rhein-Ruhr DX Association. It looks like the Madeira Islands was the place to be. Third place went the Caribbean Contesting Consortium, PJ2T.



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The battle of the Multi-Multi super stations in the U.S. is always push, push, and push some more. Tim's crew at K3LR again broke into the world top ten as #7, and that was enough to also take the U.S. Multi-Multi crown. In second place was Matt's team, KC1XX, in southern New Hampshire, and third was Frank's crew, W3LPL, in central Maryland.

The multi-national German station of DR1A took the number one position in Europe. In second place was the well-known club station of

DFØHQ. In third place was the Belgium contest club, OT6A.

XX9C was an all-Chinese team that made a big effort from this rare QTH. The operator list (see the trophy winners table) provides more XX callsigns than we have ever seen. The Quartz Hill station of ZL6QH is a reliable beacon from the southern Pacific. The green-tea plantation station of JA3YBK showed its muscle by taking first in Japan. Every year HBØ/HB9AON gathers together a team and

heads to Liechtenstein. The contest community really appreciates their efforts to put a rare one on the air each year.

The continental winners were: North America K3LR, Africa CT3YA, Asia XX9C, Europe DR1A, Oceania ZL6QH, South America PJ2T, Japan JA3YBK, and U.S. K3LR.

New Records

It took a long time to develop the CQ WW alltime records. They had to be determined by

		TOP S	CORES		
WORLD	HI3NR718,875	DR1A16,893,040	21 MHz	DFØHQ14,074,620	WØVX/5104,284
ALL BAND	PP5JD581,840	V26B16,736,711	EA7RM324,576	OT6A11,921,840	W7UPF72,210
9,068,480	YC3BDJ579,410	YV4A15,007,586	4NØW322,321	MD4K10,949,400	WZ8T66,56
EA9LZ7,534,140	L44DX570,752	FUDORE	CU2/OH1VR276,740	OHØZ9,438,984	W4EEH58,58
DA4WW7,452,256	WW-244-	EUROPE	EA3FZY185,136	TM2Y8,031,452	KØDD34,93
3W1RY7,038,534	14 MHz	ALL BAND	IZ5DKJ167,608		*******
CU2A6,598,032	XE1CQ732,017	CU2A6,598,032	IR8M167,472	LIMITED STATES	14 MHz
/E3EJ6,293,430	A45WD594,817	OE4A6,108,386	14 MHz	UNITED STATES	N4IJ143,000
DE4A6,108,386	Z35T494,331	OH8X5,477,608	Z35T494,331	ALL BAND	K2MFY138,46
LT1F5,812,478	L47D452,738	\$50A5,418,576	LZ9X334,134	NN3W4,674,356	W7FP132,600
DH8X5,477,608	LZ9X334,134 YU7ZZ323,850	ES5TV5,064,255 GW4BLE4,215,978	YU7ZZ323,850	K4ZW4,528,022 K5ZD/13,764,880	N3GH
S50A5,418,576	10/22	EA4KR3,815,724	SP4XQN318,941	W9RE3,556,816	K1VSJ48,11
20 1111-	7 MHz	GM7V3,054,301	RU6CQ270,200	WB9Z3,055,964	14.14.00
28 MHz .U1HF1,075,545	CM6RCR137,919	SO6X2,835,448	EU1AZ251,537	N2IC/53,040,045	7 MHz
PY2YU634,502	IK3UMT113,285	LB8IB2,734,453	7 MHz	W3BGN2,917,044	KU1CW/Ø49,70
P5AMP572,922	SP4TKR106,362		IK3UMT113,285	AA1K/32.671,484	WAØKDS/718,40
/M2W473,180	OE5CWL106,029	28 MHz	SP4TKR106.362	K7RL2,654,568	AB7E15,18
930232,839	HQ4R104,748	S58D260,304	OE5CWL106,029	K3ZO	AK3E
358D260,304	S54A103,251	T93O232,839	S54A103,251	Sales and the sales and sales	KK8MM7,47
		LZ1NG195,300	YO7LFV95,551	28 MHz	KU6T2,43
21 MHz	3.7 MHz	GØKPW195,210	UA3SAQ88,288	W5PR65,110	
X5J2,312,386	IO1T182,900	IT9ZMX184,899		W2RR12,120	3.7 MHz
BR1EA1,531,887	WP3C97,440	UW2I110,980	3.7 MHz		K2YEH15,34
X5BW1,441,940	S55O79,728		IO1T182,900	21 MHz	K8DO11,13
Y1A1,041,296	YT1VP71,368	21 MHz	S55O79,728	N7DD505,448	K9WZB/78,25
A1A1,028,195	F5BEG61,304	9A1A1,028,195	YT1VP71,368	K2WK/4367,776	K2SZ7,42
12T831,760	OK1WCF60,192	YT9X747,950	F5BEG61,304	K9BGL324,005	KBØFHP/31,76
AND THE CONTRACTOR OF THE CONT		T9/9A8A741,014	OK1WCF60,192	K2SS/1317,615	
14 MHz	1.8 MHz	EA1FDI644,520	SQ9UM46,152	N8II290,725	1.8 MHz
Z1A1,671,401	YMØT81,207	9A4NW558,670	- Tables	NG2X263,480	KB7Q76
CN2ZR1,437,618	ISØ/K7QB46,079	MIØLLL538,736	1.8 MHz	CHICAGO	W9LYA4
C4T1,340,325	LY2OU22,977	1000000	ISØ/K7QB46,079	14 MHz	Taxan .
L8A1,280,125	DH8BQA17,214	14 MHz	LY2OU25,761	W7WA922,374	QRP
Y4NZ1,279,278	OL3X16,414	T93M1,222,033	DH8BQA17,214	WA7LT273,456	ALL BAND
793M1,222,033	UT9MZ7,540	S57AL925,106	OL3X16,414	W9EXY213,300	KA1LMR557,72
	000	YT2T910,860	UT9MZ7,540	K1IM207,625	K8ZT205,68
7 MHz	QRP	S50K794,034	GWØDCK7,176	K6HNZ 203,625	N1TM121,63
OK5R878,628	ALL BAND	DJ4PT784,044	ODD	W8TWA200,629	N7IR77,39
T96Q734,740	TI5N753,181	OHØX758,370	QRP	~	K7HBN57,82
S53F697,288	KA1LMR557,720	71114-	ALL BAND	7 MHz	NE1RD54,28
4LØABC602,889	DF1DX369,850	7 MHz	DF1DX369850 IK5RUN244584	W2/T98T61,295	N8IE31,24
/T7A558,600	JR4DAH269,584	OK5R878,628	EA3FF244584	N2GC58,552	K4JAF23,40
5FLN404,673	IK5RUN244,584	T96Q734,740 S53F697,288	IZ1ANK154020	ND8DX50,298	KR1ST/419,60
	EA3FF214,383 K8ZT205,689	S53F697,288 YT7A558,600	EA1TI95274	K5KT/652,875	W8VE12,02
3.7 MHz	IZ1ANK154,020	F5FLN404,673	SP9RQH92016	W1XX	ASSISTED
N2R1,091,694	N1TM121,638	LX6T 276,908	RW3AI84864	***************************************	ALL BAND
/T6A410,108 (H7X280,023	EA1TI95,274	ENOE70,000	RD4HD80855	3.7 MHz	WE3C3,831,53
0H7X280,023 /L7A251,442		3.7 MHz	RX1CQ64515	AA1BU189,953	KI1G3,141,13
	ASSISTED	YT6A410,108	YO4AAC51246	K1LZ162,648	K3WW3,088,68
A6A	ALL BAND	YL7A251,442		W6KW68,160	N3AD2,653.06
MI M	FM/K9NW7,238,810	9A6A 221,914	ASSISTED	K5RX67,116	W4WTB 2,390,28
1.8 MHz	7W2W6,855,216	OM7M214,776	ALL BAND	K9ES/457,096	W3UA/12,220,14
Y2ZM215,853	ZX2B5,846,880	4N1A207,010	IR4M5,604,740	WA2AOG	K2NG 2,206,44
39C164,190	IR4M5,604,740	ER1Q197,964	IR4T4,847,472	AN ELECTRICAL MANAGEMENT OF STREET	AA3B2,009,81
A8/OH4NL137,984	IR4T4,847,472		LX714,695,376	1.8 MHz	W1GD/21,906,20
SN2B104,497	LX714,695,376	1.8 MHz	DJ4AX4,584,400	KT1V21,286	K7RC1,876,47
Y2IJ87,904	DJ4AX4,584,400	SN2B104,497	S57DX3,828,697	W2MF15,512	
O5A87,840	WE3C3,831,535	LY2IJ87,904	UZ7U3,406,032	W2VO6,794	MULTI-OPERATOR
	S57DX3,828,697	4O5A87,840	TM7F3,373,290	K1HAP4,917	SINGLE TRANSMITTER
LOW BOWER	UZ7U3,406,032	S57M86,728	DJ8OG3,064,020	W3GH4,719	K1KI5,832,53
LOW POWER ALL BAND		SP3KEY73,050	DJ2YA2,824,640	K7BG1,288	K5NA3,472,95
The state of the s	MULTI-OPERATOR	OZ1HXQ70,858	LY8O2,552,094		K5TR3,367,33
40A7,660,224 II3TEJ3,628,053	SINGLE TRANSMITTER		HILL TI OPERATOR	LOW POWER	NØNI3,148,36
N7JO3,055,689	FY5KE19,720,610	LOWBOURD	MULTI-OPERATOR	ALL BAND	KØRF3,010,66
P9I2,905,112	CN3A16,171,029	LOW POWER	SINGLE TRANSMITTER	N1UR1,194,975	N4RV2,800,44
N8SG2,893,363	5B/AJ2O16,083,132	ALL BAND	9A1P9,675,616 OM8A9,431,424	N5AW	
Z1SJ2,310,562	PJ4E13,476,375	CT6A	EI7M 8,065,260	K2PS	MULTI-OPERATOR
XM6JR2,205,218	ZY7C10,652,910 9A1P9,675,616	9A2EU	TM6M	W3LL 985,130	TWO TRANSMITTER
R2A2,179,872	3/17	9A2EU	HG1S7,032,204	WD5K 832,464 WØAH/4 732,000	N3RS6,964,15
P5MAL2,076,896	MULTI-OPERATOR	UA4FER1,496,315	RK2FWA6,883,352		W4WS3,948,87
G5JK2,035,250	TWO TRANSMITTER	DL4MCF1,422,655	11041 1111 1111111111111111111111111111	1414 10 504 054	W4RM3,902,13
	3V6T23,901,295	F4BKV1,005,888	MULTI-OPERATOR	K1HT581,360	NK7U3,440,61
28 MHz	EABAH21,141,571	S51F1,005,480	TWO TRANSMITTER	ACØW573,672	KØTV/13,380,38
A8TX346,431	IR4X13,654,120	LY6A991,200	IR4X13,654,120	710,072	W6YI3,143,40
	9A7A12,944,310	UA4FRL988,500	9A7A12,944,310	28 MHz	
W7HT330,964		51.11.1.11.11.11.11.11.11.11.11.11.11.11	UU7J8,727,840	K4WI38,808	MULTI-OPERATOR
	PS2T 10.838.687		The state of the s		BALLS OF THE ALICE STREET
R2D187,153	PS2T10,838,687	28 MHz		K4QVK 4 842	
R2D187,153	PS2T10,838,687 UU7J8,727,840	28 MHz S57S 93 603	HG6N8,624,550	K4QVK4,842 NA5O 3.390	MULTI-TRANSMITTER K3LR14,957,71
R2D	UU7J8,727,840	S57S93,603	HG6N8,624,550 OE2S8,382,465	NA5Q3,390	K3LR14,957,71 KC1XX12,399,97
R2D	MULTI-OPERATOR	\$57\$93,603 IKØEIE68,880	HG6N8,624,550	NA5Q3,390 WA5WFE2,409	K3LR14,957,71 KC1XX12,399,97 W3LPL11,663,87
R2D	UU7J8,727,840	S57S 93,603 IKØEIE 68,880 EB3EPR 62,094	HG6N8,624,550 OE2S8,382,465	NA5Q3,390 WA5WFE2,409 W4JIK282	K3LR
LW7HT 330,964 LR2D 187,153 PY2CX 187,153 LU2EVA 136,912 LW1HDJ 101,616 21 MHz CT3/HA5PP 1,024,980 ST2T 744,790	MULTI-OPERATOR MULTI-TRANSMITTER	\$57\$93,603 IKØEIE68,880	HG6N	NA5Q3,390 WA5WFE2,409	K3LR

50,244

DR1A

PJ2T.

.17,208,288

SP3LWP.

16,893,040

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The original portable Z-11 was one of LDG's most popular tuners, accompanying adventurous hams to their backyards, or to the

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The Z-11Pro uses LDG's state-of-the-art processorcontrolled Switched-L tuning network. It will match dipoles, verticals, inverted-Vs or virtually any coax-fed antenna.

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Now Includes

All Cables

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Fax: 410-586-8475

E-mail: ldg@ldgelectronics.com



The Multi-Single 6Y1V station has a nice ocean view.

hand up through 2000. Once that was accomplished, keeping up yearly updates was not as difficult. You can QSY to <cqww.com> to check the records for every country that has entered the CQ WW since 1948. If you discover an error, please let us know at <questions@ cqww.com>. Below are the outstanding efforts of super operators which resulted in setting new SSB records during the 2006 contest. Congratulations to all!

World: 3.7 CN2R (W7EJ), L1.8 YMØT

North America: 1.8 VY2ZM (K1ZM), L14 XE1CQ, L3.7 WP3C

Africa: 3.7 CN2R (W7EJ), Q14 EA8ARG Asia: L1.8 YMØT, A3.7 RT9W (RX9WR)

Europe: 7 OK5R (OK1RI), L3.7 IO1T (IK1RQT), L1.8 ISØ/K7QB

Oceania: 3.7 KH7X (KH6ND), A21 VK9AA (VK2IA), A14 KH6RZ (W6YM), A3.7 KH6/ AF7DX

U.S.: A1.8 K3BU/8

Team Contesting

Five contesters from anywhere in the world can join together to form a team. As you can see below, the World-Wide Young Contesters QRO Lids team rose to the top and took away top honors. The team operated from four different countries. Second place went to the Carolina DX Association, who had a member travel to 4X-land. Third place went to the famous Kaunas Technical University Radio Club. Congratulations on 50 years of activity! Besides sending a fax or mail to CQ, you can submit your team list to <teams@cqww.com>. You will receive an acknowledgement.

1. WWYC QRO Lids: SJ2W (SM3WMV), NN3W, OH1F (OH1NOA), LX7I

(LX2A): 11,110,820.

2. Carolina DX Association: 4X/AA4V, AA4S, N1GC, N4PQX, W4WTB: 9,078,007

3. KTURC - 50 Years Anniversary Celebration: LY1R, LY4CW, LY5R, LY6A, LY9A: 4,291,025

 WWYC QRP Lids: DM2SR, CT6A (CT1CJJ), DM7A (DJ1YFK), F4BKV: 3,720,607

5. Australis: 9M2CNC, VK8AA, VK4LAD, VK4CZ: 3,443,411

6. Minnesota #1: VB4MWA, KØSR, ACØW, KH6FI: 2,845,547

7. Stafford DX Association: K2PT, K4HR: 1,971,057

 WWYC Single Band Lids: OQ5M (ON5ZO), SM6U, E21EIC, S55O, T96Q (9A5K): 1,649,466

9. Minnesota #2: WØGJ, WA2MNO, KØKX: 515,946

10. Yaroslavi Contest Club: RV3MI, RX3MA, UA3MEJ: 421,138

Special Mention

The following are some of the many who made the contest more interesting for everyone by going on DXpeditions or providing rare callsigns: 3A/IZ2EID, 3DAØWW, 3V6T, 3W9JR, 3XM6JR, 5B/AJ2O, 5H3EE, 5R8FU, 5Z1A, 6W1RY, 6W1SE, 6Y1V, 7W2W, 8R1EA, 9G5A, 9M6BRC, 9M6DXX, 9M8YY, 9N7JO, 9N7MV, A41MX, A45WD, A61C, A61M, A71EM, A92GR, AH2R, ATØD, B1Z, B7M, B7P, BA4DW, BA4RF, BA4VE, BA6IV, BA6QD, BD1DQU, BD1DRJ, BD3AIE, BD4ALC, BD4BTB, BD4IXA, BD4SI, BD4SQ, BD7IBN, BG1LKK/4, BG1QMU, BG3MZX/3, BG4AGK, BG4QGO, BU2AI, BU2AO, BV2B, BV6GU, BY1BZH, BY1DX, BY1QH, BY1TT, C4M, C52T, C6APR, C6AQC, CN2R, CN2ZR, CN3A, CN8NK, CN8SC, CT3/HA5PP, CU2/ OH1VR, CU2A, DU9/NØNM, DU9SS, DV1AV, DV1EG, DV1JSB, DX1DBT, E2ØPFE, E21EIC, E21YDP, EA8/OH1VR, EF8A, ES1QMA, EX7ML, EY7AF, EY8BA, EY8MM, FK8GM, FM1HN, FM5AN, FM5FJ, FM5JC,

TOP SCORES IN MOST ACTIVE ZONES								
Zone 3	W3BGN2,917,044	LY6M1,945,800						
K7RL2,654,568	*VP9I2,905,112	II4A1,911,455						
K6XX1,192,985	AA1K/32,671,484	*9A2EU1,815,312						
W7WA922,374	K3ZO2,362,175							
K7ZZ838,134	K3ZM/42,101,464	Zone 16						
K4XU/7639,232	N6AR/41,381,863	UA3QDX2,453,457						
K6NA573,540	AA4S1,078,056	US5D2,284,295						
N7DD505,448		*UA4FER1,496,315						
*K7ACZ328,440	Zone 14	UV5U1,270,816						
KV7DX290,997	CU2A6,598,032	UYØZG1,104,414						
W8AEF/7290,799	GW4BLE4,215,978	UY5ZZ1,097,370						
	EA4KR3,815,724	RW1ZA1,065,858						
Zone 4	GM7V3,054,301	*UA4FRL988,500						
VE3EJ6,293,430	LB8IB2,734,453	RN4AA886,410						
VE3RM3,699,630	OZ7X2,523,900	EU1PA875,812						
W9RE3,556,816	GMØF2,175,762							
WB9Z3,055,964	*CT6A2,026,357	Zone 25						
N2IC/53,040,045	*DL4MCF 1,422,655	JH4UYB4,067,140						
VE6SV1,611,360	GW3NAS1,383,046	JR1AIB1,726,725						
VC3R1,250,058		JM1XCW1,500,638						
VE3CX1,160,700	Zone 15	A STATE OF THE STA						
N5AW1,128,320	OE4A6,108,386							
*VA7RR956,532	OH8X5,477,608	8J3YAGI669,369						
	S5ØA5,418,576	JS3CTQ647,642						
Zone 5	ES5TV5,064,255	*JA5FDJ637,670						
NN3W4,674,356	SO6X2,835,448	JF1SEK497,376						
K4ZW4,528,022	SN7Q2,366,812	JA2BNN448,632						

FS/WY3P, FY1FL, FY5KE, GU4EON, H2T, H7A, HBØ/HB9AON, HD2A, HI3C, HI9L, HQ4R, HQ9R, HR1RTF, HR2RCH, HR4/ EW1AR, HSØ/EA4BKA, IF9A, IG9C, IG9R, IH9YMC, J3A, J43J, J48RT, JD1/JE1LCK, JD1BIA, JT1C, JU1DX, JV800CJ, JW5E, JW7QIA, JY4NE, LX6T, LX7I, MD4K, MU5W, OA4WW, OHØZ, P40A, P49Y, PJ4E, PZ5RA, R1ANC, S9SS, ST2M, ST2T, SV9COL, SX5P, T40M, T6EE, T70A, TC2T, TF/DL2JIM, TF/DL2JRM, TF60IRA, TGØAA, TI5N, UK8AKK, UP5G, V26HS, V31FB, V49A, V73RY, VK9AA, VP2MHX, VP2MQD, VP5DX, VP5T, VP8NO, VP9I, VQ9X, VR2/AA1ON, VR2BG, XF4DL, XU7MDY, XV2LH, XW1A, XX9C, YEØX, YE1ZAT, YI9QJ, YMØT, ZA/UT7DW, ZA/ Z35M, ZC4T, ZD8I, ZF2AH, ZL6QH, ZS9X.

YL6W2,068,041

*Low Power

Please check out the dramatic increase in activity from China, Panama, Honduras, Indonesia, Thailand, and the Philippines, to name a few places where an increase is very welcome. The number of European entries continues to increase dramatically, as you can see by reading the results.

Comments

K5ZD/1.....3,764,880

Fall of 2006 was seeing us nearing the bottom of the sunspot cycle. The conditions were far from excellent. In spite of this, the number of entrants in the SSB contest was at an all-time high! Over 4500 logs were received. Of those, 4310 were electronic! Your continued submission of an electronic log allows for a more detailed database and fairer adjudication. As has been mentioned many times before, your UBN/NIL report is just an aid to help you pinpoint how to improve your copying skills. Submitting an electronic log is easy. Send your SSB log and summary sheet to <ssb@cqww.com> (CW to <cw@cqww.com>). Please send your log in Cabrillo format. Remember to name your file with your call with .cbr extension—e.g, JT1BV.cbr. If you did everything okay, you will get back an acknowledgment. If there is something wrong, you will get a message telling you what to do to correct the error. The messages are presented in numerous languages. If you don't see your language and you would be willing to help out by translating for your fellow countrymen, please contact <k3est@cqww. com> for more information. If you are still having problems, we can help you at <questions @cqww.com>. If you make a mistake on your first log submission, you can resubmit your log. It will replace the first submission.

We continue to receive logs where the entrants forget to change bands on the computer logging program. A lot of time is spent correcting these potential "not in log" problems. Please be careful to log all of your QSOs on the correct band.

It bears repeating that packet use without claiming Assisted is against the rules. Also remember that the use of alerting networks to self-spot is against the rules. Self-spotting can be broken down into doing it your-self or trying to hide the fact that you are doing it by using other callsigns. The first case is almost always ignorance of the rules. The second case is a deliberate attempt to hide the spot by the entrant or by someone

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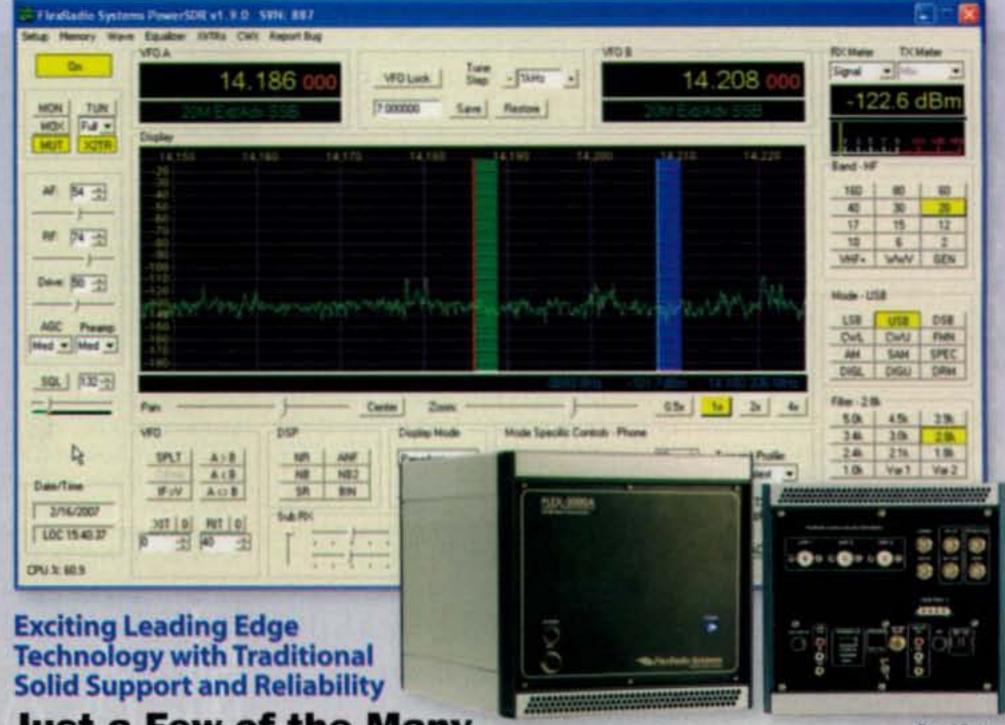
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Mike, KMOT - I had always dreamed about a radio and interface like this; but never thought it would ever happen. I sometimes catch myself staring at the screen showing the microwave band frequencies thinking "Man this is awesome!" Seems every time I turn around, there is something new coming down the pipe to make the whole setup better.

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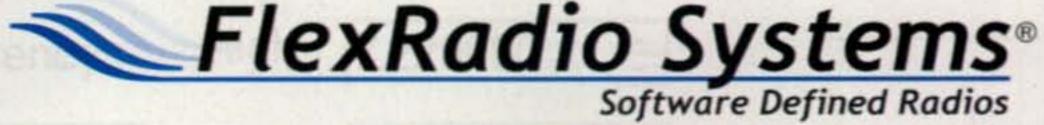
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associated with the entrant. There is nothing wrong with coming across a station and spotting it, but *self-spotting is not allowed*. Repeating from a few years ago, the CQ WW has few requirements: write down the call-sign of the station you are talking to, claim the correct category, and do not self-spot. Not so hard. The contest is for the entrants to have fun, meet friends, perhaps work some new ones, and fairly compete.

When we provided a trophy for the 21 years and younger category, we did not anticipate a bookkeeping problem: Almost no one indicates his or her age on the summary sheet. If you want to be eligible to perhaps win this trophy, please indicate your age under the "comments" section of the summary page.

Thanks

The CQ WW Contest Committee thanks all of the entrants who make the CQ WW the event each year. We do our best to assure that the results are true and accurate. The results that appear here each year require hundreds of hours of work by a lot of people. The members of the CQ WW CC who provided labor and insight in creating these results were: K1DG, K1AR, K3WW, K3ZO, K3LR, KR2Q, N2AA, N2NC, N3ED, N9RV, W3ZZ, KM3T, KT3Y, W5OV, N5KO, K6AW, and N8BJQ. The logs were received and processed by Larry, N6TW, and the scores listings were developed by Dick, N6AA. A special thanks to these hard workers. The CQ WW uses software that was developed by N6TR. Additional software was provided by WT4I. The CQ WW records are maintained by N2NC and K3EST. The All-time continental records are maintained by K6SSS. Thanks to K1AR for his advice and hard work to make the CQWW so successful. Our CQ WW CC members who are DX advisors were very helpful in offering advice, providing information, and sorting out potential problems: CT1BOH, DL6RAI, EA3DU, F6BEE, G3SXW, I2UIY, JE1CKA, OH2KI, OH2MM, OK2FD, PY5EG, S50A, UA9BA, VA7RR, VE3EJ, and E21EIC. Translation of the rules into Spanish, Japanese, German, Turkish, and French were done by EA3DU, JE1CKA, DL6RAI, TA3J, and F6BEE.

It is with a heavy heart that we move forward after the untimely loss of our friend Phil, N6ZZ (a long-time CQ WW CC member). Phil exemplified a full and active life in every way, including contesting. Among his many accomplishments, he was one of only two people to have operated the CQ WW contest from all 40 zones. His last CQ WW contest operation was from PZ5RA in November 2006. You can honor his memory by taking part in contests, which he loved. Operating the 2007 CQ WW by trying your best and being respectful of others will honor his memory.

Congratulations to all the participants and winners on all levels! CU in the 2007 contest! 73, Bob, K3EST

DX QRM

2EØTLB: Great fun. This is how contests should be. 6W1RY: Big surprise was the opening on 10 meters at this point of the sunspot cycle. Pity that I worked so few JA stations. I miss their excellent operating skills. 8P2K: What terrible conditions. Still it was great to work lots of good DX. 9W6RAY: My first CQ WW contest. Had fun, though my vertical has big ears but small mouth. Heard lots of stations but most didn't hear me. Will be back next year. C52T: Great signals from all parts of the world on all bands. Shame I couldn't get heard with my low power. Good openings on 10m. Spent all of Sunday running from a battery with just 50W out. CT3YA: The Madeira team would like to give a special thank you to each of the stations that came to our QRG to work us or at least tried to work us. We would like to congratulate all the teams that made the CQ WW DX SSB a great contest. DL1XAS: I didn't take part for more than 15 years, and I had a lot of fun testing my new QTH. Perhaps next year with beam to get more countries. My little son, 6 years old, enjoyed listening to what papa did. Propagation was not so good mostly. DP6A: Multi Two forever! E21YDP: Nice to work stations from SA and Caribbean: LU7HN, OA4WW, YV4A, and 5K4DX. Also nice to work Larry Jr., XW1X, from Vientiane. Tnx for all QSOs.

EA3EJI: For sure, despite forecasts, the CQ WW made its own propagation! Ten meters became glorious! EI2JD: Great contest, great conditions on all bands. F5KSE: First participation in CQ WW DX, and not the last. Many thanks to F5KSE Radio Club for loaning their station. G2B: Our first attempt at CQ WW SSB and we enjoyed ourselves greatly. We had a few dramas, like a PC crash, which lost rig and SteppIR control. Maybe a few mistakes there. Our FT-1000MP went wrong at 2235 UTC. G4MKP: My technique improves every year. All I need for next year is a 200 ft. tower for me and two weekend tickets to Paris for my XYL and daughter. Outstanding contest.

BAND-BY-BAND BREAKDOWN—TOP ALL BAND SCORES

Number groups indicate: QSOs/Zones/Countries on each band

WORLD TOP SINGLE OPERATOR ALL BAND

LISA TOP SINGLE OPERATOR ALL RAND

	WORLD TOP SINGLE OPERATOR ALL BAND							USA TUP SINGLE UPERATUR ALL BAND						
Station	160	80	40	20	15	10	Station	160	80	40	20	15	10	
P4ØW	34/8/18	434/17/71	829/20/74	1724/31/97	2048/29/103	1110/20/54	NN3W	70/11/34	243/18/73	298/23/82	1580/38/134	640/27/101	156/17/45	
EA9LZ	125/6/43	526/14/76	672/22/77	1515/33/105	1121/29/106	498/18/68	K4ZW	45/9/26	286/23/81	369/23/78	1391/37/125	596/24/93	133/18/49	
OA4WW	10/7/9	125/19/43	841/29/86	1326/35/106	2146/29/108	537/19/54	K5ZD/1	85/11/34	288/18/69	199/22/72	1170/29/113	709/30/104	69/12/26	
6W1RY	2/2/2	167/13/43	504/19/70	1442/36/112	1846/27/93	1078/19/87	W9RE	53/11/22	292/23/77	276/26/79	1104/36/121	605/32/100	80/11/30	
CU2A	183/10/46	352/16/63	1055/22/79	1479/27/94	1546/27/100	972/18/82	WB9Z	39/8/20	236/19/67	182/27/81	914/38/123	597/30/100	85/14/36	
VE3EJ	264/10/34	512/23/64	532/27/83	1998/37/122	807/27/102	323/18/47	N2IC/5	12/6/8	165/23/45	311/26/65	669/35/107	922/33/107	149/18/41	
OE4A	185/6/48	596/13/74	862/31/96	1723/35/116	1305/34/114	437/21/79	W3BGN	53/9/33	139/18/58	238/20/72	1071/36/115	413/24/95	110/13/49	
LT1F	2/2/2	12/8/8	406/23/42	1090/33/90	1755/29/106	1224/23/92	AA1K/3	33/9/16	101/16/50	223/22/71	1143/34/120	350/27/87	198/18/54	
OH8X	129/8/43	272/19/75	702/30/105	1833/35/110	947/30/115	306/16/73	K7RL	16/7/8	256/23/41	323/28/68	1327/37/123	365/27/63	54/12/21	
S5ØA	108/6/48	531/20/76	966/30/106	1467/34/120	827/33/107	282/19/79	K3Z0	21/8/11	335/16/71	216/20/76	651/28/106	537/21/88	90/8/23	
	WORLD	MULTI-0	PERATOR	SINGLE TR	ANSMITTE	R	in the	USA N	IULTI-OPE	RATOR SI	NGLE TRAI	NSMITTER		
FY5KE	152/14/61	583/25/88	597/31/116	2406/38/150	3062/35/146	1396/29/116	K1KI	85/12/48	187/22/77	586/31/108	1219/35/136	772/31/121	155/19/76	
CN3A	145/10/55	435/20/87	1142/30/119	1844/39/136	2876/37/160	626/26/112	K5NA	19/10/18	105/21/67	347/28/95	637/36/137	1143/33/128	146/19/59	
5B/AJ20	252/9/60	551/17/89	1444/29/112	1947/35/135	2207/36/140	1217/27/95	K5TR	63/9/17	97/21/60	337/29/96	911/36/131	1054/34/126	114/20/49	
PJ4E	35/8/19	430/18/72	1268/30/109	2110/33/128	2109/34/133	1115/23/71	NONI	39/10/21	134/24/66	211/25/83	902/38/136	761/33/118	99/15/44	
ZY7C	1/1/1	339/16/71	696/31/100	2033/37/143	2248/33/139	331/24/94	KØRF	19/8/11	86/24/51	417/32/98	870/37/137	603/29/111	96/14/40	
9A1P	141/8/58	595/18/85	1123/35/123	2307/38/153	1398/38/152	649/25/111	N4RV	53/8/29	152/18/66	207/25/85	541/33/127	699/31/118	124/18/49	
	WORL	D MULTI-	OPERATOR	R TWO TRA	NSMITTER			USA	MULTI-OF	PERATOR	TWO TRANS	SMITTER	THE S	
3V6T	246/9/58	1524/25/98	1837/33/120	3157/37/125	2689/36/140	1529/27/95	N3RS	68/10/41	470/21/88	564/28/110	1304/37/144	1073/32/125	206/19/69	
EA8AH	130/11/49	822/24/97	1848/30/111	2271/37/148	3049/36/144	1348/24/110	W4WS	28/7/8	205/19/67	360/27/100	1367/34/136	688/30/114	96/13/35	
IR4X	152/10/59	1029/26/106	1684/35/126	2171/38/149	2181/38/160	1048/29/119	W4RM	59/10/34	394/21/80	404/26/88	1259/35/117	543/26/98	73/13/26	
9A7A	357/8/56	1155/23/98	1598/35/131	2721/38/155	2201/38/153	663/25/107	NK7U	33/8/14	395/27/59	429/31/85	1293/38/146	438/29/80	100/12/32	
PS2T	3/2/2	46/13/16	795/29/85	1755/37/124	3085/37/144	1289/27/115	KØTV/1	52/10/25	440/22/92	215/26/91	872/32/130	521/26/108	95/14/32	
UU7J	296/11/63	656/28/93	1322/36/124	2183/40/149	1812/36/143	731/27/105	W6YI	10/5/4	123/20/37	532/29/81	924/37/129	753/32/97	96/16/34	
	WORLD	MULTI-0	PERATOR	MULTI-TRA	ANSMITTER	3		USAN	MULTI-OP	ERATOR M	IULTI-TRAN	ISMITTER		
СТЗУА	163/10/56	841/24/92	1920/34/126	2782/38/150	2924/38/156	1123/31/117	K3LR	305/16/57	991/28/104	1054/31/118	3047/40/165	1384/32/135	481/23/87	
CT9L	157/8/49	474/16/76	1623/33/118	2648/37/137	3337/37/149	1186/27/100	KC1XX	273/11/48	893/25/105	953/29/114	2108/39/153	1694/32/138	272/21/71	
PJ2T	225/10/26	883/25/95	1387/29/109	3141/34/118	2957/30/114	1059/16/42	W3LPL	367/15/63	837/28/106	1077/29/119	1962/39/155	1190/32/137	421/24/86	
DR1A	755/11/64	1864/24/103	2491/36/137	3361/40/163	1817/37/161	1002/27/117	NQ4I	181/11/37	295/25/80	843/30/115	2118/37/146	809/36/133	249/19/51	
V26B	239/10/33	741/23/95	1945/29/118	2924/34/116	3848/33/125	1030/17/58	K3NA/1	217/13/56	599/24/101	640/27/108	1157/32/136	639/30/123	328/21/79	
YV4A	93/7/17	553/18/72	1316/30/111	2766/37/135	2947/29/110	802/25/80	K1RX	147/13/42	517/23/93	561/27/107	1380/35/138	666/28/119	304/21/72	

Thank you. **G40CO**: As always CQ WW makes its own propagation. My first HF contest in several years. Must improve my LF antennas. **GI4SJQ**: Lots more time this year even though I had to work on Saturday. Worked mostly Europe with very few W/VE stations on 15 and 20m worked. 10m was open which was a change. Great fun but very tiring. QRM was very heavy. **GM2T**: Enjoyed the contest as always. Great to see Foundation license holders, some of them entering a contest for the first time, having a real go and coping with heavy QRM. **GW3YDX**: Very hard work on Sunday. No USA at all!

HR2RCH: Tnx fer nice contest and allowing our radio club to participate. Tnx to all the stations that make this contest so great because of the pileups. IO4T: Our best WW DX SSB. Nice team, good Es openings on 10 and 15 Sunday. IWBHOU: My first CQ WW SSB. Definitely an exciting experience. Only 506 QSOs but a good start for the future. JM1LPN: The propagation was better than expected on 15m on Saturday. Sunday was poor with the path to the polar areas very limited. We do not remember working so few stations from Scandinavia during the CQ WW. KH7U: Good conditions. It was great running stateside in the morning and having FG5FU break through, then a few QSOs later, 6W1SE. KL1V: Great openings into the Pacific, but where was the rest of the world? LU8SAN: My first entry log in CQ WW. I'm blind and automatize with a pulser to take QSO time to record in tape. Some LU hams helped me to write software that permits logging more easy in realtime QSO logging. I'm very happy. New doors were opened and enjoy this moment. M4A: A very fun contest entry with a large team made up almost entirely of current students or recent graduates of Cambridge University.

OH2TI: Demonstration of contesting at club. Also first little bit of proper contesting in ages. Had fun. Must start to do this more often (OH5JOC). OK4DZ: I am newcomer, having one year ham licence now. First time in CQ WW for a few hours. Excellent propagation. OT6L: New location in the fantastic shack of ON4HIL with lots of new operators. Had a lot of fun and learned a lot, especially what you are allowed to work as multiplier station in MOST class! P40A: Awesome contest with conditions better than predicted, again! PE2KP: It was great DXing with my 4.5 watts QRP and working a few new ones on 160 meter band. All the bands were open for DXing. PI4COM: After a few years, back to multi-operator contesting. Our mix of experienced and new contesters sure enjoyed this contest. CU in the next one. RZ6MO: Very big surprise, good conditions on 28 MHz after 5 years of silence. S50D: Team of youngsters led by op S59D was introduced into world of contesting.

EUROPE TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
CU2A	183/10/46	352/16/63	1055/22/79	1479/27/94	1546/27/100	972/18/82
OE4A	185/6/48	596/13/74	862/31/96	1723/35/116	1305/34/114	437/21/79
CH8X	129/8/43	272/19/75	702/30/105	1833/35/110	947/30/115	306/16/73
S5ØA	108/6/48	531/20/76	966/30/106	1467/34/120	827/33/107	282/19/79
ES5TV	361/9/55	578/22/82	869/30/95	1769/38/133	804/31/116	384/15/72
GW4BLE	100/8/46	501/12/70	654/22/80	1236/29/97	816/21/80	317/19/75
EA4KR	26/5/21	498/17/82	525/21/76	1342/28/100	1118/27/93	118/17/61
GM7V	247/7/45	632/19/78	692/26/95	1249/31/105	750/28/92	244/13/60
S06X	153/8/38	616/16/77	538/28/95	1225/33/97	307/29/99	181/21/75
LB8IB	388/6/52	760/12/73	378/13/71	1362/32/116	507/22/85	159/10/55

EUROPE MULTI-OPERATOR SINGLE TRANSMITTER

9A1P	141/8/58	595/18/85	1123/35/123	2307/38/153	1398/38/152	649/25/111
OM8A	370/12/62	417/22/92	1288/34/125	2265/39/160	1187/38/153	280/23/104
EI7M	231/9/57	858/19/95	568/25/100	2317/40/145	1386/33/134	985/20/100
TM6M	191/7/52	468/19/87	761/30/103	2502/38/151	709/32/132	479/20/94
HG1S	113/8/53	553/19/83	960/33/117	1835/38/149	945/37/155	642/24/112
RK2FWA	367/9/61	599/19/82	999/33/117	1786/37/161	848/36/140	569/21/92

EUROPE MULTI-OPERATOR TWO TRANSMITTER

IR4X	152/10/59	1029/26/106	1684/35/126	2171/38/149	2181/38/160	1048/29/119
9A7A	357/8/56	1155/23/98	1598/35/131	2721/38/155	2201/38/153	663/25/107
UU7J	296/11/63	656/28/93	1322/36/124	2183/40/149	1812/36/143	731/27/105
HG6N	429/8/62	1147/20/95	1289/32/121	1771/36/145	1584/37/144	614/25/100
OE2S	405/7/56	872/18/83	898/32/119	1636/40/148	1667/35/145	705/27/111
DQ4W	224/6/46	815/19/83	1013/31/112	1971/36/133	1585/37/144	371/22/91

EUROPE MULTI-OPERATOR MULTI-TRANSMITTER

DR1A	755/11/64	1864/24/103	2491/36/137	3361/40/163	1817/37/161	1002/27/117	
DFØHQ	867/10/61	1737/27/106	2516/36/143	2755/39/168	1554/37/154	983/26/123	
OT6A	733/8/56	1741/20/95	1944/34/126	2421/39/157	1515/35/148	990/25/111	
MD4K	936/11/65	1270/16/82	2815/31/117	2443/39/153	2134/30/134	1669/21/93	
OHØZ	939/9/59	1467/23/94	2057/31/113	2443/40/155	1159/33/139	767/21/84	
TM2Y	344/11/53	1003/20/87	873/26/90	2046/39/142	1662/34/125	563/21/91	

SE5S: Much fun on first day when 10m and 15m were open. I got many new DXCC in this contest. Thanks to all who heard my "Swedish call"! 75W works okay! SN1X: Next year will be better. Sunday without NA and SA was just like tea time. T6EE: This was my first CQ WW; it was not my first amateur radio venture into Afghanistan. Fortunately, two years earlier I set up an amateur station to mark Afghanistan's first presidential election. TF4M: The magnificent aurora made conditions very difficult. U1BA: Anniversary contest. My first CQ WW phone was in 1956 (club station UA1KBB). VE3MGY: You could actually hear the aurora in the headphones and signals were down by a factor of 20! It would have been an excellent weekend for the CQ WW VHF contest! VK1AA: I am 9 years old and this was my first contest. My dad and I operated from the car, running 60 watts to mobile antenna. I liked it very much. VP2MQD: This was my first trip to Montserrat. We ran low power with limited antennas. It was tough on low power from the Caribbean, but I enjoyed the contest. VY2ZM: Solar minimum low band condx not optimal but reasonably good. Nice to see so many old friends.

XE2S: Thanks to all of you who gave me the chance to QSO and hope to see you next contest. YI9QJ: Dipole in a war zone. YM125ATA: It was very tiring to work with 10-character callsign. It was a pleasure for me to remind everybody about Turkish leader with YM125ATA/4 special callsign during contest. YO2IS: Pleased to find 10 meters wide open, not too many participants. Was running my "Retro-Rig," GU29 (Russian 829B) PA, 75W and trap gp. ZL2AWH: Conditions not good. Had trouble getting stations to turn their beams down under. ZM2M: Enjoyed our first as ZM2M operating from a farm workshop with two wires and two Yagi antennas erected for the contest. ZS9X: First M2 from the new ZS9X contest station!

USA QRM

AA5RO: First time for most of the operators. AB7E: Wow, what a grind. Operating low power with a dipole on 40m in an SSB contest is an exercise in perseverence. Lots of calling, lots of time between contacts, and all S&P, at least here from Arizona. AC5ZS: Thank God for 10 meters! AF7DX: Just changed my call from AH6RF to AF7DX as I am moving to WA soon. Boy, was it a pain to sign "portable KH6" for the contest! Guess this will be my last CQ WW from Hawaii. Thanks for the fun! KODD: They say I have awoken from a 15 year coma. KOIZ: Surprisingly good band conditions. Five more multipliers than last year. Using my Collins vintage station adds a fun element to contesting. K2HN: QTH had snowstorm and power outages which limited operations. Special thanks to all the stations that took the time to pull me out of the noise (5W). K2MFY: Contest off to a good start: first QSO was B7P! K3MQ: My first SSB DX contest. Great fun! But some ops spoke so fast I thought I had picked up a RTTY signal! K3ZT: Lots of great DX contacts on 15 meters! K5RX: 80 meter signals from Europe way below normal. Heard no Scandinavia at all. Big surprise to be called by 9M6DXX. First time for our club to participate. We enjoyed it! K7ACZ: Heard some Asia stations S&P but not running. Would have loved to log them. Thanks to 3XM6JR for asking for the West Coast, otherwise would not have been able to get through to him past the East Coast curtain.

KA1C: Wow! The first contest I worked where I was able to make contacts on all bands, 160 through 10m. Nice to see 10, 15, and 160 open on the same weekend. KBØFHP: Oh, I wish I had had a couple of more dB! This was undoubtably the hardest time I have had in a contest, low power and on 80m, using only a cheezy wire vertical strung in the trees, with only minimal radials. I think I got really tired of "again again?" I want to thank everyone who was patient with my puny signal. KG4VPC: My first CQ WW contest ever! Had fun and worked a lot of new countries. KU4V: My tree wires seemed more directional and gray-line dependent than I anticipated. JH4UYB and V73RY were surprises as much as hardly no Europe! KY6LA: I love this contest. I only wish I had more time to play at it. 10m was open and lots of DX contacts during the supposedly low sunspot cycle. NE1RD: High winds and a couple of power brown-outs threatened but did not affect the weekend's operation. I was able to sneak up a G5RV at 55 feet and make it a flat-top (instead of the inverted-V like last year) and that helped considerably. QRP phone is still a challenge, especially with wire antennas, but that's what makes it fun! NJ9Z: Very challenging conditions with lots of QRN/QSB. Being able to bust through a few pile-ups with low power and a vertical made it all worth it. NN7SS: This was multi-operator from my "new" Vashon Is. QTH with the members of the Vashon-Maury Island Radio Club (W7VMI), many of whom were brand new to CQ WW.

W1CTN: 20 meters was like a knife fight in a telephone booth, no quarter given. W4CEO: Hit my goal of 200 QSOs. Not bad using Hamsticks on the car in the driveway. Highlight was working the FK8 on 15m. W4WS: First try at M/2. So much fun, yet so different in terms of strategy from M/S. If you can have this much fun at the bottom of the cycle, there is no doubt this is the best contest out there. W8KNO: With 12 minutes to go, reached my goal of working all continents. W9LYN: Was great to see 15 meters so good near the bottom of solar cycle 23 that one could catch VK4CZ with 100 watts to a 160 meter inverted-L. WN3R: My first contest from new QTH known as "Ham Heaven." Score would have been better if the beam directions were not set by the 40 mph winds. WU9B: My best effort so far from my little pistol station!

(Continued on page 103)

The recently-sleeping ham radio marketplace is waking up again, with this year's Dayton Hamvention[®] featuring so many new transceivers and other goodies that we had to break this report into two parts. We'll look at radios and amplifiers this month, and finish our "what's new at Dayton" tour next month.

Hot Stuff at Hamvention® - Part I

BY RICH MOSESON,* W2VU

here is a new excitement in the air about ham radio, and it's showing up in the marketplace as well. Last year, we saw four new radios introduced at Hamvention®, and only one the year before. This year, there are ten! Not only that, but many of them include groundbreaking innovations that promise to move us forward into the next generation of ham technology. As usual in this annual marketplace survey, we'll start out with transceivers, receivers, and amplifiers. Then next month we'll look at antennas and antenna accessories, followed by general station accessories.

Radios

We'll start off with the five new HF transceivers (six, counting one introduced earlier in the year), and we'll take these alphabetically by manufacturer, starting with Elecraft, which actually previewed its new K3 transceiver (photo A) at the Visalia International DX Convention in late April. This rig breaks with a few Elecraft traditions. First of all, it's big, by Elecraft standards, 4" × 10" × 10", and you have the option of purchasing the radio factory-assembled or as a kit-but a different kind of kit. All the modules are pre-assembled and tested, and your job as the builder is to put the modules together inside the radio. No soldering is required. Performance-wise, the rig covers 160-6 meters with your choice of two power output levels, 100 watts or 10 watts (which you can later upgrade to 100 if you want). The rig includes two totally independent receivers, each with 32-bit digital signal processors and crystal roofing filter bandwidths as narrow as 200 Hz. (The high-performance receiver is standard for the main receiver, an option for the subreceiver.) If you connect the radio to an internet-enabled computer, you can download software updates with one click, using the included downloader software. Speaking of computers, the rig includes dedicated jacks for connecting to computer sound cards as well as an RS-232 jack (with USB adapter available) for making other computer connections. One unique feature is the built-in Anderson PowerPole™ connectors for DC power. No proprietary 18-pin power sockets, just simple PowerPole connectors. Options include an internal autotuner and a transverter interface that can be built into the radio. Costs range from \$1400 to about \$3000, depending on power level, major options, and whether you buy it assembled or as a kit.



Photo A- The Elecraft K3 transceiver is a "modular kit" in which all the circuit boards are pre-assembled. It covers 160-6 meters at either 10 or 100 watts. (Photos by the author unless otherwise noted)

Next up is FlexRadio's Flex-5000, representing a new generation in software defined radios, or SDRs. The 5000 (photo B) is a "black box" with connectors on it, as all settings are controlled from your computer. It puts out 100 watts on all ham bands from 160–6 meters and includes a general-coverage receiver, plus a jack for a separate receive antenna that's particularly useful on 80 and 160 meters. The receiver can monitor the transmitter's spectrum, and includes a high-resolution spectrum display and panadapter to see



Photo B–
FlexRadio's
Flex-5000,
representing a
new generation
in software
defined radios, is
a "black box"
with connectors
on it, as all
settings are
controlled from
your computer.

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Photo C- The Hilberling PT-8000 transceiver covers 160-2 meters, is offered at three different HF power levels, and, unlike any other radio on the market today, comes in a choice of three cabinet colors—black, blue or red! (Photo courtesy Array Solutions)





Photo D—ICOM bills its new IC-7700 as "the contester's rig," and has a DSP unit dedicated to the spectrum scope. Power output is continuously adjustable from 5 watts to 200 watts at full duty-cycle and there's a low-noise switching power supply built in.



Photo E- Yaesu's new FT-450 is a compact rig covering 160-6 meters with 100 watts out on CW, SSB, and FM (25 watts on AM). Eight bandpass filters at the RF input help eliminate interference from out-of-band signals.

where activity is on a band (or where there's a quiet spot). You can point and click to retune to the frequency of your choice. The magic here is in the software, though. The DSP filters are fully adjustable from 10 Hz to 16 kHz, and are mode-specific. No hardware filters are required. On the transmit side, you have full control of transmit bandwidth, audio equalization, and digital compression. And the radio is never "finished." The open-source PowerSDR™ software is regularly updated and upgraded, and a simple download from the internet gives you new features with each new version. Finally, if you don't want to dedicate a computer to running this radio, the Flex-5000C model (\$2000 more than the basic 5000A) includes a built-in computer with a gigabyte of RAM, a 160 GB hard drive, Windows® XP operating system, standard internet connectivity, and a wireless keyboard and mouse.

A new entrant to the ham market in the United States is Germany's Hilberling GmbH, whose high-end PT-8000 transceiver (photo C) is being marketed in the U.S. by Array Solutions. The PT-8000 covers 160-2 meters, is offered at three different HF power levels (10, 100, or 600 watts; 10 watts VHF on all models), and unlike any other radio on the market today, comes in a choice of three cabinet colorsblack, blue, or red! It's also huge, weighing in at a very solid 52 lbs. (Elecraft's K3, by comparison, weighs 8 lbs.). The PT-8000's receiver features seven 16-pole ladder filters, working in combination with DSP filters in the second IF stage, resulting in ultra-sharp filtering at 10.7 MHz. The same filters are used in the transmitter as well. The unit is also designed to serve as an IF for UHF and microwave transverters, for the very serious VHF weak-signal enthusiast. One other unique feature of the PT-8000 is the inclusion of the ISB, or independent sideband, mode, originally used to send live audio on the same frequency as a slow-scan TV picture, but now finding new uses in the HF digital world.



Photo F— The Ten-Tec Omni-VII is the first ham rig that can be remotely operated over the internet via a home computer network and an Ethernet cable connection on the radio's back panel. It puts out 100 watts on 160–6 meters.

ICOM has a new player on HF (plus 6 meters), the IC-7700, which it bills as "the contester's rig" (photo D). The IC-7700 comes with two 32-bit floating-point DSP units (the same type used in the IC-7800), one for the transmitter and receiver, and the other dedicated to the spectrum scope. The power output of the IC-7700 is continuously adjustable from 5 watts to 200 watts at full duty-cycle (5–50 watts on AM), and has a low-noise switching power supply built in. The 7700 also includes a built-in digital voice recorder (DVR) and is equipped for no-computer RTTY and PSK-31 operation simply by plugging in a USB keyboard (there are two USB ports on the front of the radio, one for a keyboard and the other for a flash drive to which you can save your digital QSOs and transfer them to your PC). The spectrum scope, with its dedicated DSP chip, lets you adjust the bandwidth resolution and monitor the width



Photo G- Italian manufacturer SPE has introduced the Expert 1K-FA fully solid-state 1-kilowatt PEP amplifier covering 160 to 6 meters (700 W PEP on 6) with a built-in power supply and automatic antenna tuner. (Photo courtesy Array Solutions)



Photo H– Tokyo Hy-Power's HL-2.5KFX is a 1500-watt PEP solid-state amplifier covering 160–10 meters. It's shown here next to another new unit, the HC-1.5KAT automatic antenna tuner.

and distortion of incoming signals. The scope range may be set independently from the current receive frequency. Finally, the 7700 includes a separate preamp and mixer specifically for its 6-meter receiver, making it easier to pull out weak signals during openings on "the magic band." Like the Hilberling, the IC-7700 sits solidly on your desk at 50+pounds.

Returning to the world of lightweight and compact HF rigs, Yaesu's new FT-450 (photo E) weighs less than 8 pounds and is only 9" × 8.5" × 3.3" (plus knob depth). It covers 160–6 meters and puts out 100 watts on CW, SSB, and FM (25 watts on AM). Eight bandpass filters at the RF input help eliminate interference from out-of-band signals, and its DSP features include IF shift control with a "contour filter" for shaping the passband, as well as a

manual notch filter, digital noise reduction, and variable IF width. On the transmit side, the DSP provides a digital microphone equalizer, DSP VOX, and two voice memories of up to 10 seconds each. In addition, the radio can be set to read out frequency, mode, and Smeter readings in voice, a great help for the visually impaired operator. An internal automatic antenna tuner is an option, and the radio's light weight and small size make it ideal for mobile or portable operation as well as home-station use.

Finally, while it was formally introduced earlier this year, Ten-Tec's Omni-VII (photo F) deserves a mention here, if for no other reason than the fact that it is the first ham rig that can be remotely operated over the internet via a home computer network and an Ethernet cable connection on the



Photo I— ICOM's IC-2820 is a dualband 144/440 MHz transceiver which (with an optional digital unit) features D-Star digital voice capability and internal Global Positioning System capability, the first ham rig to do so.

radio's back panel. It puts out 100 watts on 160–6 meters, has separate equalization controls for both received and transmitted audio, and features a distributed roofing filter system to enhance noise-figure numbers and minimize intermodulation distortion.

HF Amplifiers

Two new HF amplifiers debuted at Dayton this year. The Expert 1K-FA (photo G) by Italian manufacturer SPE (marketed in the U.S. by Array Solutions) is a fully solid-state 1-kilowatt PEP amplifier covering 160 to 6 meters (700 watts PEP on 6; new FCC rules again permit the sale of amps including 10 and 12 meters) with a built-in power supply and automatic antenna tuner. It is said to connect easily to all current ICOM, Kenwood, and Yaesu transceivers, and is fully automatic, retuning itself in response to frequency changes in the transceiver. It will run off either 120 or 230 volts AC, and can be driven by as little as 20 watts of input power.

The next is actually a family of amplifiers from Tokyo Hy-Power (marketed



Photo J— The control head of the new Kenwood TM-V71A is detachable and reversible, so you can mount the rig with the speaker facing either up or down, and still have the head right-side-up. It includes a weather-alert feature and is compatible with the ARRL's Travel-Plus repeater mapping program



Photo K—The weather-resistant Yaesu FTM-10R is designed with the motorcycling ham in mind. One unique feature is that the mic and push-to-talk switch are located in the detachable front panel, so you can hold the whole front panel in your hand and talk into it. The radio will also be Bluetooth-compatible.

in the U.S. by Ham Radio Outlet). The "jewel in the crown" is the HL-2.5KFX (photo H), which, despite its name, is a 1500-watt PEP amplifier covering 160-10 meters. Fully solid-state and microprocessor-controlled, it changes bands automatically when receiving frequency information from most ICOM, Kenwood, and Yaesu transceivers. The company also introduced a companion automatic antenna tuner, the HC-1.5KAT. Tokyo Hy-Power's other new amps include the HL-1.5KFX (1 kW, 1.8-28 MHz + 650 W on 50 MHz), HL-1.2KFX (750 W, 1.8-28 MHz), HL-450B (400 W, 3.5-28 MHz), and the VHF HL-500V (500 W on 2 meters).

VHF/UHF Transceivers

This year's Hamvention saw the introduction of five new VHF/UHF transceivers, including one with built-in GPS capability, one that can be reprogrammed from ARRL repeater mapping software, and one designed with the motorcycle-riding ham in mind.

ICOM's IC-2820 (photo I) is a dual-band 144/440-MHz transceiver that, if you add the optional UT-123 digital unit, features not only D-Star digital voice capability in addition to standard analog FM, but also Global Positioning System location information, making the 2820 the first ham rig to include internal GPS capability.

Kenwood's TM-V71A (photo J) has an interesting feature to help give you more flexibility in deciding where to mount the rig. The control head is not only detachable but also reversible, so you can mount the rig with the speaker facing either up or down, and still have the head right-side-up. It also features 1000 memories and ten weather channels, includ-

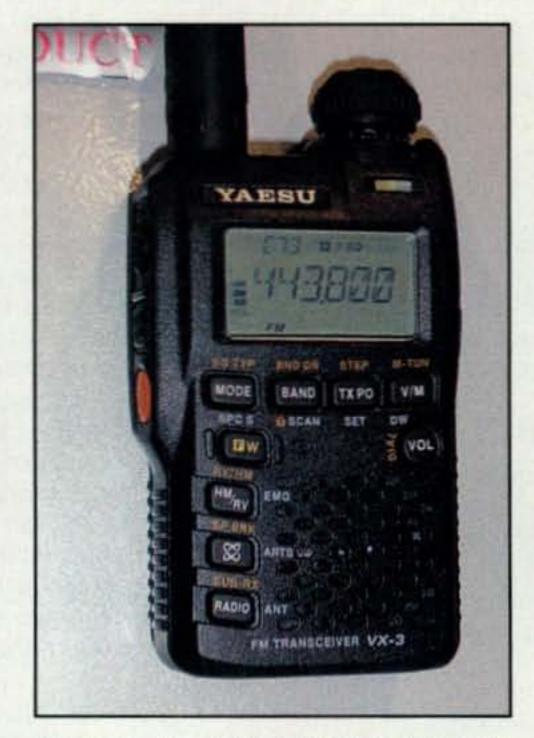


Photo L— Yaesu's VX-3R is the only new handheld introduced at Dayton this year. Unique features include an internal bar antenna for AM broadcast reception, a stereo headset jack for listening to FM stereo broadcasts, and a CW learning and training feature.

ing a weather-alert capability to sound an alarm in response to a warning from the National Weather Service. In addition, you can store five separate memory "profiles," such as groups of repeaters for different areas; plus it is compatible with the ARRL's TravelPlus® repeater mapping program. You can plot out a route in the program, and then dump all of the repeaters along that route into the 71A's memory.

Kenwood also introduced the TM-D710A mobile rig, which is APRS and Echolink-ready and has an input/output port for an outboard GPS receiver, along with all the functions of the TM-V71.

Vertex-Standard's Yaesu FTM-10R (photo K) is a tiny dual-bander with a detachable head that's designed with the motorcycling ham in mind. In fact, Yaesu even had it mounted on a motorcycle in its booth. The FTM-10R is capable of being submerged for up to 30 minutes in as much as 3 feet of water and is dust-resistant as well. One unique feature is that the mic and push-to-talk switch are located in the detachable front panel, so you can hold the whole front panel in your hand and talk into it. The radio will also be Bluetooth-compatible.

The only handheld on the Dayton intro list this year is Yaesu's VX-3R (photo L). It weighs less than five ounces yet can put out as much as 3 watts (with external power; 1½ watts on the internal battery) on 2 meters and 70 centimeters. In addition, its wideband receive coverage has led to the inclusion of an internal bar antenna for AM broadcast reception, plus a stereo headset jack for listening to FM stereo broadcasts. Finally, it includes a CW learning and training feature.

Receivers

Two big receivers were introduced at Dayton, the AOR AR-Alpha and the ICOM IC-R9500. Both are very highend professional-quality receivers with price tags to match. For more information on these receivers, see the August issue of our sister magazine, *Popular Communications*.

Next month, in Part II, we'll cover antennas and accessories.

FCC Remarks at the 2007 Dayton Hamvention®

he FCC Forum on May 19th at the 55th Dayton Hamvention® attracted a huge crowd. The Commission sent two speakers: William Cross, W3TN, of the Wireless Telecommunications Bureau, and Riley Hollingsworth, K4ZDH, of the FCC Enforcement Bureau. We will summarize Bill's remarks below and provide Riley's comments in full elsewhere in this column.

Bill Cross works in the WTB's Mobility Division in Washington, D.C. This is the office that is responsible for the day-to-day administration and the overseeing of the Amateur Radio Service and much of its rulemaking. The division also has staff members in the Gettysburg, Pennsylvania licensing facility. Riley Hollingsworth's office is also in Gettysburg.

Cross's presentation covered current and pending rulemaking activities. He began by covering the two main Report and Orders (R&O's) that became effective since the last Dayton Hamvention®. These are WT Docket No. 04-140, commonly known as the "Novice refarming" or "phone band expansion" decision, and WT Docket No. 05-235, the no-code proceeding. The remainder of the text of this month's column is Bill's presentation at the forum (words in italics represent this editor's lead-ins and comments).

The Phone Band Expansion

First I want to tell you what we did in the Report and Order in WT Docket No. 04-140. This is sometimes called the phone band expansion proceeding, but the decision actually had a much greater impact than just authorizing more frequencies for phone operation. It resolved 20 petitions for rulemaking.

Bill summarized the main rule changes of what the Commission decided:

- Eliminate the Novice and Technician Plus Class telegraphy bands, and used some of that spectrum to expand the bands for phone operation in the 80-, 40-, and 15-meter band.
- Authorize Novice and Technician Plus Class licensees CW privileges in what you all refer to as the General (and Advanced) Class CW bands, and CW, RTTY, and data emissions privileges in 28.0–28.3 MHz.
- Allow licensees to express their desire as to which radio club receives their callsigns in memoriam if they wished to do so. A recipient club would still have to be the first applicant for the callsign to get it, however.
- Prohibit acceptance of more than one application per applicant per vanity callsign. Only the first application received is now being considered.

This should end the gaming of the vanity callsign system.

 Allow commercial manufacturers to market amplifiers to amateur radio operators that are capable of transmitting on the 10- and 12-meter amateur bands. The Commission also clarified and simplified the exceptions in its rules that applied to HF amplifiers and deleted the definition of an external RF power amplifier kit because it was vague.

Other rule changes in this decision were to:

- Allow your station to transmit an image emission 500 Hz or less on the data and RTTY frequency segments.
- Allow auxiliary stations (these are stations used for repeater and "remote base" control links, among other things) to transmit on certain parts of the 2-meter band. This change eliminates any doubts about the legality of Kenwood's "Sky Command" remote-control system.
- Allow spread spectrum emissions on 222–225
 MHz (1.25-meter band.).
- Allow retransmission of communications between a manned spacecraft, such as the ISS International Space Station and its associated Earth stations.
- Delete the frequency bands and segments specified for RACES stations and clarify that during certain emergencies, RACES operation would be authorized pursuant to FCC Rules Part 214.
 Note: Part 214 covers procedures for the use and coordination of the radio spectrum during a period of—or threat of—war or a state of public peril.
- Make some changes to a few administrative rules in the examination system.

The "No Code" Proceeding

Second, I want to tell you what we did in the Report and Order in WT Docket No. 05-235. This is sometimes called the no-code proceeding because "that darn 5 wpm code test" received all the attention. But the decision also more or less restructured the license classes, because it changed the privileges for a couple of hundred thousand licensees. This decision resolved 18 petitions that requested rule changes based on the WRC-03 changes to the international Radio Regulations.

Cross said the two major rules changes in Docket 05-235 were:

- to eliminate the Morse code requirement for the Technician Plus, General, and Amateur Extra Class operator licenses, and
- to authorize Technician Class licensees the same HF operating privileges that Novice and "Tech Plus" Class licensees have.

We did not automatically upgrade anyone's licensee class or change the operating privileges

^{*1020} Byron Lane, Arlington, TX 76012 e-mail: <w5yi@cq-amateur-radio.com>

10 Bands -- 1 MFJ Antenna!

Full size performance . . . No ground or radials

Operate 10 bands: 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 Meters with one antenna Separate full size radiators . . . End loading . . . Elevated top feed . . . Low Radiation Angle . . . Very wide bandwidth . . . Highest performance no ground vertical ever . . .

Operate 10 bands -- 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 Meters with this MFJ-1798 vertical antenna and get full size performance with no ground or radials!

Full size performance gives high efficiency for more power radiated. Results? Stronger signals and more Q-5 QSOs.

Full size performance also gives you exceptionally wide bandwidths so you can use more of your hard earned frequencies.

Full size performance is achieved using separate full size radiators for 2-20 Meters and highly efficient end loading for 30, 40, 75/80 Meters.

Get very low radiation angle for exciting DX, automatic bandswitching, omni-directional coverage, low SWR. Handles 1500 Watts PEP SSB.

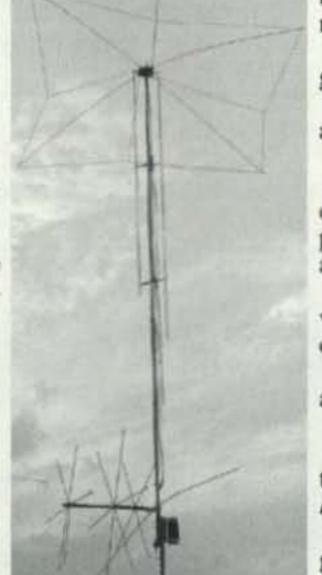
MFJ's unique Elevated Top Feed™ elevates the feedpoint all the way to the top of the antenna. It puts the maximum radiation point high up in the clear where it does the most good -- your signal gets out even if you're ground mounted.

It's easy to tune because adjusting one band has minimum effect on the resonant frequencies of other bands.

Self-supporting and just 20 feet tall, the MFJ-1798 mounts easily from ground level to tower top -- small lots, backyards, apartments, condos, roofs, tower mounts.

Separate Full Size Radiators Separate full size quarter wave radiators are used on 20, 17, 15, 12, 10 and 2 Meters. On 6 Meters, the 17 Meter radiator becomes a 3/4 wave radiator.

The active radiator works as a stub to decouple everything



MFJ-1798 \$289⁹⁵

Ship Code F

beyond it. In phase antenna current flows in all parallel radiators.

This forms a very large equivalent radiator and gives you incredible bandwidths.

Radiator stubs provide automatic bandswitching -absolutely no loss due to loading coils or traps.

End Loading On 30, 40, 75/80 Meters, end loading - the most

efficient form of loading -- gives you highly efficient performance, excellent bandwidth, low angle radiation and automatic bandswitching.

MFJ's unique Frequency Adaptive L-Network™ provides automatic impedance matching for lowest SWR on these low bands.

Tuning to your favorite part of these bands is simple and is done at the bottom of the antenna.

No Ground or Radials Needed

You don't need a ground or radials because an effective counterpoise that's 12 feet across gives you excellent ground isolation.

You can mount it from ground level to roof top and get awesome performance.

No Feedline Radiation to Waste Power

The feedline is decoupled and isolated from the antenna with MFJ's exclusive AirCore™ high power current balun. It's wound with Teflon^R coax and can't saturate, no matter how high your power.

Built to Last

Incredibly strong solid fiberglass rod and large diameter 6061 T-6 aircraft strength aluminum tubing is in the main structure.

Efficient high-Q coils are wound on tough low loss fiberglass forms using highly weather resistant Teflon^R covered wire.

MFJ's Super High-Q Loop™ Antennas



MFJ's tiny 36 inch diameter loop antenna lets you operate 10 through 30 MHz continuously -- including the WARC bands!

Ideal for limited space - apartments, small lots, motor

\$39995 homes, attics, or mobile homes. Enjoy both DX and local contacts mounted vertically.

Get both low angle radiation for excellent DX and high angle radiation for local, close-in contacts. Handles 150 watts.

Super easy-to-use! Only MFJ's super remote control has Auto Band Selection™. It auto-tunes to desired band, then beeps to let you know. No control cable is needed.

Fast/slow tune buttons and built-in two range Cross-Needle SWR/Wattmeter lets you quickly tune to your exact frequency.

All welded construction, no mechanical joints, welded butterfly capacitor with no rotating contacts, large 1.050 inch diameter round radiator -- not a lossy thin flat-strip - gives you highest possible efficiency.

Each plate in MFJ's tuning capacitor is welded for low loss and polished to prevent high voltage arcing, welded to the radiator, has nylon bearing, anti-backlash mechanism, limit switches, continuous no-step DC motor - gives smooth precision tuning.

Heavy duty thick ABS plastic housing

has ultraviolet inhibitor protection.

MFJ-1788, \$449.95. Same as MFJ-1786 but covers 40 Meters-15 Meters continuous. Includes super remote control.

MFJ-1782, \$359.95. Like MFJ-1786 but control has only fast/slow tune buttons.

MFJ-1780, \$259.95. Box Fan Portable Loop is about the same size (2x2 foot) as a box fan, complete with handle. Covers 14-30 MHz. Control has fast/slow tunes.

MFJ Apartment Antenna

MFJ-1622 \$9995

Covers 40 thru 2 Meters. Mounts outdoor to windows, balconies, railings. Works great indoors mounted to desks, tables, bookshelves. Highly efficient air wound bug catcher loading

coil and telescoping 51/2 foot radiator lets you really get out! Radiator collapses to 21/2 feet for easy storage/carrying. Includes coax RF choke balun, coax feed line, counterpoise wire, safety rope. 200 Watts PEP.

MFJ's G5RV Antenna

MFJ-1778

Covers all bands, 160-10 Meters with anten-\$3995 na tuner. 102 feet long, shorter than 80 Meter dipole. Use as inverted

vee or sloper to be more compact. Use on 160 Meters as Marconi with tuner and ground. Handles full legal limit power. Add coax feedline and some rope or other nonconductor and you're on the air!

MFJ halfwave vertical

6 bands: 40, 20, 15, 10, 6, 2 Meters . . . No radials or ground needed

Only 12 feet MFJ-1796 high and has a tiny \$21995 24 inch footprint! Mount anywhere -ground level to tower top --

apartments, small lots, trailers. Perfect for vacations, field day, DXpedition, camping.

Efficient end-loading, no lossy traps. Entire length is always radiating. Full size halfwave on 2/6 Meters. High power air-wound choke balun eliminates feedline radiation. Adjusting 1 band has minimum effect on others.

MFJ-1792, \$179.95. Full size 1/4 wave radiator for 40 Meters. 33 feet, handles 1500 Watts PEP. Requires guying and radials.

MFJ-1793, \$199.95. Like MFJ-1792 but has full size 20 Meter 1/4 wave also.

Free MFJ Catalog and Nearest Dealer . . . 800-647-1800

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MFJ ENTERPRISES, INC. Box 494, Miss. State, MS 39762 (662) 323-5869; 8-4:30 CST, Mon.-Fri. FAX: (662) 323-6551; Add s/h

Tech Help: (662) 323-0549 Prices and specifications subject to change. (c) 2006 MFJ Enterprises, Inc.

MFJ... the world leader in ham radio accessories!

for any of the license classes. Novice and Tech operating privileges were changed in the earlier docket."

Implementing Certain WRC-03 Final Acts

The last proceeding that I want to mention is the Bureau Order that implemented certain WRC-03 Final Acts. The WRC-03 Final Acts became effective at

the end of the WRC (the 2003 World Radio Conference). The Part 97 rules needed to conform with these acts. Because these were conforming amendments, notice and comment were not required under the Administrative Procedure Act, so we were able to, as Nike says, "just do it." The rule changes eliminated obsolete rules or gave you more flexibility. The changes:

· Eliminated the reference to codes

and ciphers. Now the radio regs prohibit transmitting messages encoded for the purpose of obscuring their meaning;

 Allow you to transmit emergency or disaster relief communications for a third party to any station within the jurisdiction of any foreign government even if the administration does not have a thirdparty arrangement with the U.S.; and

 Allow any communication incidental to the purposes of the Amateur Service,

"You Still Need to Lighten Up!"

Remarks by Riley Hollingsworth, K4ZDH, Enforcement Bureau, FCC

I want to talk to you about what bothers me most about amateur radio. ... You still need to "lighten up." I said that last year, but you need to take it to heart more. All of you can learn from each other. And you need to work together more and show a little more respect for your diverse interests and for the service as a whole. It isn't about you. It isn't about enforcement. It's about amateur radio.

Every time you get on the air, you need to decide what's most important to you ... the best interests of amateur radio as a whole, or your own pride or ego or "rights." I realize I may be preaching to the choir here, but on the air you need to be more cooperative and less argumentative.

In a nutshell, I have good news and bad news. The good news: Nothing is wrong with amateur radio. It is a good service that is showing its value to the public on a daily basis. The bad news is that there is an element of amateur radio that too often reflects present society in general. Whatever the phenomenon behind road rage—whatever that is—that's what I am talking about. All of you need to work together and depend upon the FCC less to solve your operating problems. We live in a rude, discourteous, profane, hotheaded society that loves its rights,

prefers not to hear about its responsibilities, and that spills over in to the ham bands.

I can't really say it any better than Dave Sumner, K1ZZ, did in May 2007 QST, page 9: "Most of the unpleasantness that erupts from time to time on the most popular HF bands can be avoided if we're willing to be flexible in our frequency selection."

Lots of you are like people in a parking lot arguing over a parking space when there are hundreds available. We are all ordinary people, and even on the best days, probably work and think at around 60% efficiency. We are not the greatest nation on Earth. We think we are but we aren't, and we aren't the greatest people. Look at the evening news for about a week if you don't realize that. And think about what the rest of the world sees going on in America.

What we are is this: "We are rude, self-important, cell-phone yapping, road raging, and stressed-out monsters behind the wheel." And all too often behind the microphone. You are increasingly calling upon the FCC too much to solve your problems. Remember: "Most of the unpleasantness that erupts from time to time on the most popular HF bands can be avoided if we're willing to be flexible in our frequency selection."

You are the only service that has thousands of frequencies and hundreds usable at any given time of day or year. It was designed that way to give you alternatives, to have fail-safe back-up plans, and to experiment and lead technology. Even the public safety services don't have thousands of frequencies.



Riley Hollingsworth, K4ZDH (at far right), listens as colleague Bill Cross, W3TN (at the microphone), speaks at the Dayton Hamvention® FCC Forum in May.

Now some frequencies are like bad neighborhoods. They are being cleaned up, but it will take more time and it's just not something that happens overnight. We will get there. Take 14.275, for example. Probably in the future it will be determined that RF radiation does indeed cause brain damage, but *only* at 14.275. It is a bad neighborhood. Stay away. I get calls every week from the same group of people who went to 14.275 and got abused.

Now if you had three alternative streets you could take to work every day but when you used one you always got a rock thrown at your windshield, wouldn't you decide to take one of the other streets after, say, five or six windshields? After several windshields the logical question would arise as to who is the biggest fool—you or the person throwing the rocks! Why don't you take the same approach to amateur radio?

There are good operators and poor operators, just like everything else in life. There is a Canadian that Canada considers mainly a fruitcake and doesn't take him seriously. Their amateur rules are more lax than ours and so are some of their laws. It's an international problem and we can do very little about it. But when you go there and take the bait (and you always seem to take the bait!) ... you get into arguments, you make the problem worse, and you make it an American problem as well and amateur radio gets a black eye. There is a bad operator in Italy, too, but these are not problems we can correct.

and remarks of a personal character, when your station is making transmissions to a different country.

What About the Future?

There's a lot coming down the pike that you need to watch and know about. Some of these items are rulemaking requests that have been filed with us but that have not yet been acted on by the Commission.

We have three petitions that ask for changes to the station identification rule. These are RM-11346 and RM-11347, each of which received over 100 comments, and a request from the Quarter Century Wireless Association.

One petitioner wants the "once every 10 minutes" part of the rule changed to once every 30 minutes. Another petitioner requested that we change the station identification rule back to what it was in the late '50s by requiring a station to transmit its callsign and the callsign of the station it is communicating with, and by requiring the use of specific words when identifying. The QCWA wants certain letter combinations reserved so that the station may be identified as that of a veteran.

There are two petitions that deal with regulation of emissions by bandwidth instead of emission type. These are

The other day I was talking to one of the complainants about 14.275 and I asked why he insisted on going there. He said, "Well, old (name deleted) likes to talk there and he doesn't have any other antennas." Well, that must be a hell of a precisely cut antenna to only operate on the 20-meter frequency of 14.275! I heard an argument there the other afternoon and one operator was saying, "I'm not going to be driven off the frequency. I got rights!"

The Orientals have a saying about Americans; they say an American will lose his butt to save face. Just go somewhere else. The world is ugly enough ... don't add to it. People make mistakes, and 90% of interference perceived as deliberate is accidental or at least unintentional.

Most of the unpleasantness that erupts from time to time on the most popular HF bands can be avoided if we're willing to be flexible in our frequency selection. Again, in a problem like 14.275, just leave. Report it to us if it is a violation. But just use one of the hundreds of other usable frequencies you have and enjoy radio!

As Dave Sumner said in his May article: "It is unfair to your fellow amateurs to assume every instance of interference you may encounter is a hostile act." You can help us and help amateur radio by making this contribution: Don't respond. Don't become the problem. Report it to us, then use the big knob. It is possible that with current society being rude and hotheaded, this is as good as your service can get for a while anyway. That remains to be seen, but defuse problems, don't add heat to them.

'We can enforce our rules, but we can't enforce kindness and courtesy or common sense. And a very wise person, who happens to be standing to my left (Bill Cross), once told me: "You just can't regulate stupid." If we could, we'd be working for the United Nations instead of the FCC.

"Now I have specific messages for more of you.

To the nets: Just because you have been on the same frequency for 75 years, that doesn't mean you own it. All frequencies are shared. If you vary your frequency, or even if you don't have a net one night, the radio world isn't going to end.

To repeater owners: Just because you are coordinated doesn't mean you own the frequency. Coordination is a recommendation, not a frequency assignment. It's your callsign on the repeater and it's your station and your responsibility ... just as if you had left the door open to your station at home. If there is abuse, lock the door. Don't ask us to be baby-sitters or hall monitors of your repeater. That's what control operators are for. Nobody asked you to start a repeater. If you shut it down tomorrow, what would happen? People would use other repeaters!

To the contesters: Be more courteous. You are responsible for the frequency you are operating on and realize that's true even when you operate split. All frequencies are shared.

To those who don't like contesters: Lighten up! Contests are short lived. Use the WARC bands. Wash the car. Cut the grass. Learn from the contesters. And this applies to you traffic net folks, too—learn from the contesters. They pass information a lot faster and more efficiently than you do. Contesters are some of the best radio operators on planet Earth. If the contesters operated at the same pace as some of the emergency traffic nets, the contest would be over after the first few dozen signal strengths were exchanged!

To the widebanders: If you want to be a broadcaster, apply for a broadcast license. Using extraordinarily wide bandwidth on crowded frequencies at peak operating time is rude, selfish, and inconsiderate. To the QRPers: Thank you, thank you, thank you for your vitality, inspiration, enthusiasm, and for being builders again! I wish I could take your enthusiasm and spread it over all segments of amateur radio. When I watch you folks, I see the excitement and magic of my first contact.

To those who don't like QRPers: Lighten up! Anyone can use a linear amplifier as a crutch.

To the ragchew nets: Four or five people meeting on the same frequency every night for 50 years using 1200 watts to talk a few hundred miles when 100 watts would do just fine is not a net. It's an informal roundtable. It ain't going to hurt you either to vary your frequency or skip a night. And the so-called "net" on 75 that bills itself as an "Oasis of Amateur Radio"—give us all a break. You are an ordinary roundtable. And no net is an "oasis of amateur radio."

To those of you who don't like DXpeditions: Lighten up! If a group of people wants to spend a lot of money to go to a rock or sandbar in the ocean, live in a tent, and swat flies and scorpions for a week and talk over ham radio 24 hours a day, so what? Let 'em do it! DXpeditions, too, are short lived, and such operation must be important to someone. Scarborough Reef drew over 50,000 contacts, didn't it? And weren't over half of them CW, by the way? Nobody would have even known about it had it not been published in popular radio magazines.

And to those of you who have been continual problems and we just haven't gotten to you yet, you now have a problem yourselves. Your renewals are coming up. You have the burden of proof in showing that you should have a license and you have to come to Washington to make your case. And we are going to have a lot of questions for you.

And finally, to all of you who will no doubt moan about the code being eliminated, I say this:

- If it was such an earthshaking issue, why did less than 1% of you even file comments during the decision-making process?? Why is it important now but it wasn't important then?
- How can it be a "filter" when the worst enforcement problems we have are all those who passed a 13- or 20-wpm code test?
- It wasn't eliminated; it just isn't required anymore. For a driver's test, did you have to know how to drive a five- or six-speed transmission? Well, those are some of the coolest cars on the road!
- •The idea of eliminating the code requirement has been kicking around for years, yet there is more code equipment today than ever before: keyers, keys, straight and bug, and readers ... you name it.

We won't know the effect of eliminating that requirement for ten years. I personally won't be here ... years of hamfest hotdogs will have taken their toll. But I honestly don't see it as an enforcement problem.

I'm loyal to the code. I wish we could have kept it at 13. But my bet is that dropping the requirement will turn out to be a stroke of genius.

Only time will tell, but if we don't do something to draw in more people, and appeal to greater numbers, in a few years at Dayton we'll all be bumping into each other with our walkers! Let's face it, folks—look around. We're getting old!

We all need to try new things and always work towards keeping amateur radio dynamic. Know the issues; participate in it. But most of all, enjoy!

And thank you again for all the incredible support you give our enforcement program. The self-regulating aspect of your service never ceases to amaze me!

RM-11305 from the Communications Think Tank and RM-11306 from the ARRL. Both petitioners have filed requests to withdraw their petitions.

The ARRL also has pending a petition, RM-11325, that requests that we amend the rules that apply to the power stations may use when transmitting spread-spectrum emissions.

A group that calls itself Hams for Action wants us to take another look at a decision denying its request that we preempt certain covenants, conditions, and restrictions (CC&Rs) in deeds.

Two individuals have requested that we reconsider certain aspects of the nocode decision. One petition is concerned about whether the Electronic Comment Filing System (ECFS) is working properly. It requests that we stay the decision, fix ECFS, re-open the comment period, and then put out a new

decision. The other petition argues that failure to keep the Morse code telegraphy requirement, at least for the Amateur Extra Class license, does not take into consideration the significant national security implications that the future viability of Morse code provides. We also have received a petition for rulemaking from Mark Miller, N5RFX. This petition requests, among other things, that the CW/RTTY/digital bands be divided into 1.5-kHz and 2.4-kHz segments, and that automatically controlled digital stations be limited to certain frequency segments.

Broadband over Power Lines: The ARRL and other user groups have filed an appeal with the DC Circuit Court of the FCC's final BPL rules. Appeals of Commission decisions are handled by our General Counsel's office. Those petitions are pending and whatever is decided on them, I am sure, will be well publicized on your websites when the Court makes a decision.

There also may be items coming out of other bureaus that will affect the Amateur Service. OET (Office of Engineering & Technology) probably will handle an ARRL petition that requests we swap one channel in the 60-meter band for another channel.

OMD (Office of the Managing Director) handles matters such as the vanity callsign application fee. It has a proposal on the street that would reduce the application fee from \$20.80 to \$11.70.

You may see decisions on some of these items coming out later this year. On the international front, planning is well under way for the next World Radio Conference, WRC-07. That conference has a couple of items that could affect the Amateur Service. One item is a request for an allocation in the LF part of the spectrum, around 135 kHz. Another item concerns HF allocations which could impact our 40- and 60-meter bands.

Lastly, keep your eye on legislation that has been introduced on Capitol Hill. A couple of bills have been introduced that may be of interest to you. One could help you with antenna installation issues.

There also has been talk that Congress may want to take another look at parts of the Communications Act later this year. I'm sure that the amateur radio press will keep you informed on these issues.

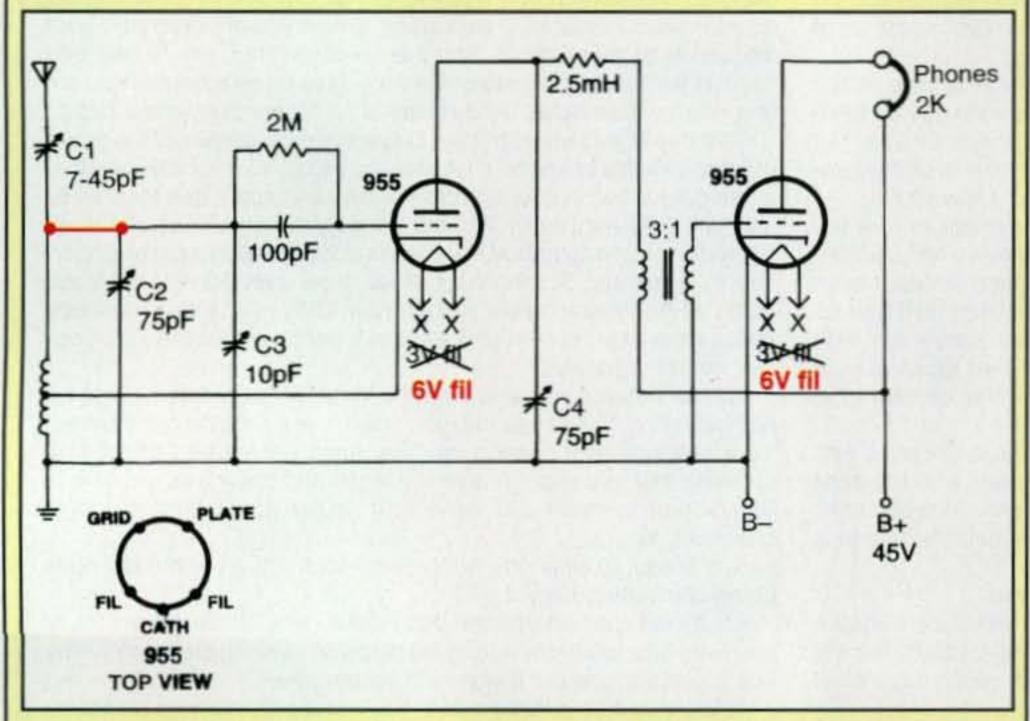
We at CQ will be certain to keep you posted on the above issues and other subjects that affect the Amateur Radio Service and your participation in our hobby.

73, Fred, W5YI

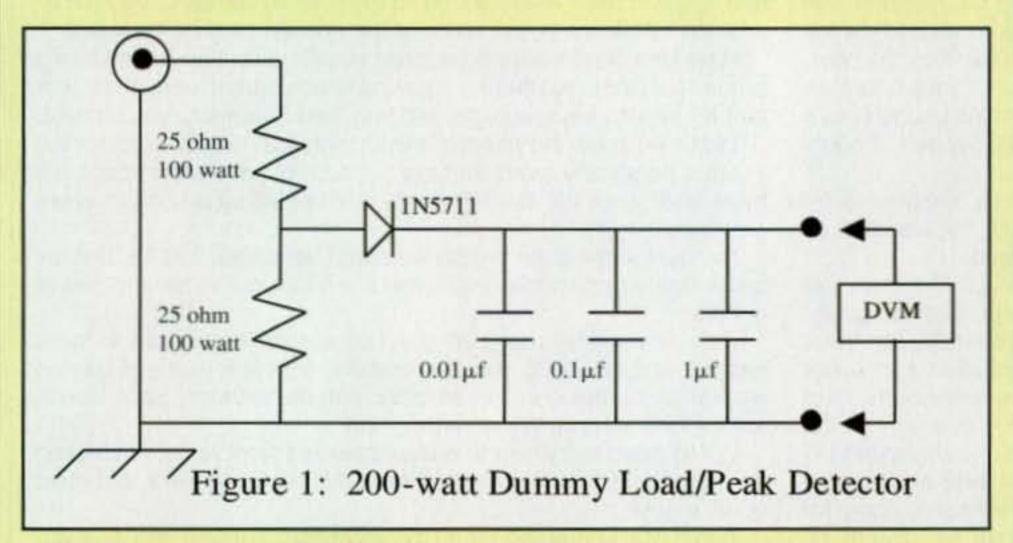
Oops...

Well, the schematic gremlins are at it again, and they had a lot of fun with the June issue...

In the "QRP" column on page 70, the schematic in fig. 1 left out a connection between the top of C2 and the top of the coil to its left; and the 955 "acorn" tubes run much better at their rated 6 volts of filament power than on 3. A corrected schematic is shown here.



And in "The Weekender" (page 54), we didn't make any mistakes in the schematic ... we just left it out altogether! So, with our apologies, here it is...



Our thanks to our many eagle-eyed readers who caught the errors and brought them to our attention.—The editors

AMERITRON 600 Watt no tune FET Amp

Four rugged MRF-150 FETs at 50 Volts give high efficiency . . . No deterioration with use



ALS-600 Suggested Retail

Ameritron ALS-600 Solid \$1299 State FET compact desktop station amplifier is only 4 dB below 1500 Watts -- less than an S-unit!

There are no tubes, no tube heat, no tuning, no worry rugged -- just turn on, select band and operate. 600 Watts PEP/500W CW -lets you talk to anyone you can hear!

Covers 1.5-22 MHz, (10/12 Meters with \$29.95 kit, requires FCC license), instant bandswitching, SWR/thermal protected, extremely quiet, lighted peak reading Cross-Needle SWR/ Wattmeter, front panel ALC control, operate/ standby switch. 12.5 lbs., 91/2Wx71/8Hx12D in.

Includes ALS-600PS transformer AC power supply for 120/220 VAC, inrush current protected. 32 lbs., 91/2Wx6Hx12D inches.

ALS-600 Amp with Switching Power Supply New! ALS-600S, \$1428. ALS-600 amplifier with transceiver and a 600 Watt amplifier, that 10 lb. ALS-600SPS switching power supply combo. together weigh less than 30 pounds."

Switching Power Supply ALS-600SPS Works with all ALS-600 amplisuggested retail fiers. Extremely

lightweight, just 10 lbs. Superb regulation, very low radiated noise. 9Wx6Hx141/2D in.

From QST Magazine, March, 2005 the ampifier faulted only when it was supposed to. It protected itself from our boneheaded, sleep-deprived band changing manuevers . . .

"I found myself not worrying about damaging this amplifier. It seems quite capable of looking out for itself. . . . Kudos to Ameritron."

"I couldn't hear any noise at all from the SPS (switching power supply) on the vertical or quad ..." "I came to greatly appreciate the size, weight,

reliability and simplicity of this amplifier." "The ALS-600S makes it possible to pack a

AMERITRON mobile 500 Watt no tune Solid State Amp

Instant bandswitching, no tuning, no warm-up, SWR protected, 1.5-22 MHz, quiet, compact



Ameritron's ALS-500M solid state mobile amp gives you 500 Watts PEP SSB or 400 Watts CW output! Just turn on and operate -- no warm-up, no tuning, instant bandswitch-

ing. Fits in very small spaces. New ALS-500RC, \$49 Remote Head lets you mount ALS-

\$849 Suggested Retail

ALS-500M 500M amplifier anywhere and gives you full control. Select desired band, turn On/Off and monitor current draw on its DC Current Meter. Has power, transmit and overload LEDs. RJ-45 cables plug into Amplifier/Remote Head.

Covers 1.5-22 MHz, (10/12 Meters with \$29.95 kit, requires FCC license).

Virtually indestructible! Load Fault Protection eliminates amplifier damage due to operator error, antenna hitting tree branches, 18-wheeler passing by. Thermal Overload Protection disables/bypasses amp if temperature is excessively high. Auto resets.

Typically 60-70 watts in gives full output. ON/OFF switch bypasses amplifier for "barefoot" operation. Extremely quiet fan comes on as needed. Excellent harmonic suppression, push-pull output, DC current meter. 13.8 VDC/80 Amps. 31/2x9x15 in. 7 lbs.

ALS-500M, \$849, 500 Watt mobile amp. ALS-500MR, \$879, ALS-500M/Remote Head ALS-500RC, \$49, Remote head for

ALS-500M (for serial # above 13049). ARF-500K, \$179.95, Remote kit for ALS-

500M serial # lower than 13049. Includes AL-500RC Remote Head, filter/relay board for ALS-500M, cables, hardware, instructions.

Free online manuals! Ameritron brings you the finest high power accessories!

ARB-704 amp-to-rig RCS-4 Remote Coax interface... \$59%

Protects rig from damage by keying line transients and makes hook-up to your rig easy!

AWM-30 Precision SWR Wattmeter .. \$149°

Active circuit gives true peak/ average readings

Switch ... \$14995 Use I coax for

4 antennas. No control cable needed. SWR

<1.25, 1.5 - 60 MHz. Useable to 100 MHz.

AWM-35 Flat Mobile ATP-100 Tuning SWR Wattmeter . . \$159°

15/s in. thin on mote sensor, 25' on lighted cross-needle cable. True peak, Cross-

meter.3000/ 300 Watt Needle,1.5 kW, 1.8-30 ranges, Remote sensor. MHz. High-SWR LED. component failure.

RCS-8V Remote Coax

Switch ... \$159 Replace 5 coax with 1! 1.2 SWR at

250 MHz. Useable to 450 MHz.<.1 dB loss, 1kW@ 150MHz.

Pulser . . . \$59% Safely tune up dashboard. Re- for full power, best

linearity. Prevents overheating, tube damage, power supply stress,

Switch ... \$1695 Replace 8 coax with 1! SWR<1.3 to 60 MHz.RCS-

10L, \$209.95 with lightning arrestors.

ADL-1500 Dummy Load with oil ... \$7485

Oil-cooled. 50 Ohms. 1500 Watts/5 minutes. SWR<

1.2 to 30 MHz. Low SWR to 400 MHz.

RCS-10 Remote Coax New! RCS-12C Fully Automatic Remote

Coax Switch Controller. . . \$229°5 Band data from transceiver auto selects antennas. Antenna mem-

ories. No hotswitching. Rig-to-amp interface. For 3/4 BCD, 1 of 8 relay boxes. RCS-12, \$299.95, auto controller with 8 coax relay box, to 60 MHz. RCS-12L, \$339.95, with lightning arrestors.

ADL-2500 fan-cooled Dry Dummy Load, \$1998

Whisper quiet fan, 2.5kW/1 minute on, ten off. 300W continuous. SWR< 1.25 to 30 MHz.<1.4 to 60 MHz.

SDA-100 Mobile Screwdriver Antenna 5379 80-10M, fiberglass form, Pittman motor, CNC parts, magnetic sensors, #14 wire, 1.2 kW PEP. 6' whip, \$2495

800 Watts . . . \$849 with four 811A tubes



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Basic Inexpensive Test Equipment

ast time we described two simple semiconductor testers. This month we would like to present a couple of additional devices that may be of use to you. In keeping with the theme of last month's column, these offerings are inexpensive but useful, so don't hesitate to dig in.

A Simple Battery Tester

We all use batteries, and if you are like me, you probably have a box (or kitchen drawer) full of them, but with little or no knowledge of which are good and which are not. Well, the circuit described in fig. 1 should help. This is a schematic of a simple battery tester that can evaluate batteries from the tiniest 1.2-volt "button batteries" cells all the way up to batteries that produce 20 volts. Furthermore, it will test the batteries under load to give you a better idea of their condition.

The circuit consists of an inexpensive digital panel meter (available from many surplus sources, such as All Electronics <www.allelectronics.com>) set to the 20.00-volt range (actually, 19.99 volts). The instructions that come with the particular meter you use will indicate just how to set the decimal point and range to achieve this, as well as how to power the unit.

Connected across the input of the meter is a series of three resistors. Pressing the appropriate button places a load (in milliamperes) equal to the terminal voltage of the battery in volts or a multiple thereof. For example, a 1.5-volt battery will draw 1.5 milliamperes on the ×1 position, 15 mil-

liamperes in the ×10 position, and 150 milliamperes in the ×100 position. Similarly, a 12-volt battery will draw 12 milliamperes, 120 milliamperes, and 1.2 amperes, respectively. A 20-volt battery will draw 20 milliamperes, 200 milliamperes, or 2 amperes. These currents are roughly within the type of normal load with which these batteries are used and will give a reasonable indication of the state of the battery being tested.

As a result of higher voltage batteries drawing significant current, the resistor wattage ranges must be chosen carefully. The 1K resistor can be a standard ¹/2-watt carbon or carbon-film type. The 100-ohm resistor, however, should be a wire-wound device rated at 5 watts (or more), such as a Mouser Electronics (www.mouser.com) 280-CR5-100-RC, and the 10-ohm resistor should be a 50-watt (or more) device made up of two 20-ohm Mouser 280-CR25-20-RC resistors in parallel. These all are standard resistors, and the Mouser part numbers are only given for reference. Most distributors will have equivalent choices, and any resistor type with the correct ratings will work fine.

To use the tester, first connect the battery to the terminals with the proper polarity and push the ON button. I will leave the details of the type of probe or arrangement you come up with to you. Note what the battery voltage should be (according to the manufacturer) and what the digital panel meter indicates that it actually is. In this position, very little current is drawn from the battery and the full terminal voltage should be displayed. If it is well below the rated value, the battery is bad.

Now press the $\times 1$ push button, the $\times 10$ button, and finally the $\times 100$ button, depending on the type

*c/o CQ magazine

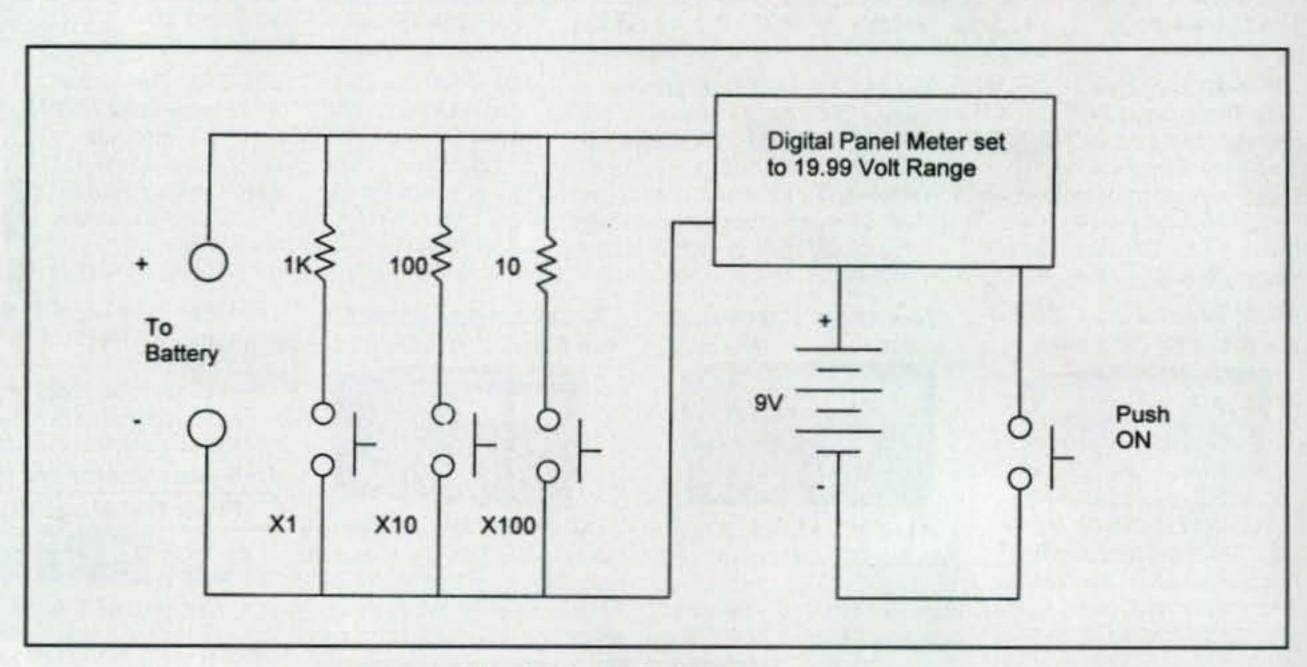


Fig. 1- A simple battery tester.

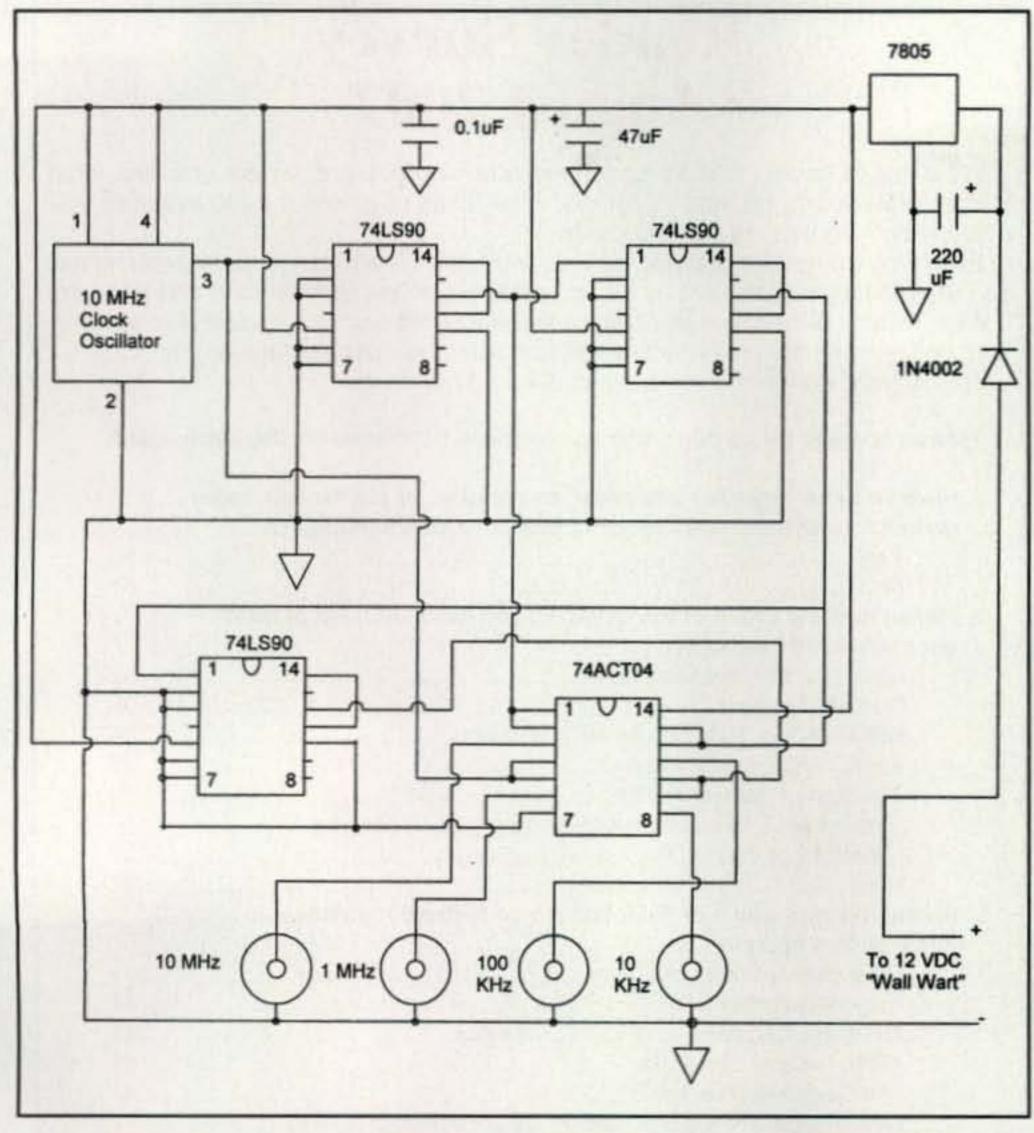


Fig. 2-A simple frequency standard. (Note: All ICs are top view. There is no connection to other pins.)

of battery you have. Note the change in battery voltage for each case. Depending on the battery and its normal current capacity, the terminal voltage should not drop more than about 10 percent. If it does, the battery should be suspect. Keep in mind that this tester really only gives a relative test, since it has no way of actually knowing the current draw of the circuit in which you plan to use the battery. However, the fact that there is a load is more meaningful than simply measuring the terminal voltage alone.

A Frequency Standard

Fig. 2 is a simple frequency standard that has a multitude of uses. A commercial, low-cost clock oscillator (Mouser 520-TCF1000-X) at 10 MHz produces a highly stable and accurate TTL signal. The output of this oscillator is then applied to three 74LS90 decade dividers and a 74ACT04 quad NAND

gate used as a driver connected to four BNC output connectors. This circuit provides accurate outputs at 10 MHz, 1 MHz, 100 kHz, and 10 kHz. If you were to connect a short length of wire from the center pin of the appropriate BNC connector and place it near your receiv-

er, you would have a stable marker signal to calibrate your receiver's dial. Such a time base is extremely useful for older equipment without a digital dial, as well as for checking more modern rigs.

The 74ACT series was chosen for output drivers, as they can easily drive 50-ohm coax. For best results, you should build this circuit in a small aluminum enclosure so that only the signal you want is present at the output. Cost for the clock oscillators is under \$2.00, and the chips are less than a dollar each. As a result, this in not a high-cost device.

As a point of information, changing the oscillator to a 1-MHz unit (Mouser 520-TCF-100-X) will drop all outputs by a factor of 10. Alternately, an additional 74LS90 divider can be added if necessary. You will also note that we used 74LS90 decade divider chips. These are somewhat old but are still readily available, and we happened to have them on hand.

Another use for the frequency standard is to calibrate a low-cost oscilloscope. If you connect the probe to the 10 kHz output, you can trim up the probe's response for the best square wave. If you connect a DVM (digital voltmeter) across the 10-kHz output and read the average DC voltage, the reading you get (about 2.5 volts) will be equal to exactly half of the peak-to-peak output. You can now use this value to calibrate a low-cost scope.

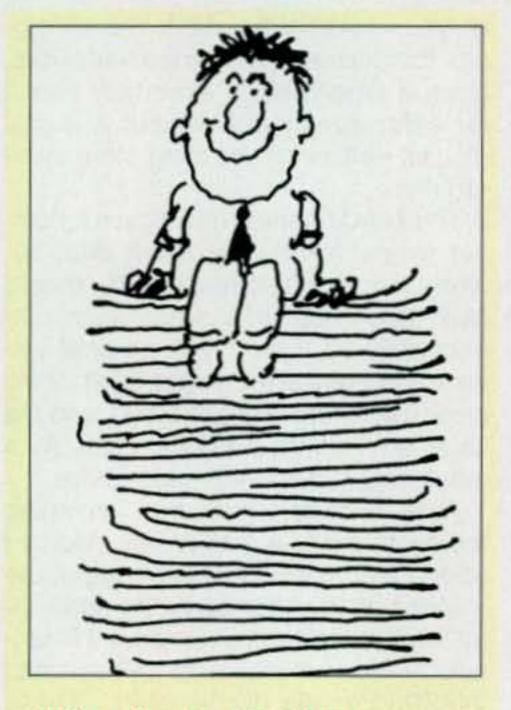
I hope the circuits we discussed last month and this month help to show you that reasonable test equipment is within the reach of the average experimenter, so don't be afraid to attempt to "roll your own."

73, Irwin, WA2NDM

Clarification

In the June column we spoke about the potential energy stored in super capacitors, and it seems that our description may have misled some readers. We stated that the energy available from the capacitor could be calculated by the formula $E = \frac{1}{2} CV^2$. While this is true, the total amount of energy present is not exactly continuously available, but has a time factor associated with it. The energy calculated by the formula is in "watt-seconds" (or joules), not simply watts. For reference, one joule is equal to one watt-second. Let me explain:

If the charged capacitor has a potential energy of 2 watt-seconds (or 2 joules), then that is the total power it can provide in 1 second—no more. If the load across the capacitor only requires 0.1 watt, the power will last for 20 seconds. If, on the other hand, the load requires 20 watts, the power will only last for 0.2 seconds. Furthermore, the power will degrade logarithmically. The various circuit examples given all will operate properly, but we thought it important for readers to understand that a super capacitor is really not quite a battery for loads that are close to its watt-second charge. However, for very small loads, such as CMOS memory backup, super capacitors can be a useful source of standby power.



What You've Told Us...

Our May survey asked about your favorite bands, modes and activities on HF, and we certainly got plenty of responses. First of all, three-quarters of you (76%) have been active on the HF ham bands for more than 15 years; followed by 12% 5–15 years, 4% each 1–5 and less than one year, and 3% who are not active on HF.

Anyone who thinks change comes quickly in ham radio needs only to look at your band choices ... seems those "new" WARC bands, which have been with us for over 20 years now, are finally starting to catch on. Asked which HF bands you enjoy using, 83% said 20 meters, 80% said 40, 65% enjoy 10, 64% enjoy 15, and 63% enjoy 80/75 meters. The WARC band with the biggest following is 17 meters, at 54%, followed by 30m (42%) and 12m (38%). In addition, 32% of you enjoy "top band" (160 meters) and only 12% like operating our actually-new 60-meter band.

Not surprisingly, single sideband (SSB) is king on HF, with 79% of you saying you regularly use it, followed by CW at 61%, then a steep drop to keyboard modes at 22%, FM at 12%, AM at 11%, and 2% each on digital voice, slow-scan TV, and "other."

Finally, your favorite HF operating activities include: DXing (69%), ragchewing (56%), contesting (41%), award-chasing (29%), net operation (26%), technical experimentation (21%), county hunting (14%), "other" (8%), and SSTV (2%).

This month's free subscription winner is Paul Franson, W2LE, of Flemington, New Jersey.

Reader Survey August 2007

We'd like to know more about you—about who you are, where you live, what kind(s) of work you do, and of course, what kinds of amateur radio activities you enjoy. Why? To help us serve you better.

Each time we run one of these surveys, we'll ask a few different questions and ask you to indicate your answers by circling numbers on the Survey Card and returning it to us. As a bit of incentive, we'll pick one respondent each month and give that person a complimentary one-year subscription (or subscription extension) to CQ.

This month, we have some questions about hamfests.

Please answer by circling the appropriate numbers on the reply card.

	you ever attended a hamfest, convention, or similar ham radio ering (not including operating events or club meetings)?
1	Yes30
	No31
2. Pleas	se indicate which of the following you have attended at least
once	(circle all that apply):
	Local club hamfest/swap meet32
	Regional hamfest33
	ARRL section, state, or division convention34
	ARRL national convention35
	The Dayton Hamvention®?36
	Other regional or national conference or convention (e.g.,
	AMSAT or Visalia DX)
	None38
3. Pleas	se indicate which of the following you attend regularly
	e all that apply):
- SD (100) (100)	Local club hamfest / swap-meet39
	Regional hamfest40
	ARRL section, state, or division convention41
	ARRL national convention42
	The Dayton Hamvention®?43
	Other regional or national conference or convention (e.g.,
	AMSAT or Visalia DX)44
	None
STOREGIST !	se indicate your usual reason(s) for attending hamfests
	all that apply):
	To shop for equipment and accessories46
	To sell equipment and accessories47
	To attend forums and talks48
	As a social event49
	To help as a volunteer50
	se indicate which one statement below best reflects
	leelings:
	'I go to hamfests to browse, even if there's nothing particular that I need."
	, , , , , , , , , , , , , , , , , , ,
	'I go to hamfests to buy; I know what I want and go home if I don't find it."
	'I go to hamfests to sell, and might bring something new home
	with me as well."
	'I go to hamfests to socialize, and if I happen to see something
	I like, I'll buy it."
	'I go to hamfests mostly for the forums; I'm not really interested
	in buying or selling."
	se indicate how you've felt after leaving the hamfests you've
	ded recently.
	Generally exceed expectations
	Generally meet expectations
	Generally do not meet expectations60

Thank you for your responses. We'll have more questions for you next month.

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BY DON ROTOLO,* N2IRZ

Reflections on Dayton

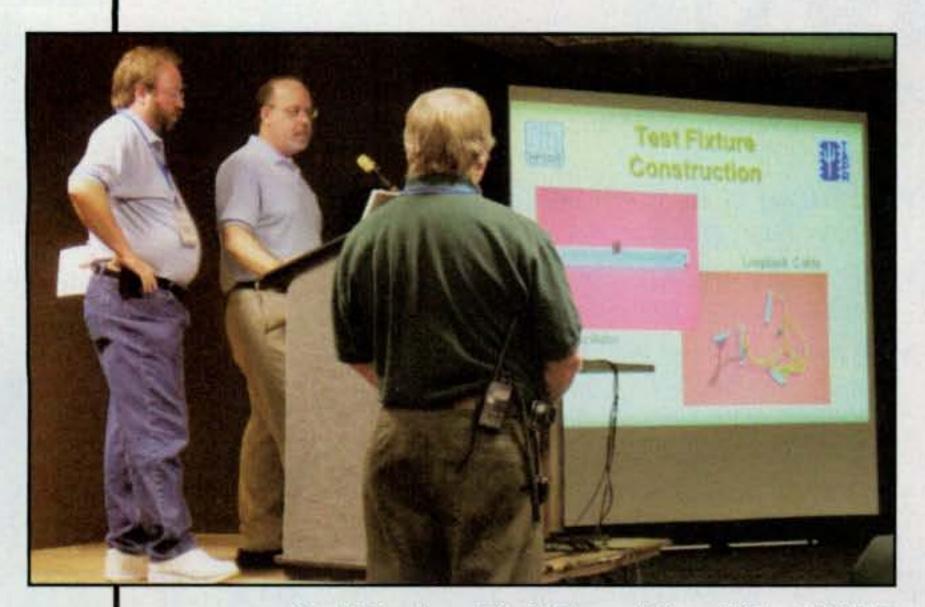
S I write this, I have gotten back from the Dayton Hamvention®, having missed the past few for various reasons. All the wonder and magic are still there, though. It's difficult to describe the atmosphere of such a large gathering of hams; there's such an excitement in the air. I've been fortunate to attend the second-largest amateur radio gathering (Dayton being the largest), the ham radio *treffen* (meeting) in Friedrichshafen, on the shores of Lake Constance in southern Germany, and the same kind of feeling is there, too. Maybe it's all the RF...? Anyway, there seemed to be an abundance of digital things at Dayton this year, and this time we'll take a look at some of them.

Modulation and Overmodulation

Before I start on the subject of Dayton, though, I want to mention the topic of modulation and over-modulation, in the context of PSK-31 and other digital modes. Like any signal, just the right amount is best, too little and you are wasting carrier, too much and distortion creeps in. Digital signals are somewhat more sensitive to distortion than analog modes, and so properly setting the output of your sound card is more important than, say, speaking into the microphone in a not-too-loud voice.

In my getting-started guide last time (June 2007 *CQ*), I mentioned that it is critical that the transmit modulation be set properly, but I didn't mention how exactly to best do that. Part of the reason was that

*P.O. Box 114, Park Ridge, NJ 07656 e-mail: <n2irz@cq-amateur-radio.com>



Scott Cowling, WA2DFI, and Steve Bible, N7HPR, describe the test fixture used to test the Atlas boards from the first run of HPSDR modules at the TAPR Forum at this year's Dayton Hamvention® as David Toth, VE3GYQ, looks on.

it's covered well in the documentation of every variety of PSK-31 software I've ever looked at, and part of the reason is that I was running out of space.

In general, for digital modes you are better off undermodulating rather than than overmodulating, and it's not always possible to hear what the best settings might be. That being said, if the signal sounds distorted, it likely is, so turn down the audio output to the radio to a point audibly below the point where the distortion seems to have gone away. That's a good starting point. Then get on the air and ask someone to tell you what your IMD (inter-modulation distortion) number is; the PSK-31 software reports this value when it receives a signal with no text. A good value is -20 dB, and lower (say, -24 dB) is better. Make small adjustments and check again, and once you've hit the best number, make a note of the setting and use that every time.

Software Defined Radios

Now back to Dayton. The big thing this year was SDRs (software defined radios). Regular readers of this column already know about this, but for any newcomers, an SDR is a radio that actually performs the modulation and demodulation in software, as opposed to hardware. This is very different from a software-controlled radio, where you can tune or change modes from a computer. An SDR is literally defined by software, with the hardware somewhat generic in form and function.

FlexRadio. The new FLEX-5000™ series is the latest addition to the FlexRadio family. While some may hesitate at the price-around \$2500 for the base model without a computer—one only has to review the specifications to see that this radio outperforms modern radios costing four times as much. The mid-range version, FLEX-5000C, incorporates an Intel Core2 Duo processor running Windows® XP and comes with a speaker, wireless keyboard, and mouse. The base model should be available by the time you read this, while the FLEX-5000C is expected in the third quarter of 2007. No word on the deluxe FLEX-5000D, which incorporates a big 300-watt RF output. Learn more and get the latest news (and download the latest radio!) at http://www.flex-radio.com">..

SoftRock. For those of us with smaller ambitions, and pocketbooks, there are the SoftRock radios. For about \$30, you can purchase a SoftRock 1-watt transceiver kit for the 30/40, 40/80, 80, or 160 meter bands, or for about \$10 you can get a receive-only kit for 20, 30, 40, 80, or 160 meters. Of course, you need a modern computer with a sound card (and USB port), since the radio resides in software, but at this price there are no excuses if you're interested in experimenting.

While they are kits, assembly appears to be fairly simple. The hardest part for some may be soldering a few surface-mount devices, for others winding few toroids, but in general it seems to me

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We've got your stuff!

Taka Nakayama, KW6I, and Jeff Reinhardt, AA6JR, answer a question during the HF Digital Forum as Mel Whitten, KØPFX, looks on.

that an advanced beginner could assemble one in a weekend. I haven't taken a look at the assembly instructions, as the kits just became available this weekend, but the majority of components are ordinary resistors and capacitors. Find out more, including how to order and support forums, at http://softrockradio.org/.

HPSDR. The High-Performance Software-Defined Radio (HPSDR) project we discussed last October is in full swing now, with the Janus, Ozy, Atlas, and Pinocchio modules shipping as this is written (June 2007). At least 17 different modules have been named, and it's a safe bet that even more are on their way. As Lyle Johnson, KK7P, said during his presentation at Dayton, "If you want to design a module, go right ahead. You even get to name it."

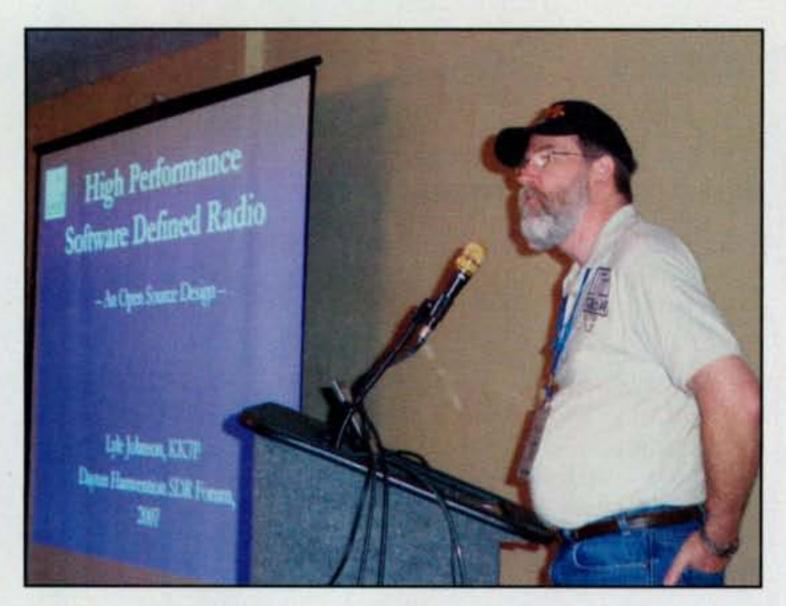
26th Annual ARRL/TAPR Digital Communications Conference

On September 28–30, 2007, the 26th annual ARRL/TAPR Digital Communications Conference will be held right in the ARRL's back yard, in Hartford, Connecticut. This is an international conference devoted to digital communications, and in the past it has never failed to deliver on the promise of a range of presentations, both highly advanced and perfect for beginners. If you live anywhere within driving distance of Hartford, you really should plan on attending, and it's still worthwhile even if air transportation is necessary. Visit http://www.tapr.org/dcc.html for more information.

The key words are *high performance*. This is being designed to be the best radio most amateurs have ever seen. AMSAT plans to use it, or something very much like it, on its next "big" satellite. In space, where it's really difficult to modify the hardware, an SDR is just perfect, since new modes and performance parameters can be uploaded.

The cool part of the HPSDR project is that the hardware is released under the OHL (Open Hardware License) pioneered by TAPR. Similar to open-source software licenses, the OHL allows you full access to the design documentation and hardware, with enough information so that you can make your own copy, as along as you agree to follow the terms of the OHL. You can even go into business selling Atlas boards if you want!

All of the public information related to the HPSDR project is found at the group's website, http://hpsdr.org/. All distribution and sales are being handled by Tucson Amateur Packet Radio Corp. (TAPR); visit http://www.tapr.org for more details.



Lyle Johnson, KK7P, speaking at the SDR (software defined radio) Forum, early Saturday morning of the Dayton weekend.

WiNRADiO. I spent quite some time at the WiNRADiO Communications booth, playing with its line of software defined receivers. While these are not transceivers, they are still SDRs and, as such, they certainly deserve attention from the amateur community. Nor are these "just" receivers. They are awesome receivers with astounding capabilities, from the eight-channel MS-8101/G3 and the moderately priced (\$500) G303i, to the G315e with its astounding 9 kHz to 1800 MHz (!) frequency range.

Of course, these are receivers, but because of their SDR architecture, they also make fine near-lab-quality spectrum analyzers, can measure a host of signal parameters such as SINAD, THD (total harmonic distortion), frequency deviation, and more, making them versatile pieces of test equipment. The housing, the same for most of the company's products, is durable and well-shielded. Visit http://www.winradio.com/ for more information.

RFspace. RFspace offers two models of software defined receivers, both able to handle spectrum analysis as well. The SDR-14, with a direct bandwidth of 230 MHz, and the new SDR-IQ, which covers 500 Hz to 30 MHz, are also moderately priced for SDRs, with quite good performance specifications nonetheless. Their ability to record a band segment—yes, record everything that happens to a hard disk—and play it back later (with full tunability and demodulation-mode selections) is really quite interesting. For example, imagine recording a 150-kHz segment of 20 meters for a whole week, about 500 GB of data, and being able to play it back at any time, as many times as you like. If you can't pull that station out of the noise, it's not there! Visit http://www.rfspace.com for details.

Digital Signal Processing

Another kind of digital system that seemed to really take off this year is the use of DSP to make for better audio. Instead of the built-in DSP, as with the IC-706 and most other radios, I'm talking about stand-alone DSP speakers. Products from West Mountain Radio (CLRspkr), bhi Ltd (NEDSP1062), and SGC (ADSP2) all deliver on their promise to make communications speech far more intelligible.

From listening to these products at Hamvention®, these all are nothing like you have ever heard before. The difference when the DSP is switched on is remarkable. Other than FM or digital voice communications, which have hardly any

added noise, any voice communication mode goes from "straining to hear" to "armchair copy" with the press of a button. I think these surely will prove to be must-have products in the coming months. I'm hoping to borrow a sample of each of these to try them for myself, and I'll be sure to let you know what I learn.

Digital Voice

Last but not least are the digital voice products. ICOM continues to successfully promote the D-STAR system, which now (according to a map ICOM distributed) boasts over 60 systems on the air, about 36 of which are "full systems," meaning 2-meter, 70-cm, 23-cm DV and 23-cm DD (digital data) capable. ICOM has a good range of transceivers that operate under the D-STAR standard, although I am disappointed that to my knowledge no other manufacturer has yet come on board with a D-STAR offering.

AOR continues its lead in the HF digital voice arena with the ARD9000 MK2 DV modem and the ARD9800 fast modem. The ARD9000 MK2 incorporates FEC (forward error correction), which considerably increases the ability to receive weaker or fading signals, while the ARD9800 also allows for fast data (up to 3600 bps) on the HF bands. (Note: On-the-air data rates may be limited in certain jurisdictions.) Both use the G4GUO open protocol.

What's nice about the AOR modems is that you can use them with virtually any SSB rig you might have. The FEC capabilities definitely make the signal more robust than with-



The TinyTrak4 Beta, from Byonics, is the latest incarnation of a family of APRS-ready modules. This one serves as an APRS tracker, KISS TNC, and digipeater and is the size of a small box of matches. If you're not the beta-version type, the TinyTrak3 is still available.

out them. To me it is a matter of opinion, but DV with FEC has a slight edge over SSB under poor band conditions, and of course DV sounds more like FM with its stunning lack of background noise. No DSP speaker needed!

Unlike when I looked at this issue a few years ago, now there is a regular DV net for the G4GUO protocol (e.g., AOR equipment) on 14.236 (QRG, USB) every Sunday at 1800 UTC, followed an hour later by the WinDRM net.

Ah, yes, WinDRM. While not a product in the strict sense, lots of folks see WinDRM as having the potential to unseat PacTOR III as the HF data transfer protocol of choice. It's free for the download, comes with decent documentation and several support files, and seems to be quite highly respected by hams who know better than I. At this point, I haven't tried it, but rest assured that it's one of my priorities. For those interested, visit http://n1su.com/ windrm/> for more info, downloads, etc.

My only regret at this year's Hamvention® is that I didn't get to see any information about the APCO P25 protocol. I've been wanting to get a better idea about this DV mode, which is fairly mature in the commercial world, but I suppose that will have to wait at least another month or two.

Digital Ham Group

Some digitally minded hams from Illinois have formed a digital ham group on Yahoo, found at http://groups. yahoo.com/group/illinoisdigitalham/>. From the main page of the website: "This group is dedicated to the discussion and development of amateur/ham radio use of digital voice & data communication techniques utilizing Digital Voice (D-STAR and APCO P25), HSMM/Wi-Fi, Packet Radio, PSK/FSK/ MFSK, APRS, WinLink, HF Digital Voice, digital satellite, digital SSTV, WSJT meteor scatter, and other digital modes on HF, VHF, and UHF. Hams from all areas are welcome."

Sounds like my kind of group! Joining is easy, especially if you already have a Yahoo account, so if you are of the digital persuasion, drop in and see what's there!

That's all for now, just an overview of what's been happening and my overall impression of the digital scene at Dayton. As the cooler weather starts to set in upon us, and sunspots start their upward swing, it's time to try a few new modes. That's what I have in mind for next time, so until then . . .

73, Don, N2IRZ

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Every Picture Tells a Story

t's my humble opinion that the antenna is the single most important element to successful mobile operations, with the qualifier that the lower you go in your operating frequency, the greater the importance of the antenna system and the greater the "degree of difficulty."

Of course, grounding, electrical connections, antenna feed-line routing, and more are also key factors in achieving good performance from your mobile setup. However, the antenna is going to be the most critical element in how you measure your mobile system's performance and, of course, your enjoyment.

Many seasoned hams will tell you that nearly every antenna installation has some faults; in other words, it's compromised in some way. The "ideal" location for a mobile antenna is in the center of the roof of the vehicle, offering the greatest ground plane beneath the radiating element and keeping RF above and away from the vehicle's occupants. For numerous reasons, few vehicles operate in the "ideal" configuration.

*5904 Lake Lindero Drive, Agoura Hills, CA 91301 e-mail: <aa6jr@cq-amateur-radio.com> This time I'll share with you several candid photos taken in and around Dayton during the annual gathering of hams at the Hamvention®. You may see some good ideas. You may also see reinforcement of some concepts and practices you already employ.

Dayton was a Bit Different

This year's gathering at Dayton was terrific in many ways—a good crowd, good weather, and a great job by the Dayton Amateur Radio Association (DARA) volunteers in pulling together the million details that go into a good show. A bit of let down for me was that there were no vehicle manufacturers present. In the past, I've always enjoyed a chat with some of the engineers and reps from Detroit who devoted some time to sharing installation tips with the amateur radio community. Sadly, this year none were to be found.

On the other hand, it was good to see many antenna manufacturers showing their wares and the diversity in designs, from simple to complex, offering the mobile enthusiast a wide range of choices. It's really encouraging to see the variety of "tunable" antennas that allow the operator to achieve optimal performance without having to



N9FPR took advantage of the area behind and above his license plate to mount a good-performing HF antenna that did not require drilling conspicuous holes in his vehicle.



leave the vehicle to retune the antenna each time one changes frequencies or bands. The range of choices varied from simple monoband "stick" antennas for around \$20 to tunable configurations that could cost hundreds.

I'm always impressed with the ingenuity of hams when it comes to mounting their antennas. From last year's humor-

ous "porcupine" car (strangely not in evidence this year; perhaps it returned to its home planet) to vans, motor homes, luxury cars, and motorcycles, you could see examples of each type in and around Dayton.

CQ Editor Rich Moseson, W2VU, and I had an enjoyable chat with Richard, N9FPR, in the Hara Arena parking lot fol-



I don't think anyone will question WØKWM's commitment to mobile operations!



There's a lot to be said for simplicity!





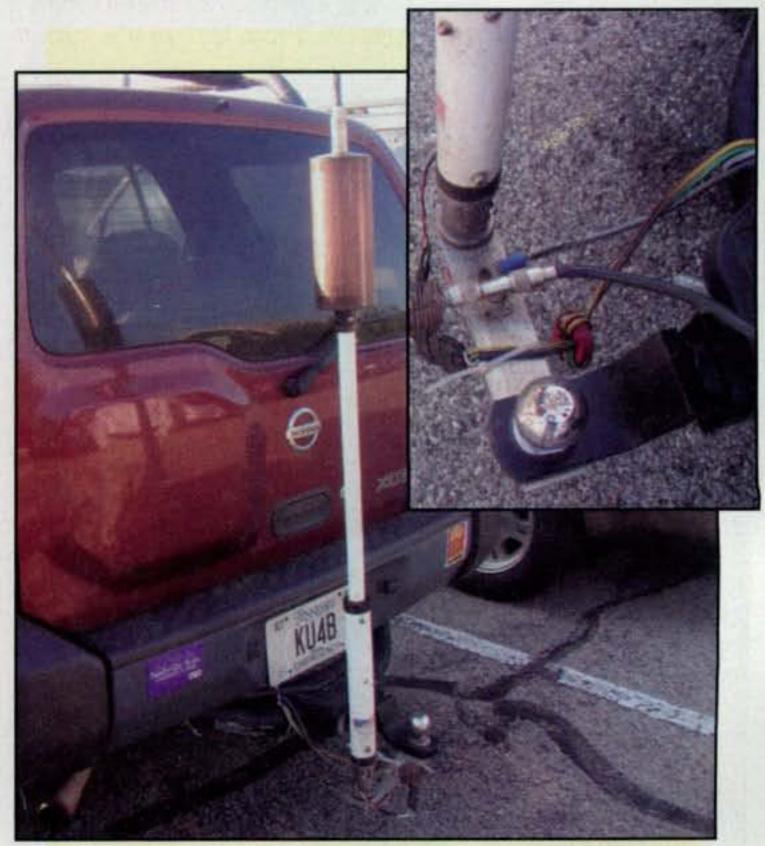


Here's an array of "clean" antenna installations that are well thought out.



Sturdy is the key word to this mount, an important factor when one considers the weight of the antenna and the wind loading it may have at 70 mph. Note that the antenna is also clear of the tail lights and tailgate.

lowing a long day on the convention floor. Despite being tired and hungry, we couldn't resist chatting it up with the owner of the vehicle, who did a first-rate installation of his antenna on a luxury sedan. Some experience as a metal worker helped bring the concept to reality, but just about anyone



KU4B also uses a strong mount, which is needed for the big antenna and the capacitance hat that you can't see in this photo.



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could replicate the idea in his own shop, or you probably know someone who could. Richard's clean installation around the license-plate frame of his car is some creative metalwork, a simple ball mount, and a quick-disconnect. However, note the attention given to grounding the antenna base.

Pickup trucks and vans offer more versatility and less concern with aesthetics, but as you'll see in the photos, there are many ways to mount an antenna that's not offensive to the eye.

Look and Learn

Take a look at the examples in the rest of the photos. The variety of ideas, styles, and mountings should provide you with some inspiration to upgrade your mobile antenna system into one that not only performs well, but looks great, too!

Please e-mail a photo of your attractive or innovative antenna design to me at <aa6jr@cq-amateur-radio.com>. I'd be pleased to share ideas an upcoming column.

Errata

In the May issue, when writing about traveling with ham radio, I said, "...be sure you have a copy of your FCC license with you (which is required per the rules)." Bob MacDougall, KC9JUB, wrote to say, "You are no longer required to carry your license or a photocopy of it with you when you are the control operator of a station." Bob is correct. Changes in the FCC rules no longer mandate carrying the license or logging contacts, but I have found both helpful when explaining my presence to law-enforcement personnel who wondered why I was parked at remote locations when operating.

73, Jeff, AA6JR

Mobiling to the Max - Part II

he fun times and clever ideas for top-notch mobiling continue to flourish, so we continue this month with more notes and views you surely will find appealing. Also, we have noticed a marked increase in mobile CW operations since the Morse code requirement was dropped from license exams. Actually, I have noticed overall interest and use of CW has been flourishing, and more folks are operating CW from their vehicles. I am not referring to sending and copying CW while driving in traffic, but rather while riding as a passenger or operating while stopped. Remember, safety first!

Even at this low point in the sunspot cycle and even while running 50 watts to an inexpensive antenna such as a Hamstick, folks are having a ball DXing on CW from the car. The key is good timing, good sending, and a sharp ear for copying signals amidst a deluge of band noise, power-line noise (every city and every parking lot within cities are different), and ignition noise (other vehicles, not yours; ground strapping minimizes your noise). Practice these techniques at your home station before trying them in your car, and fuel your interest with two or three special paddles just for mobiling. You will have a ball!

If you need more encouragement, just take a look at the mobile CW setup of Marshall Emm,

*3994 Long Leaf Drive, Gardendale, AL 35071 e-mail: <k4twj@cq-amateur-radio.com>

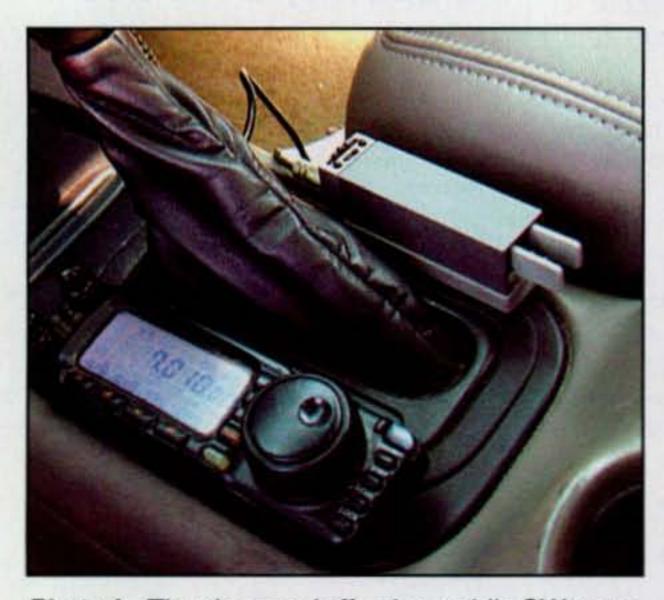


Photo A-The clean and effective mobile CW setup of Marshall Emm, N1FN, consists of Yaesu FT-100D remotely mounted in the trunk of a Chevy Impala, with a Palm Radio mini paddle and the rig's control panel attached to the console via hook-and-loop strips. This arrangement the allows panel and paddle to rotate in position for operation from either seat or be quickly removed. the antennas include an ATAS-100 plus several Hustlers. (Photo courtesy of N1FN)



Photo B– Interior view of the Land Rover mobile setup belonging to Bob Widman, KH6/W7UEA, in Hawaii. the control panel of the IC-706MKIIG sits on the console (and hides in the console box when the vehicle is unattended). The main body of the transceiver is mounted behind the rear seats only a couple of feet from the antennas. (Photo courtesy of KH6/W7UEA)

N1FN (photo A). Both the transceiver and the paddle are set for operation from either front seat, and the paddle even has enough cable to allow operation from the back seat. There are also two antenna mounts on the car—one for an ATAS-100 plus one for a hefty ball mount that can support a tall antenna for serious CW DXing. Does it get out? Yes, indeed. During a past return trip from the Dayton Hamvention®, N2WW worked all continents mobile/CW/QRP in approximately 90 minutes while N1FN drove. Nice!

Phased Mobile Pair

Now shifting views farther west, to the big island of Hawaii, we spotlight Bob Widman, KH6/W7UEA, and his cool Land Rov mobile setup shown in photos B and C and fig. 1. Bob runs an ICOM IC-706MKIIG and a pair of 20-meter Hamsticks that he quickly phased, as I discussed in this column two or three years ago. The antenna system did not perform as expected, so Bob asked my opinion, and I'm sure many of you can benefit from my investigation and the results.

Like many modern mobileers, Bob mounted the front/control panel of his IC-706 on the Land Rover's center console and installed the rig's main body in the back, behind the rear seat. The transceiver was then close to the antenna(s) and only two short lengths of coax (6.5 feet each, to be precise) were required for interconnections. Whether Bob connected one or two antennas, they were difficult to match, the SWR was a bit high, and signal gain or directivity was not noticeable. What was wrong?

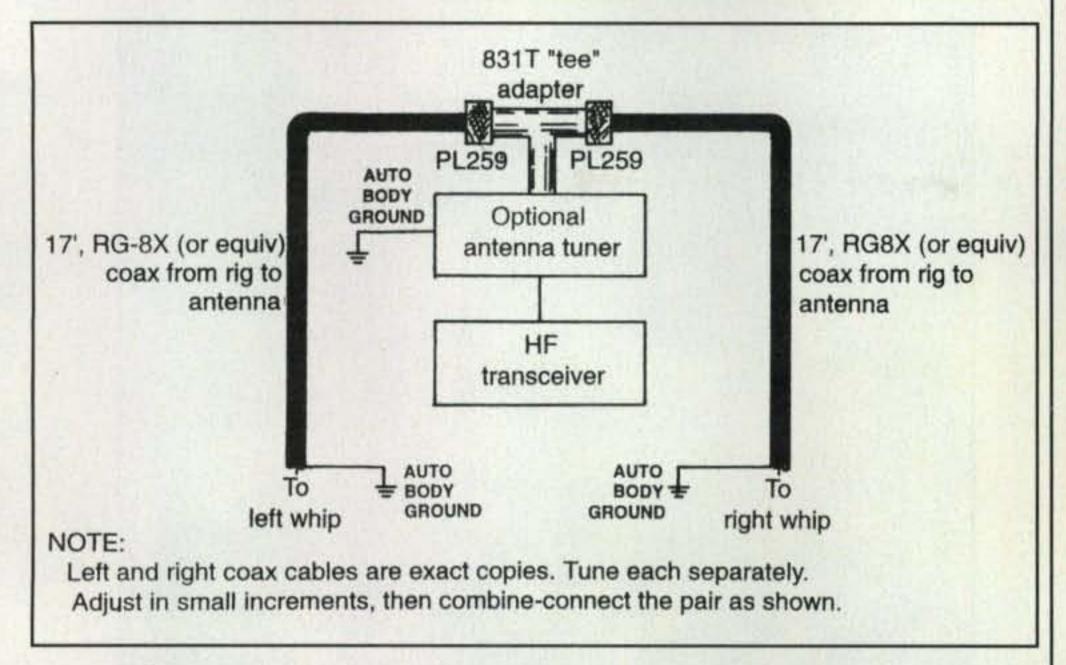
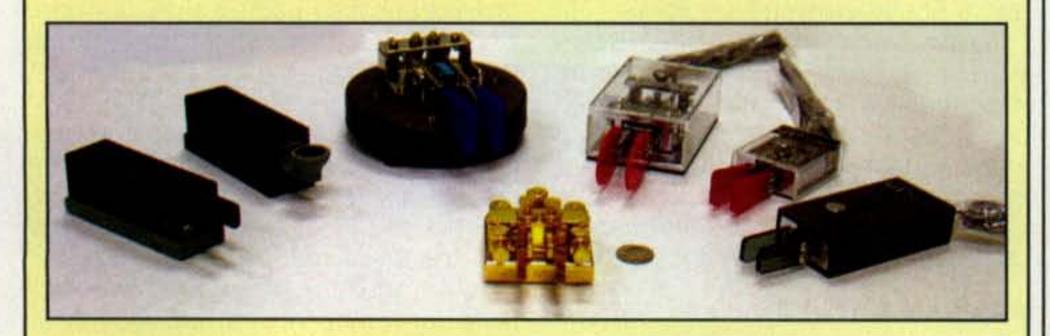


Fig. 1– Outline of the phased antenna system used by KH6/W7UEA—with one exception. Since the transceiver is mounted near the antennas, the feedlines for each are coiled into four turns 5 inches in diameter as discussed in the text.

Acquiring a good match or low SWR is always difficult when the transmission line between a rig and antenna is less than one-quarter wavelength. An antenna tuner can overcome this problem, but I always prefer fine-tuning the antenna itself and avoiding an antenna tuner when possible. Second, the phasing line connecting each antenna must

be long enough for phasing to occur— 17 feet in this case. I have always suggested routing the cables on each side of the vehicle and "zigzagging" them slightly if necessary. However, until now I had not considered a rear-mounted transceiver. I suggested that Bob change the feedlines from 6.5 to 17 feet, which he did, and the antenna system

Mobile CW: The Keys Make It Fun



Operating CW from a vehicle can prove to be a delightful experience, especially when done with one or two (or three!) just-right-for-you keys such as the ones shown here in this collection put together by Marshall Emm, N1FN, of <www. MorseX.com>.

If you are space limited, Palm Radio's popular mini paddle and matching portable straight key (left) are slim, trim, and easily mounted anywhere with hook-and-loop strips. Console cup holders often make good mounting spots for keys, and the roundbase Katsumi paddle screwed onto a round wood pedestal fitted into a cup holder is a classy and affordable choice. Some CW operators like dual-lever paddles, but prefer easier to

use single-lever paddles for mobiling, so GHD's convertible (single -or dual-lever) GM-307WS paddle to the right of the Katsumi paddle in the photo goes either way. The GHD model GM-707 Micro paddle beside it and also protected with a clear plastic cover offers maximum class and flash in an extra small package. The GHD GM-701 (on the right) is a retractable travel paddle that is protected from abuse when the going gets rough. The middle, forefront item is LTA's miniature gold-plated and quite affordable AMIO mini paddle. With keys such as these, who could resist going CW mobile! Where to get them? Ring up Morse Express at 1-800-238-8205, or see the website mentioned in the first paragraph.



began to work like a champ. As Bob said, the impedance match was better, the SWR dropped to between 1.2 and 1.5:1, and the antenna system exhibited gain of one to two "S" units.

Bob conducted some interesting tests while working some stations in Argentina and Japan at the same time. With his car pointed toward Japan, the LU station reported his signal as S7 and the signal increased to S9 when he pointed the vehicle toward Argentina. Simultaneously, the JA station report Bob's signal went from S7 (when pointing toward Japan) down to S3 or S4 (when pointing toward Argentina). Were the measurements coincidences? Bob has run tests several more times, with different stations, and the results have been similar and consistent. The phased antennas are rompers! There is a surprise here, too.

I forgot to tell Bill to stretch out or zigzag the two feedlines, so he simply coiled up each feedline into four turns approximately 5 inches in diameter. You might assume the coiled feedline idea would not work, but the system's gain and directivity figures (plus lower SWR) say otherwise. Apparently, the coils act like similarly wound coils often placed at feed points on Yagis—RF

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Photo C– KH6/W7UEA mobile at the oceanside in Hawaii. Dual/phased 20-meter Hamsticks are supported by Diamond K400 trunk lip mounts on each side of Land Rover's tailgate. The antennas consistently exhibit 2 to 2.5 S units gain over a single antenna. (Photo courtesy of KH6/W7UEA)

chokes. If you are experiencing problems matching your rear-mounted transceiver and (2 feet away) antenna, try using a 17-foot coil of interconnecting RG-8X cable.

Our thanks to Bob, KH6/W7UEA, for sharing details of his "mobile in paradise" setup. It truly represents the good life! If you have questions, you can direct e-mail to Bob at <widma@aol.com>.

Flash! Since writing about Bob's antenna system, I have heard from other mobileers who have also used long transmission lines coiled up and connected to trunk-mounted transceivers, and they too report better matching and improved performance. Try it!

Mobile Maintenance

I occasionally slip a small mobile rig into my XYL, WB40EE's car and wrangle a few QRP QSOs during brief aroundtown trips, and I always start by checking the antenna's SWR. Recently when doing so, I noticed the SWR had increased to almost 3:1, which was terrible, because I always tune and maintain my antennas for an SWR near 1:1. Apparently, rainy weather, old age, and general corrosion had taken their toll on the antenna system. Fortunately, I spotted that fact before the rig was damaged by high SWR. Hunting down and correcting the problem(s), however, spun off some interesting points worthy of

sharing here.

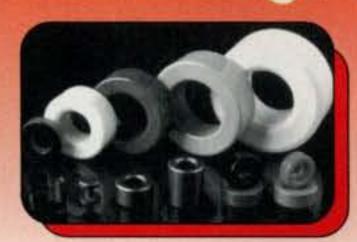
First I disconnected the ground strap that routes from a body bolt on the firewall to an alligator clip on the shell of the coax cable's PL-259 and measured resistance. This step checked resistance through the ground strap, body bolt, the car body, the frame of the antenna mount, the coax shield's ground, and the PL-259's shell all in one step. The resistance should have been less than 5 ohms, but it measured infinity-an open circuit. Ah ha! The problem evidently was a broken coax shield connection or maybe corroded setscrews on the Diamond K400 trunk-lid mount-so I thought. I stepped back to the trunk, alligator-clip jumped the mount's antenna and ground connections, and then rechecked continuity between the PL-259 center pin and the shell. Again, it measured an open circuit (what?). Time for action!

Returning to the trunk, I backed out the mount's setscrews to check their ground connections. When I moved the mount, the coax cable's pigtail lead broke in my hand (photo D). I then unbolted the mount's two main sections, made more resistance checks, and found the main bolt securing the two sections and the pigtail lead's ground lug were all corroded to the point of an open circuit. I had checked all of this and used the antenna only a couple of months earlier—honest!

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Photo D- While investigating a defunct ground on this well-aged K400 trunklid mount, I discovered several corroded-to-infinity connections, and pigtail leads fell off from age and exposure to the sun. That's only the beginning. See the text or the full story.

The setup was a total bust, so I installed a shiny, new K-400 mount with new coax. I also scraped shiny clean trunk-lip spots where set screws tighten, and installed a new base impedance matching coil and its jumper strap. That should have fixed everything in one shot, right? Wrong.

Rechecking the resistance from the new coax cable's new PL-259 shell to

rechecked resistance to the mountalso infinity. (What? This was a brandnew mount!) I then disassembled the beautiful new mount and found that each piece had been nicely painted and dried before final assembly. As a result, each piece was totally insulated from the other-and from the coax shield's ground lug (grrrr!). I spent the next hour with a knife and sandpaper diligently scraping every connection point between fitting pieces, all the way down to the four lip-securing set screws (yes, they too were paint-insulated from the mount; I even paused twice to ensure that my ohmmeter was not tricking me!). Finally, I remeasured the reassembled mount and read 0.3-ohm resistance. I installed the mount, routed its cable, rechecked the alligator clip and PL-259 ground strap, and again measured 0.3 ohms. Success . . . so I thought.

I then slipped a rig into the car, installed the old faithful antenna, and quickly checked SWR before preparing for some juicy mobile fun. What? The SWR was 2:1! I started to clean the mobile-whip connections, and then paused and considered the facts. There is a point where you have to draw the

the car body bolt indicated infinity. I line between repair and replace. When rechecked resistance to the mount— everything else is new, a repair is the weakest link—and it too will fail at the least opportune time.

I replaced the antenna with a new one, quickly tuned it for 1:1 SWR (it was a snap, since everything else had been perfected and fine tuned), and worked HI8, I3, G3, plus YO4HGX/MM (spotlighted in last month's column) while running only 5 watts.

What's the bottom line here? Never assume anything is "good" because it once was or because it is new. Maintain a top-notch setup, and it will reward you with many hours of enjoyable use.

Conclusion

Again we have reached the closing wire and must bow out rather quickly. Mobiling—and operating CW and QRP from the car, bicycle, etc.—is increasing in popularity, and we invite you to share your views and tales of your outdoor hamming fun with readers via this column. Drop me a note and one or two photos (my address is on the first page of this column) and let's get some good recognition going your way! May the force of good signals always ride with you!

73, Dave, K4TWJ

BY WAYNE YOSHIDA,* KH6WZ

Doing Some Detective Work To Save Some Money

ver the last several months, my 9-plusyear-old VHF/UHF FM mobile radio had just not been working right. I started to get reports of "cutting in and out" and "why are you so noisy?" Along my commute to and from the office, I also saw that the rig's S-meter seemed to be all right, indicating at least mid-scale. Therefore I thought, "It must be them, not me."

One day it just got worse, and I had trouble hearing stations, too. "Hmm," I thought, "maybe something happened to the repeater antenna, since I know I am usually able to hear the repeater signal from this stretch of highway on my commute."

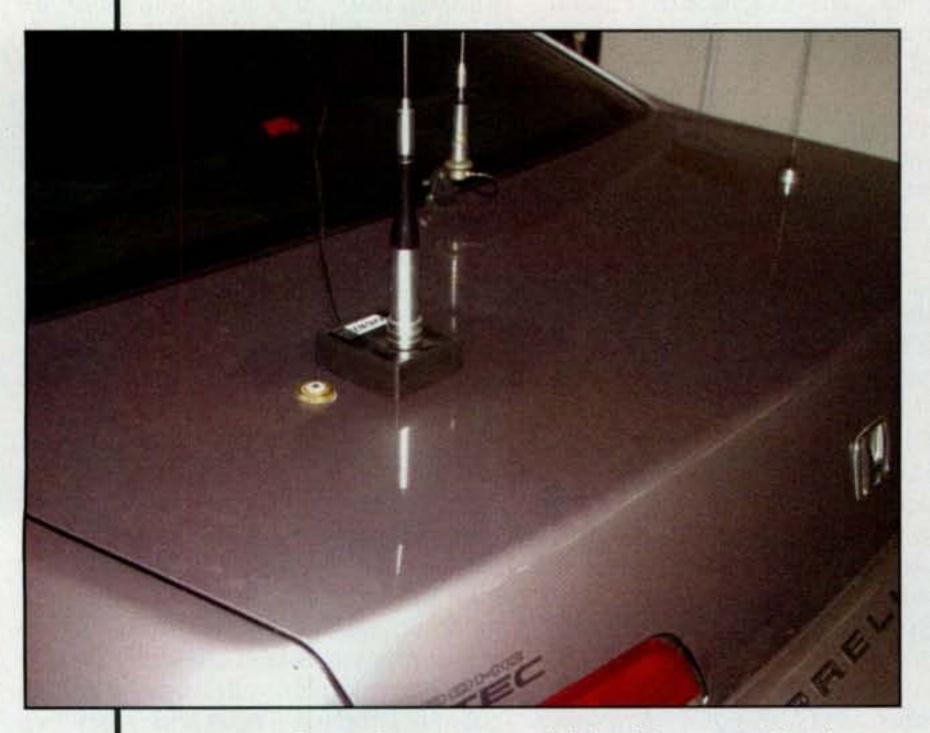
Finally, I took a Saturday afternoon to check my mobile installation from the antenna to the rig. Actually, however, I had another approach, one that was a little faster than testing anything, since I had to check into a net each week.

Detective Work Equals Saving Money

I decided to do some "detective work" and troubleshoot by swapping-out gear in the system.

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Swapping out a possibly bad element with a known "good" element in a system is one way to do some electronic "detective work" to diagnose problems. The detective work eliminates guessing and possibly saves you money because you are not throwing away perfectly good parts.

Sherlock Holmes might have called this "using the process of elimination." In other words, could the declining performance in my communications capability be related to a bad radio or a bad antenna? If it is not either, then could it be outside of my system—in other words, the repeater? However, other stations using the repeater system were not experiencing any problems, so I could eliminate the repeater as the cause of the problem. This also eliminated the other stations using the repeater system, so it pointed to something wrong in my mobile station.

After all, the rig was almost ten years old, and it had seen a lot of hard use and many adventures during emergency communications drills and many contacts over the years. Thus, I disconnected the power and antenna cables from the little dual-band radio in the car ("un-installing" the rig would have taken a little more time, and because the rig might actually be okay, I decided that a simple remove and replace should be done). I did not really want to buy a new rig, since the trouble might be a bad antenna, not a bad radio.

I had an old, but working, spare transceiver in a closet just for such occasions. After several days of using the spare radio, I confirmed that the original mobile transceiver was not at fault, since my signal reports did not improve. This was a good thing, since it meant that I did not have to get a new rig—a money-saving situation.

I wanted to double-check this and reconnected the power and antenna cable to the original mobile rig. As before, the signal reports were not good. At least this seemed to confirm that the radio should still be okay, since both radios acted the same way.

After a few days, I disconnected the mobile antenna that had been in place since I first had the radio. The antenna thus was also about nine years old. I think a mobile antenna with almost a decade of service is a reasonable lifetime, especially since I live near the ocean. I started to look at catalogs for a new dual-band mobile antenna. I soon noticed that getting a replacement antenna was a bit expensive, so I looked into my "go kit" for the spare magnet-mount dual-band mobile antenna. A go-kit is used for emergency communications. It contains the essential gear for an emergency (see the sidebar for details).

I removed the old mobile antenna from its mount on the trunk and inspected the connection. The threads and the small contact for the center of the coax cable (and the whip itself) were dull, but otherwise clean. However, the antenna whip itself was hinged near the base to allow the antenna to fold down. This is a useful feature for tall vehicles to avoid scraping the antenna on parking struc-

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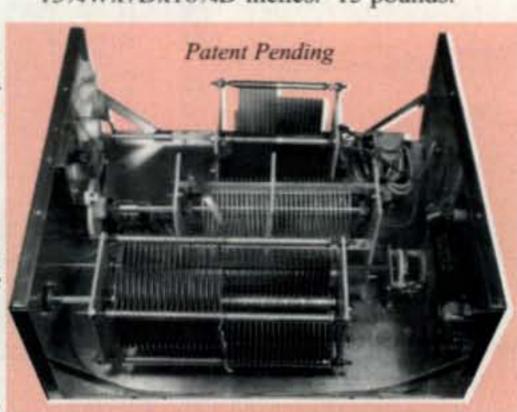
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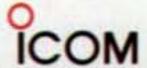
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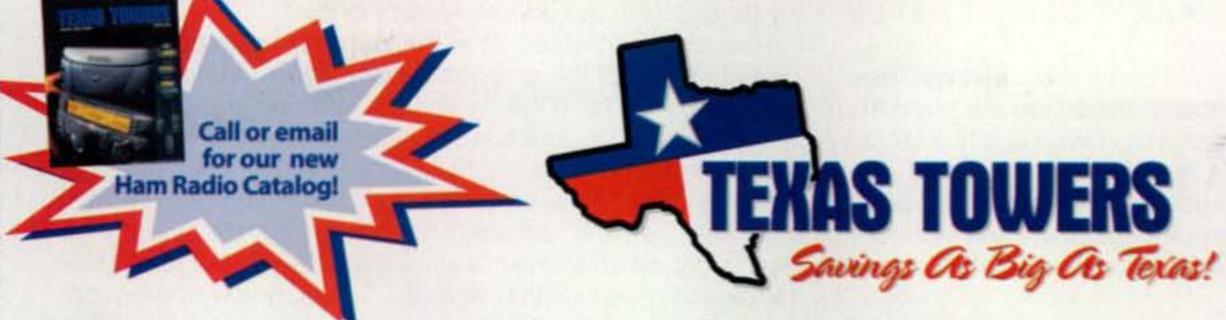
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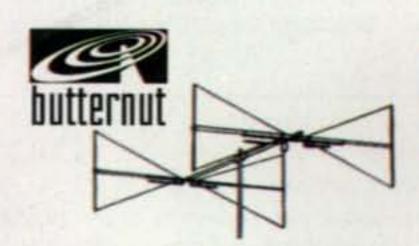
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ture ceilings and other things. In my Honda sports sedan, however, folding an antenna is not necessary. Could this hinge be the point of failure?

I pulled on the hinge and folded down the antenna. There were some gray flakes of corrosion inside, so I thought this must be the source of my problems. I was ready to throw away the antenna, but since a replacement dual-band whip is a medium-size investment, I decided that I needed to prove whether or not the whip antenna was good or bad. therefore, I did another swap-out. This time I swapped out the antenna (see photo).

After another few days of operating the mobile station with the backup magnet-mount antenna, I determined that the rig was working fine, since swapping the antennas seemed to have cured the bad signal report problem. I also noticed the rig's S-meter was more generous now, moving to full-scale rather than only mid-scale. This showed up more when I was in marginal areas along my commute, and when I was inside my garage with the overhead door closed.

This also confirmed that the antenna was at fault—or should I say that the antenna system was at fault, since the coax going between the rig and the antenna was also a part of the system. In addition, the little coax-to-whip antenna mount might have been a point of failure.

Next I checked each element of the antenna system. I removed the whip antenna from the magnet mount and replaced it with the original whip antenna. After another few days I confirmed that the original whip antenna was still good, even with some of that gray flaky stuff inside the hinge. This definitely was making me feel better, since neither the rig nor the whip antenna needed to be replaced.

Then I removed the magnet mount from the car and reinstalled the original whip onto the original mount on the car. The signal reports were bad again, just like before. This now

The Go Kit

I think every ham should belong to a local emergency response organization, whether it be RACES, ARES, or CERT. After all, service in the public interest is a reason why ham radio began. Here is a collection of gear I keep handy for RACES drills or activations. We call this a "Grab and Go Kit," or just "Go Kit," and it includes everything needed for an 8- to 10-hour shift for an emergency communicator.

The photo shows the basic gear I use for all deployments. Our public service opera-

tions are usually on 2 meters FM, so a small HT (handie-talkie) can be used. A boom mic/headset with PTT is essential for high-noise environments, such as parades, and enables "hands-free" operation. A speaker-mic, with an earphone, is ready for a back-up in case the headset breaks. Not shown in the picture is a small 12-volt gel-cell, useful for powering the HT for longer periods of time when necessary.

For longer duration assignments, the equipment list expands. Power is still the

first priority, since a communications volunteer with a dead battery is completely useless. I have a Yaesu VX-5R triple-band HT, which is powered with a Li-ion (lithiumion) battery. I used to carry a second battery pack, but now I use a 7-aH gel-cell.

More information on the Grab and Go Kit can be found in the Huntington Beach, California Radio Amateur Civil Emergency Service (HB RACES) website, <www.hbraces.org>, and on the other sites listed in the References box.



The "all mission" gear Grab and Go Kit, with all of the absolutely essential items needed for an emergency communications assignment: a dual-band HT, an extra battery pack, a gain antenna, and other accessories. All items are carried in a fanny pack or my pockets for total portability. Longer duration assignments call for more items, such as an exter-nal gel-cell, a compact battery charger, and a small solar panel.

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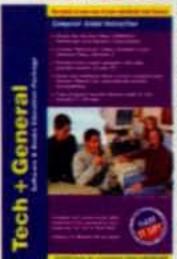
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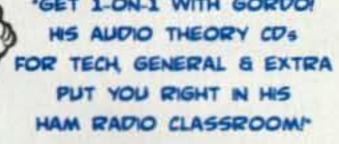
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confirmed that the trouble spots were limited to either the coax feeding the antenna system to the rig, or the antenna mount on the trunk lid. Further, the original rig and the original whip were also good, based on the previous swap-outs.

Since the mount looked nice and clean, I decided to eliminate the antenna mount from the list of suspects, and narrowed the point of failure to either the PL-259 connector at the rig end of the coax cable, or the coax cable itself. When I had installed the antenna almost a decade ago, I used some RG-8X coax, rather than the original RG-58, for lower loss. I checked the connection between the coax connector and the antenna mount with an ohmmeter, and it tested "good." However, this is a simple "continuity test," meaning that it simply verifies that a connection exists between "here and there" and the cable center conductor is not shorted to ground.

I decided that with all this detective work, making an assumption that the culprit must be the coax cable was not valid even if it tested "good," because there was a possibility that the quick ohmmeter test might not have been valid at RF frequencies. In other words,

at DC it was a good cable, but with RF energy it might not have been moving the signals correctly through the cable. In fact, upon close inspection by eye and feel, I found a squashed section of cable where it went under the back seat of the car. So yes, the cable was good at DC, but was not good at RF.

Now that the root cause of this degradation of signal strength was confirmed, it was time to move to the repairs stage. I happened to have some excellentquality coax cable (RG-142) in my "wire box." This type of coax cable is used with RF test equipment and has very low loss at very high frequencies. It would be an upgrade to the system. It is the same diameter as RG-58. The drawback to this cable, however, is that it is quite stiff. Connectors had already been

installed, although they were TNC type. Rather than cutting off the cable and perfectly good connector, I installed a PL-259 to TNC female adapter to the end of the cable.

After replacing the cable, the system worked great. The new cable even improved overall performance, including operations inside my garage with the overhead door closed. Best of all, I avoided an expensive "repair or replacement" situation by examining each element in the system, making tests (even without test equipment, with one exception) and narrowing down the points of failure to one spot. Now I just have to figure out a way to justify buying a new rig to replace a perfectly good working one!

73, Wayne, KH6WZ

References

Amateur Radio Emergency Service (ARES), American Radio Relay League (ARRL): http://www.arrl.org/FandES/field/pscm/sec1-ch1.html

Radio Amateur Civil Emergency Service (RACES): http://www.races.net>

Salvation Army Team Emergency Radio Net (SATERN): http://satern.org

SKYWARN National Homepage: http://www.skywarn.org

Is Ham Radio Always the Answer?

tors have used the slogan "When All Else Fails" to promote amateur radio in emergency communications. It has been an effective tool to describe the value of amateur radio when the telephone wires are down and other communication systems are overloaded. This month we'll take a look at two different scenarios which ask the question "Will ham radio always be the answer?" We will also review some of the Emcomm news from the Dayton Hamvention® and look at hams being prepared.

What, No Internet?

In late April, Estonian authorities began removing a bronze statue of a World War II Soviet soldier from a park in a large Baltic seaport. There were violent protests in the streets. However, there were also fights on the internet. People in Estonia use the internet to vote, file their taxes, shop, and pay for parking. According to officials, it is as vital as running water. A month-long cyberspace war forced Estonian authorities to defend their internet.

Estonian officials said the cyber attacks came from Russia. The Russian government denied any involvement in the attacks, which came close to shutting down the country's digital infrastructure. It clogged the websites of the president, the prime minister, Parliament, and other government agencies. It hurt Estonia's biggest bank website and overwhelmed the sites of several daily newspapers. Defense Minister Jaak Aaviksoo described it as a national-security situation. News sources quoted Aaviksoo as saying, "It can effectively be compared to when your ports are shut to the sea."

The attack shut down the Parliament e-mail server for four days. According to industry analysts, as many as one million computers in places as far away as the United States and Vietnam impacted the assault. The combination of very large packets of information and thousands of machines create a recipe for very damaging denial-of-service attacks. One security company, Arbor Networks, measured dozens of attacks. They said that the 10 largest assaults blasted streams of 90 megabits of data a second at Estonia's networks, lasting up to 10 hours each. That is a data load equivalent to downloading the entire Windows® XP operating system every 6 seconds for 10 hours.

Could It Happen Here?

In recent years, cyber attacks have been associated with the Middle East and the Serbian-Croatian conflicts. However, computer systems at

*c/o CQ magazine e-mail: <wa3pzo@cq-amateur-radio.com> the Pentagon, NASA, universities, and research labs have been compromised in the past.

This year scientists and researchers convened by the National Academy of Sciences heard testimony from military strategy experts indicating that both China and Russia have offensive informationwarfare programs. The United States is also said to have begun a cyber warfare effort.

There is much debate as to whether or not something like this could happen in the United States. However, since some of these attacks on Estonia were routed through computers in the United States, it is something to be aware of.

When All Else Fails, Satellite?

That's the gist of noted DXer Bob Allphin, K4UEE, of Marietta, Georgia. In a posting on the Iridium Satellite phone website he said, "After our wonderful experience using Iridium phones during our Ham Radio Expedition to Peter I Island, Antarctica last year, I vowed never to go on another expedition without an Iridium Satellite phone." Allphin also serves on the ARRL DX Advisory Committee.

In mid-January, 11 amateur radio operators met in Cochin, India to set sail for Agatti Island in the Lakshadweep archipelago, located in the Arabian Sea southwest of India. The second operation, in April, was on Swains Island, an atoll in the Tokelau chain in the South Pacific. In the amateur radio world, these islands are extremely rare and a contact on ham radio is much sought after.

"The sheer isolation of the islands makes communication difficult and highly prized," said Allphin. "But once again, just as in Antarctica the previous year, we had Iridium Satellite telephones which provided us with full-strength coverage at all times. Although we communicated all over the world with our ham radios and made 41,000 contacts in all, our communication was subject to ionospheric conditions, varied by time of day, and was restricted by low sunspot numbers. So communications with our families and announcements of our scheduled ham radio activity and updates on our results were not reliable or possible except during certain times of day and on certain radio frequencies. The ability to dial-up a number anywhere in the world and have a clear conversation, without static, fading, or interference, was truly amazing."

A Bulging Toolbox

Both stories above indicate that you cannot rely on just one form or mode of communications. As an emergency communicator you need to have multiple options available. In order to work long distances, you may use internet-linked communication systems such as Echolink and IRLP. However, you may need to rely on a high-frequency radio with different types of antennas, such as a beam, dipole, or a Near Vertical Incidence

Skywave (NVIS). You need to have digital modes as well as voice capability.

It also points out that ham radio is not the only form of communications. Sure, satellite phones are expensive and may not be practical to have sitting on a shelf, but as a communication mode they can get through. So what makes ham radio unique?

Drill! Drill! Drill!

Emergency Management officials periodically hold exercises to test various parts of their emergency plan. Sometimes there is a real need for amateur radio communications. Other times normal communications work and the hams aren't needed.

Maybe you have participate in annual drills. The drill has been going on for several years. During the first drill your local ARES (Amateur Radio Emergency Service)/RACES (Radio Amateur Civil Emergency Service) members tested you on every method, mode, antennas, etc., that were available to make sure you could communicate when all else fails. By the second or third year you had everything finetuned. You new what worked, and that's the radio link you used to get the job done.

For each drill you should test all of the systems again, whether it's a new TNC, a new controller, or new Telpac nodes. Make contact with the shelters and alternate EOCs and have them perform the backup function they were designed for. Check out simplex operations in case the repeater fails. Check and recheck your communications plan so that you know you can do what your plan says you will do.

Ham radio operators are not the stars of the drill. We are a tool available to the emergency managers that can be utilized when needed. We need to stay focused on our role in emergency communications so that we truly can say,

"When all else fails!"

Getting Ready for Hurricane Season

As part of the drill and exercising various communication networks the National Hurricane Center conducted its annual On-The-Air Station Test. This event provided an opportunity for WX4NHC to test its radio equipment, computers, and antennas on as many modes and bands as possible. Assistant Amateur Radio Volunteer Coordinator Julio Ripoll, WD4R, said, "This is not a contest or simulated hurricane exercise." New computers and software



Julio Ripoll, WD4R (left), and John McHugh, K4AG (right), flank former NHC Director Max Mayfield and new NHC Director Bill Proenza. Both are strong supporters of ham radio. (Photo courtesy of WD4R)

were also tested. Ripoll told CQ, "Max Mayfield retired as NHC Director earlier this year and we will miss him greatly. Not only was Max a strong supporter of ham radio, but a true gentleman and dear friend. Max gave 'The Hams' a very high endorsement to our new Director, Bill Proenza, and briefed him on our dedication and public service to NHC for the past 26 years."

For the Military Affiliate Radio System (MARS) there was often confusion as to whom to contact for help. Do emergency managers place a call to the Army, Air Force, or Navy-Marine Corps MARS? The issue was discussed and solved at the Dayton Hamvention®.

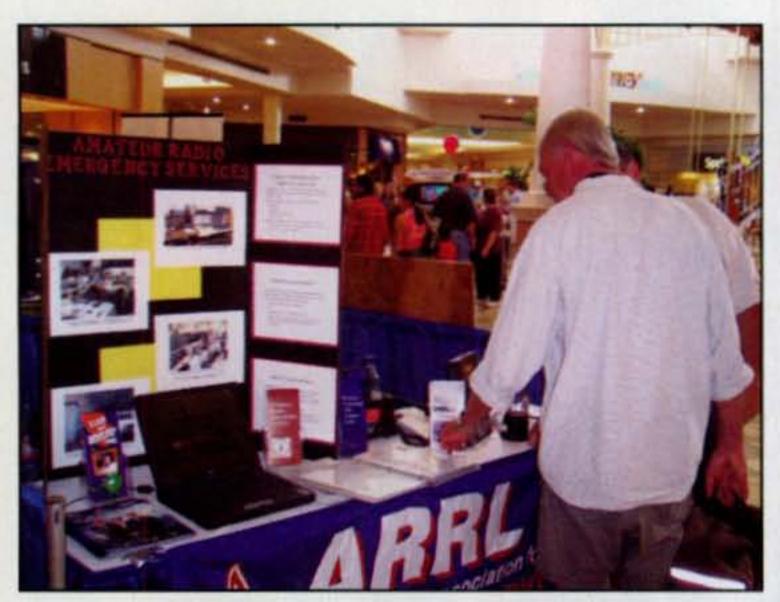
Chiefs Stuart Carter of Army MARS, Bo Lindfors, Navy-Marine Corps MARS, and Don Poquette, Air Force MARS, integrated the three services' on-the-air operations after their decades of functioning as separate organizations. The three services will establish joint emergency nets in each of their ten regions, make each other's military frequency allocations available to all, share net control assignment across the three services, and standardize voice operating procedures.

The integration plan came just weeks before the start of the hurricane season. Pensacola Transportation Security Officer (TSO) Jeff Smith, W4ZH, trained 30 Transportation Security Administration volunteers to use emergency high-frequency radio equipment during disasters. The 30 also qualified for ama-

teur radio Technician Class operator licenses. A Technician amateur radio license allows MARS operators to operate on VHF as well as HF MARS frequencies. MARS provides backup communication for the TSA. Protecting airports during the hurricane season will be the immediate focus. The emergency support teams, consisting of four MARS members, are being assembled for deployment as needed when and if the government's communication systems fail. MARS is tasked with maintaining communication during the first 72 hours of incidents involving aircraft, mass transit, and pipelines. Seventytwo hours is considered the maximum time needed for federal response organizations to deploy internal emergency communication systems.

"Pensacola is fortunate that we have a TSO who is a highly experienced amateur radio operator, trainer, and examiner," said Federal Security Director Steve Earnest. "His volunteer efforts have given the agency tremendous inhouse capability that would have been expensive for the agency to replicate using contractors."

On the technology front, Army MARS assumed responsibility for the military version of Winlink 2000. It will be upgraded to operate independent of the internet if that system ever fails. MARS traffic will be securely separated from that of hams using Winlink on other frequencies. At the same time, Navy-Marine Corps MARS became the new



Wilmington, North Carolina hams were inside the region's biggest shopping center, Independence Mall, staffing a booth at the annual local hurricane expo. (Photo courtesy of David Williams, KF4CQS)



MARS leaders worked on integrating the three MARS services at this year's Dayton Hamvention®. The three chiefs at the joint Military Affiliate Radio System booth are Don Poquette of Air Force MARS, Stuart S. ("Stu") Carter of Army MARS, and Bo Lindfors, Navy-Marine Corps MARS. (Photo courtesy of James Banks, Army MARS)

home of MARS Automatic Link Establishment development, relieving Army MARS of that commitment. According to officials, members of all three services will continue on the ALE development team. "It was an awesome event," Army's Carter said of the meeting of minds at Dayton, and no time was wasted moving from decision to action.

Immediate Action

With the hurricane season fast approaching, Navy's Lindfors said, "[We] ask that all Region Directors immediately contact their Army and Air Force counterparts to coordinate frequencies. We won't be able to promulgate a new policy in time, so I trust your judgment to set up a system that works."

Air Force MARS Chief Poquette, retiring after 26 years of active duty in radio communications, departed on an optimistic note. "Yes, full interoperability is in sight," he said.

"Hopefully within one year, if everyone keeps working at it and I think they will."

MARS, RACES, ARES

One concern raised by MARS leaders is the coordination of missions among MARS, RACES, and the ARRL's ARES. All three provide emergency communications in disaster situations. MARS feels that the three groups are sometimes thought to be in competition with one another. According to Carter, MARS sees itself as the "long-distance carrier" in any emergency scenario, linking federal agencies with state agencies and on-site command posts via HF, while ARES and RACES provide essential close-in communications primarily via VHF.

"We do not compete with these other very critically needed emergency communications entities; we enable them to extend their customers' messages from the local level to a potentially global audience," Carter said. "We really are not rivals. We are partners, with the same goal—to provide emergency support when our nation's citizens need it most."

Carter said a formal proposal is in preparation for defining how Army MARS and the American Radio Relay League can work together, particularly with regard to ARES. "Army MARS is committed to creating a relevant relationship with the ARRL," he said. "We too serve the same population. We are not at cross purposes; I believe we really can provide a better service by leveraging each other's capabilities."

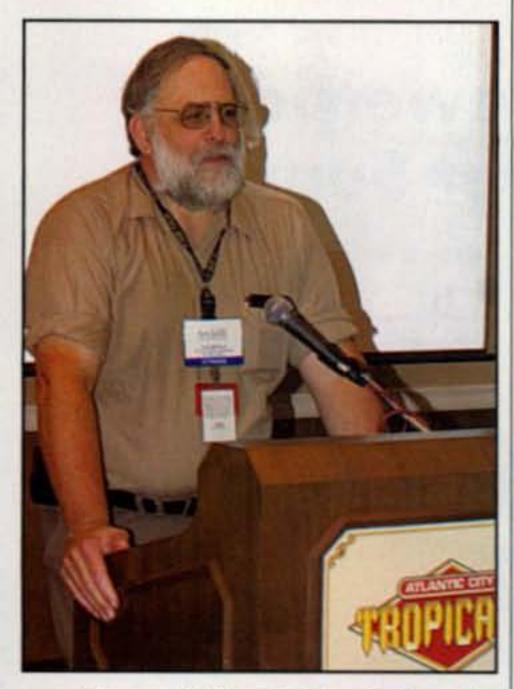
Spreading the Word

New Jersey emergency management officials have become aware of the valuable service provided by amateur radio operators. As part of New Jersey's Emergency Preparedness Conference, attendees were given the opportunity to earn their amateur radio license. The ten participants in the licensing course included emergency medical staff, firemen, dispatchers, and other emergency service workers. The course was comprised of two days of intensive instruction centered around a PowerPoint presentation, the ARRL Ham Radio License Manual, and on-line practice tests. The two days of instruction were followed by a license testing session. The course was taught by Lou Milone, KA2NTT, Atlantic County, New Jersey, RACES Officer, with assistance from other New Jersey RACES officials.

The second activity was a breakout session covering RACES, ARES, and the benefits of these amateur radio services to emergency managers. The session was presented by Ed Taylor, N2EWT, Bill Cole, N2CSA, and Tim Cwik, N2LTQ. The presentation centered around a brief video from FEMA and a presentation adapted from an original by Ed Bruette, N7NVP, Washington State Officer. Cole said the session was attended by emergency medical, fire, dispatch, police, and Emergency Operations Center personnel from the state, county, and local levels.

Talk on a Disk

The ARRL is helping you promote amateur radio emergency communications by providing a "Talk on A Disk." The emergency communications Powerpoint presentation provides the information needed to tell the public about amateur radio in times of emergency. It describes how we use amateur radio, some of the agencies that serve, and the types of communications available to hams. It picks up on FEMA's recommendation to be self-sufficient for 72 hours and asks the question "How will you communicate?" The CD has the current emergency communications brochure on it, as well as



Lou Milone, KA2NTT, Atlantic County, NJ, RACES officer, teaches an amateur radio class to attendees at the New Jersey Emergency Preparedness Conference. (Photo courtesy of Ed Velez, KD2PM)

several presentations on Hurricane Katrina. The information can help anyone give a good presentation on amateur radio.

One additional presentation helps you understand how to promote amateur radio. Just like emergency communicators have a go kit, well-prepared ham radio public-relations people have their own go kit to help get the word out.

Under the National Incident Management System there is a Joint Information Center. Here's a central point from which the news media can get information on a disaster. Preplanning is the key. The ham radio PR person has to make contact with the PR person from the served agency. By working with the JIC, you are sharing information to ensure that what is released is accurate. You can keep messages consistent and avoid releasing conflicting information.

These CDs will be available at the Huntsville (Alabama) Hamfest in August, or you can send an SASE big enough for a CD to the Public Relations Department at ARRL Headquarters (225 Main St., Newington, CT 06111).

Until Next Time...

This month we would like to thank Bill Sexton, N1IN, Army MARS, and Bill Cole, N2CSA, Assistant Cape May County, NJ RACES officer.

Do you have a story involving amateur radio public service? Drop us a note. Until next time . . . 73, Bob, WA3PZO



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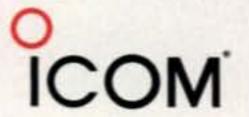
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Adding an Anderson Powerpole™ Connector to your Power Supply

ike many hams, I've converted all my DC power interfaces to Anderson Powerpole™ connectors. Currently, though, no +13.8-VDC power supplies have these connectors. Power-supply DC interface connectors are typically 1/4-inch threaded studs, five-way binding posts, and even front-facing automotive accessory sockets, which generally are limited to no more than about 10-15 amps. Rather than an accessory socket, I'd prefer a full-current-capable Powerpole connector on the front of my power supply. If I need an accessory socket, I can always build a Powerpole-to-accessory-socket adapter cable. Therefore, I decided to modify the accessory socket on my MFJ-4225 into a Powerpole interface. This modification is applicable to any power supply with an automotive accessory socket.

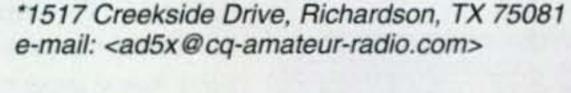
For this modification, I first built a Powerpole adapter cover for the accessory socket. The socket opening is about 0.8 inch in diameter, so a standard 3/4-inch diameter metal hole-plug, available from ACE Hardware or Mouser Electronics (part number 534-7605 @ \$0.74 each), fits snugly into this opening if the hole-plug's metal fingers are bent out slightly. I cut a hole for the Powerpole connector in the plug by drilling a 1/4-inch diameter hole in the center of the plug and then using a needle file to square up the hole. Next I used a nibbling tool to cut out a 0.3" × 0.6" rectangular hole, and then I painted the plug black to match my power-supply front panel. Finally, I slid the



Photo B- The painted plug ready for Powerpole



Photo C- Braid assemblies soldered in place.



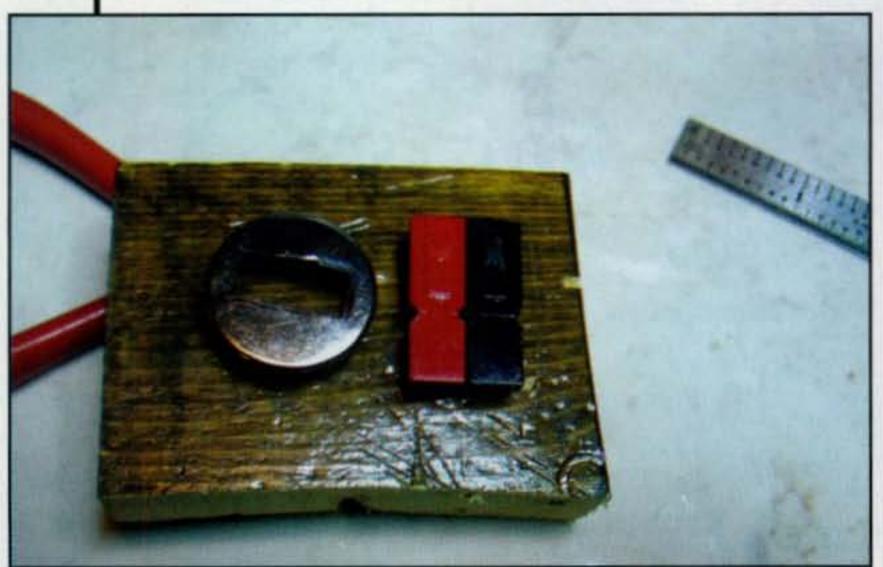


Photo A- The unpainted cut-out plug.



Photo D- The final Powerpole-equipped power supply.

"If I were to do this again, I probably would drill a hole in the side of the accessory socket inside the power supply, and slide 14-gauge wires through this hole."

Powerpole connector into the rectangular slot and epoxied it in place.

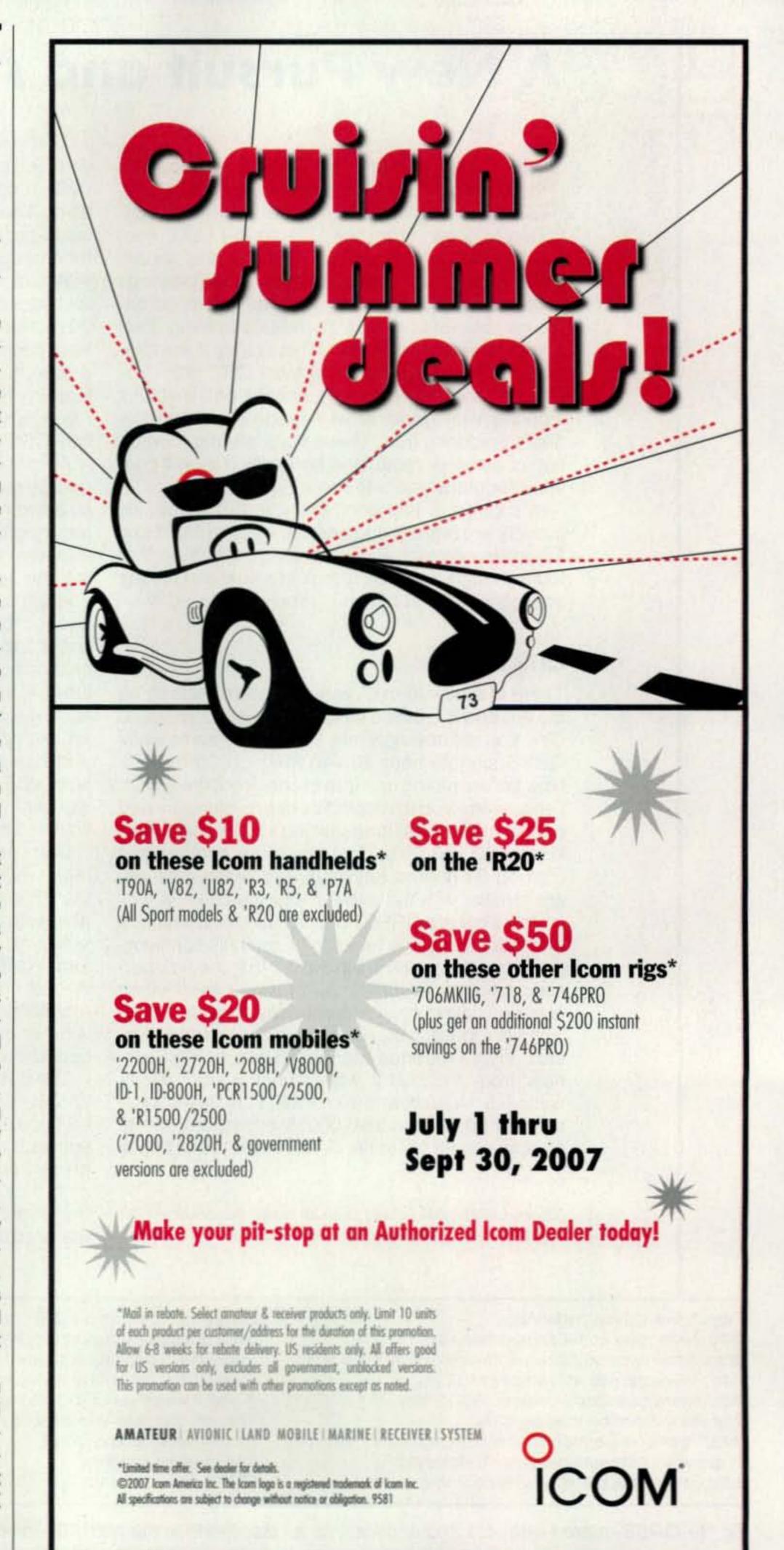
You may need to modify the inside wiring of your power supply if the internal power leads attached to the accessory socket are not at least 14-gauge (12-gauge preferred). If the wires aren't heavy enough, either replace the existing wires or just parallel them with 14-gauge or heavier wires. If desired, you can solder the ground wire directly to the accessory-socket case using a large soldering iron.

Now from the front of the power supply, you need to solder wires to the inside of the accessory socket. Since there isn't much room inside the socket, standard insulated wires are too inflexible. Therefore, I used two 2-inch lengths of RG-58 coax shield. Crimp (or solder) the Powerpole terminals on one end of each piece of braid. Next slide a piece of heat-shrink tubing over each braid, leaving about 1/4-inch of the braid exposed. Tin the exposed braid ends.

The next step is a little difficult, but not too bad. Tin both the accessory-socket center-conductor tab and the inside case of the accessory socket. Leave a nice glob of solder in both places. Now solder each of the braid assemblies to the tinned locations. Once this is accomplished, slide the Powerpole terminals into the Powerpole housing, and then push the plug assembly in place to ensure that everything fits properly. Once the fit is verified, pull the plug assembly back out and apply epoxy around the inside of the accessory socket. Carefully slide the plug assembly back in place and let the epoxy cure.

If I were to do this again, I probably would drill a hole in the side of the accessory socket inside the power supply, and slide 14-gauge wires through this hole. Then I could simply have soldered these wires to the internal high-current connectors.

That's it. My MFJ-4225 is now much more versatile for my bench work, as I have both an Anderson Powerpole connector and high-current five-way binding posts on the front panel. Until next month 73, Phil, AD5X





A New Pursuit and A New Kit

pattern of ups and downs, or highs and lows, but through it all QRP holds steady and continues to grow. From the U.S. to the U.K., from South Africa and Brazil, to Australia and Japan, QRP rocks! As I have mentioned in previous columns, QRP today involves a pleasant mix of onthe-air operations and home-assembling low-power projects just for fun. This is truly a wonderful part of amateur radio, as most QRP activity is on CW and homebrewing simple rigs involves working with genuine wire-leaded components and a soldering iron. These traits are the foundation of amateur radio, and hopefully they will continue for many years to come.

In support of that good thought, this month we proudly are highlighting another easy-to-build and fun-to-use project. Before getting started on that topic, though, let's briefly look at a new and unique application of that all-time favorite mode—CW.

QRSS

There is a new form of very-low-power activity on the air, and it is called QRSS, for ultra-slow-speed CW. You unknowingly may have heard some weak QRSS signals near 10.140 MHz on 30 meters. Now before tuning up there to check out the action, I encourage you to respect its hearty pioneers and refrain from blindly transmitting within one or two kHz of 10.140 MHz (few amateurs operate that high on 30 meters anyway). Just listen until you are familiar with the general activities.

How slow are QRSS transmissions and what are their attractions and benefits? Generally speaking, these transmissions are in the 0.1 to 2.0 words-perhour category, and they are proving beneficial for communicating over exceptionally long distances with very low power. As some eye-opening examples, VK3DI reported copying 30-meter QRSS signals from WB3ANQ while running 500 microwatts/0.5 milliwatt, and from VK6JY 240 miles away running 50 nanowatts/0.00005 microwatts on 30 meters. Closer to home, AA4XX and WØCH have

*3994 Long Leaf Drive, Gardendale, AL 35071 e-mail: <k4twj@cq-amateur-radio.com> communicated over an approximate 900-mile path while running QRSS at 50 microwatts on 10.140 MHz. Those feats average out to over 15 million miles-per-watt! Just imagine the benefits of QRSS for other pursuits such as moonbounce!

Would you like to try your hand at copying some test transmissions from QRSS beacon stations on 30 meters (and no, you do not need to sit by your transceiver for several hours to do so; a computer can handle the task for you). The first step is learning the basic facts regarding QRSS, and the following steps involve installing (and using) some free QRSS software on your computer.

As previously mentioned, QRSS signals are usually quite weak-so weak that they are masked by band noise. The key to hearing them involves reducing the noise or improving the receive signalto-noise ratio, and this is accomplished by reducing the receive bandwidth so it is barely wide enough to pass the (QRSS) signal but not wide enough to pass noise. How wide (or narrow) is that passband? It depends on the QRSS speed and is calculated as: CW speed (wpm) × 2.5 (response time) = absolute minimum bandwidth (in Hz) for absolute maximum S/N (signal-to-noise) ratio. As an example, 25 wpm \times 2.5 = 62.5 Hz bandwidth, and 12 wpm \times 2.5 = 30 Hz bandwidth. Likewise, 1 wpm \times 2.5 = 17.5 Hz bandwidth and a typical QRSS signal of .8 wph (that's words per hour), or 0.0133 wpm \times 2.5 = .03 Hz bandwidth.

Don't panic! A bandwidth this narrow (plus DSP noise reduction) can be acquired at the AF rather than IF level, and that is where your HF transceiver plus computer equipped with sound card, QRSS software, and a quick-brew interface enter the picture. You tune your transceiver to frequency, leave it, and the computer does the time-consuming monitoring for you. Your transceiver's filter is also wide enough such that mild drift is acceptable, because computer-based filtering is used.

The details of where to find more information on QRSS (including times/frequencies of QRSS test transmissions) and where to look for free QRSS software are given in fig. 1. Bear in mind that at the present time most QRSS activity is pre-announced as to time, frequency, and power via e-mail (check the knights_qrss e-mail reflector for details), and the Argo and Spectran software (available though

http://www.qsl.net/padan/argo

http://www.qsl.net/padan/spectran.html

http://www./wca.org/library/software/qrs/qrs317dl.shtml

http://www.qsl.net/on7yd/zip/qrs402.zip

http://www.ussc.com/~turner/QRSS1.html

http://www.cnts.be/knights_grss/

http://mail.cnts.be/mailman/listinfo/knightsqrss_cnts.be

http://www.hanssummers.com/radio/qrssjb

http://www.qrss.thersgb.net/receiving-qrss.html

Free Argo software for QRSS reception

Free Spectran software for QRSS reception

Free QRSS transmit software for Windows 3.1, 95, 98, & Me

Free QRSS transmit software for Windows 95, 98, Me, 2000, & XP

A sheer wealth of QRSS information plus links to other QRSS sites

This site includes info on subscribing to the Nights QRSS E-mail Reflector

E-mail Reflector for QRSS

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Fig. 1- QRSS-related websites and applications as discussed in the text. 500-microwatt signals transmitted from the U.S. have been received in Australia using this ultra-low-power mode.









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SS-12	10	12	1%x6x9	3.4
SS-18	15	18	1%x6x9	3.6
SS-25	20	25	2% x 7 x 9%	4.2
SS-30	25	30	3% x 7 x 9%	5.0



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MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.
SS-25M*	20	25	2% x 7 x 9%	4.2
SS-30M*	25	30	3% x 7 x 9%	5.0



MODEL SRM-30

RACKMOUNT SWI	TCHING POWER SUPPLIES			
MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25	20	25	3% x 19 x 9%	6.5
SRM-30	25	30	3% x 19 x 9%	7.0
WITH SEPARATE V	OLT & AMP METERS			
MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3% x 19 x 9%	6.5

30

25



MODEL SRM-30M-2

2 ea SWITCHING F	POWER SUPPLIES ON ONE RA	ACK PANEL		
MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25-2	20	25	3% x 19 x 9%	10.5
SRM-30-2	25	30	3% x 19 x 9%	11.0
WITH SEPARATE	VOLT & AMP METERS			
MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3½ x 19 x 9%	10.5
SRM-30M-2	25	30	3% x 19 x 9%	11.0



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SS-12TK OR SS-18TK

SS-10SM/GTX

SS-10SM/GTX, SS-12SM/GTX, SS-18SM/GTX

SS-10RA

SS-12RA

SS-18RA

SS-10SMU, SS-12SMU, SS-18SMU

SS-10V, SS-12V, SS-18V

QSL.net) include construction information for simple interfaces.

QRSS may or may not parallel your QRP interests. However, considering it is a new pursuit, you deserve to know about it, how to investigate it, and then draw your own conclusions. That is why I covered it here. Would you like to read more about it in future columns or prefer that we focus only on classic QRP? Personally I feel that even if QRSS is not your cup of tea, writing about it in this month's column again brought up some always useful tricks for QRP success. How? Sending CW slower than usual and using narrow filters plus DSP noise reduction improves a S/N ratio and enhances copy under marginal conditions. Having problems in DX pile-ups? Consider a distant station using a very narrow filter. If your signal is not centered in that narrow passband, it will be attenuated 5, 10, 15, or more dB. If you shift frequency ever so slightly and fall precisely in the center of that passband, your signal can gain a 5, 10, 15, or greater dB boost.

As we think more about QRSS and also consider its "non radiating" abilities—such as the way prisoners of war have communicated by eye blinks and wall taps—the possibilities of stealth communications with QRSS boggle the mind. The FBI, CIA, Interpol, etc., should be interested in QRSS!

Twofer QRP

Doug Hendricks, KI6DS, of <www. qrpkits.com>, has been pumping out some neat mini rigs that are ideal firstbrew projects for newcomers, and one of his latest gems is the "Twofer" transmitter kits shown in photos A, B, C, and fig. 2. Simply described, the Twofer is a four-transistor 2-watt transmitter kit for 40, 30, or 20 meters complete with VXO and adjustable output control. The transmitter's PC board measures 2 inches by 3 inches, so it fits perfectly in an Altoids® tin. The Twofer might be considered a golden oldie, since it first appeared during the 1980s. However, the famous expression of "everything old is new again" definitely applies here. Richard Fisher, KI6SN, recently upgraded the Twofer to 2007 standards, Doug Hendricks integrated the mods in the kit, and it is now ready to delight homebrewers for another 20-plus years.

In looking at the rig's circuitry (fig. 2), we note it uses a JFET for the crystal oscillator and VXO, a 2N2222 for a driver, and a hefty 2N3553 or 2SC799 for a power amplifier. VXO range differs slightly from band to band, but it is gen-

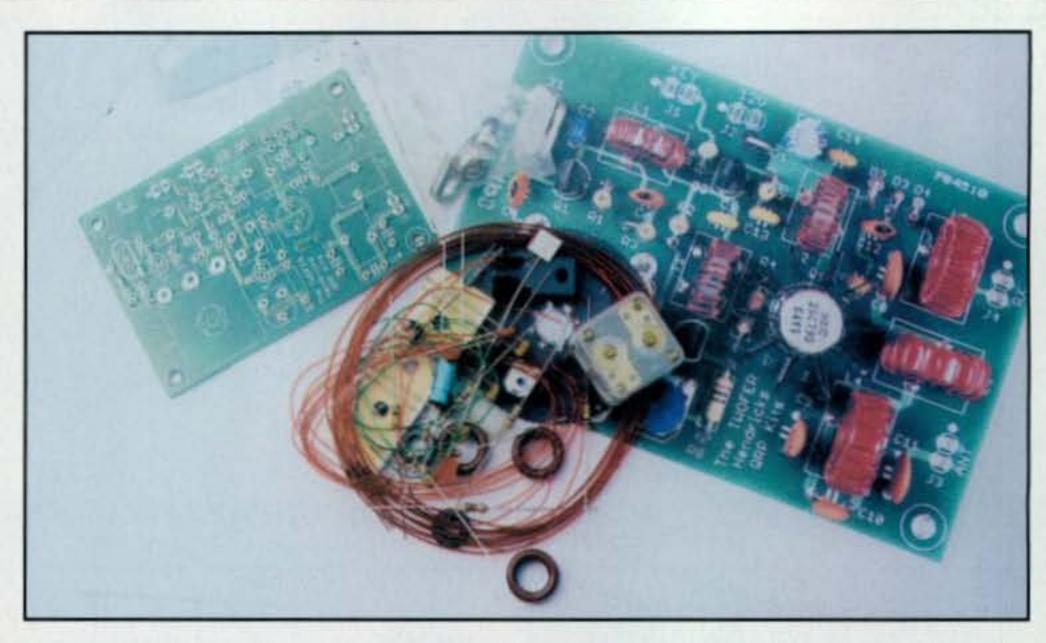


Photo A— The Twofer QRP transmitter kit as received from KI6DS of <www.qrp-kits.com> and placed beside an enlarged photo of the completed kit printed out from the website. The transmitter delivers 2 watts output, includes VXO frequency control, and can be built for 40, 30, or 20 meters. It's nice, affordable, and a first-class kit.

erally in the 2- to 3-kHz range. A drive control on the 2N2222's emitter lets you reduce power for serious milliwatting or even QRSS pursuits. A heat sink is included for the 2N3553, and a zenier diode is included in its collector circuit for SWR protection. QRP gear seems to get more abuse than regular ham gear—apparently from portable operation with makeshift antennas—so zenier protection is a very good idea. A diode-type T/R switch is also included in the 2N3553/power-amplifier stage for easy and convenient interconnection

with an external receiver. Finally, a 2N3906 acts as a high-speed electronic switch for keying the JFET and 2N2222 stages.

The Twofer is supported with an excellent 20-page web-downloadable manual complete with photos and step-by-step instructions to ensure successful assembly. Each step has a check-off box, so you can assemble the kit on a minute here and a minute there basis and always know where you left off. There are six toroids to wind, but everything is furnished, so you just wind them

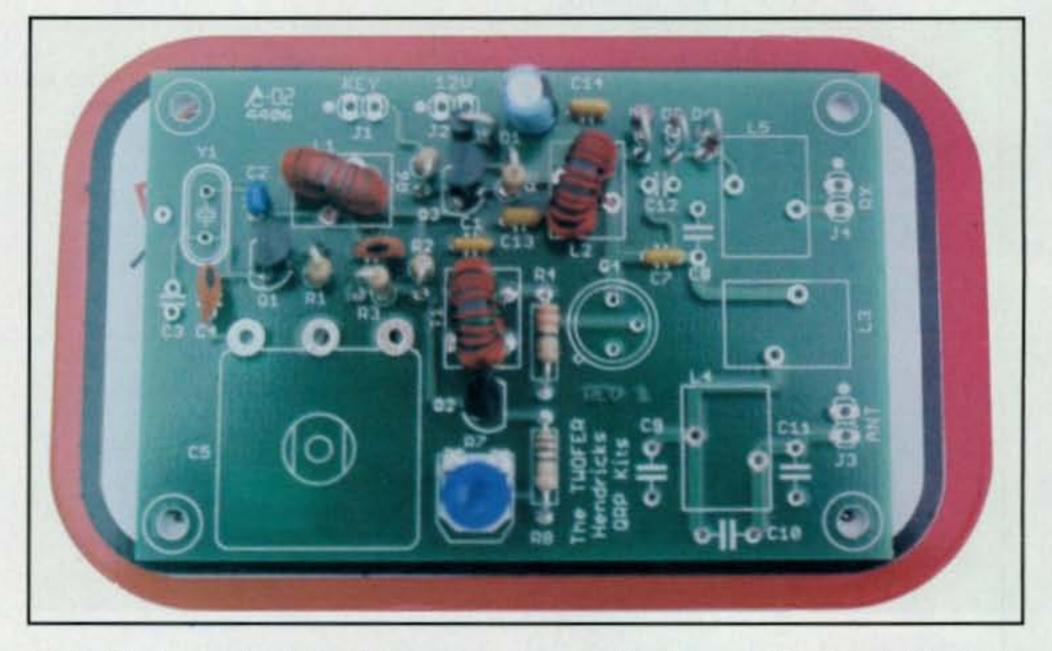


Photo B— Approximately midway during assembly, I paused to shoot this photo. Actually, all the small components (resistors, capacitors, and transistors) have been installed and only band-related components plus power amplifier transistor and VXO capacitor are yet to be installed. Assembly time to this point was approximately 30 minutes.

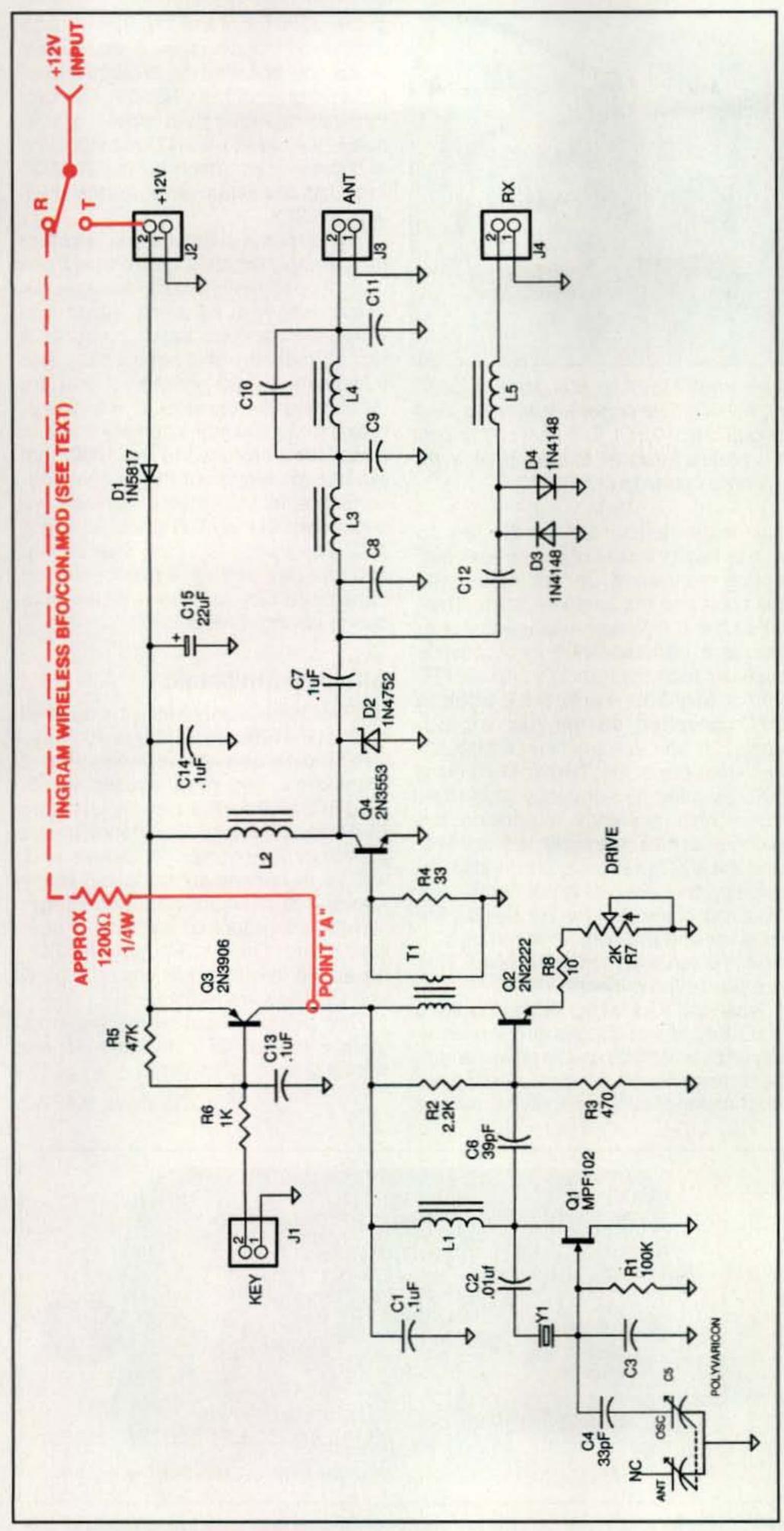


Fig. 2- Circuit diagram of the Twofer transmitter from <www.qrpkits.com>. The addition in color is my "Ingram Mod" described in the text.



Photo C— The assembled, tested, and fully operational Twofer nestled in an Altoids® mint tin. After adding my "Ingram Mod" described in the text, I moved the Twofer into a plastic case so it could freely radiate a wireless BFO/conversion signal into a nearby AM-type shortwave receiver.

to look like the ones in the manual's photos. I wound mine while watching TV and listening to 30 meters. It's that easy.

I assembled my Twofer for 30 meters and found it to be perfectly suited to a variety of QRP applications. Combined with an external receiver and low-slung dipole, it makes a good "flip on and enjoy" mini station for travel and/or casual use (thank goodness for that SWR-protecting zenier diode). It is designed to work with a 12/13-volt DC supply, but I found it also worked (at reduced power) with a 9-volt battery. The big surprise, however, surfaced when I added my "Ingram Mod" to the rig (description follows).

All aspects considered, I think the Twofer is an outstanding kit available at a fair price. It is good for both home and portable use, and I have even successfully used it mobile. You can read more about the Twofer and order a kit at <www.qrpkits.com> or by contacting Doug Hendricks at 862 Frank Avenue, Dos Palos, CA 93620. Check it out!

Ingram Mod for the Twofer

After making two or three on-the-air contacts with the Twofer, I decided to tailor it for field operation with a low-cost AMonly shortwave receiver by quickly adding my "Ingram Mod" to it. This mod was included in my "Hamfest Buddy"



Photo D- Supporting the philosophy "if it fits in an Altoids® tin, it is genuine QRP" is this two-tin station built by Dennis Payton, N9JXY. The upper-left item is a classic "Micromountaineer" mini transceiver designed by W7ZOI. The item on the right is a Jackson Harbor in a tin with a homebrew paddle attached to the top. Note the unique labels on the lid of each tin. (Photo courtesy of N9JXY)

mini rig featured in my August and October 2005 CQ magazine QRP columns. It works with almost any oscillator-style transmitter, and everyone is invited to try the mod in a favorite circuit. I only ask for credit as the mod's designer.

Basically, the mod involves keying the oscillator in its emitter and adding a

high-value resistor across the key so one or two milliwatts of power "leak out" during receive/key up, yet increase to full output on transmit/key down. Then when the transmitter is placed near or beside a portable AM-only shortwave receiver such as Grundig's popular FR-200 or Mini 300, it acts like a wireless BFO/converter, so the receiver can copy CW on the transmitter's frequency. Also, since the Twofer includes a VXO, shifting its frequency also shifts the receive frequency. In addition, the receiver's (AM) bandwidth is 5 or 6 kHz and the VXOs range is 3 or 4 kHz, so retuning the receiver is not necessary. You just place the Twofer beside the receiver and the combo becomes a 3or 4-kHz tunable mini transceiver! This is a terrific fun project!

Now look back at fig. 2. The Twofer's VXO and driver stages are indirectly keyed by a 2N3906 and its power amplifier runs unkeyed, so implementing my "Ingram Mod" calls for applying voltage

to the collector of the 2N3906 through a dropping resistor (point A, fig. 2). This works fine, because the 2N3906 will not pass voltage to the 2N3553. Then for transmitting rather than receiving, voltage is shifted to the +12-volt input line and the key is closed so the 2N3906 conducts and in turn activates the JFET and 2N2222.

The added resistor's value, incidentally, is approximately 1200 ohms. If you wish to get really exact, insert a 5K potentiometer in its place, adjust it to where the oscillator barely produces a signal, measure the pot's value, and substitute a fixed resistor. If you are measuring current flow, it will be approximately 400 ma full power and 7 or 8 ma when switched to the 1200-ohm resistor for wireless BFO/receive converter operation. Portable receivers are super sensitive on CW (most also lack AVC), so I suggest using their pull-up antennas for receive. If overloading on transmit is noisy, just switch off the radio during keying. Enjoy!

Altoids® Tin Magic

QRPers have a universally recognized cabinet that literally screams authentic QRP and it is available at variety stores, drugstores, and road houses worldwide. It is an Altoids® mint tin. I have an SWR monitor in one, an antenna bridge in another, a 49er, a DC-40 deluxe, and, well, one can never have too many Altoids® rigs! Need more encouragement? Take a look at a couple of special treats Dennis Payton, N9JXY, squeezed into Altoids® tins (photos D and E). They are terrific!

That overflows space for this time, gang. Stick with QRP and listen for me weeknights on 30 meters.

73, Dave, K4TWJ







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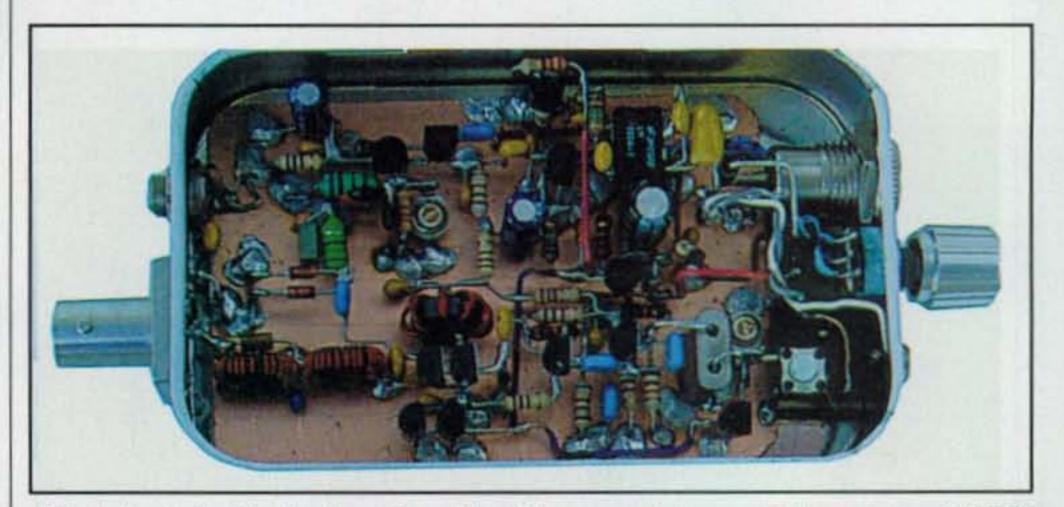
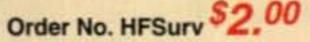


Photo E-An inside-the-box view of the Micromountaineer mini transceiver N9JXY squeezed into an Altoids® tin. It is using little rigs such as these (and the previously featured Twofer!) that makes QRP so exciting!

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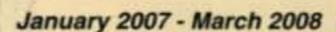
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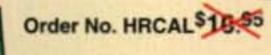
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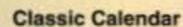
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Microphones, RF Meters, Dipole Center Insulator, and a Farewell

his month we focus our attention on accessories for the radio shack, antenna accessories, portable and mobile goodies, software, the radio bookshelf, and more useful items, taking a close look at "what's new" in our amateur radio hobby. Are you ready to begin? Well then, let's dig right in.

Accessories for the Shack

New Microphones from Heil Sound, Ltd. Heil Sound has announced three new versions of its popular PR 20 Spotlight Series Microphone: the PR 20W (White), the PR 20P (Pink Pearl), and the PR 20R (Red). These microphones (see photo A) were especially designed to provide unique color finishes for different professional environments. With the renowned PR 20 audio quality and attractive pearl-coated finishes, the new microphones also can be the ultimate style statement for a modern ham shack. All versions terminate in an industry-standard XLR connector, for easy interfacing to an equalizer, and Heil Sound adapter cables are available for connection to most modern trans-



Photo A– Heil Sound has announced three new versions of its popular PR 20 Spotlight Series Microphone: the PR 20W (White), the PR 20P (Pink Pearl), and the PR 20R (Red). These three microphones are designed to provide unique color finishes for different professional environments. (Photo courtesy of Heil Sound)

*289 Poplar Drive, Millbrook, AL 35054-1674 e-mail: <w8fx@cq-amateur-radio.com> ceivers. The PR 20 features a very wide frequency response with excellent clarity and articulation, leading to high intelligibility.

There's more to the story, too. According to Chip Margelli, K7JA, Heil's Vice President, Amateur Sales and Marketing, the PR 20P Pink Pearl was developed as a breast-cancer awareness project with the Susan G. Komen Foundation. Emblazoned with the pink ribbon on a pink-pearl finish, ten percent of the retail sales price and a minimum guaranteed donation of \$6800 will be donated to Susan G. Komen for the Cure®, for the purpose of raising the awareness of breast health and breast cancer. For more than 20 years, the Komen Foundation has been a global leader in the fight against breast cancer through its support of innovative research and community-based outreach programs.

Established in 1966, Heil Sound Ltd., under the leadership of Bob Heil, K9EID, has developed many audio innovations for the amateur radio market-place over the years, and currently is a world leader in the design and manufacture of professional-grade microphones for the broadcast, recording, live-sound, and amateur radio markets. Heil Sound microphones are distributed worldwide through a network of leading amateur radio dealers.

The manufacturer's suggested retail price (MSRP) of the PR 20W, PR 20P, and PR 20R microphones is \$179 each. Full specs can be found at the Heil Sound website.

For product information on Heil products, contact Heil Sound, Ltd., 5800 North Illinois, Fairview Heights, IL 62208 (618-257-3000; e-mail: <info@heilsound.com>; <http://www.heilsound.com>).

New from McKay™ Products USA. McKay Products USA sent us a great deal of information on its ever-expanding line of radio accessories, which features a variety of speaker microphones, headsets, adapters, connectors, and parts.

Particularly interesting is the new RJ45 Break-Out Box, the RJ45-BOB (photo B). The unit brings out all connections to test points and binding posts for the now-common RJ45 connector found on late-model amateur and amateur-mobile radios, serial cables, T1 lines, Ethernet connections, and a host of other interface applications. Some of the new unit's features include gold-plated test points, binding-post connections, convenient solder points for connection to custom test equip-

Note: Listings in "What's New" are not product reviews and do not constitute a product endorsement by CQ or the column editor. Information in this column is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of this column is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.

Enjoy HF even more with HF Digital!



Add a whole new mode to your HF operation with a couple of quick connections and be part of the digital voice excitement that's sweeping the SSB bands. Once you hear the audio quality, you'll be a believer! Whenever these digital voice modems are demonstrated, looks of amazement pass through the crowds.

Using the open G4GUO protocol, the ARD9000 Mk2 or ARD9800 allows any ham to convert any existing HF analog transceiver to work digital voice in one easy step! The unit automatically detects digital signals and decodes them, but you also maintain full analog capabilities. Whether a contact comes in as digital or analog, the ARD9000 Mk2 and ARD9800 can handle it.

It's a real breakthrough in communications technology that uses the same audio frequencies (300 Hz ~ 2500 Hz) as microphone audio to transmit digital SSB voice signals.

Enjoy the clean, clear audio that makes HF digital so much fun!

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- Built-in FEC protocol
- Compact unit. Easy to operate.
- Utilizes a uniquely designed high performance DSP engine
- Uses the established G4GUO open protocol
- ARD9800 can also be used for digital slow scan TV and data transmissions (images require optional memory board)

Be sure to check the website at www.aorusa.com for FAQs, links to user groups and more!

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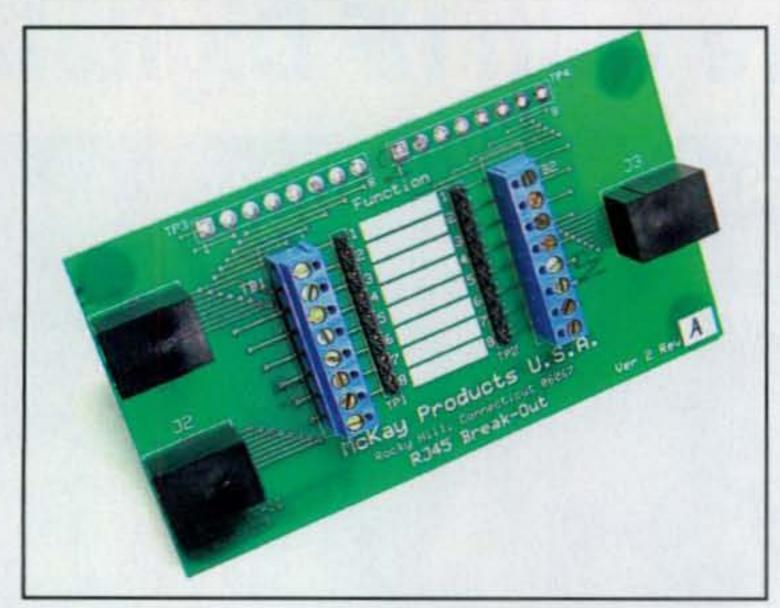


Photo B— The RJ45-BOB Break-Out Box from McKay Products USA brings out all connections to test points and binding posts for the now-common RJ45 connector found on late-model amateur and amateur mobile radios, serial cables, T1 lines, Ethernet connections, and a host of other interface applications. (Photo courtesy of McKay Products USA)



Photo C- The McKay Model 4SM Heavy Duty Industrial Speaker Microphone is an attractive. rugged microphone that is equipped with auxiliary 2.5-mm and 3.5-mm mono speaker jacks. The unit is fully sealed from dust and water, and it features a replaceable head and cable. (Photo courtesy of McKay Products USA)

ment, a label area for each RJ45 pin, and more. The MSRP is \$34.95 each.

McKay also has announced the release of its Model 4SM Heavy Duty Industrial Speaker Microphone (photo C). The attractive, rugged microphone is a medium-size, heavy-duty speaker-microphone that is equipped with auxiliary 2.5-mm and 3.5-mm mono speaker jacks. The unit is fully sealed from dust and water, and it features a replaceable head and cable. The mic is available in configurations for most popular amateur and commercial hand-held radios. MSRP starts at \$59.95 each.

For more information, contact McKay Products USA, 38 New Britain Ave., Rocky Hill, CT 06067 (860-808-1280; e-mail: <mailto:sales@mckayproducts.com>; on the web: <http://www.mckayproducts.com>). Visiting the website should prove beneficial should you need more details.

Antennas and Antenna Accessories

New Meters from LDG Electronics. LDG Electronics, the St. Leonard, Maryland-based ham radio equipment manu-

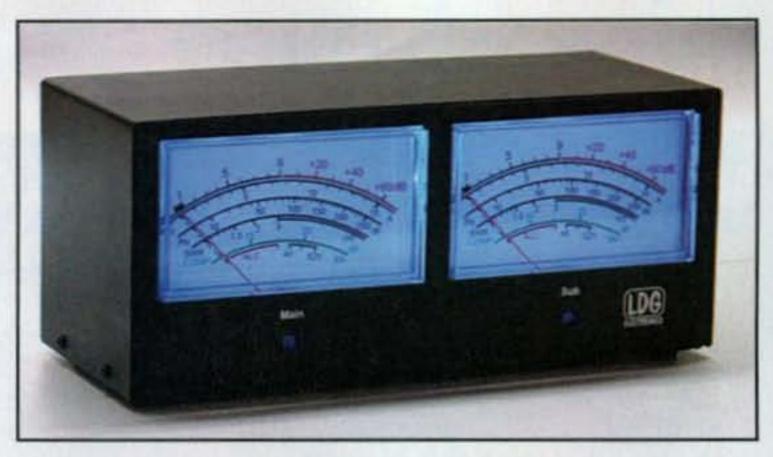


Photo D- LDG Electronics has announced the DM-7800 meter for the Icom ICOM IC-7800. LDG's DM-7800 dual-meter system provides two 4.5-inch meters, one for the Main receiver and one for the Sub. (Photo courtesy of LDG Electronics)

facturer, has announced the release of the DM-7800 meter for the ICOM IC-7800 (photo D). LDG's DM-7800 dual-meter system provides two 4.5-inch meters, one for the Main receiver and one for the Sub. The lush meter faces are LED back-illuminated in cool, high-visibility blue, drawing only 20 to 60 ma (depending on brightness setting) with a brightness control on the back.

"ICOM's magnificent IC-7800 transceiver is a quantum leap in amateur radio technology," said Dwayne Kincaid, LDG's chief engineer. "ICOM did a good job on the make-believe LCD meters, but all I heard from IC-7800 owners was they wanted 'real' meters."

There are separate calibration adjustments for Main and Sub accessible from the back of the DM-7800; you don't have to take apart the meter to calibrate it. A provided cable connects to the rig, and the radio menu lets you select functions for each meter. The DM-7800 and the virtual meters on your radio can work together; for example, you can display SWR on the radio's meter and power output on the DM-7800. On receive, the S-meter reading is shown.

The DM-7800 is 9.7" × 4" × 4" and requires power only for the lights; the meters themselves are passive. The case is textured gray, a great match for the IC-7800. As with all LDG products, the DM-7800 comes with a two-year warranty and all necessary cables are included.

At the same time, LDG Electronics also announced the release of the new and improved FT Meter for Yaesu FT-857 and FT-897 owners. The new FT Meter (photo E) is an update of the highly successful original FT Meter. The new meter features improvements, including on/off switch for the light; LED back-illuminated in cool, high-visibility blue; calibration adjustment on the back of the unit, so there is no need to take it apart to calibrate; and backlight brightness adjustment on the back so you can set the backlight to the desired level.

The original FT proved to be one of the most well-received products LDG ever released. "We were very happy with the first FT Meter," said LDG's chief engineer Dwayne Kincaid, "but we got feedback from owners regarding additional features they would like to see. This new model was really designed by our users from the feedback we received." The new FT meter is still only \$49.

LDG's new version of its popular FT Meter presents a lush, highly readable 2.5-inch meter face with calibrated scales for signal strength and discriminator reading on receive; and power output, SWR, modulation, ALC action and supply volt-

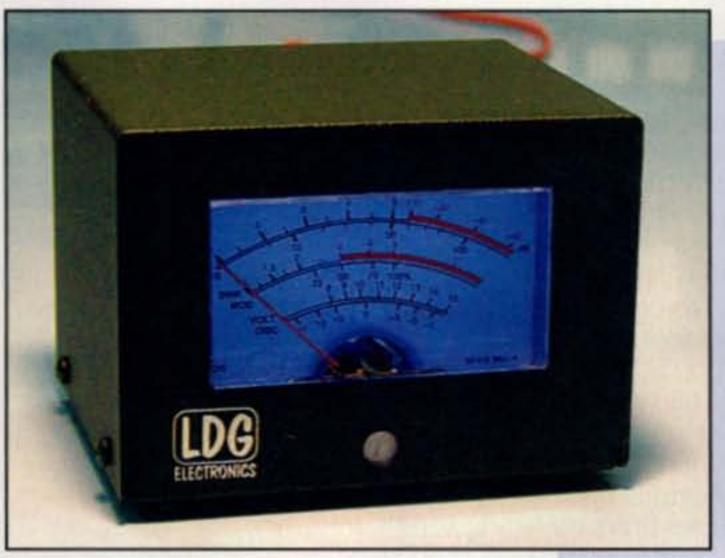


Photo E-LDG
Electronics also has
announced a new
and improved FT
Meter for Yaesu
FT-857 and FT-897
owners. The new
meter is an update
of the highly
successful original
FT Meter, and it
features several
improvements.
(Photo courtesy of
LDG Electronics)

age on transmit. Each function is selectable from the radio's menu. Weighing only 8 ounces and measuring 3.5" × 3" × 2", the new FT Meter is said to be the perfect choice for discriminating FT-857 and FT-897 owners. As with all LDG products, the FT Meter comes with a two-year warranty—and the cable is included.

LDG Electronics is a 14-year-old Maryland-based ham radio equipment manufacturer. Its products are available from distributors throughout the world.

For more information on the LDG Electronics product line, contact your favorite dealer, or LDG Electronics, 1445 Parran Road, St. Leonard, MD 20685 (410-586-2177; e-mail: <ldg@ldg electronics.com>; on the web: http://www.ldgelectronics.com).

K4AVU. Paul Marsha, K4AVU, tells us that he has introduced yet another handy antenna accessory. The versatile K4AVU "Boo Wig" connector (photo F) can be used to make a portable dipole inverted-V antenna, or it can be used to couple open-wire feeders or ladder line to coaxial cable. The connector uses stainless-steel hardware, and the price is a modest \$15, including shipping. Payment can be by personal check or money order.

Contact Paul Marsha, K4AVU, 200 Garden Trail Lane, Lexington, SC 29072 (e-mail: <k4avu@yahoo.com>). Also, for a peek at the other accessories Paul offers, be sure to check out the W4LGH Ham Radio Accessory Page at <http://www.w4lgh.com/accessories.htm>.

Portable and Mobile Goodies

High Sierra Tripod Deluxe. This exceptionally sturdy aluminum tripod from High Sierra Antennas (photo G) is said to be perfect for the temporary installation of HF antennas. Whether

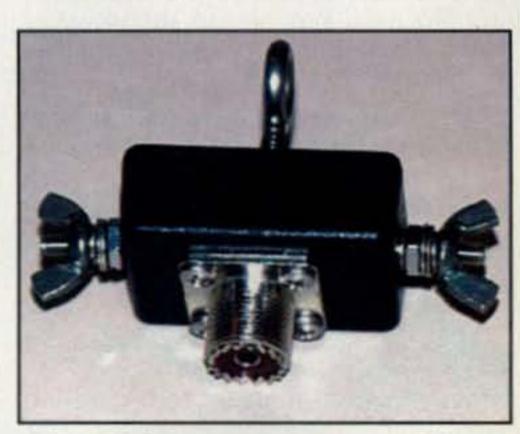
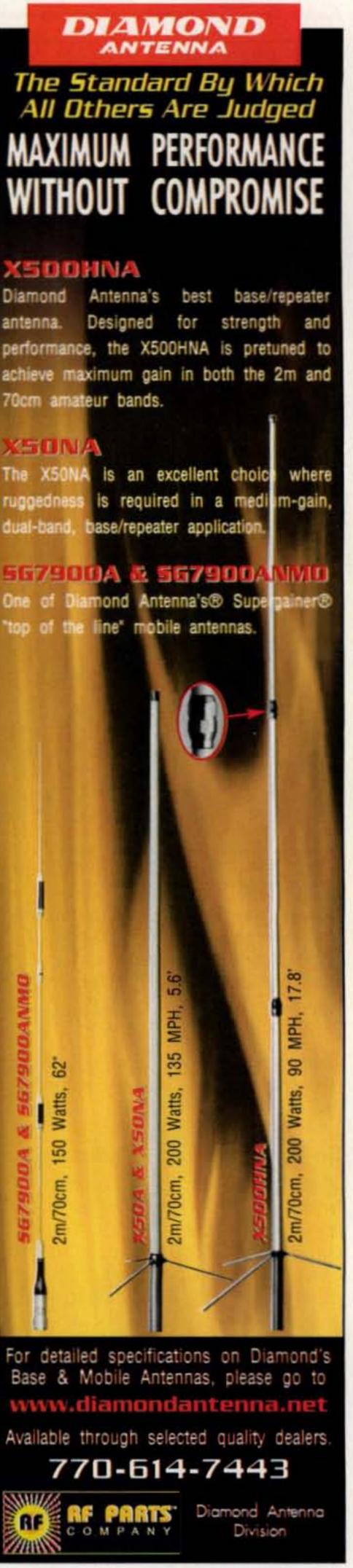


Photo F— The versatile, new, and interestingly named K4AVU "Boo Wig" connector can be used to make a portable dipole inverted-V antenna, or it can be used to couple open-wire feeders or ladder line to coaxial cable. (Photo courtesy of Paul Marsha, K4AVU)

you are installing the antenna in the back yard, out camping, or for an emergency response, the Tripod Deluxe sets up in just one minute. It works with just about any antenna that has the standard 3/8-24 thread. For example, High Sierra's Sidekick Antenna is said to work great on the Tripod Deluxe.

The High Sierra Tripod is aluminum and powder-coated black. The Tripod weighs just 4 pounds and when fully extended is 6 feet tall. It will collapse to about 3.5 feet. The top mast is about 1.37 inches in diameter. It can hold up to 100 pounds. The stainless-steel mount has a coax connector with a 3/8-24 thread. There are also eight wire radials that are just 10 feet long, and the bottom line is that all you need to do is put it out in the yard.

The Tripod Deluxe is available from High Sierra Antennas for \$160. For more information, contact High Sierra Antennas, PO Box 2389, Nevada City, CA 95959 (530-273-3415; on the web:



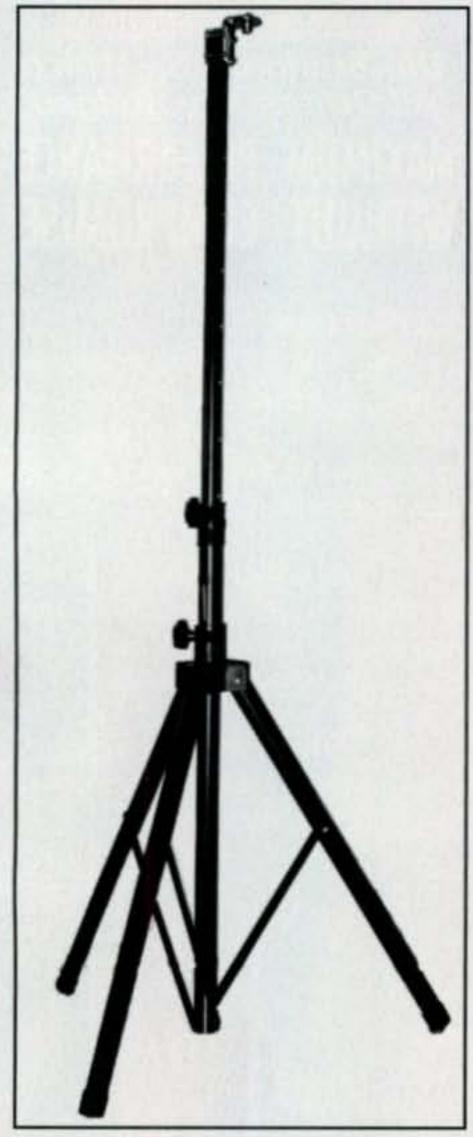


Photo G- The exceptionally sturdy aluminum Tripod Deluxe from High Sierra Antennas is said to be perfect for the temporary installation of HF antennas. The antenna sets up in just one minute. (Photo courtesy of High Sierra Antennas)

http://www.hamcq.com). The firm recommends that you order online or use one of its dealers.

Software and Computers

The Grayline Program on CD-ROM from antenneX. The Grayline Program on CD-ROM, developed by Marcel H. De Canck, ON5AU, is distributed by antenneX. It's a new and unique program dealing with the dynamic motions of propagation.

Having precise information of where to find the sunrise and sunset zones is a must for eager, DX-chasing radio hams. These zones have specified propagation properties and characteristics that lead to long-distance communication possibilities with strong signal-strength quality. With current low sunspot activity, the highest HF radio ham bands are not too

productive now, and may not be for some years to come. Thus, many hams frequently are using the lower HF bands; these bands are in good shape now, to make exciting DX contacts. Knowledge of the gray-line zone and dark hours locations worldwide is a must to succeed on these bands.

The Grayline Program was developed by the antenneX resident propagation expert and columnist Marcel De Canck, ON5AU. Along with his nowfamous use of propagation animation wizards, one is able to follow the "grayline" as it progresses around the globe in lifelike motion. According to Jack L. Stone, antenneX publisher, it's said to be an amazing piece of work by Marcel, and the folks at antenneX are proud of the unique effort and endeavor for perfection evident in the program. Jack notes that antenneX takes on only selective products to distribute, and the company chose this one because it has known Marcel and his work in this field for many years and believes the program is a most useful one.

For pricing, contact antenneX Online Magazine, PO Box 271229, Corpus Christi, TX 78427-1229 (361-855-0250; e-mail: <info@antennex.com>; on the web: <http://www.antennex.com>); or go to the antenneX Announcements Page for more details and various links: <http://www.antennex.com/news/index.html>.

From the Bookshelf

ICOM IC-718 Quick Reference Mini-Manual. Nifty! Ham Accessories has recently added the IC-718 Mini-Manual (see fig. 1) to its series of quick reference guides, providing condensed and easy-to-understand operating instructions for ICOM's venerable entry-level transceiver.

Simplified, step-by-step programming and operating instructions for all controls and setup menus are concisely covered in this short-form manual. Lightweight, waterproof, and color-coded for finding relevant information quickly, the Mini-Manual is a convenient memory jogger for instantly recalling how to set up and operate the IC-718.

Printed in color and laminated for durability, the compact, 14-page, 4.5" × 8" Mini-Manual is designed as a ready reference to be kept with the radio, so it's there when you need it. The price is \$16.95 plus s/h.

Incidentally, proprietor Bernie Lafreniere, N6FN, mentioned that initially he was not going to do a guide for the IC-718, but after receiving many requests,

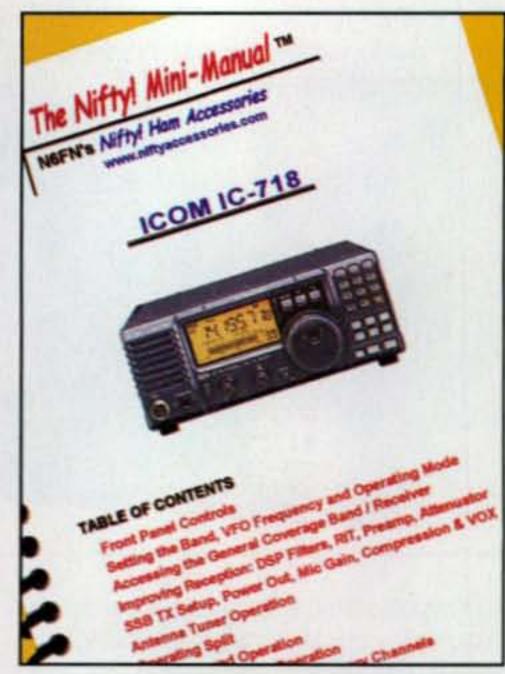


Fig. 1- Nifty! Ham Accessories has recently added the IC-718 Mini-Manual to its series of quick-reference guides, providing condensed and easy-to-understand operating instructions for ICOM's venerable entry-level transceiver. (Image courtesy of Nifty! Ham Accessories)

he was persuaded to write the Mini-Manual. He just had not realized how popular this radio has remained.

For more information, contact Nifty! Ham Accessories, 1601 Donalor Drive, Escondido, CA 92027 (telephone 760-781-5522; e-mail:

// contact Nifty! Ham Accessories (telephone 760-781-5522; e-mail:

// contact Nifty!

The ARRL RFI Book, Second Edition. In introducing The ARRL RFI Book, Second Edition, edited by Mike Gruber, W1MG, the ARRL wryly makes the point that there are two kinds of hams: those who don't have interference problems and those who get on the air. In this regard, ARRL's team of experts has compiled what they consider to be the best advice and practical cures available on almost every type of radio frequency interference (RFI), from automotive to television, from computers to DVD players, from audio equipment to telephones—and more.

The 19-chapter book, priced at \$29.95 plus s/h, has four appendices and an index. It's authored by a number of RFI experts who know the best way to tackle RFI problems. These experts, both amateur and professional, provide their expertise clearly and concisely in the book.

The second edition also includes resources for tackling power-line noise, cable-television interference, and RFI solutions for other electrical devices. Indeed, if it's a device that can be affected by interference (including your own radio receiver), you'll likely find practical, step-by-step cures in this book.

Contact the American Radio Relay League, 225 Main Street, Newington, CT 06111-1494 (1-888-277-5289; email: <pubsales@arrl.org>; on the web: http://www.arrl.org/shop). You can place orders online, and the paperbased ARRL Publications Catalog is available upon request.

More Useful Stuff

New Cold Weld Product from the J-B Weld Company. There's likely nothing worse than waiting around the house for a simple epoxy job to harden: today's busy multi-taskers require super-swift epoxy solutions for all of their at-home repairs. To save the day, J-B Weld's recent addition to the cold-



Photo H- Today's folks require superswift epoxy solutions for all their athome repairs. J-B Weld's recent addition to the cold-weld clan, Mini Clear Epoxy Syringe®, is said to harden to nearly any surface, including wood, metal, tile, ceramics, jewelry, glass, china, and plastics in just five minutes. (Photo courtesy of J-B Weld)

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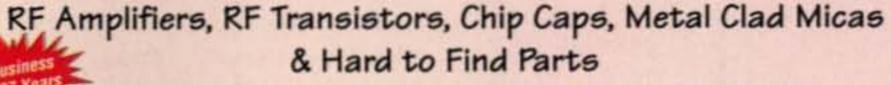


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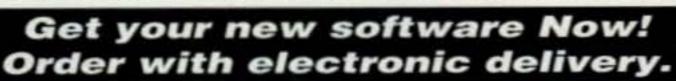
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Fig. 2— The handy ClampTite Clamp Making Tool is offered for a wide variety of applications. It reportedly is designed to "clamp anything . . . any size, any shape, any where," and several versions of the tool are available. (Image courtesy of ClampTite)

www.clamptitetools.com

weld clan, Mini Clear Epoxy Syringe® (photo H), is said to harden to nearly any surface, including wood, metal, tile, ceramics, jewelry, glass, china, and plastics in just five minutes. The J-B Mini's nozzle is designed for one-time use only. The no-fuss, dispense-and-mix formula comes in petite packaging and measures just 0.2 fluid ounces. The MSRP for the J-B Mini is \$2.99.

J-B Weld reportedly is the leading provider of cold-weld products, including its flagship invention, J-B Weld. The firm also manufactures specialty and quick-setting epoxies and putties for use in water, gas, marine, and various industrial and do-it-yourself settings.

For more information or to order, contact J-B Weld Company, 1130 Como St., Sulphur Springs, TX 75483 (903-885-7696; web: http://JBWeld.com).

Clamp Anything with ClampTite™. Here's an interesting product that re-

portedly is designed to "clamp anything . . . any size, any shape, any where." The ClampTite Clamp Making Tool (fig. 2) is designed for a variety of applications. No matter whether you're looking for a quick and effective emergency leak repair or a bulletproof means for securing nearly any material from rubber hoses to spliced wires, this new and innovative tool is said to be a "must have" addition to any portable or shop tool chest.

ClampTite quickly replaces ineffective or damaged conventional hose clamps with a temporary or permanent clamping mechanism formed from stainless-steel safety wire. Clamps formed using ClampTite seal a full 360 degrees with no flat spots and can be used to band any type or size material. The ClampTite tool provides a means for tightening wires wrapped around an object and then locking it in place. The tool can be used with various wire sizes, which are said to eliminate space and strength issues often encountered with screw-operated worm-gear type clamps. Just under 6 inches in length, the ClampTite tool is about the size of a pencil and is precision-machined. Several different versions are available.

For details, contact ClampTite Tool, LLC, P.O. Box 372333, Satellite Beach, FL 32937 (telephone 1-800-962-2901; e-mail: <Sales@ClampTiteTools.com>; and on the web http://www.clamptitetools.com).

Wrap-Up

That's all for this time, gang. Next time, more "What's New," with a new columnist (see below).

Overheard: I have found over the years that if you honor yourself, others likely will honor you, too.

73, Karl, W8FX

A Farewell Note from your Column Editor

In late 1979, then-CQ Editor Alan Dorhoffer, K2EEK (SK) asked me to take over CQ's "Antennas" column from Bill Orr, W6SAI (SK). I did not consider myself an antenna expert, but I nevertheless agreed to give a reborn "Antennas" column a try, beginning in early 1980. The column and its several successors, including the present "What's New" column, indeed have been a pleasure to write and edit. However, I have decided that some 27 years of a monthly column is a very long time! Thus, the time has come for me to retire from my editorial activities and responsibilities. With much reluctance, I have decided to "hang up my spurs," so to speak, relinquishing editorship of the "What's New" column with this issue.

I have enjoyed working with the CQ staff, notably Publisher Dick Ross, K2MGA; Editor Rich Moseson, W2VU; Managing Editor Gail Schieber, K2RED; Advertising Manager Don Allen, W9CW; and Controller Sal Del Grosso, to name but a few. I especially thank you, the readers and advertisers, for your valued comments, suggestions, and support over the years. You all will be missed.

In any case, not to worry: CQ will have a successor on board by the next issue, who I expect will continue the longstanding traditions of the column—and will also develop some new traditions of his own.

Vy 73, Karl, W8FX

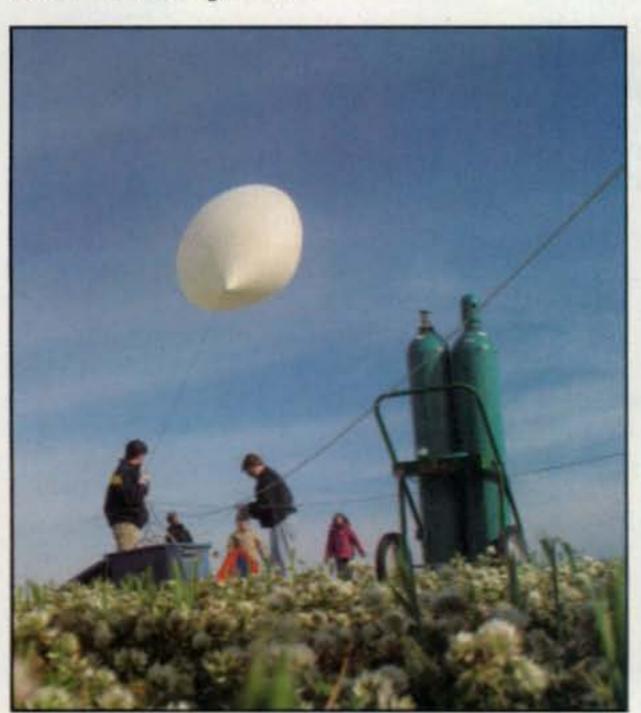
The Auburn University Student Space Program

he Auburn University (AU) Physics Department hosts a unique space research program that involves students from all disciplines on the AU campus. These students can contribute to the program by sending payloads to the edge of space via balloon launches, designing and building satellites for launch in the space surrounding Earth, or working toward student-built projects for planetary exploration.

Entitled the Auburn University Student Space Program (AUSSP, website: http://space.auburn. edu>), it is an excellent example of a higher education program that introduces students to space exploration and also includes amateur radio. It is a student-led, faculty-mentored program that involves students in designing, building, launching, and operating spacecraft. Participants launch high-altitude balloons to the edge of space to test engineering and science instruments. In addition, they build small satellites (such as CubeSats and pico satellites) that orbit the Earth. Furthermore, they are working with other universities on missions to the moon and Mars.

Three groups comprise the AUSSP. They are: the Auburn High Altitude Balloon (AHAB) group, the AubieSat (Small Satellite) group, and the management group, which includes students who are not majoring in the sciences or engineering. This latter group gives students who are not primarily scientifically oriented the opportunity to learn management and organizational skills.

e-mail: <n6cl@sbcglobal.net>



Students from the Auburn University Student Space Program prepare to launch a high-altitude weather balloon carrying an amateur radio payload from Eufala, Alabama. (Balloon photos on this page by Steve Martinez)

VHF Plus Calendar

August 3	Moon Perigee
August 4-5	ARRL UHF and Above Contest
August 5	Last Quarter Moon. Moderate EME conditions
August 13	New Moon and Perseids Meteor
	Shower Peak; Good EME conditions
August 18-19	First weekend of the ARRL 10 GHz
	and Above Cumulative Contest
August 19	Moon Apogee; Poor EME conditions
August 20	First Quarter Moon
August 26	Moderate EME conditions
August 28	Full Moon and Total Lunar Eclipse
	visible throughout most of eastern
	Asia, Australia, the Pacific Ocean, and the Americas
August 31	Moon Perigee
	-EME conditions courtesy W5LUU.

Most recently, on April 23, 2007, students in the AHAB subgroup launched a high-altitude balloon that traveled from Eufaula, Alabama to south of Sasser, Georgia. The payload was successfully recovered, and their system worked very well for the launch. The balloon did not travel as far as was predicted, thereby making it possible for the chase team to achieve a speedy recovery. Although a couple of problems with the system were identified, they have been discussed and the participants determined that overall the launch was a great success.

AubieSat is intended for juniors and seniors in the Engineering and College of Science and Mathematics (COSAM) departments, although



Members of the Auburn High Altitude Balloon team recover the payload south of Sasser, Georgia. They used APRS and Google Maps to track the balloon in flight and locate the payload.

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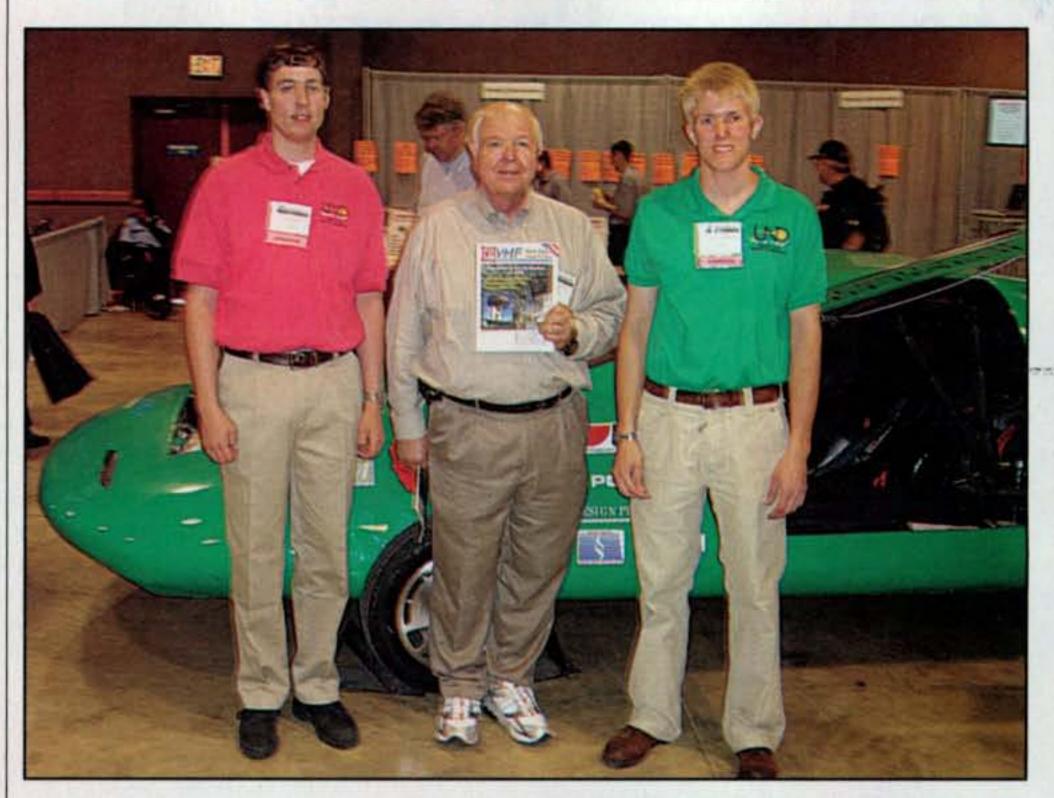
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N6CL poses with two student members of the University of North Dakota's SEA (Tim Langemo, KCØWS [left], and Trent Jenson, KCØYXH [right]) and the experimental hydrogen-cell-powered vehicle, the SubzeroIV, at Dayton (Photo courtesy of SEA)

others outside these departments may join the group and participate. The AubieSat Group designs, builds, tests, takes care of launch, and operates CubeSats in low Earth orbit (LEO). The goal of AubieSat is to test concepts and components and do science in space.

Presently, the AubieSat Team is building a Pico satellite called AubieSat-1, a 10-cm cube the mass of which is only 1 kg. AS-1's main objective is to test a new ultra-violet (UV) sensor developed by Dr. Minseo Park of the Physics Department. AubieSat is part of the Stanford CubeSat program, which launches student-built satellites from former Russian Intercontinental Ballistic Missiles (ICBMs).

Students in the the management group perform the essential tasks of AUSSP. Each technical group leader is a member of the management group. Students engage in planning and monitoring projects, leading group meetings, and ordering materials and supplies to build their spacecraft.

The AUSSP lead scientist is AU graduate student Luther Richardson, KI4AOJ, who is also a teacher in the Science Department at Columbus (Georgia) High School. In that latter capacity, over the past several years he has led his students to be involved in several NASA-related projects through the Columbus High School Space Program entitled DREAMS, which is an acronym for Doing Research at Extreme Altitudes by Muscogee coun-

ty Students. Most recently, on May 2, 2007, the DREAMS team tested a high-altitude balloon that is expected to be used this summer to fly experiments from other Muscogee County (Georgia) schools to the edge of space. More information on this and other projects with which Luther is involved can be found in the Summer 2007 CQ VHF magazine article entitled "Creating a Few Scientists and Engineers with Amateur Radio."

Hydrogen-Fueled Car A Source for New Hams

How can amateur radio contribute to our country's reducing its dependence on petroleum-based fuel? The answer to that question lies in the following:

One of the more intriguing displays at the Dayton Hamvention® this year was a hydrogen-cell-powered two-seater car. Called the Subzero IV, this compact, lightweight vehicle is the fourth in a series of experimental cars built by the students of the University of North Dakota's Society for Energy Alternatives (SEA).

One of the unique membership requirements of SEA is that one needs to possess both a driver's license and a Technician class amateur radio license in order to drive the experimental vehicle. The reason for the Technician class license is the communications need between the experimental vehicle and its

lead and chase vehicles, which are required by North Dakota state law. In the past, the students tried various forms of communications between their experimental vehicles and the chase and lead vehicles. They included CB, FRS, GMRS, and cell phones. However, none of these proved as reliable as amateur radio, because these signals seemed to be the least affected by attenuation from the car's carbon body or interference generated by the car's power plant. Most of the time the amateur-radio-based communications is conducted on either 2 meters or 70 cm FM.

The power plant that makes the experimental vehicle go down the road includes a 10-kW hydrogen fuel cell, a 2-kW DC brushless motor, and 1000 scf (standard cubic feet) of hydrogen storage. The car is capable of traveling 50 mph and the gas consumption equivalent is 125 mpg, which makes for a traveling range of between 250 and 300 miles per tank of hydrogen. This vehicle is essentially pollution free because the exhaust is oxygen-depleted air and water.

Last year this 10-kW hydrogen fuel was used by the FORX Amateur Radio Club (of Grand Forks, North Dakota and East Grand Forks, Minnesota) to power the PSK-31 station at Field Day. The club was also planning to power its site for this year's Field Day activities.

The student members of SEA are very practically demonstrating that hydrogen-fuel-cell-powered vehicles are a viable option for reducing our country's dependence on petroleum-based fuels. A plus for our hobby is that amateur radio is playing a critical role in the safe operation of the experimental vehicle produced and used by these students.

Some of the information for this piece was derived from the article "Hydrogen Driven Hams," by Rod Klug, KEØA, and Scott Tolbert, KCØFTG, which appears on pages 32–33 of May 2007 QST magazine. Plans are under way to publish an article on the vehicle in a future issue of CQ VHF magazine.

Ariane Arrays, Successor to C3i, Introduces New Products

It was last year when we in the VHFplus world heard that C3i had been sold.
We wondered what might become of its
product line—and quality. We don't have
to wonder anymore. Ariane Arrays, the
successor company, is maintaining the
quality products that C3i and Rutland
Arrays were known for and is also introducing new products. Two of its newest
antennas are the CX10-50, a 10-ele-

ment 6-meter Yagi, and the VHF (6 and 2 meters and 70 cm) Tribander. Scott Bullock, N1CX, is the general manager of the new corporation.

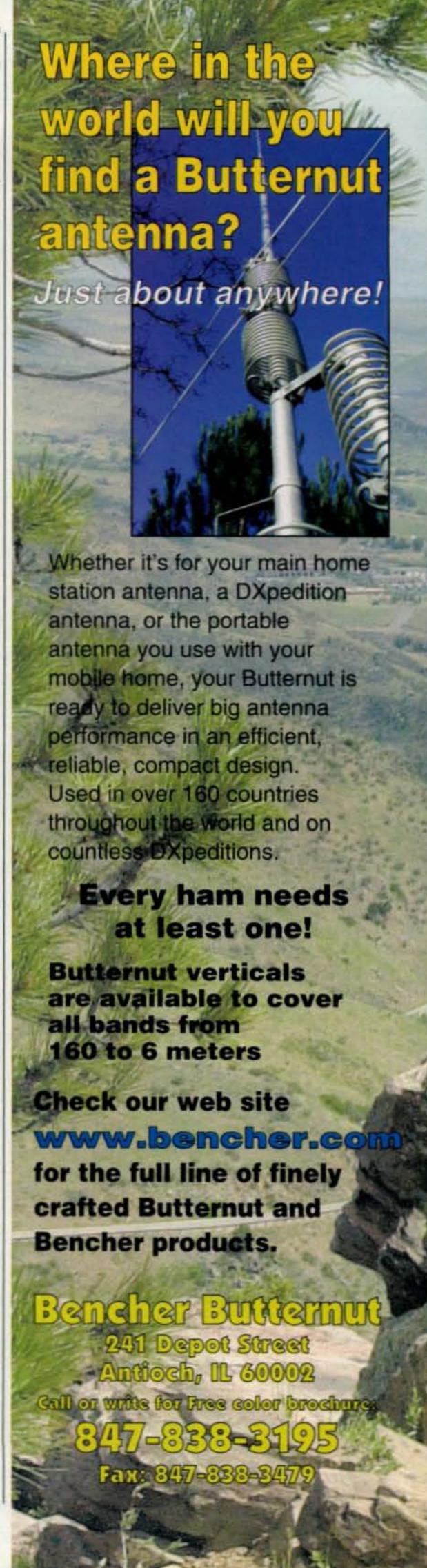
The CX10-50 is a 10-element Yagi on a two-wavelength 40-foot boom. Its features include easy 2-3 hour colorcoded assembly, Phillystran RF transparent heavy-duty truss, and a sleeved boom for maximum durability. Ariane Arrays says, "Whether it's DX chasing or a sophisticated EME/Moonbounce station, the CX10 is an excellent choice for your station when compared to other antennas that are very narrow bandwidth and susceptible to rain/snow static and ice/rain detuning." The price is \$599 and ships via truck freight. For more info on the CX10-50, go to: < http: //www.ariane-arrays.com/cx10.htm>.

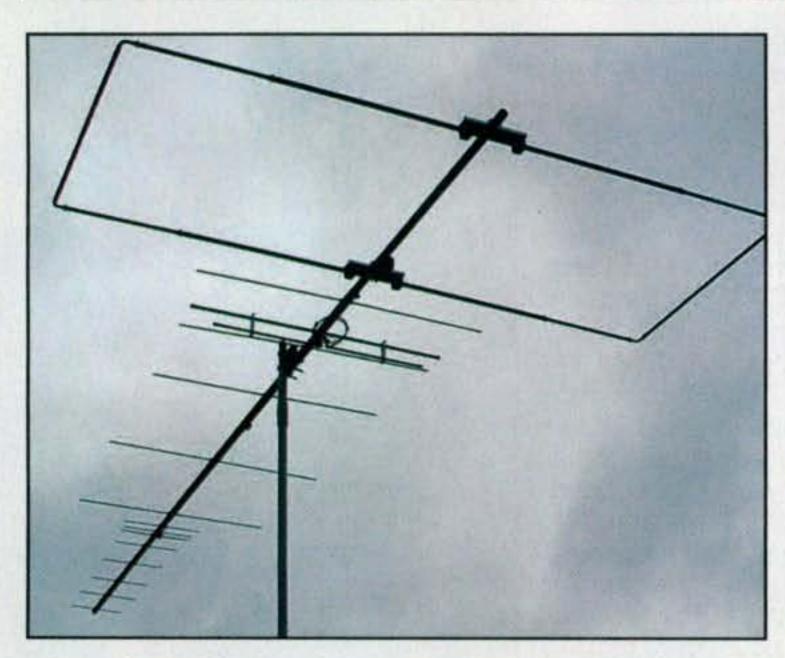
The VHF Tribander operates on 50/144/432 MHz, all in one antenna. The segmented monobanders can be assembled into a two- or three-band combination antenna. You can make it a dual bander with 6 meters and 432 MHz, or 6 and 2 meters, or 2 meters and 432 MHz. The antenna is comprised of a two-element Moxon on 50 MHz, 6 elements on 144 MHz, and 8 elements on 432 MHz. It is an excellent choice for rovers because it is street legal width. It features three feedpoints. However, the 144/432 antennas can easily be phased together in order to make one feedpoint. The price is \$399 and it is UPS shippable. For more information on the VHF Tribander see: http://www. ariane-arrays.com/tribander.htm>. For orders, the toll-free number is: 1-877-301-2300.

Using the Buddipole on 6 Meters

Having been to the Buddipole™ booth at both the Dayton Hamvention® and Ham-Com in Plano, Texas this past May and June, I can attest to this antenna's extreme popularity as a portable HF dipole. Add ham radio operator ingenuity and there's no telling what may be produced. Chris and Budd of Buddipole are sensitive to this ingenuity as they watch their customers adapt the dipole to various configurations.

One such adaptation, a 3-element 6-meter Yagi, can be found on Carl Gosselin, KG6WTF's website (http://kg6wtf.gosselinfamily.com/buddipole3e.html). On the website Carl describes the extra parts that you need to obtain from Buddipole to make the 6-meter beam. While he states that some of the items are not available from Buddipole, this is no longer correct, as Chris and Budd





One of Ariane Arrays' new products, the VHF Tribander. (Photo from the Ariane Arrays website)

have developed these parts in response to the demand for them. When you order the standard Buddipole (website: http://www.buddipole.com), you can mention to either Chris or Budd that you want to build the KG6WTF 6-meter beam. Also included on Carl's website are assembly photos, drawings, and a radiation pattern for the beam.

AMSAT/TAPR Dayton Banquet

The first AMSAT/TAPR Banquet was held Friday evening May 18, 2007 at the Air Force Museum in Dayton, Ohio in conjunction with the Hamvention®. The "Dinner Under the Wings" festivities began at 6 PM with a cash bar and appetizers in the Air Power Gallery (World War II). The buffet dinner was served at 7 PM in the Cold War area. Following a few announcements and a short presentation, the attendees were free to roam the museum. More than 300 people attended, which was quite surprising to the organizers because this number represented almost 100 more than the combined total of the two separate banquets. All agreed that the food and the venue were excellent. Plans are being formulated to again hold a joint banquet in conjunction with next year's Hamvention®.

Microwave Enthusiasts Get Together at WC8VOA

An informal get-together of Microwave enthusiasts will be held on August 11, 2007, beginning at 12 PM at the West Chester, Ohio former VOA Bethany Station site. All of those, amateurs or otherwise, who are interested in microwave communications are invited to attend. There will be demonstrations of the 7.2-meter satellite antenna doing 10-GHz EME (Earth-Moon-Earth) communications, as well as portable terrestrial microwave equipment. The former VOA site is located at 8070 Tylersville Road, West Chester, OH. Contact Jim Miller, N8ECI, at <jcmco@yahoo.com> for further details.

Regarding WC8VOA and microwave activity, this past April after two years of work, KA8ABR and N8ECI made their first 3-cm EME QSOs from the 7.2-meter dish at WC8VOA. These QSOs included W5LUA and IQ4DF. Their system includes: RX: DB6NT LNA, DEMI LNA; RXTX: DEMI Xverter, ICOM IC-251 IF rig; TX: DEMI 2W IPA, DEMI 8W PA at feed; and the antenna is the 7.2-meter Cassegrain dish. Subsequent

QSOs include RW1AW, F2TU, and G4NNS. More information on their operations can be found at: http://www.wc8voa.org.

Current Contests

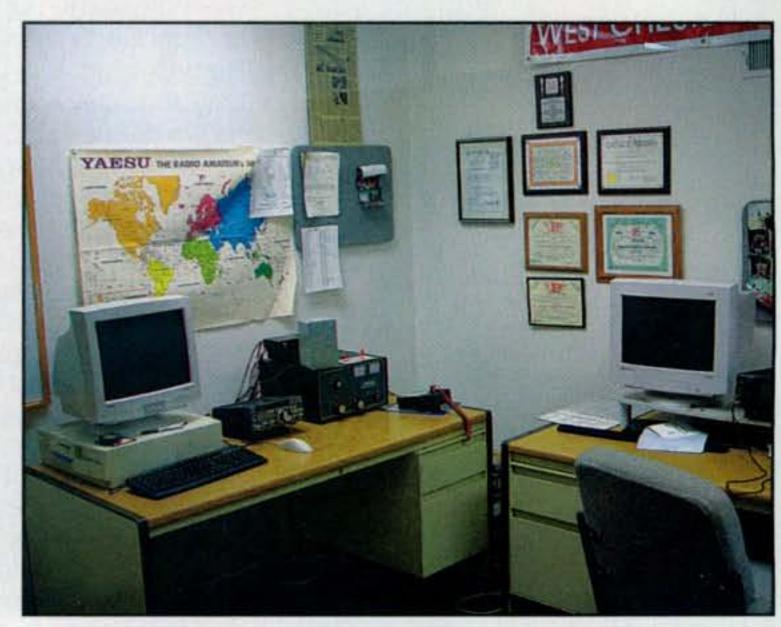
There are two important contests this month: The ARRL UHF and Above Contest is scheduled for August 4–5. The first weekend of the ARRL 10 GHz and Above Cumulative Contest is scheduled for August 18–19. The second weekend is September 15–16. Complete rules for these two contests can be found in the July issue of QST and on the ARRL website: http://www.arrl.org.

Calls for Papers

Calls for papers are issued in advance of forthcoming conferences either for presenters to be speakers, or for papers to be published in the conferences' *Proceedings*, or both. For more information, questions about format, media, hardcopy, e-mail, etc., please contact the person listed with the announcement. The following organizations or conference organizers have announced a call for papers:

ARRL and TAPR Digital Communications Conference: Technical papers are solicited for presentation at the 26th Annual ARRL and TAPR Digital Communications Conference to be held September 28–30, 2007 in Hartford, Connecticut. These papers will also be published in the conference *Proceedings* (you do *not* need to attend the conference to have your paper included in the *Proceedings*). The submission deadline is July 31, 2007. Please send papers to: Maty Weinberg, ARRL, 225 Main St., Newington, CT 06111, or you can make your submission via e-mail to: <maty@arrl.org>. Papers will be published exactly as submitted and authors will retain all rights.

AMSAT-NA 2007 Space Symposium: Technical papers are solicited for the 2007 AMSAT Space Symposium and Annual Meeting to be held October 25–28, 2007 in Pittsburgh, Pennsylvania. Proposals for papers, symposium presentations, and poster presentations are invited on any topic of interest to the amateur satellite community. An emphasis this year is an educational outreach to middle and high school students. In particular, papers on the following topics are solicited: Students & Education, ARISS, AO-51, P3E, Eagle, and other satellite-related topics. Camera-ready copy on paper



Two of the operating positions at WC8VOA. (N6CL photo)



The 7.2-meter dish used for recent WC8VOA 10-GHz QSOs. (N6CL photo)

or in electronic form is due by September 1, 2007 for inclusion in the printed symposium *Proceedings*. Papers received after this date will not be included in the printed *Proceedings*. Send abstracts and papers to: Daniel Schultz, N8FGV, by e-mail: <n8fgv@amsat.org>.

Microwave Update 2007. Technical papers are solicited for presentation at the Microwave Update 2007 to be held October 18-20 in Valley Forge, Pennsylvania. Any topics related to microwave theory, construction, communication modes, deployment, propagation, antennas, activity, transmitters, receivers, components, amplifiers, LASER, and practical experiences are welcome. Completed papers and articles must be submitted by August 15 and go to W2PED at <pdrexler@hotmail.com>, or N2UO at <lu6dw@ yahoo.com> in MS Word or as a pdf. Diagrams, photos, and illustrations should be in black and white. hard copies may be sent to Paul E. Drexler, 28 West Squan Rd., Clarksburg, NJ 08510.

Current Meteor Showers

Beginning around July 17 and lasting until approximately August 24, you should be seeing activity tied to the *Perseids* meteor shower. Its predicted peak is around 0500–0730 UTC on August 13. A possible tertiary peak may occur around 1500 UTC. Amateur radio communications data could confirm or detect otherwise unobserved maxima. The *k-Cygnids* meteor shower is expected to peak on August 18.

For more information on the above meteor shower predictions, please see Tomas Hood, NW7US's Propagation column. Also visit the International Meteor Organization's website: http://www.imo.net/calendar/2007>.

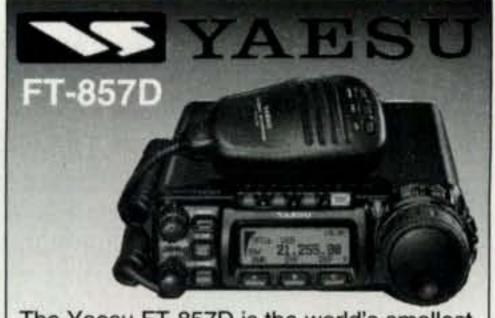
And Finally . . .

Once again this column features creative, student-led ways of involving amateur radio in research projects. It is my firm belief that it is only by way of these grassroots efforts that we are truly going to repopulate our amateur radio hobby. For Auburn University and Columbus High School, amateur radio operator Luther Richardson, KI4AOJ, who has been licensed for a little over four years, is leading the way. Regarding the University of North Dakota's Society for Energy Alternatives experimental vehicles, Rod Klug, KEØA, has been the Elmer (mentor) for the amateur radio development in that organization. Rod estimates that more than 30 of the SEA members have obtained their amateur radio license. Furthermore, in my conversation with the representative students at the Dayton Hamvention®, they indicated that they are strongly interested in upgrading their amateur radio licenses.

What are you doing to bring in more amateur radio operators? Please let me know so that I can publicize your activities either via this column or in a future issue of *CQ VHF* magazine. Who knows? Maybe your activities will be the inspiration for another Elmer in some other part of the country.

Until next month...

73 de Joe, N6CL



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County Hunting Q&A

rules covering CQ's USA-CA Award and county hunting in general. Most of the time we reply to the questions on an individual basis, but two e-mail inquiries we received recently deserve answering in this month's column.

Q: What is the minimum report for USA-CA? I heard one person say it is 5×1, but thought I had read somewhere that it had to be 2×2.

A: Interestingly, there is no such requirement for a minimum RS/T in the USA-CA program. The QSL or MRC (Mobile Reply Card) in your possession is evidence that the sending station agrees that it has received sufficient information during the contact so as to qualify as a legitimate contact. "Two by two" is one such test, but it is not the only one. The USA-CA Record Book does not include RS/T as a required field.

Q: For county award purposes, do you have to work the Nevada and Virginia independent cities as well as the 3077 counties? If not, what county are they considered to be in—for example, Carson City, Nevada?

A: Independent cities are not a part of the county that surrounds or borders them. For county hunting purposes, the issue with independent cities is deciding which county you want them to count for. The majority of these cities are completely surrounded by a county, and you would count a contact in the city as the surrounding county. In some cases, the independent city borders/touches two or three surrounding counties. When that happens, the USA-CA rules state that you must choose one of those counties for award purposes. If in the future you work another ham in that same independent city, you cannot then choose the other county. In other words, you are bound by your first choice.

A somewhat related issue arises in Maryland and Missouri. Here there are separate and distinct counties named Baltimore County, Baltimore City County, St. Louis County, and St. Louis City County. They each count as a county, and the cities named in each case are not "independent cities."

US Awards

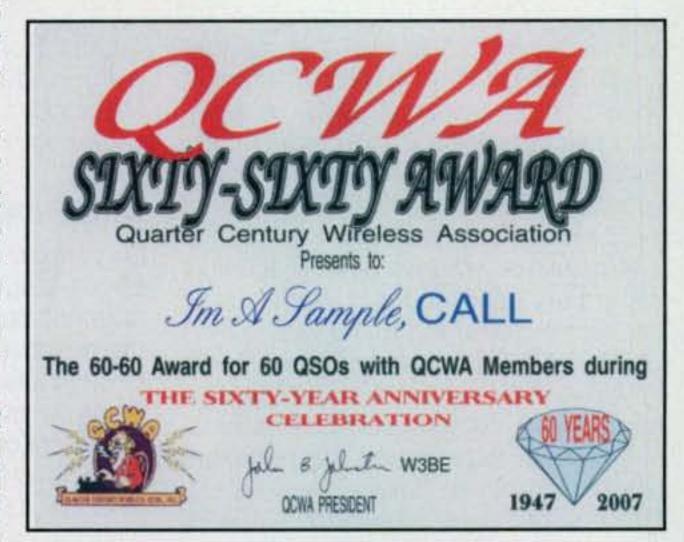
QCWA Sixty-Sixty Award. On November 14, 1947, during a 10-meter round-table QSO, the suggestion was made to form an association of ham radio operators who had been licensed for 25 years or more. The very next month, with that thought in mind, a group of hams met on Friday evening, December 5, 1947 in New York City. That evening, the Quarter Century Wireless Association (QCWA) was born.

In order to celebrate its 60th anniversary, the QCWA has announced a short-term award. The award is available to both members and non-mem-

*12 Wells Woods Rd., Columbia, CT 06237 e-mail: <k1bv@cq-amateur-radio.com>

U	SA-CA	Honor Roll		
500		1500		
KØRCJ	3405	HB9AUS1454		
N9YPN	3406			
HB9AUS34067		3000		
		W6RQ1177		
1000				
KØRCJ	1732			
HB9AUS				

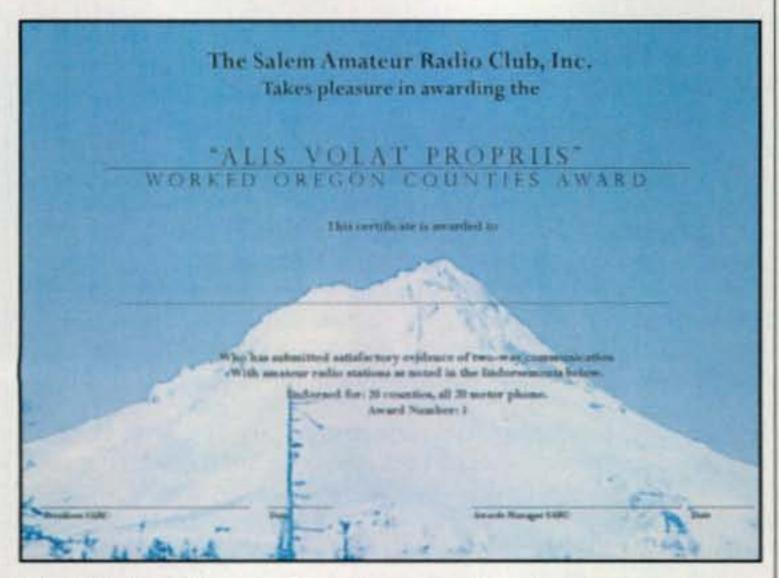
The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is \$6.00. For nonsubscribers it is \$12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for \$2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.



To celebrate its 60th anniversary, the Quarter Century Wireless Association is sponsoring a short-term award, the QCWA Sixty-Sixty Award.

bers. The basic requirement is simple: Make 60 twoway contacts with 60 different QCWA members. For contacts to count for the award they must have been made from May 2007 to 2400 UTC, June 30, 2008. All applications for the award should be postmarked no later than September 1, 2008. The rules follow:

- Submit a list of 60 different two-way contacts with QCWA members, including their associated membership numbers.
- Two-way contacts may be made utilizing any RF mode of operation on any frequency authorized for amateur use and includes the use of VHF/UHF repeaters.
- Submitted log information should include the time (UTC), date of contact, callsign, and QCWA member's name and membership number.
- 4. Provide a statement that the contacts are true and correct and were made in accordance with both the amateur regulatory requirements for the country of residence and the QCWA requirements as set forth for the award.



The Worked Oregon Counties Award is given for contacting Oregon counties on or after January 1, 2007.

- 5. There is a fee of US\$2.00 for the award (check, cash, or money order only). Award certificates will be free to stations outside North America, but donations to defray postage and handling will be gratefully accepted.
- 6. Send application to: Robert Buus, W2OD, 8 Donner St., Holmdel, NJ 07733-2004.

Worked Oregon Counties Award. The latest state county award comes from Oregon and is sponsored by the Salem Amateur Radio Club. The background on the award certificate is a photograph of Mt. Hood in northwestern Oregon. All modes are accepted, and the group is willing to provide an endorsement for every band/mode combination you can think of.

The award is given for contacting Oregon counties on or after January 1, 2007. Alis Volat Propriis is the Oregon state motto, meaning "She Flies With Her Own Wings," which is appropriate for radio communications and this award. The basic certificate is issued for contacting 25 of Oregon's 36 counties. Endorsements are available for 30 and all 36 counties. Endorsements must follow the band or modes used to complete the original certificate. Contacts with mobile, portable, or fixed stations on county lines are valid as long as the QSL or log extract clearly states the counties involved. Contacts via repeaters, digipeaters, moonbounce, satellites, packet, Pactor, RTTY, and similar systems are acceptable from any and all locations. Contacts made while mobile or portable in the state of Oregon are valid, and travelers in Oregon can use repeater contacts anywhere in the state to work any of the counties. SWL okay.

Send GCR list (or original cards) and fee of US\$3 to Awards Manager, Salem Amateur Radio Club, Box 61, Salem, OR 97308.

DX Awards

Dahner Felsenland Award. Dahner rock country (felsenland) is located in southern Germany, adjacent to the Pfalzerwald Nature Park. This is a popular vacation spot for German tourists, combining the romance of ancient hilltop castles with hiking/biking among fantastic rock outcroppings resembling those of the American Southwest. This unusual and beautiful combination is portrayed in the well-designed the award certificate. The award is issued by the DARC division Dahn (DOK K44). Many clubs offer certificates that show

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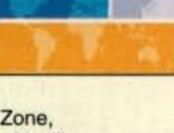
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Barry L. Mitchell, NØKV USA-CA All Counties #1151, March 22, 2007

I was first licensed as K3WKV in 1963 when I was 16 years old. During high school, I was primarily interested in traffic handling on 75 meters. After graduating from college in 1979, I joined the USAF and had many varied assignments. During one of my tours, I was introduced to weak-signal VHF/UHF and contesting and that interest continues to today. During my 20-year military career, I was also an active member of USAF MARS.

In 1979 I took the Extra Class exam and got my current call, NØKV. In 1989 I retired from the Air Force and moved to my present QTH in Parker, Colorado. I've been an active DXer on 10-160 meters since then, working on the DX Challenge Award (1975 countries) and attaining the DXCC Honor Roll in 2006. I've also been on several DXpeditions, most recently to Cocos Keeling (VK9CGG, October/November 2006), am active in both local and state search-and-rescue efforts, and serve as a Comm Unit Leader in the Douglas County Incident Management Team (IMT).

I became interested in county hunting in 2003, primarily because DX was at a low ebb due to the sunspot cycle. I went through all the weak-signal VHF and DX QSLs I'd collected over the years and discovered that I already had nearly half of the counties already confirmed! I became active on the SSB and CW County Hunter nets on 20, 30, and 40 meters to augment the confirmed totals. Soon I got interested in putting out counties, too. At some point, I convinced my wife (Pat, NØLFV) to try husband/wife team ops on the County Hunter SSB nets, and I soon discovered that if I tried to run a county alone, someone would politely suggest that I wait and run it when Pat was available. On one of our outings, we found ourselves (truck and Airstream trailer) on a nine-car ferry crossing the Ohio River to get from Kentucky to Hardin County, Illinois!

Attending the MARAC 2005 southeastern mini-conference and the 2006 MARAC national Convention in Wisconsin allowed Pat and I to get to know many of the other county hunters, making QSOs that were much more enjoyable. Also, over the past several months Pat and I have been assisting on the planning committee for the 2007 MARAC National Convention, July 12-14 in Denver, Colorado.

In compiling the confirmations, I tried to use a variety of different QSOs from both domestic and overseas operations and from as many bands and modes as possible. QSOs were included from all HF bands (160-10) as well as 6 and 2 meters and 432 MHz, and modes included CW, SSB, RTTY, and FM. A variety of different VHF/UHF propagation methods were also represented, including one- and two-hop sporadic-E on 6 and 2 meters, as well as 6- and 2-meter aurora and meteor scatter.

When my wife asked me if I was going to start over and go for it again, I just smiled and she rolled her eyes! And yes, I'm working on the second time, and she has over 1200 counties worked.

Finally, I'd like to say that we couldn't have done it without the great help of the net controls and other hams/operators running counties. Also, a special thanks to CQ for its sponsorship of the USA-CA Award. See ya on the road again soon.

-73, Barry, NØKV



The Dahner Felsenland Award is issued by the DARC division Dahn for working stations in the Dahner rock country of southern Germany.

and promote the beauty and attractions of their location. The Dahn group has succeeded in doing so.

This award is issued for working stations in the "Dahner Felsenland" region after January 1, 2003. SWL okay. Germans need 25 points, while all others need 15. Point values are as follows: Contacts with any K44 DOK station count for 2 points; contacts with DN2PP, DFØDN, DKØDFL, DLØDFL, DKØSWP, DLØSWP count 5 points; contacts with any K09, K14, and K22 DOK station count 1 point.

Except for packet radio, contacts may be made on any band or mode. Send GCR list and fee of 10 Euros to: Paul W. Kluetz, DK4FV, Suedstrasse 14, D-76891 Busenberg, Germany.

A Fox Hunter Award from the Ukraine. Fox Hunting is a specialized segment of ham radio that deals with the competitive sport of locating lowpower hidden transmitters. This activity is most popular among European hams, and the Fox Hunter Award is



The Fox Hunter Award is sponsored by the Ukraine Amateur Radio League for contacting five "foxes" (low-power hidden transmitters) from the sport of Amateur Radio Direction Finding (ARDF).



The Simferopol Award, offered by the Crimean branch of the Ukraine Amateur Radio League, is earned by contacting five stations in the city of Simferopol and five stations in the Crimea region.

sponsored by the Ukraine Amateur Radio League.

Contact five "foxes" (QSO/SWL) of the ARDF (Amateur Radio Direction Finding) enthusiasts group. Contacts on any band or mode since January 1, 1992 count for the award. SWL okay. Copies of QSL cards are required to claim the award. Applicants should send an application and separate list with the five copies of the QSLs to the award manager listed below. The manager will verify the existence of the contacts from the mentioned ARDF members and then the certificate will be sent to the applicant. Fee is US\$5 or 10 IRCs. Fee for members of the ARDF sport community (2 QSOs or SWL contacts without QSL card copies) is US\$2 or 4 IRCs. Apply to: Igor Lazarev, USØVA, P.O. Box 11, Kiev 04111, Ukraine.

ARDF members list is at: http://www.uarl.org.ua/ardf/FHA.htm.

Simferopol Award. Simferopol is a large Ukrainian city located on the Crimean Peninsula, which extends into the northern part of the Black Sea. As with many Ukrainian awards, the requirements simply call for five contacts in the city and five in the region. The artwork of the certificate is above average, with small images of local scenery superimposed on a scene of the city as it was in the 1700s or 1800s.

The award is offered by the Crimean branch of the UARL. SWL okay. All bands and modes accepted. Contacts must have been made after 1984, the 200th anniversary of the city of Simferopol. For stations outside of the Ukraine, it is necessary to make contacts with ten different amateur radio stations in the Crimea region. At least

five of these must be stations located in the city of Simferopol.

Send GCR list and fee of US\$10 or 10 Euros to: Olga Serdyukova, UU5YL, Uhtomskogo st. 12, Simferopol, Crimea 95014, Ukraine (e-mail: <uu5yl@ukr. net> or <uu5yl@mail.ru>).

The following states still do not have a separate county award: Alabama, Alaska, Hawaii, Idaho, Illinois, Iowa, Kansas, Kentucky, Montana, Nebraska, New Mexico, Nevada, South Dakota, and Tennessee. This is a good project for any club in these states.

Several of the awards featured in this month's column were submitted by sponsors who know that *CQ* magazine offers valuable (and free) publicity. Feel free to contact me at the e-mail address shown on the first page of this column. 73, Ted, K1BV



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Dayton and DX News

DX Hall of Fame Clarification

Our report last month on the 2007 inductees to the CQ DX Hall of Fame accidentally omitted listing Valeria Pregliasco, IK1ADH, as an inductee. Valeria is the wife of fellow inductee Mauro, I1JQJ, and his co-editor of "425 DX News." Mauro and Valeria were nominated together and both were elected, even though only one was originally reported. So, to clarify, both Mauro, I1JQJ, and Valeria, IK1ADH, are among the 2007 inductees to the CQ DX Hall of Fame. We apologize for the error.—W2VU

ayton 2007: Tom, K8CX, prepared his Dayton Photo Gallery again this year, and you can take a look at those 259 images on the web at: http://hamgallery.com/dayton2007/. It looks as if Tom managed to take at least one picture of almost every DXer and contester who was at Dayton this year. Nice job, Tom.

There were also lots of very positive comments about Tim Duffy, K3LR, and the Contest University program. Great job, Tim, and all of those who spoke at the university program. It seems as if there was something for everyone at Dayton this year, no matter what his or her interest or level of skill in ham radio.

And then there were all of the honors conveyed on the 2007 inductees in the CQ Amateur Radio Hall of Fame, DX Hall of Fame, and Contest Hall

*P.O. Box DX, Leicester, NC 28748-0249 e-mail: <n4aa@cq-amateur-radio.com>



The CQ DX Hall of Fame plaques were awarded to this year's inductees at the SouthWest Ohio DX Association's 22nd annual DX Dinner during the Dayton Hamvention®. Jay Slough, K4ZLE (left), on behalf of CQ magazine, is shown here presenting the awards to Roger Western, G3SXW (center), and Nigel Cawthorne, G3TXF (left). Mauro Pregliasco, I1JQJ, and his wife, Valeria, IK1ADH, also inducted into the DX Hall of Fame this year, were presented with their plaque at the Friedrichshafen convention in June. (Photo courtesy of Joe, N1ZP, SWODXA)

of Fame. Look at this list of Who's Who for 2007, and for details of their accomplishments, see the July issue of *CQ*, page 36.

CQ Amateur Radio Hall of Fame: Phillip Catona, W2JAV (SK); PaulFlaherty, N9FZX (SK); John Geloso, I1JGM; Michael Griffin, NR3A; James Hillier, ex-VE3SH (SK); Herb Johnson, W6KQI (ex-W7GRA) (SK); Roy Lewallen, W7EL; Rick Lindquist, N1RL; Copthorne MacDonald, VY2CM; Bill McArthur, KC5ACR; Don Miller, W9NTP; Louis Tristao, KG6VY (SK); Durward J. Tucker, W5VU (SK); Ade Weiss, WØRSP (ex-K8EEG); and Farrell Winder, W8ZCF.

CQ DX Hall of Fame: Roger Western, G3SXW, and Nigel Cawthorne, G3TXF, who were nominated together; and Mauro Pregliasco, I1JQJ, and his wife, Valeria, IK1ADH, co-editors of "425 DX News."

CQ Contest Hall of Fame: Fred Capossela, K6SSS; Phil Goetz, N6ZZ (SK): and Tom



Roger, G3SXW, and Nigel, G3TXF, arrived in French Guiana in mid-June. Well known for their DXpeditioning activities over the years, they continue with short weekend trips just to keep in practice – hi! (Photo courtesy of Roger, G3SXW)



Palmyra Island comes of age. Mike, KH6ND, Jim, WH6GS, and Pat, NH6UY, rest in the shade of the new dish they installed to allow the residents of the island to have full-time contact with the rest of the world. (Photo courtesy of Mike, KH6ND)

Taormina, K5RC. Also, Franc Bogataj, S59AA, a 2004 Contest Hall of Fame inductee, was formally presented with his plaque at a meeting of the Slovenia Contest Club, as well as at this year's Friedrichshafen convention in Germany. (For photos and details of the Contest Hall of Fame inductees, see this month's "Contesting" column by K1AR.)

Congratulations to all!

BS7H, Scarborough Reef

The BS7H team made the rounds of the DX gatherings soon after their adventure, making presentations at Ham Comin Dallas, etc. The QSLing took an interesting turn, with the team uploading the logs for early contributors to the LoTW early on in the process. They will continue to upload the logs as the processing of the paper QSLs continues, beginning probably in early July when the cards are available from the printer. The early LoTW entry for contributors is explained this way:

This was a special "Thank You" to those who made the effort to support our operation. The cutoff date of this log is as of the June 9th website donation listing.

There will be additional periodic uploads of the log to LoTW as QSLing proceeds and a full upload will be done as soon as the bulk of the direct QSLs are answered.

The 2007 DXpedition to Scarborough Reef again wishes to thank those who helped make this happen. We could not have done it without your support.

DXpedition News

3B(6-7)SP - Agalega/St. Brandon. The famous "Murphy" hit our Polish friends as they headed for Alalega

The WPX Program

CW

None

SSB

None

MIXED

None

CW: 1400 KØARS. SSB: 750 W8HGH. 1300 AE9X.

Mixed: 2500 7K3QPL.

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Qceania: N8BJQ N. America: N8BJQ S. America: N8BJQ

Award of Excellence: UA4LY 160 Meter Bar: UA4LY

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS IBYRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KASW, K3UA, HABUB, HABXX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE ITEEW, IBRFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEBDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q VETWJ, VETIG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, 11JQJ, PY2DBU HIBLC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH N6JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA ITEEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB IK4GME, WX3N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 355, New Carline, OH 45344 USA. Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means. "Please Note: The price of the 160 meter bar for the Award of Excellence is \$6.50.

in early June. SP5BFX reported the difficulties:

When we planned our DXpedition we did not expect so many problems. ... We are very sorry, but we did not reach 3B6 Agalega Islands. We had many problems with our catamaran and either finally or happily sailed to 3B7 St. Brandon (Isle Rafael S16o26° E59o36°) tied by rope to the Quo Vadis I fish vessel. Our catamaran was seriously damaged (we lost one of two engines and all two sails). In that situation we decided to stay on the island resting and waiting about a week for a new boat which would bring us back to

Mauritius, or try to change our license and start to work on the air from 3B7 St. Brandon to fulfill promises we had given to DR OMs and our sponsors. ... We had asked the ICTA about permission to start our activity from 3B7 by meteorologists' radio, and we were very surprised when we obtained a new license and a modified callsign the next day! The right callsign of our interrupted DXpedition is 3B7SP. Somewhere on our website you can find our previous callsign (3B6SP), but the right one is 3B7SP. The webmaster is currently off the internet and we are not able to change this in all places (especially in the log online database head-

THE WPX HONOR ROLL

The WPX Honor Roll is based on the current confirmed prefixes which are submitted by separate application in strict conformance with the CQ Master Prefix list. Scores are based on the current prefix total, regardless of an operator's all-time count. Honor Roll must be updated annually by addition to, or confirmation of, present total. If no up-date, files will be made inactive.

				MIXED				
52649A2AA 4846W2FXA 4735W1CU 4419EA2IA 4187N4NO 4145YU1AB	3956VE3XN 3948I2PJA 3760N9AF 3723I2MQP 3703I2UIY 3646S53EO	3569KF2O 3560KØDEQ 3475YU7BCD 3393WB2YQH 3331IK2ILH 3227K9BG	3089W9OP 3011W2WC 29969A4W 2873W2ME 2815W9IL 2704K2XF	2637OZ1ACB 2457JN3SAC 2442W6OUL 2415K5UR 2242I2EAY 2239VE6BF	2202N8BJQ 2024AE5B 1947KØKG 1891VE9FX 1826W7CB 1741AB5C	1705W2EZ 1683KX1A 1662SV1DPI 1643N1KC 1556W2OO 1288K6UXO	1269K5WAF 1016RA1AOB 979KM6HB 825KL7FAP 742K5IC 648KWØH	
				SSB				
4710IØZV 4266VE1YX 3932I2PJA 3900F6DZU 3573OZ5EV 35329A2NA 3529I2MQP	3445EA2IA 3276N4NO 3155I2UIY 3142CT1AHU 3108I4CSP 2972OE2EGL 2970KF2O	28574X6DK 2711LU8ESU 2658KF7RU 2595EA1JG 2557IN3QCI 2431G4UOL 2419YU7BCD	2326CX6BZ 2209IK2QPR 2209I3ZSX 2196W2WC 2178NQ3A 2093W9IL 2085N6FX	2076K2XF 2051K5UR 1935SV1EOS 1855K3IXD 1827AE5B 1795W2FKF 1776SV3AQR	1744KQ8D 1729W6OUL 1718W3LL 1693DL8AAV 1688KI7AO 1623VE9FX 1611W2ME	1480AB5C 1464VE7SMP 1458JN3SAC 1412I2EAY 1386IK4HPU 1381N8BJQ 1371IK2DZN	1289AE9DX 1258N1KC 1232AG4W 1145EA3EQT 1042IZØBNR 999IK8OZP 995KX1A	978EA7HY 952KU4BP 843VE6BF 729K7SAM 637K5WAF
CW								
4618K9QVB 4574WA2HZR 3704N4NO 3685VE7DP 3329LZ1XL	3316EA2IA 30789A2NA 2688I2UIY 2636KF2O 2632W2ME	2526I7PXV 2522KA7T 2476W2WC 2474YU7BCD 2465EA7AZA	2251N6FX 2236OZ5UR 2148IK3GER 2120JN3SAC 2093VE6BF	2089K2XF 2081W9IL 1955K5UR 1901I2MQP 1895W6OUL	180412EAY 180412EAY 1783N8BJQ 1432AC5K 1402WO3Z	1334RUØLL 1267K6UXO 1202WA2VQV 1131KX1A 1053K5WAF	1042VE1YX 915N1KC 824VE9FX 608IK2SGV	

The WAZ Program

10 Meter SSB

582K6SY

15 Meter SSB

635K6SY

20 Meter SSB

1161K6SY 1163IV3ARJ

17 Meter CW

65F9XL

20 Meter CW

573OK2PEX (QRP)

160 Meters

244RA4LW

All Band WAZ Mixed

8455	YL2GD	8458	JE70E0
8456	AA6XV	8459	WB2JSN
8457	OK1EV	8460	1201

SSB

5034IV3CJJ

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and \$1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for all CQ awards is \$6.00 for subscribers (please include your most recent CQ mailing label or a copy) and \$12.00 for nonsubscribers. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a CQ checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

The CQ DX Field Award Program

Mixed

87AA6XV

SSB

50PP5KZ 51AA1VX

Endorsements Mixed

250K2TQC/258	175VE3ZZ/191
200W1CU/215	175K8OOK/180
200KØDEQ/210	100KM6HB/103

SSB

200W1CU/200 175KØDEQ/184	100AE9DX/102			

CW

RTTY

100W1CU/119

The basic award fee for subscribers to CQ is \$6. For non-subscribers, it is \$12. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the www.cq-amateur-radio.com website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Please make all checks payable to the award manager.

5 Band WAZ

As of May 1, 2007, 728 stations have attained the 200 zone level and 1547 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:

YL2GD W6BJH I2PJA

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26) W4LI, 199 (26) K7UR, 199 (34) W2YY, 199 (26) VE7AHA, 199 (34) IK8BQE, 199 (31) JA2IVK, 199 (34 on 40m) IK1AOD, 199 (1) DF3CB, 199 (1) GM3YOR, 199 (31) VO1FB, 199 (19) KZ4V, 199 (26) W6DN, 199 (17) W3NO, 199 (26) HB9DDZ, 199 (31) RU3FM, 199 (1) N3UN, 199 (18) OH2VZ, 199 (31) W1JZ, 199 (24) W1FZ, 199 (26) SM7BIP, 199 (31) SP5DVP, 199 (31 on 40) N4NX, 199 (26) N4MM, 199 (26) EA7GF, 199 (1) N6HR/7, 199 (37) JA5IU, 199 (2) CT3DL, 199 (26) NØIJ, 199 (21) RU3DX, 199 (6)

VE3XN, 199 (26) K7BG, 199 (22) YU7GMN, 199 (10) K7LJ, 199 (37) K8SIX, 199 (29) EA5BCX, 198 (27, 39) G3KDB, 198 (1, 12) KG9N, 198 (18, 22) JA1DM, 198 (2, 40) 9A5I, 198 (1, 16) K4CN, 198 (23, 26) G3KMQ, 198 (1, 27) N2QT, 198 (23, 24) OK1DWC, 198 (6, 31) W4UM, 198 (18, 23) US7MM, 198 (2, 6) K2TK, 198 (23, 24) K3JGJ, 198 (24, 26) W4DC, 198 (24, 26) F5NBU, 198 (19, 31) OE2LCM, 198 (1, 31) HA1RW, 198 (1, 31) WK3N, 198 (23, 24) W9XY, 198 (22, 26) KZ2I, 198 (24, 26) W7VJ, 198 (34, 37) WØCP, 198 (18, 40) K9MIE (18, 21)

EA8AYV, 199 (27)

The following have qualified for the basic 5 Band WAZ Award:

K6SY (170 zones)

N4XR, 199 (27)

WØPGI, 199 (26)

HA5AGS, 199 (1)

W2IRT (172 zones)

**Please note: Cost of the 5 Band WAZ Plaque is \$100 (\$120 if airmail shipping is requested).

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and \$1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is \$10.00 for subscribers (please include your most recent CQ mailing label or a copy) and \$15.00 for nonsubscribers. An endorsement fee of \$2.00 for subscribers and \$5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a CQ checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

ers). Please be patient; we will make all necessary adjustments after coming home.

Have fun working with on the air! We installed 80% of our antennas and four stations. We are trying to work all the time except for short breaks (lunch, dinner, and generator maintenance). We have had a huge pile-up but we are trying to do our best for you.

Vy 73! Wojtek, SP5BFX

They did in fact make the most of their difficult situation and were very active on as many bands as possible.

1AØKM – Sovereign Military Order of Malta. Luciano, IØJBL, was to lead a multi-national team for a ten-day operation in mid-July. 1AØ continues to be "needed" by a lot of DXers, ranking #28 worldwide in *The DX Magazine*'s Most

CQ DX Awards Program

SSB

2498AD7J

SSB Endorsements

330	N5FG/337	330VE2GHZ/334
330	DU9RG/337	320SV3AQR/321
330	K6AW/335	310IØYKN/310

CW Endorsements

330N5FG/336	2504Z5SG/252
320OZ5UR/320	28 MHz4Z5SG
300 WA4DOU/307	

RTTY Endorsements

330.....N5FG/331

The basic award fee for subscribers to CQ is \$6. For non-subscribers, it is \$12. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the www.cq-amateur-radio.com website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 337 active countries. Please make all checks payable to the award manager.

Wanted Survey for 2006, and #21 for North America.

FO/C – Clipperton. Bob, N6OX, will be heading up a group of 24 for a March 2008 trip to Clipperton. It still ranks relatively high at #35 worldwide and #24 for Europe.

VP6DX – Ducie. Carsten, DL6RAU, and Eric, K3NA, will share leadership roles for a planned operation from Ducie in February 2008 by a team of 13 operators.

TI9M – Cocos. An operation from Cocos is planned for 2008. Worldwide need for 2006 had TI9 at #87, Europe at #67, and #49 in Asia.

"Ultimate Friendship" Award

In June a dinner was held on Long Island, New York to celebrate the longstanding friendship between two amateur radio operators: Lew Reinberg, W2BIE, and Martti Laine, OH2BH. As of the end of April, Lew had "worked them all" except one, Scarborough Reef. Lew had been in a 40-year quest to complete DXCC Honor Roll and had been seriously ill. Steve, WB2ZHB, encouraged Lew to not give up and go for the Scarborough Reef QSO, for his last one.

The next morning, Steve went down to his shack and turned on the radio just in time to hear Martti telling everyone to stand by so he could talk to his friend Lew. W2BIE had made it through, a contact with Scarborough Reef. In the midst of one of the biggest pile-ups of all time,



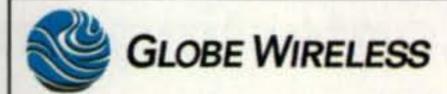
Left to right: Steve, KU9C, presents the "Ultimate Friendship Award" certificates to W2BIE and OH2BH. (Photo courtesy of Steve, WB2ZHB)

Martti took the time to ask Lew how he was feeling and they made the Q. It was the thrill of a lifetime for W2BIE. Framed award certificates were presented to both Lew and Martti at the dinner. Ham radio is about the friends we make, some of which last a lifetime. For more photos and details, go to: <myspace.com/stephenhass>. (Tks, Steve, WB2ZHB)

CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll lisiting is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is \$1.00 each plus SASE. Please make all checks payable to the Award Manager, Billy F. Williams. Mail all updates to P.O. Box 9673, Jacksonville, FL 32208.

Mixed	
N4MM	N4NX 182 KØCA 181 K1NU 180 K8OOK 180 W5ODD 177 K2AU 177 NØFW 176 ON4CAS 175
The state of the s	
SSB	
N4MM180	NØFW176
W4UM178	DL3DXX175
W4ABW177	
cw	
JN3SAC193	N4MM178
W4UM188	KØCA175
OK2PO184	
	N4MM 198 W4UM 196 VE3ZZ 191 HA9PP 190 BA4DW 188 OK1AOV 187 9A5CY 187 F6HMJ 182 K2SHZ 182 SSB N4MM 180 W4UM 178 W4ABW 177 CW JN3SAC 193 W4UM 188



Globe Wireless - a global telecommunications provider of HF radio and Inmarsat satellite systems for the maritime industry seeks candidates to join our growing team. We offer an excellent selection of benefits. Competitive salary range based on experience.

DIRECTOR OF HF ENGINEERING

Major Duties and Responsibilities

- Candidate must have broad experience in HF engineering with technical skills, cognitive engineering abilities & research/analysis. Ability to plan, implement, document, and present the results of technical system assessments is required.
- Lead and manage RF engineers and technicians that develop and support electronic communication systems. This group is a multi-disciplined team working on equipment that includes digital, power, HF & satellite RF systems.
- · Establishes engineering quality standards, methods, policies and procedures.
- · Provide design expertise in support of product development and product support.
- · Manage frequency coordination and fixed station licensing.
- · Position reports to the VP of Engineering.

Critical Skills / Knowledge / Abilities:

- Strong interpersonal skills with demonstrated ability to work both well and cooperatively in an interdisciplinary environment.
- Maintaining engineering results by coaching, counseling, and disciplining employees.
- · Exceptional problem solving skills & ability to manage multiple projects.

Education, Experience and Job Knowledge:

- · Bachelor's degree in a technical discipline; Electrical Engineering preferred.
- Five years electrical design background with leadership experience.
- Exp. interfacing with Engineering, Manufacturing, Product Mgmt., Field Service & vendors.
- Exp. performing project planning, tracking, and oversight activities with travel as necessary.
- Prior HF systems experience
- Excellent communication skills in English reg'd; foreign language skills preferred.
- · Strong Windows proficiency and networking knowledge a plus
- Knowledge of IP communications protocols a plus
- FCC General Radio Telephone operator license is a plus.

Office Location: Palm Bay, Florida

Some travel may be necessary. Interested candidates can submit qualifications and resume to: HR@globewireless.com Include salary history and requirements. EOE

Solar scientists seem to agree (pretty much, anyway) that the bottom of this solar cycle will occur sometime in the next several months. That is good news for all of the planned DXpeditions for early 2008. As conditions start to improve over the next few years I think we will be seeing more operations from rare and semi-rare locations.

Many DXers "topped out" on their Mixed DXCC awards with the BS7H operation this year. Now they are looking to "filling in the blanks" on bands and modes for those not-so-rare ones, especially on the higher bands, where we have not been able to do much over the past few years.

Until next time, enjoy the chase and Have Fun!

73, Carl, N4AA

QSL Information

2EØPLA via ON4IQ
3A/DF8XC via DL1YFF
3A/DL1YFF via DL1YFF
3A3WPX via DJ9ZB
3B8ZZ via K4YT
3B9ZZ via K4YT
3CØA via DJ9ZB
3CØF via DJ9ZB
3CØF via DJ9ZB
3CØV via DJ9ZB
3C5XA via G3SWH
3D2AM via K1ER
3D2VB via UA4WHX
3DAØEI via EI7CC
3DAØVB via UA4WHX

3V8SS via ON4IQ
3Z25PAZ via SP6PAZ
3Z6PAZ via SP6PAZ
3Z6V via SP6DVP
4A2MX via K6VNX
4A2Q via WD9EWK
4KØVB via UA4WHX
4L/UA4WHX via UA4WHX
4LØB via UA4WHX
4LØB via UT7QF
4N1A via YU1FJK
4N2ØØA via YU1FJK
4N2ØØA via YU1FJK
4N6ØØA via YU1FJK
4N6ØØA via DJ9ZB
4S7RO/6Y5 via DJ9ZB

4S7VK via DJ9ZB
4S7WHG/A via G3SWH
4U8ITU via I8QJU
4W1AF via DJ9ZB
4W1ZB via DJ9ZB
5A1HA via DJ9ZB
5B4/AC6WE via UA3DPX
5B4/UT7QF via UT7QF
5H/7Q7RS via IT9YVO
5HBRS via IT9YVO
5H1/G3SWH via G3SWH
5H3VMB via UA4WHX
5R8FL via G3SWH
5R8FT via G3SWH

5R8FV via G3SWH 5R8GO via G3SWH 5R8GZ via G3SWH 5R8HA via G3SWH 5R8O via G3SWH 5TØCW via G3SWH 5T5DX via K4YT 5T5TY via NI5DX

(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>.)

Contesting and Dayton 2007

August's Contest Tip

Efficiency in operating practice is a big part of contest operating. Whether it's short CQ's that emphasize your call (remember, that's the part people don't know when they tune by) or effective exchanges, it all contributes to working more stations. For example, if someone calls you and you only copy part of their call, go with it. The process can work like this: "Something Alpha Romeo, you're 59001" rather than simply "Alpha Romeo?" Always start the process of working the other station calling you right away as it will reduce the number of back-and-forth transmissions and make you a faster, more efficient operator with higher scores.

the secular equivalent to a trip to Mecca for many contesters. After all, there are the evening contest suites, contest forum, and contest dinner. This year many had the added thrill of participating in Dayton's first-ever Contest University (more on that later). Simply put, if you are a contester, this was the place to be in 2007.

I can't report more without first acknowledging the driving force behind of much of the contest activities that took place this year—Tim Duffy, K3LR. Whether it was serving up pizzas at 11 PM in the Contest Super Suite or leading a gargantu-

*2 Mitchell Pond Road, Windham, NH 03087 e-mail: <K1AR@contesting.com>

٠.		
	7:00 AM	Registration and Breakfast
1	8:00 AM	Propagation for Contesting, N6BV
	8:00 AM	Basic Contest Operating, K1DG
	8:30 AM	What your Contest Signal Sounds Like in Europe,
		MØDXR
ı	8:30 AM	Contest Station Layout and Design, N5OT
	9:00 AM	DXpedition Contesting, N5TJ
	9:00 AM	QSO Party Contesting, K8MR
	9:30 AM	Single Operator Two Radios for High Performance Contesting, K5ZD
	9:30 AM	Mobile Contesting, K8MR
	10:15 AM	Antennas for USA Contests, N6BV
	10:45 AM	Single Operator UNassisted Contesting, N5TJ
	11:15 AM	Logging & Accuracy—Contest History & Records,
١	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	N6AA
	12:15 PM	Lunch
۱	12:45 PM	Extreme Shack Make Over, K1DG
	1:05 PM	Sprint Contest, K1DG
	1:15 PM	Hints and Kinks to Help you Win Contests, N2NT
١	1:45 PM	Antennas for DX Contests, N6BV
	2:30 PM	Contest Logging Software, N2NT
	2:30 PM	RTTY Contesting, K5ZD
	3:00 PM	Single Operator Assisted, K1DG
	3:00 PM	Contest Station Layout and Design, N5OT (repeat of 8:30 session)
	3:30 PM	Chokes and Filters for Contest Stations, K3LR
	3:30 PM	VHF Contesting, K8MR
	4:00 PM	High Frequency Terrain Analysis, N6BV
	4:00 PM	Computers for Contesting, W9ZRX
	4:30 PM	Response to Students Questions & Answers
	HO WILL	by CTU Staff
	5:00 PM	Conclusion

Table I- The 2007 Dayton Contest University schedule.

Calendar of Events

All year	CQ DX Marathon
July 21-22	CQ WW VHF Contest
Control of the Contro	North American RTTY QSO Party
Company of the party of the par	RSGB IOTA Contest
	European HF Championship
DUINE CO.	North American CW QSO Party
	10-10 Int'l Summer QSO Party
	SARL HF Contest
A CONTRACTOR OF THE PARTY OF TH	Worked All Europe CW Contest
	Maryland-DC QSO Party
	SARTG WW RTTY Contest
Tarrison and the second	RDA Contest
	North American SSB QSO Party
	New Jersey QSO Party
	SCC RTTY Contest
	YO DX HF Contest
Aug. 25-26	Ohio QSO Party
Aug. 26	SARL HF Contest
22-1 (MC)	Russian RTTY Contest
CONTRACTOR OF THE PARTY OF THE	All Asian SSB DX Contest
Sept. 29-30	CQ WW RTTY DX Contest
	July 21–22 July 28–29 Aug. 4 Aug. 4–5 Aug. 4–5 Aug. 5 Aug. 11–12 Aug. 11–12 Aug. 18–19 Aug. 18–19 Aug. 18–19 Aug. 25–26 Aug. 25–26 Aug. 25–26 Aug. 25–26 Aug. 26 Sept. 1 Sept. 1–2

an effort to pull off a highly successful Contest University, Tim was at the center of it all. Hats off to K3LR for the enthusiasm and leadership that made this year's Hamvention such memorable experience for so many.

Contest University

This concept has been around for many years: Make use of some of contesting's veterans to teach others via their experiences in a number of key areas of contesting. Previously, the idea had been limited to club efforts. I have personal experience with the Yankee Clipper Contest Club, where a class-based structure has been used to educate others about contesting. It works! The Potomac Valley Radio Club as well as the Northern California Contest Club, and others, have also delivered programs of this nature in the past.

This year at Dayton, however, the notion was taken to a new level with Contest University (CTU), headed by CTU Chairman Tim, K3LR. Taking nearly a year to prepare, CTU was a huge success, with nearly 160 students and 11 "professors" working together over a 10-hour period to teach 22 in-depth contesting topics (see the teaching schedule in Table I). Yes, the concept has been around. However, the results at Dayton were unparalleled and absolutely amazing.

With the Super Suite at the Dayton Crowne Plaza opening one night early on Wednesday, nearly 50% of the students checked in and the fun began. It makes one wonder when the Dayton Hamvention® will eventually become a one-week event for some contesters!

Early the following morning, registration began at 6:30 AM sharp, and by 8 AM everyone was ready to go. For the next nine hours a spirited combination of class time, a simulated voice Sprint contest, lunch and discussion, and stimulating Q&A took place in an unprecedented setting led by CTU professors N6BV, K1DG, MØDXR, W9ZRX,



"Professor" Dick Norton, N6AA, teaching Dayton Contest University students about the process of log checking. (Photo courtesy of Tim, K3LR)



Nearly 160 students filled the room at the first-ever Dayton Contest University. (Photo courtesy of K3LR)

N5OT, N5TJ, K8MR, K5ZD, N6AA, and N2NT. CTU students came from all over the world, both new contesters and experienced pros. Also, speaking from personal experience, I learned a new operating trick myself, thanks to Randy, K5ZD, who suggests that you stay focused on one station when multiple callers are after you. It actually helped my score in the KCDX suite during the pile-up competition that weekend. The point is that CTU was an event for all, including 9-year-old contester Joseph Callow, W9JJC!

With professionally developed and printed classroom binders under each student's arm, the Dayton Contest University was a big hit. Participants were talking about it all weekend. As you might imagine, preparations are already under way for next year's graduate school program at Contest University 2008. Keep an eye for updates at <www.contestuniversity.com> to learn about an even better experience slotted for the next one.

Hats off to everyone involved and congratulations to all the students! It's also important to acknowledge the support of Ray Novak, N9JA, and ICOM America, CQ magazine, DX Engineering, and the ARRL, all of which contributed resources to make CTU 2007 such a huge success.

CQ Contest Hall of Fame

One of the greatest honors I have as the Master of Ceremonies at the Contest Dinner at Dayton is to witness the induction of new members into CQ's Contest Hall of Fame. This year we were pleased to induct four contesters: K5RC, K6SSS, and N6ZZ (SK) as 2007 inductees; and S59AA, who was inducted in 2004 but was not formally acknowledged with his award that year.

K5RC. Tom Taormina, K5RC, has been around contesting since the late 1950s and has a long track record of operating accomplishments and contributions to the sport. In addition to bringing many new contesters into our ranks through relentless mentoring, he has built and made available to contesters several world-class contest stations. Tom was instrumental in helping to develop the North American QSO Party, as well as being a member of the CQ WW Contest Committee. A quick look at some of the older National Contest Journals will show that he was a former editor and contributor to that publication. Congratulations, Tom!

K6SSS. Fred Capossela, K6SSS, is a past CQ World-Wide DX Contest Director. It was under Fred's leadership in the early years of the contest that the CQWW ultimately became the world's most popular and most professionally run contest. Fred became the first contester to actually run the contest, introducing the foundation for the rigorous log-checking standards that are being used today. Fred has continued his contributions to this day, having maintained and annually updated the CQWW All-Time Records List for over 40 years. Well done, Fred!

N6ZZ. Much has been said about Phil Goetz, N6ZZ (SK), who left us much earlier than he deserved. Phil is most noted for being one of only two contest participants to have operated the CQ WW DX Contest from each of the world's 40 CQ zones (Dick Norton, N6AA, is the other). Amassing hundreds of thousands of QSOs, Phil was an inspiration to contesting and a dear friend, advisor, and confidant to many. The other aspect of Phil's illustrious contest career, however, was what he did behind the scenes. N6ZZ was a member of the first ARRL

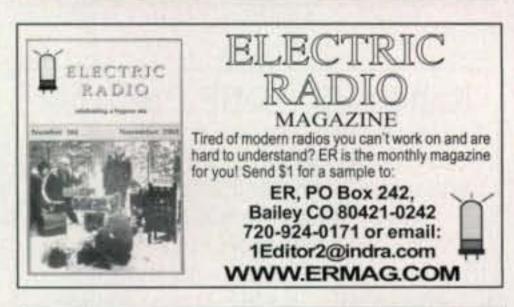




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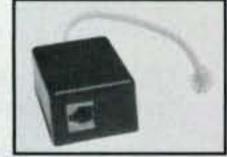
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One of the CQ Contest Hall of Fame's newest members, Tom Taormina, K5RC (left), receiving his well-deserved plaque from Bob Cox, K3EST, Chairman of the CQ WW Contest Committee. (Photo courtesy of Tom, K8CX)



(Left to right) An elated Fred Capossela, K6SSS, with his wife Ava, and K3EST and K1AR, proudly displays his CQ Contest Hall of Fame plaque. (Photo courtesy of K8CX)

Contest Advisory Committee, as well as serving on the CQ WW Contest Committee. In addition, he was a judge at every World Radio Teamsport Championship (WRTC) event, except in 2002, when he was a contestant. His support during the recent WRTC event in Brazil was instrumental in ensuring the results were accurate and of the highest quality. We'll miss you, Phil; you deserve every bit of this one!

S59AA. Last but not least, Franc Bogataj, S59AA, is the final member to be mentioned. Although he received the honor of being added to the list of Contest Hall of Fame members in 2004, Franc was formally inducted and received his plaque at a local meeting of the Slovenia Contest Club, as well as at this year's Friedrichshafen convention in Germany. Franc is known all over Slovenia and parts of Eastern Europe as a mentor to new contesters. Tine Brajnik, S50A, a Hall of Fame member

in his own right, cites Franc as having had a profound influence on the contest movement in Slovenia. Franc's snappy CW and skillful operating technique are a joy to work. When I first met Franc at WRTC, I witnessed his infectious enthusiasm for contesting. Not only was he a valued contributor to WRTC, he became a friend to many of us as we learned what he has done and continues to do to further contesting. Thanks for everything, Franc!

FCC's Riley, K4ZDH Speaks at Dayton

The FCC's highly visible Special Counsel for Amateur Radio Enforcement, Riley Hollingsworth, K4ZDH, led the FCC forum at Dayton this year. He had some specific messages regarding contesting that we all should take to heart. I can't do his commentary justice, so let me simply quote Mr. Hollingsworth so that you get the message loud and clear:

...to the contesters: be more courteous. You are responsible for the frequency you are operating on, and realize that's true even when you operate split. All frequencies are shared.

To those who don't like contesters: Lighten up!! Contests are short lived. Use the WARC bands. Wash the car. Cut the grass.

Learn from the contesters—and this applies to you traffic net folks, too. Learn from the contesters—they pass information a lot faster and more efficiently than you do. Contesters are some of the best radio operators on planet Earth. If the contesters operated at the same pace as some of the emergency traffic nets, the contest would be over after the first few dozen signal strengths were exchanged!

As contesters, it's clear that the Commission acknowledges our skill and supports our on-the-air activities. However, before we get too carried away with ourselves, we do not get a free pass. Our obligation to respect the operating privileges of others is no different than any other ham radio group. Words to the wise!

Final Comments

Well, another Dayton is in the books and many will say that for contesters it was one of the best. I've often thought that the best part of Dayton is seeing my friends and meeting new ones. Indeed, the camaraderie of contesting is one of the greatest attractions for me, at least as much as operating itself. Whether it's Dayton or just a cookout in your back yard this summer, enjoy your contesting friends. It's a big part of who we are!

73, John, K1AR

Basics, Part IV: Solar Wind and Coronal Holes

A Quick Look at Current Cycle 23 Conditions

(Data rounded to nearest whole number)

Sunspots

Observed Monthly, May 2007: 12

Twelve-month smoothed, November 2006: 13

10.7 cm Flux

Observed Monthly, May 2007: 75

Twelve-month smoothed, November 2006: 79

Ap Index

Observed Monthly, May 2007: 8

Twelve-month smoothed, November 2006: 9

ast month we took a look at sunspots and the 10.7-cm solar flux. There are other phenomena that occur on the sun that can influence radio signal propagation, too. This time let's take a look at a significant player in space weather and propagation of your transmitted signal.

Solar Wind and Coronal Holes

Space is not a vacuum, at least in our solar system. The sun's atmosphere actually extends very far out from the sun. Space in our system is filled with plasma, a low-density gas in which the individual atoms are charged. The temperature of the sun's atmosphere is so high that the sun's gravity cannot hold on to it. The plasma streams off of the sun in all directions at speeds of about 400 kilometers per second (about 1 million miles per hour). This is known as the *solar wind*.

The speed of the solar wind fluctuates and carries with it magnetic clouds. These magnetic clouds are interacting regions where high-speed wind catches up with slow-speed wind. The solar wind speed is high (on average 800 km/s) over coronal holes and low (300 km/s) over streamers. These high- and low-speed streams interact with one another and alternately pass by the Earth as the sun rotates. These wind-speed variations buffet the Earth's magnetic field and can produce storms in the Earth's magnetosphere.

Coronal holes are an extended region of the corona that have exceptionally low density and "open" magnetic-field topology. Coronal holes are largest and most stable at or near the solar poles and are a source of high-speed solar wind. However, those coronal holes situated at or near the solar equator tend to have the greatest impact on the Earth.

Coronal holes follow the rotation of the sun, taking about 27 days for a full revolution around the sun. This means that if the coronal hole lasts long enough, we'll see its influence on space weather every 27 days. When a coronal hole survives to

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LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for August 2007

	Ex	Expected Signal Quality			
Propagation Index	(4)	(3)	(2)	(1)	
Above Normal: 1-7, 10-11, 18-31	A	A	В	C	
High Normal: 8-9, 12, 15-17	A	В	C	C-D	
Low Normal: 14	В	С-В	C-D	D-E	
Below Normal: 13	C	C-D	D-E	E	
Disturbed: None	C-D	D	E	E	

Where expected signal quality is:

- A-Excellent opening, exceptionally strong, steady signals greater than S9.
- B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
- C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
- D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
- E-No opening expected.

HOW TO USE THIS FORECAST

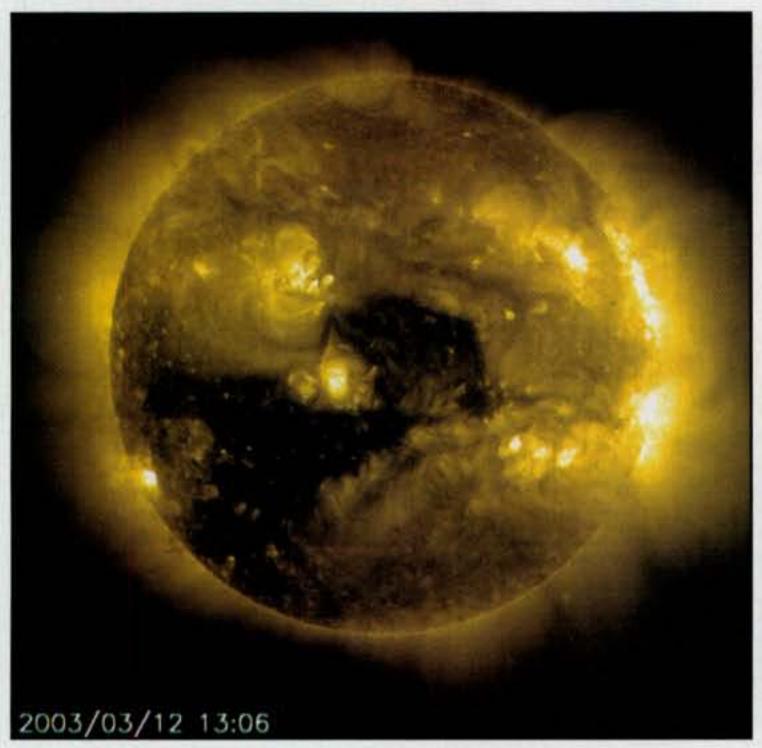
- Find the propagation index associated with the particular path opening from the Propagation Charts appearing in The New Shortwave Propagation Handbook by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.
- 2. With the propagation index, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a propagation index of 2 will be Good (B) on August 1st through the 7th, Fair (C) on the 8th and 9th, and so forth.
- 3. As an alternative, the Last-Minute Forecast may be used as a general guide to space weather and geomagnetic conditions through the month. When conditions are Above Normal, for example, the geomagnetic field should be quiet and space weather should be mild. On the other hand, days marked as Disturbed will be riddled with geomagnetic storms. Propagation of radio signals in the HF spectrum will be affected by these conditions. In general, when conditions are High Normal to Above Normal, signals will be more reliable on a given path, when the path is ionospherically supported.

make it around a second time, the coronal hole is said to be "recurrent." Coronal holes, then, typically are long-duration features, and since they spew out plasma at elevated speeds, they degrade ionospheric propagation for days at a time.

The Earth has a magnetic field with a north and a south pole that is enclosed within a region surrounding the Earth called the *magnetosphere*. As the Earth rotates, its hot core generates strong electric currents that produce the magnetic field, which reaches 36,000 miles into space. The magnetosphere prevents most of the particles from the sun, carried in solar wind, from impacting the Earth. The solar wind distorts the shape of the magnetosphere by compressing it at the front and causing a long tail to form on the side away from the sun. This long tail is called the *magnetotail*.

Let's look at the relationship between coronal material and magnetic fields. The corona is so hot that the gases in it lose some of their electrons in the powerful collisions between atoms. This plasma is a mixture of positively charged ions and negatively charged electrons.

An example of plasma can be seen by looking at a neon light. You are looking at plasma, energized to the point where light is emitted. Because plasmas are electrically conductive, they can steer

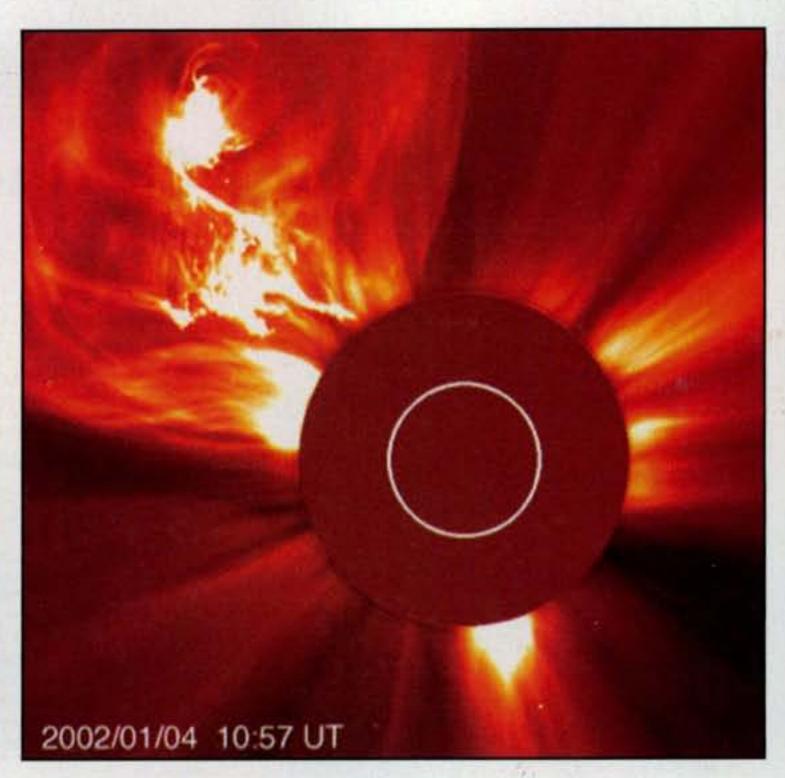


This picture features a large coronal hole in the sun's corona on March 12, 2003. The leading edge of the coronal hole appears as dark areas of the corona when viewed in ultraviolet light and in X-rays. This distinctive hole area appears to extend across about one fifth of this side of the sun. This is a very large coronal hole. Coronal holes are often the source of strong solar wind gusts that carry solar particles out to our magnetosphere and beyond. Solar wind streams take two to three days to travel from the sun to Earth, and they are more likely to affect Earth after they have rotated more than halfway around the visible hemisphere of the sun. The magnetic field lines in a coronal hole extend out into the solar wind rather than connecting to a nearby part of the sun's surface. Often located near the poles of the sun, coronal holes also occur closer to the solar equator, as we see here. These low-latitude coronal holes are responsible for the high-speed solar-wind streams that may trigger aurora, and provide aurora-mode VHF propagation openings. (Source: SOHO/NASA)

magnetic fields, and they are steered by magnetic fields. These loops of magnetic force are stretched and dragged into interplanetary space by the inertia of the expanding plasma that spirals out as the solar wind. When these magnetic forces impact the Earth, they are either diverted by or combined with Earth's magnetic field.

The speed of the solar wind fluctuates. This year we're seeing a range of solar wind speed of between 300 km/s and around 600 km/s on average. When the solar wind picks up speed, and when the magnetic field lines that are stretched out on the solar wind pass the Earth, geomagnetic storms may be triggered. For radio signals, this could be a good thing, or a bad thing, depending on the frequency and radio path.

The majority of geomagnetic disturbances are generated by the encounter with the magnetic fields, and the volume and speed of the solar wind. The ability of the solar wind to disturb the Earth's magnetosphere is a function of its speed and the strength and orientation of the magnetic fields. In the presence of a strong southward magnetic field component, a "connection" is made between the solar wind's magnetic fields and the Earth's magnetic fields (picture two pole mag-



This image shows solar plasma flying out away from the sun. The plasma rides the solar wind out into our solar system, following the magnetic field lines of the wind streams. (Source: SOHO/NASA)

nets, where the north pole of one "connects" with the south pole of the other).

The Earth's magnetosphere is formed from two essential ingredients, the Earth's magnetic field (which has much the same form as that of a bar magnet, and is from pole to pole) and the solar wind. When the solar wind and magnetic fields combine with the Earth's magnetic field, they alter the shape and intensity of this shield around the Earth. The ionosphere is affected by these changes, either by an increase of ionization, or a decrease or even a depletion of ionization. Depressions in ionospheric density cause major communications problems, because radio frequencies that previously had been refracting off the ionosphere now punch through. The maximum usable frequency (MUF) on a given radio signal's path can be decreased by a factor of two during an ionospheric storm event. Storm effects are more pronounced at high latitudes.

During the periods of lowest solar activity of a solar cycle, such as where we are right now, we see far less coronal mass ejections (CMEs) than during the peak years of the cycle. However, we still see frequent recurring coronal holes. These coronal holes are producing fast solar wind streams and at times spew out enough plasma to cause minor geomagnetic storms.

Low sunspot counts combined with coronal-hole activity often contribute to days of very poor propagation on the high frequencies (30 MHz and below). When the solar wind speed is high (over 650 kilometers per second), when there's a release of solar plasma on that wind stream, and when the orientation of that wind stream is aligned to combine with the magnetosphere, the geomagnetic field will "open" to the incoming plasma, and aurora occurs. That is when VHF comes alive for the exotic aurora-mode propagation.

During August, we'll see days when coronal holes dominate space weather. Solar activity will be low to moderate, too, as we are at the end of solar Cycle 23. Major shortwave broadcasters have taken this into consideration and have chosen frequencies that, with the high power and gain of their transmitting facilities, will overcome tough propagation into their target areas. However, there may be days when it will be a challenge to hear the station for which you are hunting.

August Propagation

Late August and early September are a difficult time of year for which to make accurate band predictions, because conditions can change drastically from day to day. On many days typical summertime conditions will continue much as they were during June and July.

On the other days, conditions may sound typically fall-like, with somewhat higher daytime usable frequencies and somewhat lower nighttime usable frequencies. When you add equinoctial conditions that can begin as early as late August, we often experience optimum openings between the Northern and Southern Hemispheres on the one hand, but periods of active to stormy conditions on the other.

Despite being at the end of solar Cycle 23 with low solar activity, during the daylight hours good DX conditions should be possible on several bands: 15, 17, and 20 meters. Expect signals on the 17- and 20-meter bands to peak approximately during the two-hour window immediately following sunrise and again during the late afternoon. These two bands, and to a lesser degree, the 15-meter band, will see openings for DX throughout the daylight hours. Fairly good DX openings should occur along an arc extending across central Africa, Latin America, and into the far Pacific area. Peak conditions should occur during the afternoon hours, but an increasing number of earlier openings should be possible by early September.

Between sundown and sunrise, 20 meters is expected to be the best DX band. However, with lower solar activity, the band in general will suffer compared to the past few years. Openings might be possible to many areas of the world, some with surprisingly strong signal levels. Until midnight, good DX conditions should be found for openings toward Latin America, the far Pacific, and into Asia. You might even catch some activity on 17 or even 15 meters. Fairly good conditions are also expected on 30, 40, 60, and 80 meters despite the high static level at times. Openings should be possible before midnight along an arc extending from northern Europe, through Africa, and into Latin America, the far Pacific, and Asia.

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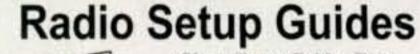
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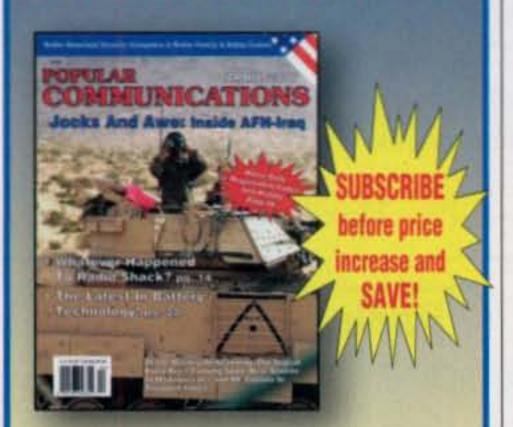
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Visit our web site: www.popular-communications.com By late August it should be possible to work some DX on 160 meters during the hours of darkness. Conditions on this band, as well as on 40, 60, and 80 meters, will tend to peak just as the sun begins to *rise* on the *light*, or easternmost, terminal of a path.

For short-skip openings during August and early September, try 80 meters during the day for distances less than 250 miles, with 60 and 40 meters also usable. During the hours of darkness both 80 and 160 meters should provide excellent communications over this distance. For openings between 250 and 750 miles use 30 and 40 meters during the day for distances up to 500 miles, and 20 and 17 meters between 500 and 750 miles. At night 40 and 30 meters should be the best bands for this distance until midnight, with 80 meters optimum from midnight to sunrise. Try 60 meters, as well. For openings between 750 and 1300 miles, try 20 and 17 meters, as they should provide optimum propagation during the hours of daylight. Optimum conditions should continue on these bands for this distance range after sundown and until midnight. Between midnight and sunrise the best band should be 40 meters, but check 60 meters, too. For openings between 1300 miles and the one-hop short-skip limit of approximately 2300 miles, try 20 and 17 meters during the day, with 15 meters also usable. After sundown try 30, 40, and 60 meters, with 80 meters also providing good propagation conditions for this distance range.

VHF Conditions

Sporadic-E propagation usually begins to taper off during August, but may continue to occur fairly frequently. Some 6meter sporadic-E openings are expected during the month over distances of approximately 750 to 1300 miles. During periods of intense and widespread sporadic-E ionization, two-hop openings may be possible considerably beyond this range. Also check the 2meter band for an occasional sporadic-E short-skip opening between approximately 1200 and 1400 miles. While sporadic-E short-skip openings may occur at any time, there is a tendency for them to peak between 8 AM and noon, and again between 6 PM and 9 PM local daylight time.

The Perseids meteor shower this year covers the period of July 17 to August 24. The peak is expected to occur August 13 between 0500 UTC and 0730 UTC, and will be most observable in the Northern Hemisphere. The radiant point for this shower will be in

the constellation of Perseus. Look to the northeast. The maximum hourly visual rate is expected to reach about 100, possibly more active than last year.

For the very patient, check the 6-meter band for possible trans-equatorial (TE) openings between 8 and 11 PM local daylight time. This type of propagation favors openings from the southern tier states into the far southern areas of South America, with the signal path crossing the magnetic equator at a right angle. TE openings during August are rare, but they can occur. Very weak signals and severe flutter fading usually characterize them.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for May 2007 is 11.7, a considerable jump up from April's 3.7 and from March's 4.8. The lowest daily sunspot value recorded was zero (0) on May 25 through May 28. The highest daily sunspot count was 25 on May 18. The 12-month running smoothed sunspot number centered on November 2006 is 12.7. A smoothed sunspot count of 14, give or take 12 points lower to 12 points higher, is expected for August 2007.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 74.5 for May 2007. The 12-month smoothed 10.7-cm flux centered on November 2006 is 78.5. The predicted smoothed 10.7-cm solar flux for August 2007 is 76, give or take about 15 points.

The observed monthly mean planetary A-index (Ap) for May 2007 is 8. The 12-month smoothed Ap-index centered on November 2006 is 8.5. Expect the overall geomagnetic activity to vary greatly between quiet to disturbed during most days in August.

Signing Off...

Please take a look at what's new at my website, http://propagation.hfradio.org/. Included on the site is an up-to-the-day Last-Minute Forecast for you to use to get the very latest forecast for the month. If you have a cell phone with internet capabilities, try http://wap.hfradio.org/.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column. I'd also love to hear any feedback you might have on what I have written. Until next month, . . .

73, de Tomas, NW7US

Results of the 2006 CQ WW DX SSB Contest (Continued form page 27)

129

117

105

96

61

20

33

23

63

69

61

WR3H

K2IC/3

W3DQN

K3RWN

K3SOM

K3GYS

N3FNE

K3VA

K3TEJ

AB3EF

KB3KXX

K3VED

WЗMG

N3MRA

AB38Q

N3CHX

N3MMH

N3NRN

KB3KYZ

KB3KRW

KB3MMX

WB3CJU

34,100

26,145

25,398

21,924

Number groups after call letters denote following: Band (A = all), Final Score, Number of QSOs, Zones, and Countries. An asterisk (*) before a call indicates low power. Certificate winners are listed in bold. (All country terminology reflects the DXCC list at the time of the contest.)

2006 SSB RESULTS SINGLE OPERATOR

NORTH AMERICA UNITED STATES K5ZD/1 3,764,880 2515 KIRU .060,410 1032 96 294 NIDD 1,042,625 902 108 331 W1AD 89 279 509,408 645 KG1E 555,765 83 645 WIDP 477.576 606 69 228 N4CW/1 466,032 595 63 229 WIRY 373.599 521 74 229 70 WHCSM 357,280 500 210 K1LU. 335,405 525 191 WISD 333,840 193 AK1N 326.922 728 WIWEF 182 W31Z/1 259,692 151 KK1L 237,088 K5MA/1 216,634 KITR 141 192,910 NTIN 150 147,908 K1BV 116,448 123 WIGWN 127 106.950 W1FM 86,742 118 207 53,156 W1YRC 98 148 WIZT 51,948 176 78 K1DII 45,460 165 81 NIJW 32.860 123 72 W1CPR 26,448 121 50 K1SEZ 26,038 27 130 WIAF 22,422 110 15 IOP: NF1R WIZS 15,400 N1SOH 11,270 67 23 47 AA10 62 19 46 8,385 K2\$\$/1 317,615 27 829 112 K11M 207,625 697 25 38,704 K1SND 203 W1XX 37,837 177 23 68 **AA1BU** 3.7 189,953 614 22 K1LZ. 162,648 597 18 (OP: LZ1Y0)

"W2JU/1 179,894 326 161 *K7JE/1 165,624 303 61 145 "KA1C 124,432 129 283 47 "K1TN 55 223 104,520 146 *W1KT 127 103,488 211 49 W2AFC/ 33 138 87,894 210 104 "NJ1H 203 67,734 "AB1FY 171 37 108 64,960 "W1AIR 62,350 167 41 104 *WB2000 34 43,225 143 WILZ 'KA1CQF 26,624 68 64 67 KTVU. 129 *KD1EU 'KQ1F 24,905 *KA1VMG 22,540 *N1ORK 8.246 *W1WIU 5,418 *K1QK 3,219 *W1CRK 2,772 *KB1JDY 2,120 *KK1X 1,947 *WA200E/1 1,764 *N1HTS *KB1CJ

4,836

48,114

21,286

194,975

581,360

413,712

230.572

197,448

4,917

92

80

67

57

526

331

251

261

232

169

171

29 79

138

117

95

80

88

NA3M

W3GH

.M3LL

'NS3T

*W4EE/3

*N2U5/3

1.8

KT1V

K1HAP

"N1UR

OLIW.

*K1H7

"WICTN

"N1PGA

"AK1Q

*N1DC

*K1VSJ

WA2MCR

KM20

'K2RET

'N2MTG

*N20PW

*KZTV

NZLT 1,296,788 N2MM 1,185,340 1137 111 349 K2DM 291 AB3CX/2 745 WA2NHA 648,414 247 N2MR K2FU 235 **WENN** W2LU **W38GN** 423,800 K2NV AA1K/3 K2KQ 339,556 K320 K3QDV/2 257,280 N3DG KC2NB 160,600 K3TC WB2HJV N3UM KB2DE **K38Z** W2VQ N3RJ WB2KLD K4JLD/3 W2FUI 57,441 N2SY квзмл KA2CYN N3KR KD2NE W2GPS WA2BKN W2RR 13,588 W3FVT NGZX 263,488 **K3FIT** NAZX KB3TS **N2MUN** 53,784 K3ZT W2/T98T 51,295 WA3ELO N2GC **K3MRG** 58,552 W1TY/2 WENRUS WA2A0G K3RH 3.7 6,542 W2MF 15,512 K315H W3S0 W2V0 'KZPS 881,740, *K2CS 392,329 75 212 *KE2DX 'WB2WPM WN3R N2HMM 145 WABAAN 'ABZTC 103,290 121 AD8J/3

*KR2Q *KB4VL/2 *KG2AF *KV2M *WA2IAU *KC2JR0 "AIZN *WAZART *K2BQW *KA2ASU *K2MFY 'N2GM 'N2ZR **K2RED** N2ZN KG2V

NS2P

AB210

*KZYEH

*KZSZ

33

21

693

520

14

81,744

78,674

60,391

210

171

36

25

103

106

K40H KN4KI K4ADR K1ZW/4 W4CEO AD4TR N4UH WF3C/4 W4HRC K4PB WD4LYV NEBJ/4 W4RIS 20 WA30FC/4 19 K4DGJ WA4ASJ 17

K4PHE

W4NTI

K4FYM

W4UF0

K1T0/4

NO9E/4

N4CU

206,140

200,128

*AI4ME 154 NV4B 129 *KS4S 127 AG4SO 162 W4RQ 128 *N3CZ/4 140 W4TIJ 124 K4MIL W4IHI 117 127 W4WN1 119 WB4S0 121 W4KAZ 112 AC5ZS/4 *N4W0 112 AD4YQ 112 W4SW 98 'KU4FP 104 **W406** 106 Al40T 83 "KT4PD

58

69

167

356

350

*W4YE

*KR4ZA

*N3UA/4

74,528

66,402

50,864

49,640

47,310

46,982

46,208

44,525

43,036

41,496

39,208

32,010

30,528

30,450

29,192

23,760

23,430

22,969

20,984

20,925

20,854

20,600

20,240

19,285

19,266

19,228

18,785

18,009

17,014

16,704

16,320

13,398

11,076

10,804

10,020

9,750

9,360

8,568

8,316

8,308

7,467

6,615

5,344

6,300

6,125

5,600

4.770

4,324

4,278

2,430

2,232

2,153

1,952

1,664

1,378

384

104

100

38,808

4,842

58,588

31,500

17.460

10,561

6,480

3.552

1,890

143,000

52,598

14,402

2,701

1,100

3,040,045

402,232

316,071

314,080

174,512

135,771

95,432

83,074

77,004

203

170

161

148

161

158

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133

148

153

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116

107

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(OP: W5ASP)

73

72

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69

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14

190

59

222

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2226 141

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12

W4AMP WB5NMZ/4 *W4IFI WS4V N4DXI *K1CEC/4 W4NSC *N3JT/4 "W4EBA *WG4M 'KE4EE *AD2H/4 'AD4N *K4G0P WD4FL K4FT0 *AJ4FS *K4BK

W4TTX 'K1HG/4 KD4ULW *K4PG *NJ8J/4 *WD4KTF *KD40L "AG1H/4 *AF4UU "AI4HR

*K3MZ/4 *W4066 *K2VX/4 "AD4ES *KU4WH *AH4GR *AB3S/4 KB4TKQ *K4WI *K4QVK W4JIK *W4EEH

28

21

*KR40W *N4KZ *W5CPT/4 "WA4FXX *KI4EGT *NQ4K "N4IJ *KZ50H/4 K4NVJ WA2ASQ/4 *AJ2U/4

KI4MUG

KI4IGW

N2IC/5 W5WMU N5ZK K5LAD W6PU/5 N5VK W5UW KA5BQM AB5C WA5ZUP

94 86

65

85

59 53

KZ5J KD5JAA K5LAN 64,218 50,848 27,538 N500 22,704 WD5JNC 20,114 K5QW0 7,315 N5TEY W5PR 65,110 W5KI K5RX *N5AW *WD5K W5PUF

67,116 1,128,320 832,464 123,025 82,336 80,256 51,240 32,235

'WA5iYX K5KM W5MPC KE5LQ **KCSR** W5TMC *KSBZH 'NY5J *KØGED/5 KD5VVI *KSKA 22,927 WB5IZD 22,659 KD5ZEZ 17,954 K5WWT 17,860 28 N5KDA 13,182 N3Q0/5 12,358 KE5FDW N5KEV 11,289 W6TRO/5 10,686 6,210 'N5MOC NSDIT 5,512 3,362 3,060

http://www.icomamerica.com/amateur/video Where contesters learn about contesting.



IC-7800 | The contest machine

Looking to get your name on this contest results page? See how the experts do it. Watch over 15 minutes of K3LR station info on the new volume 5 of Icom Radio News! Who's K3LR? Winner of the top U.S. multi-multi station SSB score the past 3 years running. It's an all-Icom station, too. Video by W7NWH.

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422

N3FJP

кзки

*N3GH

KB3IWV

21

2023 120

2043 126 397



		2,362,175	1847	181	374
		739,050			
		637.482	691	90	272
		637,482 528,352	686	72	232
		457,140	635	72	213
		446,356			223
		437,552	554	82	246
	. 0	404,424			
	7	213,358		54	
	- 4	205,514	367	50	161
3	9	167,904		54	144
		165,600		48	136
	- 4	111.408	281	47	120
		91.740	205	39	126
	A	91,740 87,216 49,623 31,042 24,252 21,854 20,930	233	41	117
	- 0	49.623	164	34	85
ř.		31.042	141	22	61
		24.252	101	30	64
3	.0	21.854	104	27	71
1		20.930	97	26	65
	.0	9,455	62	21	40
	7	2,929	37	21 6	23
			(0	P: W3	Y07
		2,871	31	9	24
		1,178	24	14	17
	14	84,840	381	26	94
į.	14 7 37	6,705	(0 31 24 301 58 48 10	12	33
	- 18	3,915	48	8	21
	3.7	406	10	5	. 9

4,719

304

292

211

65

55

39

147

118

N4BH

WB2QLP/4

W2YE/4

985,130

153,675

147,056

87,292

2,917,044

2,671,484

"K1EFI/3 "КВЗНЈК *K3LAB *N3GE *AK3E *KBØFHP/3 3.7 K4ZW K3ZM/4 N6AR/4 AA4S N4PQX KZ21/4 WX4G N1GC/4 N4TX NX9T/4 K4EU N4MM W9WI/4 NSPR/4 NJ2F/4 K4LTA N4GN K4BP KU8E/4 N4EK 14422 74 10 29 901 163 327 W7QF/4

4,528,022 2820 134 1154 116 1,078,056 1,032,822 881 104 321 106 85 78 614,836 726 538.560 520,138 75 485,001 452,410 423,660 405,444 345,984 72 474 304,200

283,725

269,136

268,974

264,960

244,984

10,443

62,667

31,820

11,077

1,512

8,694

1,768

77

235

135

100

35

59

61

17

22

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11

10

16

53

68

77

63

54

177

172

415

456

399

42

15

47

N4CC

KG4NOZ

N2IXX/4

W4ROT

AI4KM

W4UM

K2WK/4

KBEJ/4

K4SN

K4ZGE

K4RDU

K4SQR

AG4W

K9ES/4

W7HJ/4

WA40AB

KK4SI 241 *W6AH/4 W4KW WJ2D/4 NS4T W4TAA 220 K4GKD 227 KI30/4 W4TMN 200 *KA80/4 197 'AA4FU 180 KN5DX4 172 AB4GG 184 W3TB/4 216 *KM4RK

WA4DOU

56,025

48,512

38,304

15,051

11,925

5,865

4,370

367,776

250,446

121,040

113,520

57,567

30,295

24,674

98,175

88,146

78,323

156

168

145

124

76

92

102

38

1010

770

232

132

139

21

12

16

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23

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17

47 261

184 129

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51

240

215

202

KC5LIP WSCTV W5RE0 KSBDL N5EYT W5QLF 109 'N5JEP 125 *NA50 124 *WA5WFE 116

1,701 1,560 1,131 3,390 2,409 104,284

81,510

42,780

38,236

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Part	Table Tabl														
WGTX 48,250 155 47 78 78 78 78 78 78 78	WGTX 48,250 155 47 78 W60P 7541,550 622 62 180 8FSH 3.7 779 77 6 13 13 14 18 180 18 18 18 18 18 1	*W5TD *W5GAI *W5GAI *W5GAI *AD6G/5 *WA5SWN *K5KVN K6XX A 1,19 K6NA * 57 K6MM * 28 K6DK * 22 W86S * 15 W6SST * 11 N6WK * 9 AJ6V * 8 NK6A * 55 K6GMM * 7 K6GET * 22 N6XI * 11 K6GA * 22 N6XI * 11 K6GMZY * 13 K6HNZ * 14 K6HNZ * 14 K6GMZY * 16 K6GMZY * 16 K6GMZY * 17 K6GEN * 16 *K6GM * 16 *K6GMAL * 16 *K6GN * 17 *K7XE/6 * 12 *K7XE/6 * 12 *K7XE/6 * 12 *K7XE/6 * 12 *K7XE/7 * 28 *K7XE/7 * 28 *K7XE/7 * 28 *K7XE/7 * 29 *K7ABV * 17 *K7ABV * 18 *K7ABV * 18 *K7ABV * 17 *K7ABV * 18 *K7ABV * 18 *K7ABV * 17 *K7ABV * 18	1,595	*KE7FXF *KE8DM/7 *NG7Z *W7ASF *N7CN *W87WS *WN7T *N7RQ *KG7WZ *W8PAN/7 *KG7WZ *W8PAN/7 *K7AT *KE7FKX *W8PAN/7 *K7AT *KE7FKX *W8POE *KC7WDL *W7UPF *W7TSQ *W7TSP *AC7GP *K7ABL *W7KAM *KC7FPB *W7KAM *KC7FPB *W7KAM *KC7FPB *W8KDS/7 *AB7E *K9WZB/7 *K9TT/8 *WBSC *K8BOD *KABOAT *K8CO *KBBOD *KABOAT *KSCR *MBIL *KBSCR *MBIL *KBSCR *MBIL *KBSCR *ABUD *KBSCR *KBSCR *ABUD *KBSCR *KBSCR *KBSCR *ABUD *KBSCR	12,213 11,388 8,614 7,776 7,208 5,160 4,332 4,224 2,847 1,514 1,450 1,224 660 420 220 72,216 3,744 132,600 6,802 3,360 2,300 920 18,403 15,189 8,256 765 391,578 378,585 293,748 292,164 279,500 73,968 70,924 46,936 47,986 48,882 38,812 36,957 33,817 32,314 29,160 28,600 14,726 12,865 9,570 4,160 3,955 359,015 274,417 162,162 150,682 127,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 150,682 17,790 58,298 7,670 4,160 3,955 359,015 274,417 162,162 17,790 58,298 7,670 4,170 4,	96 26 43 101 28 45 75 22 37 62 23 25 74 25 28 59 23 20 41 28 29 41 17 27 34 16 23 33 14 15 19 11 13 20 10 12 15 8 6 25 77 41 15 25 42 11 28 380 30 100 72 17 21 41 15 25 49 10 13 20 10 10 102 23 54 113 18 43 73 17 6 9 538 76 201 503 85 229 421 69 204 434 65 186 420 79 181 215 36 102 198 52 101 108 36 71 121 58 111 148 43 92 158 59 188 39 10 30 53 11 24 476 75 228 438 59 188 328 47 142 282 66 163 282 45 132 381 17 34 73 170 42 87 151 43 81 155 44 83 170 42 87 151 43 81 155 44 83 160 31 19 476 75 228 476 13 23 160 13 15 171 16 37 27 16 13 15 171 16 37 27 16 13 15 171 16 37 27 16 13 15 28 18 11 15 18 15 15 18 18 18 18 18 18 18 18 18 18 18 18 18	*W9LYA KORH KOOU WOZA KAVXO WAOMHJ KOFX WOOR KSOWOR KSOWO	A 790,020 - 629,247 - 401,310 - 392,660 - 320,120 - 199,752 - 176,172 - 173,604 - 103,797 - 102,135 - 87,167 - 77,115 - 67,192 - 59,488 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 42,578 - 43,800 - 27,918 - 9,075 - 44,224 - 2,006 - 1,560 - 1,377 - 722 - 414 - 14 148,869 - 119,434 - 48,403 - 20,786 - 34,494 - 4,620 - 43,901 - 36,059 - 26,121 - 25,272 - 25,048 - 21,200 - 12,168 - 11,970 - 10,318 - 8,493 - 44,431 - 44,020 - 43,901 - 36,059 - 26,121 - 25,272 - 25,048 - 21,200 - 12,168 - 11,970 - 10,318 - 8,493 - 44,431 - 44,020 - 43,901 - 36,059 - 26,121 - 25,272 - 25,048 - 21,200 - 12,168 - 11,970 - 10,318 - 8,493 - 44,020 - 43,901 - 36,059 - 26,121 - 25,272 - 25,048 - 21,200 - 12,168 - 11,970 - 10,318 - 8,493 - 4,745 - 4,108	775 92 257 588 79 194 527 81 209 447 75 190 366 73 159 339 58 154 345 77 145 235 50 121 241 45 120 181 62 140 195 54 105 202 48 100 178 48 95 142 43 79 153 44 79 153 44 79 153 44 79 153 44 79 154 25 50 41 26 40 29 14 20 34 9 17 (OP: KUICW) 27 11 16 15 9 10 9 9 9 686 30 89 439 30 103 223 22 75 124 15 51 20 7 14 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 26 585 87 241 161 25 69 48 16 17 18	*VE3KF *VE3NE *VE3SHL *VE3OTL *VE3OTL *VE3OTL *VE3OTL *VE3OTL *VE3OTL *VE3OTL *VE3OTL *VE3TW *VE3FH *VA3PL *VE3FH *VA3MAH *VA3CV *VE3JDF *VA3TTU *VE3JM *VE3OM *VE3UZ *VA3TTU *VE3UZ *VA3TPS *VE3UZ *VA3TPS *VE3EU *VE3EU *VE3EU *VE3FU *	349,048 236,786 214,060 138,243 137,408 129,404 114,211 93,900 60,624 58,824 57,754 47,151 43,290 41,912 40,891 36,421 31,680 25,840 25,110 22,816 22,320 18,156 15,318 5,712 3,650 2,480 1,035 41,912 40,891 36,421 31,680 25,840 25,810 22,816 22,320 18,156 15,318 5,712 3,650 2,480 1,035 4 19,264 7 6,356 A 122,472 14 19,264 7 6,356 A 123,328 A 106,344 12,567 21 18,810 14 123,328 A 106,344 12,567 21 18,810 14 123,328 A 106,344 12,567 21 18,810 14 123,328 A 106,344 10,000 14	611 73 198 490 69 160 450 65 155 385 56 119 526 49 103 295 55 132 249 51 130 263 44 106 180 52 92 164 49 103 200 42 92 178 35 82 173 40 77 145 36 88 147 30 73 122 34 87 140 33 66 103 29 66 108 24 69 100 30 62 104 33 60 151 22 46 101 19 55 63 21 27 52 22 28 45 15 16 28 12 11 7 3 3 117 17 57 123 16 48 114 10 18 297 52 116 18 8 7 701 62 121 198 30 59 1311 82 177 208 27 66 818 18 37 246 44 70 113 29 30 153 16 39 500 26 68 364 57 91 186 35 77 158 21 49 154 30 40 2798 36 122 362 54 81 141 34 39 105 41 54 90 26 32 83 25 30 107 19 29 43 8 6 ISS 12 71 69 320 15 40 768 22 71 69 320 15 40 768 22 71 66 13 33 UBLIC UBLIC	*HP3FTD *HP1DCP *HP1DCP *HP1BYS *HP1XX *HP1ALX *WP3GW *KP4AFR *WP4NEG *WP3C *IGGR IGGC *IH9GPI *IH9YMC *ZD8I *ZD8I *EA8BYX EF8ABT EA8/OH4NL *EA8KX *EA8BYX EA8BAD *EA8AD *EA8AB *EA8BB *EA9BO *GRA *CN2R *CN2R *CN2R *CN2R *CN2R *CN2R *CN2R *CN2R *CN2R *CN3AA *CN8NK *SAM6JR *SAM	PANAMA A 66,730 28 5,535 21 141,286 14 69,234 12,768 3.7 6 PUERTO RICC A 165,360 23,392 6,893 3.7 97,440 AFRICA AFRICAN ITAL 14 980,564 1.8 164,190 28 8,029 21 2,772 ASCENSION ISLJ 14 121,128 CANARY ISLAN 7 303,438 3.7 6,513 1.8 137,984 A 390,144 187,332 142,242 76,692 76,368 2,952 28 346,431 21 221,920 1 69,048 12,800 14 192,530 CEUTA & MELIL A 7,534,140 A 273,728 27,643 CEUTA & MELIL A 7,534,140 A 2,893,363 21 120,700 NAMIBIA A 2,893,363 21 120,700	(OP: YN4SU) 274 39 72 94 11 16 809 22 60 498 15 51 96 15 41 1 1 1 342 51 144 137 32 54 49 25 36 599 18 62 Y 2000 38 135 (OP: IXSHCG) 821 11 67 (OP: IV3OWC) 80 8 29 44 6 15 ND 462 31 72 DS 1067 24 79 68 7 32 613 16 72 (OP: OH2BYS) 597 66 188 381 54 147 423 34 117 193 51 115 198 41 107 43 17 24 1143 22 89 847 22 73 309 17 67 197 14 36 875 31 99 LA 4457 122 475 485 48 160 91 39 80 270 11 53 3041 39 160 (OP: W7EJ) 2409 33 126
W7EEH	W7FEH 1,00 25 156, 486 123 36 14 24 189WKW 1,00 12 156, 486 130 1,00 130 14 14 14 14 14 14 14 1	AC7GL	34,780 235 57 100 76,302 178 56 106 72,320 259 39 89 18,250 155 47 78 13,778 149 34 84 25,536 109 37 59 23,736 121 33 53 22,736 103 36 62 21,244 98 36 58 16,170 81 31 46	WB9Z W9OP WE9N W9YQ K9SG K9HUY K9UQN W09S K9JIG	3,055,964 541,528 272,734 267,675 221,949 160,328 128,960 126,355 111,456	2053 136 427 682 85 243 442 62 180 425 59 190 331 81 192 323 61 135 305 40 115 282 60 125 256 45 127	8P6SH *8P6EX V31FB	A 1,059,282 BARBADOS 3.7 A 813,984 BELIZE A 471,303	1940 82 212 (OP: N2TTA) 17 6 13 1333 76 202 1086 67 149 (OP: W5JON) 1237 24 77	*OX3JZ *FG5JK TGBAA	GREENLAND 14 660 GUADELOUP A 2,035,250 GUATEMALA 14 76,024	65 5 6 E 2588 83 267 (OP: F6HLC) A 562 20 48 (OP: TG9ADQ)	S9SS 6W1RY 6W1SE ZS5NK ZS1EL	O TOME & PRIN A 1,656,305 SENEGAL A 7,038,534 692,874 SOUTH AFRIC A 6,144 874	CIPE 2239 60 199 5032 116 407 (OP: F5VHJ) 870 72 210 A 49 18 30 15 9 14
W7BJ S5,226 224 29 77 KG9N 34,162 222 19 43 *VE1EQO 7 15,318 192 13 33 MARTINIQUE FMSAN A 782,034 1485 62 184 FMSAN	W7BJ	W9PL/7 N7ER N7DD 21 50 W7UT 20 K8IA/7 16 KC7V 15 WE7K 2 K7MY 4 W7WA 14 92 WA7LT 27	1,260 25 7 11 139 8 5 5 15,448 1233 36 128 11,894 590 32 101 31,007 591 29 90 32,360 587 27 77 26,480 134 22 58 6,105 74 15 22 22,374 1832 38 148 73,456 771 35 109	N9WKW K9WMS KW9R KD9MS W9TY W9SE N9KO K9VS W19WI K2AAW/9	87,120 68,952 40,474 31,552 31,482 20,826 17,622 7,524 3,450 1,056	211 58 122 206 33 103 139 34 84 114 39 77 131 32 74 (OP: K9MDO) 98 31 58 95 27 62 76 19 38 32 16 30 20 7 15	VE1MC VE9/K1JB VO1HE *VE10P *VO1JNS	A 2,905,112 CANADA A 499,174 110,322 21 310,352 A 285,103 254,030	3384 91 301 (OP: K1XM) 743 59 204 306 48 114 994 22 97 559 63 178 529 40 150	*HQ9R *HR1RTF *HR4/N3SY *HR4/EW1/	HONDURAS A 988,592 59,136 28 638 AR 14 43,407 7 104,748	1683 76 198 (OP: WQ7R) 212 51 81 48 5 6 400 15 38 (OP: NP3D) 602 20 64 (OP: EW1AR)	*ST2M *ST2T	A 40 SUDAN 28 30,592 21 744,790 TANZANIA A 808,563	4 4 4 172 15 49 1850 32 110 (OP: \$57CQ)
	*K7TR * 85,488 246 57 99 *N9LYE * 46,200 162 49 83 *VA2WDQ * 53,152 149 41 110 *XE1ZTW * 25,456 118 34 52 RK9KWI * 326,474 612 57 182 *XE1ZVO * 73,000 215 55 91 *K9OR * 25,878 95 42 72 *VE3EJ A 6,293,430 4436 142 452 *XE1ZVO * 12,243 73 32 45 RV9AZ * 227,565 443 50 145 *XE1ZVO * 64,493 186 57 86 *W9QL * 22,800 118 34 61 *VC3R * 1,250,058 1750 82 236 *XE1XVL) * 7,705 60 27 27 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 8 RASJP * 79,242 430 25 69 *XE1XVL) * 7,705 60 27 27 27 27,242 430 25 69 *XE1XVL) * 7,705 60 27 27 27 27,242 430 25 69 *XE	W7BJ 5 KK7DP 6 K7CHC 6 K7AWB 7 W7ACD 3.7 K7BG 1.8 *K7ACZ A 322 *N7BK 25 *W7TTE 20 *N7WI 10	55,226 224 29 77 9,013 66 23 33 945 20 11 16 9,911 81 19 34 3,544 36 14 28 1,288 41 8 15 8,440 456 88 192 4,176 458 66 142 11,612 356 64 148 17,568 316 59 103	KG9N W9EXY N9CO KF9TI K9CAN *K9QVB A *W9JA *AC9X *K9JE *N9TTX	34,162 213,300 121,634 60,691 41,967 347,844 287,310 284,242 251,450 88,580	222 19 43 520 37 121 382 28 94 216 24 85 179 22 67 482 79 208 417 82 232 441 72 185 398 66 169 220 57 115	VE2IM VY2LI VE2AYU VE2QIP VY2ZM VE2HIT VA2SG	7 15,318 A 2,964,300 - 661,074 - 481,838 7 65,593 1.8 215,853 A 179,790	192 13 33 3118 97 313 1241 63 176 759 69 202 345 21 68 1837 17 76 (OP: K1ZM)	*FM1HN XE1MM XE2S *XE2Q *XE2MX *XE2AUB	A 782,834 14 48,095 MEXICO A 580,086 511,821 A 365,200 98,820 98,406	1465 62 184 275 21 60 1391 66 135 1651 65 94 1121 60 106 251 64 119	EK3SA UA9CLB UA9JDP	AFGHANISTAI 14 15,250 ARMENIA 21 548,359 ASIATIC RUSS A 3,630,655 BS4,000	212 10 40 1584 28 105 IA 2809 119 392 1174 74 231

RA9AU * 202,476 579 *UA9TF A 695,450 803	31 110 *BD4SQ 86 264 *BD7/BN	21 32,912 27,740	170 25 63 200 23 53	*JA2GHP *JK2V0C	73,030 49,848	246 53 81 188 56 78	EX2T 21	KYRGYZSTAN 83,747	471 20 63	*EU4CQ *EW6EW	38,59 20,65	
*UA9AL * 618,464 846 *UA9ACJ * 595,552 801	72 236 *BD48TB 62 234 *BG1QMU	14 15,433 8,208	182 19 42 108 18 30	*JA2KPW *JA2TTH	46,917	167 50 67 35 19 23	EX2X 14 EXBAA		1053 28 91 174 31 61	*EW3LN	11,16	0 78 28 62
*RK9AJZ * 444,500 821 *RA9CB * 364,536 588	63 191 *BD4IXA 55 189 *BD3AIE	3.7 2.664 700	57 15 22 33 9 11	*JH2AQI *JA2DLM	28 5,603 2,067	59 14 21 34 10 14	*EX7ML 21		218 15 42	*EW1NA *EW6GL	93	0 22 10 21
*RK9CR * 278,005 502 *RA9XF * 251,286 482	62 173 55 162	CYPRUS		*JG2KKG	21 1,682 14 161,523	28 12 17 489 35 96	*XW1A 14	LAOS 138,920	588 32 83	*EW1ABF	28 7,21	6 61 2 14
*RV9CP 230,249 463 *RV9CP 210,675 533	43 150 H2T 39 120	21 831,760	2172 32 116 (OP: 584XF)	*JF2WXS	7 18,924	122 30 53	1.7	MONGOLIA		*EW8DA	21 15,16	5 43 11 34
*RX9FR 196,716 467 *RV9UP 151,702 364	35 134 C4M 66 136	3.7 71,400	363 14 70 (OP: 584AGM)	8J3YAGI	A 669,369	1141 91 176 (OP: JA1CQL)	.1A8BBC1 V	137,566	842 46 97 (OP: JT1CJ)	*EW2EO	2,660 14 251,533	7 1185 34 109
*RX9CU 118,900 319 *RX9DU 96,875 295	34 111 43 112	GEORGIA		JR3XEX JS3CTQ	14 647,642	48 17 21 1539 38 120	Jan II	NEPAL		*EW6DX	15,350	2 98 14 40
*RA9FR * 95,880 226 *RZ90W * 74,200 294	49 139 4LBA 26 74 4LBABC	14 1,280,125 7 602,889	2795 38 137 1792 30 103	JA3AYX *JH3CUL	A 139,531	93 24 35 300 77 140	9N7MV 21		438 20 55 (OP: JABUMV)	*EW4AB *EU1DZ	7 7,956	
*RA9UN * 63,116 273 *UA9FGJ * 57,330 206	39 85 *4L1FP 32 94	14 170	7 4 6	*JA3AVO *JR3EOI	16,185 4,928	95 36 47 48 24 32	*9N7J0 A	3,055,689	3182 107 334 (OP: LA7JO)	20511	BELGIUN	
"UA90MT ' 44,175 231 "RA9ULK ' 34,476 186	28 65 28 74 VR2BG 46 81 VR2XMT	HONG KON6 21 409,536	1326 35 109	*JUSEVM	1,947	30 15 18 15 9 11		SAWARA ISLA		0Q5M	14 401,257	(OP: ON5ZO)
*RX9WN * 32,512 107 *RW9UNT * 26,703 137 *UA9AGX * 25,185 137	46 81 VR2XMT 14 55 *VR2XLN 35 80 *VR2/AA10	14 178,048 A 507,780 N 230,202	869 32 75 1036 82 178 818 62 112	*JR3RIY *JF3BFS *JA3DAY	21 116,012 93,457	463 32 65 412 28 63	*JD18IA 21	1,264	35 8 8	0010	271,215	(OP: 0N40N)
*RX9FW 16,016 79 *RZ90J 12,814 71	40 72 *VR2WIW 29 57	14 5,334	81 17 25	*JA3FZI *JR3KAH	3,744 2,526 2,454	40 16 20 36 13 20 42 12 19	*A41MX A	OMAN 435,764	855 46 151	OR4A OR6N	7 170,355	(OP: 0N48W)
*UA9XF * 7,440 66 *UA9TZ * 3,195 33	13 35 16 29 *VU3DMP	A 635,040	885 75 213	*JA3KDJ *J03CQF	1,984	59 17 21	*A45WD 14	594,817	1251 39 140 (OP: YO9HP)	*OREG	A 150,14	
*RK9DR * 2,226 27 *RV9UB * 1,443 24	17 25 ATBD	88,330	289 42 104 (OP: VU3EUQ)	*JM3HYL *JI3BFC	153 14 122,808	6 5 6 412 33 86	A71EM A	QATAR 1,037,300	1372 68 207	*007T	* 135,258	
*RA9XU * 90 5 *RA9FLW * 10 7	4 5 6	IRAQ		*JA3UWB	7 40,320 7 4,300	205 28 56 49 15 28		SAUDI ARABI		*ONSSV *ON4CAS	112,736	453 40 168
*RV9UF 28 392 49 *RL9A 21 177,243 574	11 17 *YI9QJ 28 103	A 97,744	257 32 117	*JA3PYH	70	4 4 4	*7Z1SJ A	2,310,562	2235 91 310 227 19 50	*OR7Y	94,520	
*RW9QA * 97,119 377	23 86 4X/AA4V	A 3,821,658	3353 93 340	JH4UYB JA4DHN	A 4,067,140 10,089	2964 147 385 78 15 37		SINGAPORE		*ON4XG. *ON5UJ	\$1,452 53,78	5 359 34 135
"RA9JR " 80,066 487 "UA9XCW " 15,624 139	23 75 17 45 *42500	A 259,896	(OP: AA4V) 466 59 179	JM4WUZ JA4FHE	14 31,898 7 136,633	160 27 55 499 34 97	9V1RH A 9V1UV	37,772 31,350	132 58 75 162 43 67	*OREC	42,70	(OP: ONSCR)
"RASUT 2,048 35 "UASJMB 14 204,744 742	9 23 *4Z5MV 29 85 *4Z5PJ	134,373	338 49 134 37 10 31	*JA4AGR *JH4GYA	A 107,068 12,297	304 49 93 73 33 41	9V1AL 14	588	16 8 13	*0R4T	30.98	(OP: ON7SAT)
*RV9JR * 49,914 225 *RU9AZ/9 * 31,671 168	21 73 17 64	JAPAN		*JF4GWA *JR4FLW	14 27,458	76 37 50 178 25 50	*BV6GU A	TAIWAN 477,630	1043 89 181	*0090	23,75	0 100 22 72
"RK9ABJ 19,208 171 13,464 84 84 84 9,126 72	12 44 JR1AIB 15 51 JM1XCW 15 39 JF1SEX	A 1,726,725 1,500,638	1906 124 261 1970 96 206 729 86 178	*JR4GPA *JR4URW	7 9,450 7 1,020	73 20 34 27 9 11	*BUZAI	51,062 34,944	226 48 73 221 40 56	*ONEMI	8,70	
*RW9HW * 8,319 58 *RA9XY 7 42,186 227	14 45 JF10PL 17 62 JH1EVD	497,376 193,377 145,812	729 86 178 366 80 139 341 62 112	JA5FBZ JA5CPO	A 142,956 8,384	310 78 131 59 30 34	DOTAL T	TAJIKISTAN	400 M M	*0N9008E	7,470	(OP: ON4LWX)
*UA9QCZ 1.8 35 5	2 3 JR1LEV 7J1ABD	75,500	214 63 88 140 42 60	JA5FDJ JH5FIS	21 637,670 14 184,926	1588 37 118 582 34 85	EY7AF 7 EY8MM 3.7 "EY88A A		491 26 85 614 26 91 157 23 47	*0068	3.7 37,48	(OP: DN4TO)
RKBUT A 511,699 1230 UABAPV " 384,540 702	73 166 JR1VAY 75 180 JF1EQA	32,940 32,485	116 54 68 129 32 57	The second secon	3.7 110,090	448 27 74 (OP: JR5JAQ)	ETODA A	THAILAND	107 20 47		OSNIA-HERZE	and the same of th
RV1AW/8 : 371,295 916 UAØFGZ : 313,536 826	79 144 JO1WKO 78 114 JH1RDU	16,020	78 36 53 33 13 12	*JJSECZ *JASND	A 20,774 21 - 331	102 43 51 19 9 10	HSØ/EA4BKA HSØZDR 21	A 1,184 43,674	16 16 16 227 24 63	T930 T9/9A8A	28 232,83 21 741,01	9 1650 26 97
RABAA 216,125 584 RUBAIG 137,060 428	54 121 JA1LBN 40 114 JH10CC	1,760 28 10,488	30 20 20 98 17 29	JA6AVT	A 62,992	214 40 84	*HSBZEE A	1,351,125 50,752	1730 100 275 240 43 79	T93M T960	14 1,222,03 7 734,74	3 3917 40 139
RUBAW 8,875 77 RABOQ 7,140 78	27 44 JH1ACA 25 35 JH1AEP	14 147,375 7 202,860	451 34 97 766 33 72	JA6BGA JA6WFM	2,271	27 15 15 1095 36 101	*HSSFAI 21 *E21EIC 14	27,216	233 22 50 507 32 101	*T94LW	A 498,63	
UADOW 2,360 23 UADODX 1,400 23	18 22 JH10GC 11 17 JE1LFX	3.7 106,561 391	505 30 61 13 8 9		7 68,139 3.7 31,878	239 32 81 252 21 48	*HS8KAY * *E21YDP 7	272 15,870	14 7 9 115 21 49	*T93Y *T92M	21 6,16	
RUBAJD 14 213,720 753 RABOC - 202,965 953	29 91 *JS10YN 29 76 *JG1TVK	A 341,090 229,753	592 86 144 415 87 149	*JR6VIX/6	A 8,418 28 6,109	59 30 39 73 16 25	The same of the	ASES ON CYF	AND DESCRIPTION OF THE PARTY OF		BULGARI	
UABYAY 188,136 744 UABAZ 126,939 424 UABSR 55,460 305	30 87 *JA1GY0 33 98 *JP100H 25 69 *JA1XPU	191,622 125,244 95,524	378 81 137 340 51 96 240 70 97	*JQ1AHZ/6 *JH6QFJ	21 8,159 14 119,830	89 16 25 412 34 81	ZC4T 14	1,340,325	3090 38 123 (OP: G3AB)	LZZFN LZZZ LZZPL	A 1,617,444 430,680	0 1085 67 224
RWDCF 3.7 3,450 62 *RABAY A 356,379 773	14 16 "JA1GLE 60 151 "JA1BPN	90,082	299 57 89 205 59 87	JA7NVF JR7WAB	A 1,045,584 366,849	1408 108 210 799 64 125		ED ARAB EMI		LZ2PG LZ1MC	66,924 35,700 1,056	3 137 38 67
*RWBAQ * 196,885 555 *RWBAW * 195,360 539	45 124 *JA1BUI 45 131 *JH1UUT	66,960	235 67 88	JA7AKH	68,880		A61C A		1117 72 198		1,000	
*RAØAQL * 148,555 357	The state of the s	54.960	202 52 68			273 35 70 168 50 74	a complete and the comp	66,750	222 37 88	LZ1NG LZ5W	28 195,300	
	58 127 'JA1HNW 54 115 'JA1KK	54,960 42,672 35,924	202 52 68 176 47 65 151 48 63	JA7ZP JA7OWD	48,360 28 4,889	168 50 74 53 13 16	*A61M 14	23,160	222 37 88 177 13 47	LZ5W	21 237,336	5 1230 31 101 (OP: LZ1RAY)
*RXØQA * 138,749 491 *RWØCOA * 122,670 374	54 115 *JA1KK 65 109 *JJ1MZH	42,672 35,924 35,880	176 47 65 151 48 63 148 45 59	JA7ZP JA7OWD JO7KMB JH7XMO	48,360 28 4,089 3,968 21 225,920	168 50 74 53 13 16 47 12 20 747 35 93	*A61M 14	23,160 UZBEKISTAN 7 54,776	177 13 47 306 16 66	LZ5Z	21 237,336	5 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ)
*RXØQA * 138,749 491 *RWØCOA * 122,670 374 *UAØCNX * 118,988 524 *RAØLE * 118,272 326 *UAØACG * 102,490 349	54 115 *JA1KK 65 109 *JJ1MZH	42,672 35,924	176 47 65 151 48 63	JA7ZP JA7OWD JO7KMB	48,360 28 4,089 3,968 21 225,920	168 50 74 53 13 16 47 12 20	*A61M 14	UZBEKISTAN 7 54,776 468,435	177 13 47	LZ5Z LZ5A LZ2HM	21 237,336 25,277 14 223,366 1.8 53,556	6 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 0 693 9 66
*RXØQA * 138,749 491 *RWØCOA * 122,670 374 *UAØCNX * 118,988 524 *RAØLE * 118,272 326 *UAØACG * 102,490 349 *RAØSCA * 78,898 206 *RAØACM * 34,430 139	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH1OLB 35 75 *JA1HG	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39	JA7ZP JA70WD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JE7LKG	48,360 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62	*A61M 14	23,160 UZBEKISTAN 7 54,776	177 13 47 306 16 66 782 61 194 1388 64 185	LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF	21 237,336 25,277	5 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 0 693 9 66 3 31 43 131 5 251 38 115
*RXØQA * 138,749 491 *RWØCOA * 122,670 374 *UAØCNX * 118,988 524 *RAØLE * 118,272 326 *UAØACG * 102,490 349 *RAØSCA * 78,898 206 *RAØACM * 34,430 139 *UAØLGY * 19,201 106 *RAØCAH * 12,948 130	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH1OLB 35 75 *JA1HG 33 58 *JA10Q 33 45 *JH1RMH	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JE7LKG *JA7EDZ *JA7ADV	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27	*A61M 14 UK9AA 3.7 *UK8AKK A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM	177 13 47 306 16 66 782 61 194	LZ5X LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2ZY	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 47,736 46,610 46,092 45,016	6 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 6 693 9 66 331 43 131 5 251 38 115 176 45 113 2 219 38 100 5 222 30 106
*RXØQA 138,749 491 *RWØCOA 122,670 374 *UAØCNX 118,988 524 *RAØLE 118,272 326 *UAØACG 102,490 349 *RAØSCA 78,898 206 *RAØACM 34,430 139 *UAØLGY 19,201 106 *RAØCAH 12,948 130 *UAØSAV 1,320 25 *RUØAE 1,140 16	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH10LB 35 75 *JA1HG 33 58 *JA10Q 33 45 *JH1RMH 9 15 *JR1MRG 14 16 *JA1STY	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JE7LKG *JA7EDZ *JA7ADV *JL7FBV	48,360 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616	177 13 47 306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH)	LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZZY *LZ2ZY *LZ2HN *LZ5PL	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 47,736 46,616 46,097 45,016 34,776 28,916	6 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 6 693 9 66 331 43 131 2 251 38 115 176 45 113 2 219 38 100 5 222 30 106 184 31 107 195 27 91
*RXØQA	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH10LB 35 75 *JA1HG 33 58 *JA100 33 45 *JH1RMH 9 15 *JR1MRG 14 16 *JA1STY 10 12 *JO1SIM 23 80 *JA1ANF	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JE7LKG *JA7EDZ *JA7ADV *JL7FBV *JA8CSY *JA8IJI	48,360 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A	23,160 UZBEKISTAN 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400	177 13 47 306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE)	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZF *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,610 46,090 45,016 34,776 28,910 9,600	6 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 6 693 9 66 331 43 131 5 251 38 115 176 45 113 2 219 38 100 2 222 30 106 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI)
*RXØQA	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH10LB 35 75 *JA1HG 33 58 *JA100 33 45 *JH1RMH 9 15 *JA1STY 10 12 *JO1SIM 23 80 *JA1ANF 21 64 *JA1CP 20 67 *JJ1WWL/1	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JE7LKG *JA7EDZ *JA7ADV *JL7FBV *JA8CSY *JA8IJI *JI8BUR	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126	177 13 47 306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ2IKY *LZ2ZF *LZ2ZY *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3HI *LZ3JA	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 47,736 46,610 46,092 45,016 34,776 28,910 9,600 3,556 21 85,644	6 1230 31 101 (OP: LZ1RAY) 2 12 17 55 (OP: LZ3DJ) 5 1289 32 111 6 693 9 66 331 43 131 5 251 38 115 176 45 113 2 219 38 100 2 22 30 106 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI) 44 18 32 5 555 25 83
*RXBQA	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH10LB 35 75 *JA1HG 33 58 *JA10Q 33 45 *JH1RMH 9 15 *JH1RMH 9 15 *JH1RMH 14 16 *JA1STY 10 12 *JO1SIM 23 80 *JA1ANF 21 64 *JA1CP 20 67 *JJ1WWL/1 20 65 *JA1CPZ 29 82 *JA1LBZ	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JE7LKG *JA7EDZ *JA7ADV *JL7FBV *JA8CSY *JA8LJI *JI8BUR JA9CCG *JH9JJD	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 47,736 46,616 46,097 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134	6 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 6 93 9 66 331 43 131 2 251 38 115 176 45 113 2 219 38 100 2 22 30 106 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1 388 38 133 (OP: LZ1RB)
*RXBQA	54 115 *JA1KK 65 109 *JJ1MZH 52 99 *JA1RQT 58 101 *JH1ABP 66 119 *JA1IWP 65 141 *JH10LB 35 75 *JA1HG 33 58 *JA10O 33 45 *JH1RMH 9 15 *JR1MRG 14 16 *JA1STY 10 12 *JO1SIM 23 80 *JA1ANF 21 64 *JA1CP 20 67 *JJ1WWL/1 20 65 *JA1CPZ 29 82 *JA1LBZ 22 43 *JE1NSA 5 5 *JR1UMO 1 *JK1NSR	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ2IKY *LZ2ZF *LZ2ZY *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3HI *LZ3JA	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 47,736 46,616 46,097 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134 7 25,346	6 1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 5 1289 32 111 6 93 9 66 331 43 131 2 251 38 115 176 45 113 2 219 38 100 2 22 30 106 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1 388 38 133 (OP: LZ1RB)
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH10LB 35 75 "JA1HG 33 58 "JA100 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 "JK1NSR "JG1FGL "JE1KDM	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TQY *JH9AMJ	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,910 9,600 3,556 21 85,644 14 334,134 7 25,346 CRETE A 163,486	(OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 3 1289 32 111 693 9 66 331 43 131 5 251 38 115 176 45 113 2 219 38 100 2 222 30 106 3 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1 388 38 133 (OP: LZ1RB) 2 247 14 69
*RXØQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OQ 33 45 "JH1RMH 9 15 "JA1STY 10 12 "JO1SIM 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC" "JA1AAT	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 1,456 1,352	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7ADV *JL7FBV *JA8CSY *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3.7 1,755 329 21 63,900	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 59 19 23 35 12 15 11 9 9 324 30 45	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZF *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X *LZ4UU	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,910 9,600 3,550 21 85,644 14 334,134 7 25,346 CRETE	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 29 82 "JA1LBZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT "JE1ALA "7N2UQC "JA1AAT "JE1ALA "7K3OWM	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21 121,275	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9URT *JA9XBW JA6QNJ JJ8KRD *JH6NEC	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 OS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ2JA *LZ9X *LZ4UU SV9COL TK1KJ	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 47,736 46,616 46,097 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134 7 25,346 CRETE A 163,486 CROATIA	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OQ 33 45 "JH1RMH 9 15 "JA1STY 10 12 "JO1SIM 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 29 82 "JA1LBZ 29 82 "JA1LBZ 29 82 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JE7LKG *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JHPAMJ *JHPA	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *ZA/Z35M A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 OS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS)	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3H *LZ3JA *LZ9X *LZ4UU SV9COL	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,910 9,600 3,550 21 85,644 14 334,134 7 25,346 CRETE A 163,486 CRETE A 207,766 CROATIA A 233,777 21 1,028,196	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 150 505 62 182 1519 68 240 2787 38 165
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CP2 29 82 "JA1LBZ 29 82 "JA1LBZ 29 82 "JA1LBZ 29 82 "JA1LBZ 20 65 "JA1CPZ 20 67 "JJ1WWL/1 20 65 "JA1CPZ 21 64 "JA1CP 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT "JE1ALA "JE1ALA "7N2UQC "JA1AAT "JE1ALA "JE1ALA "7N2UQC "JA1AAT "JE1ALA "JE1A	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21 121,275 69,460 21,980	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JHPAMJ *JHPA	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 OS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ2JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,610 46,097 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CRETE A 163,486 CRETE A 233,777 21 1,028,195 558,677 418,584	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 1509 68 240 1509 68 240 1
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JA1STY 10 12 "JO1SIM 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 29 82 "JA1LBZ 29 82 "JA1LBZ 20 67 "JJ1WWL/1 20 65 "JA1CPZ 20 67 "JJ1WWL/1 21 64 "JA1CPZ 21 64 "JA1CPZ 22 43 "JE1NSA 5 "JA1LBZ 24 94 "TN2UQC 1 JA1AAT 1 "JE1ALA 19 70 "TK4XNN 11 65 "JP1JFG 1 4 "JA1RYC 8 55 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT P TA2RC) "JA1DBG	* 42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9XBW JA6CK *JA6CK	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 96 42 59 106 35 51 121 35 46 42 24 32	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A OE3DMA A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 OS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ2JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A4W 9A6A 9A2OQ *9A2EU	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CORSICA 14 207,766 CROATIA A 233,777 21 1,028,198 558,676	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 1509 1252 30 101 1519 68 240 1519 68 2
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CP 21 64 "JA1CP 22 43 "JE1NSA 5 5 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT "JG1FGL "JG	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23	JA72P JA70WD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9TEA *JA9TEA *JA9T	* 48,360 28 4,889 * 3,968 21 225,920 14 243,005 * 132,678 A 367,392 * 308,374 * 16,683 28 226 21 4,860 * 2,372 A 128,484 * 37,450 21 4,368 A 50,450 A 338 21 69,823 * 30,323 7 6,090 3,7 1,755 * 329 21 63,900 14 204,032 A 68,816 * 23,028 * 19,902 * 18,630 * 4,816 * 3,520 * 4 21 26,964 * 8,100 * 3,243	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 S 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2HN *LZ5PL *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A4W 9A6A 9A200	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,093 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CRETE A 233,776 CROATIA A 233,776 CROATIA A 233,776 1,028,198 558,676 418,584 3.7 221,914 1.8 38,796	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 505 62 182 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1253 36 125 1254 36 125 1255 9 52 1628 22 99 1628 240 36 125 1772 36 127 1628 22 99 1628 22 99 1628 22 99 1629 129 512 1628 22 99 1628 22 129 512 1628 22 129 512
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JA1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT "JE1ALA "JE1ALA "JE1ALA "JE1ALA "TK3OWM 19 79 "TK3OWM 19 79 "TK3OWM 19 79 "TK3OWM 11 65 "JA1JLP 1 4 "JA1RYC "JA1ARYC "JA1AB" "JA	* 42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,106 1,705 1,525 1,271 1,012 432 78 21 121,275 69,460 21,980 8,469 7,872 7,872 7,800 4,601 4,307 2,000 1,718 465 403	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15	JA72P JA70WD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9CNJ JJ8KRD *JH9NEC *JABANS *JHBNEC *JABAN	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC *OE7KM	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 OS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ2JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A6A 9A2DQ *9A2EU *9A4KW 9A6A 9A2DQ *9A2EU *9A4KW *9A1CMS	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,096 45,016 34,776 28,916 9,600 7 25,346 CRETE A 163,486 CRETE A 207,766 CROATIA A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 45,016 46,096 47,766 48,096 49,600 40,016 41	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 248 42 104 (OP: 9A6KZH) 90 35 75
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JA1LBZ 22 43 "JE1NSA 5 5 "JA1LBZ 24 94 "7N2UQC 25 3A1LBZ 26 94 "7N2UQC 27 3A1LBZ 28 94 "7N2UQC 29 82 "JA1LBZ 29 82 "JA1LBZ 20 65 "JA1CPZ 20 65 "JA1CPZ 21 3 "JE1NSA 21 1 "JA1AAT 22 13 "JE1ALA 23 "JE1ALA 24 94 "7N2UQC 34 94 "7N2UQC 35 5 "JA1JLP 36 8 "JA1JLP 37 "7K3QWM 37 "7K4XNN 39 "JA1JLP 31 4 "JA1RYC 31 1 4 "JA1RYC	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 4,307 2,000 1,718 4,307 2,000 1,718 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15 35 11 14 20 7 8	JA72P JA70WD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9TEA *JA9TEA *JA9T	* 48,360 28 4,889 * 3,968 21 225,920 14 243,005 * 132,678 A 367,392 * 308,374 * 16,683 28 226 21 4,860 * 2,372 A 128,484 * 37,450 21 4,368 A 50,450 A 338 21 69,823 * 30,323 7 6,090 3,7 1,755 * 329 21 63,900 14 204,032 A 68,816 * 23,028 * 19,902 * 18,630 * 4,816 * 3,520 * 4 21 26,964 * 8,100 * 3,243	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM *OE2F	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4WW 9A6A 9A2OQ *9A2EU *9A4KW 9A6A 9A2OQ *9A2EU *9A4KW *9A1CMS	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,610 46,097 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CRETE A 163,486 CRETE A 233,777 21 1,028,195 558,676 418,584 3.7 221,914 1.8 38,796 A 1,815,312 92,056 45,996 17,496 28 60,356 23,465 23,465	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 1518 247 14 69 1518 2
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JA1KK 9 15 "JA1KR 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM 24 94 "7N2UQC "JA1AAT 12 13 "JE1ALA "JE1ALA "JE1ALA "TK3OWM 19 79 "TK4XNN 11 65 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT P. TA2RC) "JA1DBG "JE1IIA "JJ1LAB "JM1KLO 6 8 "JE1JAC "TK1EQG "JG1GCO	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 4,307 2,000 1,718 4,65 4,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15 35 11 14 20 7 8	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7EMZ *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH8JJD *JR9NVB *JA9TOY *JH9AMJ *JH9A	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A *OE2FKM A *OE3CO A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 S 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2HN *LZ2HN *LZ5PL *LZ3HI *LZ5PL *LZ13ARDF *LZ3HI *LZ3A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A4W 9A4W 9A6A 9A2OQ *9A2EU *9A4KW *9A1CMS *9A3OB	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,096 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CRETE A 207,766 CROATIA A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 17,496 28 68,356 23,486 24,476 26,476 27,496 28,476	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 251 36 125 252 30 101 251 36 240 252 30 101 251 36 240 252 30 101 251 36 240 252 30 101 251 36 240 251 36 240 251 36 125 252 36 125 253 26 27 254 26 27 255 27 256 27 257 27
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT 12 13 "JE1ALA "7N2UQC "JA1AAT 19 70 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC "JA1RYC "JA1RYC "JA1DBG "JE1IIA "JJ1LAB	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 4,307 2,000 1,718 4,307 2,000 1,718 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 64 13 20 45 15 15 36 47 44 44 1 1 1	JA72P JA70WD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9URT *JA9XBW JA9XBW JA9XBW JA6CK *JA6CK	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 4,816 3,520 4 21 26,964 8,100 3,243 14 113,644 JORDAN A 827,383	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 96 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A *OE3CO A *OE3CA 14 *OE5CWL A *OE5CWL A *OE5CWL A *OE5CWL A *OE7AJT A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA)	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ5PL *LZ13ARDF *LZ3HI *LZ5A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4WW 9A6A 9A2OQ *9A2EU *9A4WW *PAAYW *PAAYWW *PA	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,916 9,600 7 25,346 CRETE A 163,486 CRETE A 163,486 CROATIA A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 A 1,815,312 9,2056 45,996 17,496 28 60,356 21 78,476 7 25,896	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 505 62 182 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1253 36 125 1772 36 127 1628 22 99 1628 22 99 1629 35 75 1628 22 99 1628 22 99 1629 35 75 1628 22 99 1629 35 75 1628 36 125 1772 36 127 1628 22 99 1629 35 75 1628 22 99 1629 35 75 1628 32 99 1629 35 75 1628 32 99 1629 35 75 1628 32 99 1629 35 75 1629 35 75 1629 35 75 1629 35 75 1629 36 127 1628 32 99 1629 35 75 1629 36 127 1628 32 99 1629 36 125 1772 36 127 1628 32 99 1629 35 75 1629 3
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OQ 33 45 "JH1RMH 9 15 "JA1KK 65 109 "JA1KP 10 12 "JO1SIM 14 16 "JA1STY 10 12 "JO1SIM 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM 24 94 "7N2UQC "JA1AAT "JG1FGL "JG1FGC "JG1GCO "JG1G	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 21 121,275 69,460 21,980 8,469 7,872 7,872 7,870 4,601 4,307 2,000 1,718 4,307 2,000 1,718 4,65 4,601 4,307 2,000 1,718 4,65 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,65 4,601 4,601 4,307 2,000 1,718 4,65 4,601 4,601 4,307 2,000 1,718 4,65 4,601 4,601 4,307 2,000 1,718 4,65 4,601 4	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15 35 11 14 20 42 41 44	JA7ZP JA7OWD JO7KMB JH7XMO JH7XMO JH7XGN JA7COI *JA7LMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9AM	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 4 21 26,964 8,100 3,243 14 113,644 JORDAN A 827,383 KAZAKHSTA A 1,322,578 341,523 14 145,908	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNISLE)	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC *OE7KM *OE7KM *OE7KM *OE7KM *OE7KM A *OE3CWL A *OE5CWL A *OE5CWL A *OE5CWL A *OE5CWL A *OE5CWL A *OE7AJT A *CU2DX CU2CR 21	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ2JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A4WW 9A6A 9A4DQ *9A4WW 9A6A 9A4WW 9A6A 9A5WW *PACTE	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,096 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134 7 25,346 CRETE A 163,486 CRETE A 163,486 CRETE A 207,766 CROATIA A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 A 1,815,312 92,056 45,996 17,496 28 68,356 21 78,476 7 25,896 CZECH REPU A 372,627	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1505 62 182 1505 62 182 1506 62 182 1507 93 94 1508 125 1509 68 240 1509
*RXBOA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JA1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT 12 13 "JE1ALA 19 70 "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT P. TA2RC) "JA1DBG "JG1GCO "JG1G	* 42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 2,464 2,106 1,705 1,525 1,271 1,012 432 78 2,860 1,352 455 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 280 136 70 64 42 2 14 110,565 12,213 3,118 390 3,7 2,673	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 10 13 12 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15 55 11 14 470 32 37 49 14 18 10 7 8	JA7ZP JA7OWD JO7KMB JH7XMO JH7XMO JH7XGN JA7COI *JA7EMZ *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8IJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TCY *JH9AMJ *JH9AM	48,360 28 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 4,816	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNSUE) 589 26 82 227 16 60 (OP: UNSUE) 589 26 82 227 16 60 (OP: UNSUE)	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM *OE7KM *OE2FKM *OE7KM *OE	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 1446 30 96 506 57 182	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ2IKY *LZ2ZF *LZ2ZY *LZ2ZY *LZ2HN *LZ5PL *LZ3HI *LZ5PL *LZ13ARDF *LZ3HI *LZ2JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A4WW 9A6A	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CORSICA 14 207,766 CROATIA A 233,777 21 1,028,191 558,677 418,584 3.7 221,914 1.8 38,796 A 1,815,312 92,050 45,996 17,496 28 60,356 21 78,476 7 25,896 CZECH REPU A 372,627 50,566 182,740 50,566 182,740 50,566	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 1505 62 182 1505 62 182 1505 62 182 1506 62 182 1507 36 127 1628 22 99 625 9 52 1622 129 512 302 44 131 248 42 104 (OP: 9A6KZH) 90 35 75 1628 127 14 63 1638 155 165 1772 36 127 1628 22 99 1625 129 512 302 44 131 248 42 104 (OP: 9A6KZH) 90 35 75 784 16 55 211 14 63 435 25 93 217 24 85 247 15 68 1506 55 245 563 56 173 191 40 111
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM 24 94 "7N2UQC "JA1AAT 12 13 "JE1ALA "7N2UQC "JA1AAT 12 13 "JE1ALA "7N2UQC "JA1AAT "JE1ALA "7N2UQC "JA1JLP 1 4 "JA1RYC "JA1RYC "JA1RYC "JA1BG "JA1JLP 1 4 "JA1RYC "JA1BG "JA1JLP 1 4 "JA1RYC "JA1DBG "JE1IIA "JJ1LAB "JA1LAB "J	* 42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 1,456 1,352 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 280 136 70 64 42 21 14 110,565 12,213 3,118 390 3,77 2,573	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 48 18 23 64 13 20 49 14 18 10 15 18 11 9 6 4 4 1 1 14 17 9 6 7 18 14 4 4 1 1 18 18 15 16 19 15 16 19 17 7 10 16 10 15 17 7 10 16 11 14 12 17 8 15 16 15 16 16 19 17 8 18	JA7ZP JA7OWD JO7KMB JH7XMO JH7XMO JH7XGN JA7COI *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9AM	48,360 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 4,816 4	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 59 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2952 61 193 511 68 205 (OP: UNSLE) 589 26 82 227 16 60 (OP: UNSLE)	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A OE3DMA A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM COE7SPI *OE2DJL *OE7ADT *OE8CCO *OE3BCA 14 *OE3CWL 7 *OE7AJT CU2A A CU2DX CU2CR 21 CU2AF 14 *CU2/OH1VR 2 BAI	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 1446 30 96 506 57 182 1327 26 111	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2HN *LZ2HN *LZ5PL *LZ3HI *LZ5PL *LZ13ARDF *LZ3HI *LZ3A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4WW 9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A4WW *9A4WW *9A5WW *PA5WW	21 237,336 25,277 14 223,366 1.8 53,556 A 82,477 46,610 46,093 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CRETE A 163,486 CROATIA A 233,776 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 45,996 CZECH REPU A 372,62 250,506 182,744 50,586 32,356	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 251 36 125 251 36 125 252 30 101 251 36 125 252 30 101 251 36 125 252 30 101 251 36 125 252 30 101 251 36 125 252 30 101 253 36 125 255 9 52 256 25 9 52 257 38 165 257 38 165 258 30 101 258 22 99 259 52 260 55 245 270 784 16 55 271 14 63 271 24 85 271 14 63 271 24 85 271 14 63 271 271 85 271 172 85 271 173 191 40 111 232 27 104 (OP: OK1FUA)
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OQ 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM 24 94 "7N2UQC "JA1AAT "JG1FGL "JE1KDM "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC "SAXNMT P. TA2RC) "JA1DBG "JE1IIA "JJ1LAB "JA1LBG "JA1	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,601 4,501 4,601 4	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 48 18 23 64 13 20 48 18 23 64 13 20 47 15 16 27 17 14 18 14 17 16 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 48 18 23 69 15 17 7 9 4 4 4 4 4 4 4 4 4 4 4 4 4 7 7 9 6 7 7 8 8 10 7 8 8 11 7 7 7 9 6 4 4 4 4 1 1 7 16 15 16 17 7 7 18	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8LJI *JA8CS *JA8LII *JA8CCG *JA9JD *JA9NVB *JA9NVB *JA9NVB *JA9NVB *JA9NVB *JA9NVB *JA9NVB *JA8CCK	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 4,816 4,81	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 96 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNSLE) 589 26 82 227 16 60	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A *OE2FKM A *OE2FKM A *OE2FKM A *OE2FKM A *OE3CO A *OE3CA 14 *OE3CO A *OE3CA 14 *CUZDX CUZCR 21 CUZCR	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270 21 276,740 LEARIC ISLAN 366,080 58,696	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 1446 30 96 546 57 182 1327 26 111 IDS 802 75 245 357 25 91	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ3JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A4WW 9A6A 9A2DQ *9A4WW *9A6A 9A2DQ *9A4WW *9A6A 9A2DQ *9A4WW *9A6A *QA4WW *	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,097 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134 7 25,346 CRETE A 163,486 CRETE A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 21 78,476 7 25,896 CZECH REPU A 372,627 25,896 CZECH REPU	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 505 62 182 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1252 30 101 1253 30 101 1254 125 1252 30 101 1253 30 101 1254 125 1255 9 52 1256 129 512 1257 14 63 1258 127 14 63 1258 127 14 63 1259 127 14 63 1259 127 14 63 1250 127 14 63 1251 14 63 1252 129 512 1253 127 124 85 1254 125 125 125 1255 125 125 1256 125 125 1257 124 85 1257 124 85 1258 127 124 85 1258 127 124 85 1259 127 124 85 1250 1250 125 1251 14 63 1252 129 512 1253 127 124 85 1254 125 125 125 1255 125 125 1256 1257 125 1257 124 85 1257 124 85 1257 124 85 1257 124 85 1257 104 (OP: OKIDTP)
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT "JE1ALA "JE1ALA "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC "JA1AAT "JE1ALA "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC "JA1ABC	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 21 121,275 69,460 21,980 8,469 7,872 7,872 7,870 4,601 4,307 2,000 1,718 4,307 2,000 1,718 4,65 4,01 4,307 2,000 1,718 4,65 4,01 4,01 4,01 4,01 4,01 4,01 4,01 4,01	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15 35 11 14 470 32 33 48 18 23 64 13 20 47 8 8 18 18 23 67 7 7 48 4 7 7 7 9 6 7 7 7 9 6 7 7 7 9 7 9 8 158 10 72 8 11 14 18 15 18 16 15 16 955 112 230 729 90 158 625 96 178 789 58 126	JA7ZP JA7OWD JO7KMB JH7XMO JH7XGN JA7COI *JA7LMZ *JA7BME *JA7EDZ *JA7ADV *JL7FBV *JA8CSY *JA8LJI *JA8CSY *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9A	48,360 4,889 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 14 26,964 8,100 3,243 14 113,644 JORDAN A 827,383 KAZAKHSTA A 1,322,578 341,523 14 145,908 43,472 3,7 192,279 A 748,576 326,781 672 21 44,239	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 659 19 23 35 12 15 11 9 9 324 30 45 65 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNSLE) 589 26 82 227 16 60	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM *OE2FKM *OE2FKM *OE2FKM *OE7SPI *OE7AJT A CU2DX CU2CR 21 CU2AF 14 *CU3AL A *CU2DX CU2CR 21 *CU2CR 21 *	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270 21 276,740 LEARIC ISLAN 366,080 58,696 14,392 13,300 LEARIC ISLAN 368,080 58,696 14,392 133,300	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 161 24 83 164 28 84 117 21 65 140 17 61 657 35 111 IDS 802 75 245 357 25 91 208 17 39 171 17 59	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2HN *LZ2HN *LZ5PL *LZ3HI *LZ5PL *LZ13ARDF *LZ3HI *LZ3A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4WW 9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A4WW *9A4WW *9A5WW *PA5WW	21 237,336 25,277 14 223,366 1.8 53,556 A 82,477 46,610 46,093 45,016 34,776 28,910 9,600 7 25,346 CRETE A 163,486 CRETE A 163,486 CROATIA A 233,776 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 45,996 CZECH REPU A 372,62 250,506 182,744 50,586 32,356	1230 31 101 (OP: LZ1RAY) 2 212 17 55 (OP: LZ3DJ) 3 1289 32 111 693 9 66 331 43 131 5 251 38 115 176 45 113 2 219 38 100 2 222 30 106 3 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI) 44 18 32 5 555 25 83 1 388 38 133 (OP: LZ1RB) 2 47 14 69 5 505 62 182 6 1252 30 101 7 519 68 240 5 2787 38 165 7 247 14 69 5 1622 129 512 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 22 99 7 1628 25 9 52 7 1629 127 7 1628 22 99 7 1629 127 7 1628 22 99 7 1629 127 7 1628 22 99 7 1629 127 7 1628 22 99 7 1629 127 7 1628 22 99 7 1629 127 7 1628 22 99 7 1629 129
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JR1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM "7N2UQC "JA1AAT "JE1ALA "JE1ALA "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC "JA1AAT "JE1ALA "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC "JA1ABC	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 280 136 70 64 42 2 14 110,565 12,213 3,118 390 2,673 2,573 4,680 1365 70 644 422 2 14 110,565 12,213 3,118 390 3,70 2,673 2,573	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 9 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 42 10 15 35 11 14 470 32 37 49 14 18 10 7 8 11 7 7 9 4 4 4 4 4 3 4 1 1 1 470 32 37 49 14 18 10 7 8 11 7 7 9 4 4 4 4 1 1 1 10 7 8 11 7 7 9 4 4 4 4 1 1 1 10 7 8 11 14 18 11 7 7 11 14 18 11 15 18	JA7ZP JA7OWD JO7KMB JH7XMO JH7XMO JH7XGN JA7COI *JA7EMZ *JA7EMZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA7EDZ *JA8CSY *JA8LJI *JI8BUR JA9CCG *JH9JJD *JR9NVB *JA9TOY *JH9AMJ *JH9AM	48,360 28 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3.7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 4,816 4,81	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNSUE) 589 26 82 227 16 60	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC *OE7KM A	23,160 UZBEKISTAN 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270 21 276,740 LEARIC ISLAN 366,080 58,080	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 1446 30 96 544 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 1446 30 96 544 12 67	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4WW 9A6A 9A2DQ *9A2EU *9A4NW 9A6A 9A2DQ *9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A4WW 9A6A 9A4WW 9A6A 9A4WW 9A6A 9A4WW 9A6A 9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A2DQ *9A4WW 9A6A 9A4WW 9A6A 9A4WW 9A6A 9A4WW 9A6A 9A2DQ *9A4WW *9A5WW *PAFWW *PAF	21 237,336 25,277 14 223,366 1.8 53,556 A 82,476 46,616 46,096 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134 7 25,346 CRETE A 163,486 CRETE A 163,486 CRETE A 207,766 CROATIA A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 418,584 3.7 221,914 1.8 38,796 418,584 23,486 21 78,476 7 25,896 CZECH REPU A 372,627 25,896	1230 31 101 (OP: LZ1RAY) 2 12 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 5 251 38 115 176 45 113 2 219 38 100 2 222 30 106 184 31 107 195 27 91 2 32 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1 388 38 133 (OP: LZ1RB) 2 47 14 69 1 505 62 182 1 1252 30 101 2 519 68 240 5 2787 38 165 5 247 14 69 5 505 62 182 1 1252 30 101 2 519 68 240 5 2787 38 165 5 247 14 69 5 1622 129 512 3 302 44 131 2 48 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 248 42 104 (OP: 9A6KZH) 9 0 35 75 7 84 16 55 2 11 14 63 1 232 27 104 (OP: OK1FUA) 1 313 34 138
*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1RQT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JR1MRG 14 16 "JA1STY 10 12 "JO1SIM 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JA1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM 24 94 "7N2UQC "JA1AAT 12 13 "JE1ALA 19 70 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT 12 13 "JE1ALA 19 70 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT P: TA2RC) "JG1TCV 6 20 "JG1GCO "JG	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 28 1,456 1,352 455 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 21,980 1,718 465 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 280 136 70 64 42 2 14 118,565 12,213 3,118 390 3,70 64 42 2 14 118,565 12,213 3,118 390 3,70 64 42 2 14 118,565 12,213 3,118 390 3,70 64 42 2 14 118,565 12,213 3,118 3,90 4,601 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,601 4,307 2,000 1,718 4,601 4,801	176	JATZP JATOWD JOTKMB JHTXMO JHTXMO JHTXGN JATCOI *JATEDZ *JATED	48,360 28 4,889 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 4,816 23,028 19,902 18,630 14 204,032 A 68,816 23,028 19,902 18,630 14 24,8576 3,520 14 145,968 43,472 3,7 192,279 A 748,576 326,781 672 21 44,239 14 145,968 43,472 3,7 192,279 A 748,576 326,781 672 21 44,239 14 145,968 43,472	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 659 19 23 35 12 15 11 9 9 324 30 45 65 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNGLE) 589 26 82 227 16 60	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OHØX 14 *ZA/UT7DW A *ZA/Z35M A OE3DMA A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM *OE7SPI *OE2JJL *OE7AJT A CU2DX CU2CR 21 CU2AF 14 *CU3AL A *CU2CH1VR 2 EU1PA A EA6AZ *EA6TU A *CU2CH1VR 2 EU1PA A EU1PA A	23,160 UZBEKISTAN 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270 21 276,740 LEARIC ISLAN 366,080 58,696 14,392 13,300 9,576 BELARUS 875,812	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1646 30 96 544 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1446 30 96 544 12 67 5587 120 464 (OP: OH2UA) 527 30 93 1446 30 96 544 12 67	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2IKY *LZ2ZF *LZ2HN *LZ2HN *LZ5PL *LZ3HI *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A4W 9A4W 9A6A 9A2OQ *9A2EU *9A4NW *9A5ANB OK6TW OK2FB OK1AXB OK7MT OL5Y OL7D OK2ABU OL9Z OK5R OK2ZAW	21 237,336 25,277 14 223,366 1.8 53,556 A 82,477 46,610 46,093 45,016 34,776 28,910 9,600 3,556 21 85,644 14 334,136 7 25,346 CRETE A 163,486 CROATIA A 233,777 21 1,028,198 558,670 418,584 3.7 221,914 1.8 38,796 A 1,815,312 1 92,056 45,996 17,496 28 60,356 17,496 28 60,356 17,496 28 60,356 17,496 28 60,356 17,496 28 60,356 182,740 17,496 28 60,356 17,496 28 60,356 17,496 28 60,356 182,740 17,496 28 60,356 17,496 28 60,356 182,740 182,	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 505 62 182 1252 30 101 2519 68 240 2787 38 165 247 14 69 506 2787 38 165 247 14 69 507 247 14 69 508 240 36 125 1772 36 127 1628 22 99 52 1622 129 512 302 44 131 248 42 104 (OP: 9A6KZH) 90 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 90 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 90 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6KZH) 290 35 75 784 16 55 211 14 63 213 34 138 217 24 85 217 24 85 217 24 85 217 24 85 217 24 85 217 24 85 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*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1ROT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JA1KRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CP 21 64 "JA1CP 22 43 "JE1NSA 5 5 "JA1LBZ 24 94 "7N2UQC 0K1MU) 12 13 "JE1KDM 7N2UQC 0K1MU) 12 13 "JA1AAT 15 "JE1KDM 7N2UQC 0K1MU) 14 "JA1AAT 15 "JE1KDM 7N2UQC 15 "JE1ALA 19 70 "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT P: TA2RC) "JA1DBG "JE1IIA "JJ1LAB 1 "JA1LBB 1 "JA1	42,672 35,924 35,880 31,059 20,767 16,235 12,896 12,888 10,988 8,385 7,950 7,424 5,217 3,525 2,584 2,464 2,106 1,705 1,525 1,271 1,012 432 78 1,456 1,352 455 21 121,275 69,460 21,980 8,469 7,872 7,800 4,601 4,307 2,000 1,718 465 403 21,980 8,469 7,872 7,800 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,601 4,307 2,000 1,718 4,65 403 280 1,356 70 64 42 2 14 110,565 12,213 3,118 3,90 3,70 64 42 2 14 110,565 12,213 3,118 3,90 3,70 64 463 280 1366 70 64 42 2 14 110,565 12,213 3,118 3,90 3,70 64 463 280 1366 70 64 42 2 14 110,565 12,213 3,118 3,118 3,118 3,118 3,118 3,118 3,118 3,118 4,632 4,632 4,632 4,633 4,634 4,635 4,636 4,631 4,63	176 47 65 151 48 63 148 45 59 149 33 54 167 53 73 81 36 49 94 26 36 78 33 39 87 26 41 65 25 36 56 24 29 71 23 35 62 18 29 36 21 26 35 15 23 35 21 23 28 14 13 27 15 16 27 11 14 18 14 17 16 10 13 12 7 5 5 31 10 16 26 9 21 13 5 8 498 31 68 334 32 60 146 24 46 56 16 19 72 21 31 65 22 33 48 18 23 64 13 20 48 18 23 64 13 20 49 14 18 10 15 11 14 11 15 11 14 11 15 1	JATZP JATOWD JOTKMB JHTXMO JHTXMO JHTXGN JATCOI *JATEDZ *JATED	48,360 4,089 3,968 21 225,920 14 243,005 132,678 A 367,392 308,374 16,683 28 226 21 4,860 2,372 A 128,484 37,450 21 4,368 A 50,450 A 338 21 69,823 30,323 7 6,090 3,7 1,755 329 21 63,900 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 14 204,032 A 68,816 23,028 19,902 18,630 4,816 3,520 14 26,964 8,100 3,243 14 113,644 JORDAN A 827,383 KAZAKHSTA A 1,322,578 341,523 14 145,908 43,472 3,7 192,279 A 748,576 326,781 472,150 48,377 7 38,163 3,7 192,279 KOREA	168 50 74 53 13 16 47 12 20 747 35 93 729 34 97 562 29 62 590 90 168 469 91 171 110 28 39 9 4 6 54 15 27 37 13 14 303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNSLE) 589 26 82 227 16 60	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A *OE3FKM A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270 21 276,740 LEARIC ISLAN 366,080 58,696 14,392 13,300 9,576 BELARUS 875,812 18,144 443,031	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 146 30 96 544 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 146 30 96 544 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1057 28 93 1446 30 96 544 12 67	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2ZY *LZ2ZY *LZ2HN *LZ2HN *LZ5PL *LZ13ARDF *LZ3HI *LZ3JA *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A6A 9A2OQ *9A2EU *9A4WW 9A6A 9A2OQ *9A2EU *9A4WW 9A6A 9A2OQ *9A2EU *9A4WW *9A1CMS *9A3OB *9A2EU *9A4WW *9A1CMS *9A3OB *9A2EU *9A4WW *9A1CMS *9A3OB *9A2EU *9A4WW *9A1CMS *OK5TW *OK2FB OK5TW OK2FB OK7MT OL5Y OL7D OK2ABU OL9Z OK5R OK2ZAW *OK1TC *OK1DKR	21 237,336 25,277 14 223,366 1.8 53,556 A 82,477 47,736 46,616 46,096 45,016 34,776 28,916 9,600 3,556 21 85,644 14 334,134 7 25,346 CRETE A 163,486 CRETE A 163,486 CROATIA A 233,776 CROATIA A 233,776 14 207,766 CROATIA A 233,777 21 1,028,196 558,676 418,584 3.7 221,914 1.8 38,796 A 1,815,312 558,676 11,815,312 558,676 11,815,312 558,676 11,815,312 11,815,312 12,914 13,815,312 13,815,312 14,815,312 15,920 17,496 28 60,356 23,466 21 78,476 7 25,896 CZECH REPU A 372,622 132,746 133,366 21 357,416 23,366 24 352,126 250,50	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 505 62 182 1252 30 101 2519 68 240 2787 38 165 247 14 69 506 2787 38 165 247 14 69 507 247 14 69 508 240 36 125 1772 36 127 1628 22 99 52 1622 129 512 302 44 131 248 42 104 (OP: 9A6K2H) 90 35 75 784 16 55 211 14 63 248 42 104 (OP: 9A6K2H) 90 35 75 784 16 55 211 14 63 248 42 104 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*RXBQA	54 115 "JA1KK 65 109 "JJ1MZH 52 99 "JA1ROT 58 101 "JH1ABP 66 119 "JA1IWP 65 141 "JH1OLB 35 75 "JA1HG 33 58 "JA1OO 33 45 "JH1RMH 9 15 "JA1KRG 14 16 "JA1STY 10 12 "JO1SIM 23 80 "JA1ANF 21 64 "JA1CP 20 67 "JJ1WWL/1 20 65 "JA1CPZ 29 82 "JA1LBZ 22 43 "JE1NSA 5 5 "JA1UMO 1 1 "JK1NSR "JG1FGL "JE1KDM 24 94 "7N2UQC "JA1AAT 1 JE1KDM 24 94 "7N2UQC "JA1AAT 1 JE1ALA 19 70 "7K3OWM 19 79 "7K4XNN 11 65 "JA1JLP 1 4 "JA1RYC 8 55 "JA1XMT P: TA2RC) "JA1DBG "JE1IIA "JJ1LAB 45 159 "JA1DBG "JE1IIA "JJ1LAB 45 159 "JA1DBG "JE1IIA "JJ1LAB 45 159 "JA1CV 6 20 "JA1DBG "JE1IIA "JJ1LAB 45 159 "JA1KVI 1 4 "JA1RYC "JA1DBG "JE1IIA "JJ1LAB "JA1KWI "JA1RYC "JA1DBG "JE1IIA "JJ1LAB "JA1KWI "JA1CV "JA1DBG "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JA1KWI "JE1IIA "JJ1LAB "JEINSA "JE1IIA "JJ1LAB "JEINSA "JE1IIA "JJ1LAB "JEINSA "JE1IIA "JJ1LAB "JEINSA "J	42,672 35,924 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303 67 105 162 41 66 61 18 24 204 38 65 11 6 7 320 29 67 182 24 50 69 19 23 35 12 15 11 9 9 324 30 45 656 33 95 215 54 82 98 42 59 106 35 51 121 35 46 42 24 32 37 20 20 66 31 49 144 31 53 76 20 30 31 16 31 472 29 66 1247 54 179 N 2052 61 193 511 68 205 (OP: UNSUE) 589 26 82 227 16 60 31 49 144 31 53 76 20 30 31 16 31 472 29 66	*A61M 14 UK9AA 3.7 *UK8AKK A 3W9JR A *XV2LH 14 9M2CNC A *9M2TO A OH8X 14 *ZA/UT7DW A *ZA/Z35M A *OE3DMA A *OE3UFC *OE1YMA *OE2FKM A *OE3FKM A *OE2FKM A *OE2FKM A *OE3FKM A	23,160 UZBEKISTAN 7 54,776 468,435 VIETNAM 780,864 3,616 VEST MALAYS 1,415,400 117,126 EUROPE LAND ISLAND 758,370 ALBANIA 311,190 153,295 AUSTRIA 6,108,386 170,931 51,200 39,144 33,670 23,112 18,368 13,932 13,494 154,938 106,029 54,352 AZORES 6,598,032 130,872 269,951 274,050 222,270 21 276,740 LEARIC ISLAN 366,080 58,696 14,392 13,300 9,576 BELARUS 875,812 18,144 443,031	306 16 66 782 61 194 1388 64 185 (OP: OK1JR) 68 12 20 (OP: DL1LH) IA 1897 89 248 (OP: G4ZFE) 433 57 105 IS 2581 36 134 (OP: OH2TA) 1176 52 178 589 43 172 5108 140 527 (OP: OE1EMS) 551 49 178 190 38 122 124 53 115 182 34 96 161 24 83 164 28 84 117 21 65 140 17 61 657 33 114 744 23 96 644 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1657 28 93 1646 30 96 544 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1446 30 96 544 12 67 5587 120 464 (OP: OH2UA) 522 30 93 1446 30 96 544 12 67	LZ5W LZ5Z LZ5A LZ2HM *LZ9Z *LZ1IKY *LZ2ZF *LZ2UZ *LZ2HN *LZ2HN *LZ5PL *LZ3HI *LZ3A *LZ3A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A *LZ9X *LZ4UU SV9COL TK1KJ 9A3ST 9A1A 9A4NW 9A4W 9A4W 9A6A 9A2OQ *9A2EU *9A4KW *9A1CMS *9A3OB *9A2EU *9A4KW *9A1CMS *9A3OB *9A4NW 9A4W 9A6A 9A2OQ *9A2EU *9A4NW 9A6A 9A2OQ *9A2EU *9A4NW 9A6A 9A2OQ *9A2EU *9A4NW 9A6A 9A2OQ *9A2EU *9A4NW 9A6A 9A2OQ *9A2EU *OCCUPATION OKETW OKE	21 237,336 25,277 14 223,366 1.8 53,556 A 82,477 46,610 46,093 45,016 34,776 28,910 9,600 7 3,556 21 85,644 14 334,136 7 25,346 CRETE A 163,486 CROATIA A 233,777 21 1,028,198 558,670 418,584 3.7 221,914 1.8 38,796 A 1,815,312 7 25,896 CZECH REPU A 372,621 7 25,896 CZECH REPU A 372,621 17,496 28 68,356 17,496 28 68,356 17,496 28 68,356 17,496 28 68,356 17,496 28 68,356 17,496 28 68,356 182,746 50,586 32,355 21 357,416 33,366 452,126 33,366 452,126 33,366 452,126 33,366 452,126 33,366 452,126 33,366 452,126 33,366 33,366 33,366 34,266 357,416 36,950 37,416 38,746 37,416 38,746 38,	1230 31 101 (OP: LZ1RAY) 212 17 55 (OP: LZ3DJ) 1289 32 111 693 9 66 331 43 131 251 38 115 176 45 113 219 38 100 222 30 106 184 31 107 195 27 91 232 9 39 (OP: LZ3HI) 44 18 32 555 25 83 1388 38 133 (OP: LZ1RB) 247 14 69 1505 62 182 1252 30 101 247 14 69 1505 62 182 1252 30 101 248 42 104 (OP: 9A6KZH) 90 35 75 1628 22 99 625 9 52 1622 129 512 302 44 131 248 42 104 (OP: 9A6KZH) 90 35 75 784 16 55 211 14 63 435 25 93 217 24 85 211 14 63 435 25 93 217 24 85 247 15 68 247 15 68 248 42 104 (OP: OK1FUA) 1313 34 138 (OP: OK1FUA) 1314 0 111 232 27 104 (OP: OK1FUA) 1315 222 27 104 (OP: OK1FUA) 1316 222 27 104 (OP: OK1FUA) 1317 232 27 104 (OP: OK1FUA) 1318 34 138 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*OKICLD :		531 45 182 *ESSRIN	: 3,4		9 34	*RA6AAW		590 46	28 38	*F4CUI	18,326		*DK1TS *DL1TPY	33,136 31,752	206 25 84 193 37 125
*OK2SAR *OK1BET	130,180	515 45 188 *ES4RD 489 43 187 *ES5RY 458 44 197 *ES7GM	7 70,1	40 501	8 13 21 84 16 64	*HA3AKI *RA3SS *RU3UN	6,	260 97 862 42 830 41	14 45 31 42 19 34	*F1AMA *F4DZR *F1IWH	15,288 13,516 7,047		*DG1IU *DJ4TS	31,730 30,134	320 37 130 218 21 101
*OK1BLU *	117,132	326 51 176 *ES6PA	3.7 12,2		7 43	*RV3DUT *UA3ACL	5,	103 54 352 57	23 40 18 46	*F888L *F4FDA	6,771 28 13,633	72 19 42	*DK9WQ *D01SSB	30,016 29,555	274 24 110 271 18 97
*OK1DUT * *OK2BRX * *OK4AS *	95,207	401 41 162	EUROPEAN I	RUSSIA 57 2450 1	31 528	*UA3RAW	3,	888 46	17 37	*F5TMJ *F4EUR	9,045	114 12 55 69 15 53	*DG60AG *DL9ZWG	28,956 27,450	168 31 96 167 29 121
*OK1CJN *	84,249	249 54 153 RW1ZA	1,065,8	58 1487	95 306	*UA3UBT *UA6HFR *UA4PJI	* 3.	645 65 380 49	12 33 25 40	*F5JY	21 80,642	318 26 96	*DO18EN *DL3ZAI	26,790 25,864	217 19 95 183 25 97
*OKZWYK *	60,078	324 36 151 RN4AA 218 40 146 RA1AGL 259 36 136 RZ6HAZ	* 886,4 * 386,4	60 920	97 372 78 264	*RX3AA	* 3.	087 32 038 38	20 29 19 30	*F50GG *F50DA	20,368 14 102,480	695 28 92	*DL1DXF *DK1LRS	25,544	148 30 94 195 27 107
*OKISAT *OKZKFK *	54,479	325 31 126 RX3MA	296,2	40 577	70 237 78 254	*RZ30V	* 2.	760 50 736 35	12 34		7 22,240 3.7 61,304	723 10 69	*DF1RK	24,656 24,400	159 28 94
*OL2T *	Action	304 27 124 RV3FN (OP: OK2TC) RA3NG 197 37 123 RZ1ZZ	249,9 214,8 197,4	94 504	59 227 65 213 30 93	*RA3FH *UA3SBW *RW6CW	1	696 19 950 14	14 18	*F6FTB	GERMAN'		*DM2AWM *DL3VFN *DG6DAF	22,040 20,460 20,140	182 26 90 116 35 89 141 23 72
*0K2SWD *	35,346	197 37 123 RZ1ZZ 238 24 113 RV1CC 127 31 83 RU3UR	193,3	04 431	30 93 73 219 70 225	*UA3DSS *RL3AF		700 15 550 12 195 18	11 11	DL2DX DL2MWB	A 920,040 652,802		*DL1XAS *DJ8UV	19,493 17,802	183 18 83 130 27 59
*OKTVHV *		103 25 69 RV3NA 81 33 69 RZ3DW	157.2	84 337	57 200 78 206	*RX4HX *RU6MD		140 6	4 6	DP5W	539,982		*DL3DBY :	17,480 17,200	148 24 91 162 16 70
*OK2PMA : *OK1GS :	10,836	122 15 69 UA38M 123 13 63 RA3TT	140,1	82 312	71 195 57 165	*RZ6MO *RW68N	* 6,	148 59 145 67	15 41 14 43	DH6JL DL9GTB	537,288 402,750	800 85 281	*DJ60L :	17,160 16,512	140 23 81 114 25 71
*OK1SRD *OK2STM *	2,652 1,892	47 15 36 RW6HX 46 11 33	133,1	52 287	71 157 RZ6HX)	*RA3DTN *RZ4AG		150 43	11 31 31 110	DF3IS DK5EZ	395,307 387,595	767 70 293	*DL3KDC :	16,349 16,166	150 22 86 170 31 87
*OL7A	945	42 13 32 RT3T (OP: OK1SRD)	113,0	46 412	46 181 UA3TU)	*UA3PW *UA4LW	40,	061 238	21 76 20 74	DJ9HX DL2APJ	380,210 343,900	502 94 292	*DL9CW :	14,400 13,959	100 22 78 110 29 70
*OK1UU 28	4,879 2,940	95 8 33 RA4PO 64 8 27 RX3MX	107,6	16 276	64 172 41 125	*RL3AB *RZ3VA	20,	086 198	17 66 18 45	DJ3HJ DL9GFB	320,169 315,882	657 63 198	*DG5088 *DL8SDI	12,384 11,842	96 29 67 100 22 60
*0K2N 21		533 30 128 UA4NCI (OP: OK2NN) RZ3DA	51,9 50,4	93 194	51 108 49 125	*RW4LQ *RA3GFG	8,	265 53 054 27	20 37 12 22	DF7IT DL6UNF	289,008 256,320	581 64 260	*DL7FA *DL1AWC	11,440 10,962	127 15 65 99 22 65
*OK1DRQ *OK2TBC *	91,188 13,370	347 31 118 UA4NC 135 18 52 RX3DTN	42.7	12 200	38 114 36 57	*RUSCO *RV3RM	14 270.	200 955	37 138 36 117	DK4IO DLØHCC	215,556	515 57 219	*DL8DXL	10,880 9,555	131 16 52 92 25 66
*OK4A 14 *OL5M "	85,527	469 29 88 RA3UT 399 25 88 UA3RC	10,8	73 54	34 49 12 41	*RX6AH *RN3GA	143,	295 884	28 95 24 88	DH2RTW	198,372	(OP: DL9DRZ)	*DL9LF *DM2AJK	9,464 9,250	79 23 68 104 20 54
*OK1MMN *	23,052	(OP: OK1GI) UA4NJ 231 16 52 RA4NAJ	1,7	34 51 40 27	7 27 12 25	*RX3DBG *RU4WD	54,	184 332 840 250	23 81 20 76	DD1JN DK7CH	176,256	430 52 236	*DK8RE *DO1KUB	8,560 8,208	79 22 58 103 15 57
*OK4AZ 7	2,204	50 9 29 RC4Q 367 10 49	28 5,9	The second second	17 34 (UA4RC)	*RA3DGH *RN1AW	18,	056 200	11 63 21 56	DJ1TU DJØIF	111,150	346 46 188	*D04WA *D09ST *	7,820 7,332	124 16 52 92 15 63
*0K1WCF 3.7	60,192	(OP: OK2PTZ) UA4RC 761 10 66 UA4LU	21 350,6 " 231,5	56 800	33 125 30 116	*RU3UW *RV3EDY	. 6,	727 113 000 103	12 53 12 36	DL1PT DF5BX	108,624	382 50 169 418 36 183	*DL5SWB *DL2EF	7,020 6,175	90 21 57 98 12 53
*OK2PWJ *OL3X 1.8	- 22122	250 12 62 RA30U 299 8 50 RX3AW	115.1	70 130	27 104 19 63	*RW3DL *UA4PAQ		566 40 171 19	6 23 5 14	DG1EA DM5TI	98,703	335 47 179 175 66 113	*DL5X *DL7CU	5,292 5,049	55 22 32 82 12 39
*OK2BRA *	2,244	(OP: OK1FC) RS3A 65 5 29	14 599,1	(OP:	38 153 RA3CW)	*RUSTC *UASSAQ	7 88,		3 5 25 99	DL2RTL DK2006TZ	75,735 75,645	326 42 163	*DL60AK *D02XX	4,900 4,880	51 18 31 69 16 45
*OK1DST *	1,740	82 5 24 RN3ZC RA4LBS	288,7 199,2	60 977	34 122 30 105	*RU6FA *RN4SN	54. 51.	448 270	21 87 24 85	DL5RBR	70,497		*DJ3GE *DL6ZBN	4,189 4,148	55 16 43 63 15 46
OZ7X A	DENMARK 2,523,900 3	239 95 375 RV3BQ	113,7		33 118 17 54	*UA5LCN *UA1ANA	5.	896 103 650 99	13 51 9 41	DL7BA DL8KJ	57,984 55,632	156 49 102 255 43 140	"DLEUJ	4,125 3,901	60 11 44 48 14 33
OZSEV *	142,758	(OP: 0Z5KF) RU4CO 352 71 269 RX3FS	7 69,6		25 83	*RW3GB	3.7 17,		8 38 10 55	DL9DRA DM3ML	51,208	194 37 111 158 42 96	*DL4EBW *DL1ARD	3,770 3,520	67 13 52 54 20 44
0Z8PI 0Z1HXQ 1.8		195 25 102 UA6YN 951 11 60 RW6ATJ	41,2	88 31	6 21	*RZ3AUL	1.8 4.	406 37 576 96	7 37	DO9REF DJ2SL	28,558 28,416	163 29 102 123 34 114	*DL1KUR *DC2IP	3,190 2,964	62 15 42
*0Z7AM A *0Z1JVX	155,262	581 53 248 UA10MS 519 41 188 RA6AFB 473 41 166 UA3MIF	3.7 37,2	36 227	15 65 12 60 9 50	*UA68QD	EUROPEAN	S81 S8	6 25	DL9AWI DL9NCR DF1DV	28,148	133 37 91	*DL4EAX *DGØOM *DJ4PM	2,268 2,006 1,911	51 17 42
*0Z1ACB *0Z1RD *0Z4EL	138,483 111,188 75,839	473 41 166 UA3MIF 422 39 170 RA4YW 302 36 145 *UA4FEF	11.0 2.3 A 1.496.3	66 58	5 21 08 397	*TA1FA *TA1CM	14 12,	10HKE1 1027 211 201 72	9 45 5 26	DK8EY DG1HVL	16,112 14,720	126 19 73	*DL3DC	1,786 1,681	56 10 37
*0Z1KKH :	38,363 33,408	149 34 135 *UA4FRI 239 26 102 *RU30W	988,5	00 1281 1	01 399 94 358	INIUM	FAROE ISI			DL1HSI DL6RBO	9,550	94 22 57	*DL1HWH *DD3WW	1,527 1,520	27 14 25 24 18 20
*0Z7TTT ·	16,756	128 23 95 *RA60B (OP: 0Z5WQ) *UA3BL	586.2 577.0	96 1034	83 325 83 320	0Y1CT *0Y9R	21 50,		13 67 29 132	DJ1ZU DL3LE	28 38,165 21 174,064	301 15 70	*DL7VRG *DG8KAD	783 780	21 10 19 34 8 22
*0Z10GQ *	7,884	98 16 57 *RK3ZZ *RX3ZX	555,4 479,5	44 893	91 326 84 286	*OY1A		034 100	6 35	DMBY	134,796		*DL8JDX *DL7L2	609 480	15 7 14 14 B 15
	AND LOCAL CONTRACTOR						CIMIL AT	un		DK3GG	* 77.004	The second second second			45 4 45
GBMTN A	1.028.853 1	*RV6LFE	414,0	81 956	74 257 80 279	онах	A 5,477	The second secon	138 521				*DL9RB *DL5ASE	418 238	14 6 11
GBMTN A G4DBL *	1,028,853 1 915,013 1	*RV6LFE	389,8	81 956 74 664 80 640	make more	OH8X OH1F	A 5,477,	508 4189 (OP	138 521 OH6UM) 116 454	DL4WA DP3D	62,946	320 27 90	*DLSASE *DLSASE *DLSASE *DLSASE *DHBGDS 20	418 238 136 8 6,344	15 / 12 14 6 11 13 6 11 111 7 45
G4DBL * MØWLF * G3YBY * G3KWK *	1,828,853 1 915,813 1 680,656 1 267,435 188,370	735 81 360 *UA3AB. 375 91 340 *UA3MO	414,0 389,8 M 334,0	81 956 74 664 80 640 07 584 94 668	80 279 73 275	OH1F OH3OJ	A 5,477,	508 4189 (QP 930 2133 (QP: 288 1604	OHEUM)	DL4WA DP3D DJ4PT DL5JS	62,946	320 27 90 305 25 103 (0P: DK3KD) 2183 37 137	*DL5ASE *DL7JOM *DH8GDS 21 *DL8WAA *DL1EFD 2	1 62,595	6 6 6 348 20 87
G4DBL ** MØWLF ** G3YBY **	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT	M 389,8 334,0 307,2 267,5 260,4 254,6 242,1	81 956 74 664 80 640 07 584 94 668 96 652 00 649 51 616	80 279 73 275 74 215 65 244 68 175 61 207 59 214	OH1F OH3OJ OH2RA OH18V	A 5,477, 1,737, 568, 426, 233,	938 4189 (OP) 930 2133 (OP) 288 1604 116 1088 761 684	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI	62,946 61,824 14 784,944 50,040 42,726 2,366	320 27 90 305 25 103 (OP DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17	*DLSASE *DL7JOM *DHBGDS 20 *DL8WAA *DL1EFD 2 *D04ZN *D01YCL	1 62,595 33,909 20,498	15 / 12 14 6 11 13 6 11 111 7 45 6 6 6 348 20 87 227 20 69 188 16 58
G4DBL MØWLF G3YBY G3KWK MØGHQ G7T G3VCQ	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LHI	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7	81 956 74 664 80 640 07 584 94 668 96 652 00 649 51 616 80 499 81 624	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI	A 5,477, 1,737, 568, 426, 233, 65,	930 2133 (OP: 288 1604 116 1088 761 684 490 332 763 59	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38	DL4WA DP3D DJ4PT DL5JS DK8JB	62,946 61,826 14 784,944 50,040	320 27 90 305 25 103 (OP DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62	*DLSASE *DL7JOM *DH8GDS 2I *DL8WAA *DL1EFD 2 *D04ZN *D01YCL *DJ6XB *DL3JRA	1 62,595 33,909	6 6 6 348 20 87
G4DBL MØWLF G3YBY G3KWK MØGHQ G7T	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3FD) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204	OH1F OH3OJ OH2RA OH18V OH5NE OH1BOI OH6AC	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31,	930 2133 (OP: 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF:	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA	14 784,044 50,040 42,728 2,366 7 133,504	320 27 90 305 25 103 (OP: DK3KD) 1 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG)	*DLSASE *DL7JOM *DHBGDS 21 *DL8WAA *DL1EFD 2 *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ 1	1 62,595 33,909 20,498 2,108 546 399 4 189,440	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126
G4DBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4HY	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: MØOXO) 197 34 114 *RL3AW	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 1 79,2	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 21 38,	930 2133 (OP: 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF: 081 80 182	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 27 93	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF	62,946 61,824 14 784,944 50,040 42,726 2,366 7 133,504 19,304 3.7 54,201 A 1,422,655	320 27 90 305 25 103 (OP: DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG) 605 15 74 7 4 7 1551 107 452	*DLSASE *DL7JOM *DHBGDS 21 *DL8WAA *DL1EFD 2 *DO4ZN *DO1YCL *DJ6XB *DL3JRA *DL2ZA *DL9LR *DJ9LR *DJ2XC	168 1 62,595 33,909 20,498 2,108 546 399 4 189,440 112,464 61,490	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13
G4DBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: MØOXO) *UA4PJ 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: GBAEV) *RA3QG	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 179,2 164,1 154,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 38, 14 1, 3.7 9,	508 4189 (OP 930 2133 (OP: 288 1604 116 1088 761 664 490 332 763 59 080 299 (OF 081 80 160 182 080 43 821 158	0H6UM) 116 454 0H1NOA) 64 237 66 241 50 299 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA DF5AU	14 784,044 50,040 42,726 2,366 7 133,504 19,304 3.7 54,201	320 27 90 305 25 103 (OP DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299	*DLSASE *DL7,JOM *DH8GDS 21 *DL8WAA *DL1EFD 2 *DO4ZN *DO1YCL *DJ6XB *DL3JRA *DL2ZA *DL9LR *DL9LR *DJ2XC *DL7UIO *DG8AM	168 1 62,595 33,909 20,498 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101
G4DBL MEWLF G3YBY G3KWK MBGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF 7	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 41, 1, 3.7 9, A 61, 51,	930 4189 (OP) 930 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 299 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ	62,946 61,824 14 784,944 50,040 42,726 2,366 7 133,504 19,304 3.7 54,201 A 1,422,655 743,792	320 27 90 305 25 103 (OP: DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP: DJ8GM) 1060 82 320	*DLSASE *DL7JOM *DHBGDS 21 *DL8WAA *DL1EFD 2 *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB	168 1 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101
G4DBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G6KDS G4ADJ	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: MØOXO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RA3QG (OP: GBAEV) *RA3QG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 107,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 41, 51, 51, 41, 32,	930 4189 (OP) 930 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196	**COHECUM) 116 454 OH1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DR4G	62.946 61.824 14 784,044 50,040 42,726 7 133,504 19,304 3.7 54,201 165 A 1,422,655 743,792 623,392 585,714	320 27 90 305 25 103 (OP: DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP: DJ8GM) 1060 82 320 (OP: DJ1YFK) 1019 67 286	*DLSASE *DL7JOM *DHBGDS 21 *DL8WAA *DL1EFD 2 *DO4ZN *DO1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR *DL3DRN	168 1 62,595 33,909 20,498 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650	6 6 6 6 348 26 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42
G4DBL MEWLF G3YBY G3KWK MBGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G9KDS A	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160	735 81 360 *UA3AB. 375 91 348 *UA3MG 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: MØOXO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: GØAEV) *RA3OG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 107,8 107,5 102,3	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 8, 2,	930 2133 (OP: 288 1604 116 1088 761 684 490 332 763 59 80 299 (OF: 288 160 43 821 158 540 294 506 192 556 183	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 299 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G	62.946 61.826 14 784,044 50,040 42,726 7 133,504 19,306 3.7 54,201 165 A 1,422,655 743,792 623,392 585,714 513,968 344,072 311,220	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1060 82 320 (OP. DJ8GM) 1060 82 320 (OP. DJ9FK) 1019 67 286 800 59 269 0 544 72 270	*DLSASE *DL7JOM *DHBGDS 21 *DL8WAA *DL1EFD 2 *DO4ZN *DO1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54
G4DBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU 14 G3TXF *G8KDS *G4ADJ *G4FKA *2EBATY *MOMCX *G4DFI *M3OXD	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 154,160 138,697 120,510 107,991	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3FD) 358 45 140 *UA3FD) 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: GBAEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WN 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RN4AM	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 101,8 101,9 101,8 101,9	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153 47 143 53 153	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 41, 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7,	930 2133 (OP: 288 1604 116 1088 761 684 490 332 763 59 80 299 (OF: 288 160 43 821 158 540 294 506 192 656 183 375 196 858 88 068 39 480 19 257 100	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN	62.946 61.824 14 784,044 50,040 42,726 7 2.366 7 133,504 19,304 3.7 54,201 165 A 1,422,655 743,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,586	320 27 90 305 25 103 (OP: DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP: DJ9GM) 1060 82 320 (OP: DJ1YFK) 1019 67 286 1069 69 299 1060 82 320	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD 2 *DO4ZN *DO1YCL *DJ6XB *DL3JRA *DL2ZA *DL9LR *DL9LR *DJ2XC *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR *DL3DRN *DL3SEM *DL3SEM *DL2SAX	168 162,595 33,909 20,498 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 47,214	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79
G4DBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4HY G8KPW 28 G3RAU 14 G3TXF G8KDS G4ADJ G4ADJ G4FKA CEBATY MØMCX G4DFI M30XD G6CSY G4LDL	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253	735 81 360 *UA3AB. 375 91 348 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: MØOXO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RA3GG (OP: GBAEV) *RA3GG (OP: GBAEV) *RA3GG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RN4AM 399 32 157 *RV3YR 230 49 144 *RV2FW	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 107,5 101,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 90 243	80 279 73 275 74 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153 47 143 53 153 73 163 58 149 50 141 54 147 55 162	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH4YT F6DZU	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 41, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689,	930 2133 (OP: 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF: 081 80 150 150 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DM9CM *DM5JBN *DM9CM *DM5JBN *DM3HZN *DF6WE	62.946 61.824 14 784,044 50,040 42,726 7 133,504 19,304 3.7 54,201 A 1,422,655 743,792 623,392 585,714 513,968 344,072 310,640 298,551 285,582 265,200 213,080	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 800 59 269 0 544 72 270 0 569 74 279 625 62 265 657 61 216 0 597 63 237 0 601 52 228	*DLSASE *DL7,JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3DRN *DL3SEM *DL3SEM *DL2SAX *DH8BQA 1.	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50
G4DBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G6KDS G4ADJ G4FKA C2EØATY MØMCX G4DFI M30XD G6CSY G4WGE G6SFP	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940	735 81 360 *UA3AB. 375 91 348 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M0OXO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) *RA3OG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RN4AM 399 32 157 *RV3YR 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 107,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,9 101,9 101,8 101,9 101,9 101,9 101,8 101,9 101,8 101,9 101,9 101,9 101,9 101,8 101,9 101,9 101,9 101,8 101,9 101,8 101,9 101,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 90 243 30 344 80 270	80 279 73 275 74 215 66 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153 47 143 53 153 73 163 58 149 54 147 55 162 42 148 55 158	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3FM *OH4YT F6DZU F5VHY F5BBD	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689, 528, 521,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 520 1493 367 739 255 1270	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM3HZN	62.946 61.824 14 784,044 50,040 42,726 7 133,504 19,304 3.7 54,201 165 A 1,422,655 743,792 623,392 585,714 513,968 311,220 310,640 298,551 285,582 265,200	320 27 90 305 25 103 (0P. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (0P. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (0P. DJ8GM) 1060 82 320 (0P. DJ1YFK) 1019 67 286 2 800 59 269 0 544 72 270 0 569 74 279 625 62 265 657 61 216 0 597 63 237 601 52 228 484 55 216 491 56 208	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50
GADBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU 14 G3TXF *G8KDS *G4ADJ *G4ADJ *G4FKA *2EBATY *MØMCX *G4DFI *M3OXD *G4CSY *G4UDL *G4WGE *G6SFP *M5KJM *G6UBM	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: GBAEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WN 567 33 155 *RA6FZ 536 39 188 *RX6LP 560 38 168 *RN4CA 402 38 175 *RN4AM 305 34 131 *UA3ME 305 34 131 *UA3ME 265 32 125 *RA3TU 296 38 132 *RU4CS	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8 101,8 101,8 101,9 101,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 90 243 90 245 90 245	80 279 773 275 774 215 65 244 68 175 61 207 59 214 772 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153 47 143 53 153 73 163 58 149 50 141 54 147 55 158 40 160 46 147	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3RM *OH4YT F6DZU F5VHY F5BBD F5RAB F5PU	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 41, 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689, 528, 521, 359, 343,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 640 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 520 1493 367 739 255 1270 466 580 264 1213	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 OH6CS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DR4G "DM7A "DL6DCD "DL7UMK "DJ4JF "DK8AX "DM9CM "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DF6WE "DM2BPG "DRØR	62.946 61.826 14 784,044 50.040 42,726 2,366 7 133,504 19,306 3.7 54,201 A 1,422,655 743,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,005 173,446	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 2 800 59 269 0 544 72 270 1060 82 320 0 (OP. DJ1YFK) 1019 67 286 2 800 59 269 0 544 72 270 0 569 74 279 1 625 62 265 1 657 61 216 1 597 63 237 1 601 52 228 1 484 55 216 1 491 56 208 (OP. DK2DQ) 1 544 49 216	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DO1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR *DL3DRN *DL3SEM *DL3SEM *DL3DRN *DL3SEM *DL3SEM *DL3SEM *DL3BRN *DL	168 162,595 33,909 20,498 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150
G4DBL MEWLF G3YBY G3KWK MIGGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU 14 G3TXF *G8KDS *G4ADJ *G4ADJ *G4FKA *2EBATY *MOMCX *G4DFI *M3OXD *G6CSY *G4LDL *G4WGE *G6SFP *M5KJM *GGUBM *G4DDL *G4NXG	1,828,853 1 915,913 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 617 47 189 *RU3VD 560 45 197 *RX3AG 536 39 188 *RX6LP 537 *RW3YR 538 132 *RU4CS 538 133 *RU4CS	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 90 243 90 246 90 246 90 246 90 246 90 247 90 248 90 248	80 279 773 275 774 215 65 244 68 175 61 207 59 214 772 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 58 163 58 149 50 141 51 25 52 148 53 153 53 163 54 147 55 158 56 149 57 148 57 148 58 162 58 162 58 162 58 162 58 163 58 163 58 163 58 164 58 165 58 1	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH4YT F6DZU F5VHY F58BD F5RAB F5PU F4CPF F6IQA	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 520 1493 367 739 255 1270 466 580 264 1213 074 253 167 495	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219 58 191 44 143	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DQ5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM3HZN *DM5JBN *DM3HZN *DF6WE *DM2BPG *DRØR *DL8ULO *DJ8EW *DD1LD	62.946 61.826 14 784,044 50,040 42,726 2,366 7 133,504 19,304 3.7 54,201 A 1,422,656 743,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,009 173,448	320 27 90 305 25 103 (OP: DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP: DJ8GM) 1060 82 320 (OP: DJ1YFK) 1019 67 286 800 59 269 (OP: DJ1YFK) 1019 67 286 800 59 269 544 72 270 569 74 279 625 62 265 657 61 216 597 63 237 601 52 228 484 55 216 491 56 208 (OP: DK2DQ) 544 49 216 461 49 208 357 58 206	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9LR *DL9LR *DJ2XC *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3DRN *DL3DRN *DL3SEM *DL3SE	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 300,330 5,529 949,355	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (OP: 0J5JH) 682 24 86
G4DBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4HY G8KPW 28 G3RAU 14 G3TXF *G8KDS A*G4ADJ *G4FKA *2EØATY *MØMCX *G4DFI *M30XD *G6CSY *G4DFI *M30XD *G6CSY *G4UDL *G4WGE *G6SFP *M5KJM *G6UBM *G4DDL *G4NXG *G6UBM *G4DDL *G4NXG *G8UGO *MEDYI	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767	735 81 360 *UA3AB. 375 91 348 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RA3GG (OP: G8AEV) *RA3GG (OP: G8AEV) *RA3GG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA3GW 305 34 131 *UA3ME 265 32 125 *RA3TU 296 38 103 *UA1QV 296 38 103 *UA1QV 297 29 121 *RV3MI 294 24 107 *RU3DW *RU3DW *RX3DW *RX3D	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 30 344 80 270 50 283 18 248 39 160	80 279 773 275 774 215 65 244 68 175 61 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153 47 174 69 153 47 143 53 153 73 163 54 147 55 148 55 148 50 141 51 158 40 160 46 147 46 142 45 145 41 130 51 128	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH4YT F6DZU F5VHY F5BBD F5RAB F5PU F4CPF F6IQA F2JD F5MNK	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101, 100, 54,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 856 183 375 196 858 88 068 39 480 19 257 100 CE 520 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 36 94	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DL4MCF *DK5DQ *DH7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM3HZN *DM5JBN *DM3HZN *DF6WE *DM2BPG *DRØR *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE	62,946 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,304 3.7 54,201 A 1,422,655 743,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,586 265,200 213,080 184,000 173,448	320 27 90 305 25 103 (0P. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (0P. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (0P. DJ8GM) 1060 82 320 (0P. DJ1YFK) 1019 67 286 800 59 269 0 544 72 270 0 569 74 279 625 62 265 657 61 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 597 63 237 0 601 52 228 0 484 55 216 0 491 56 208 0 (0P. DK2DQ) 0 544 49 216 0 461 49 208 0 357 58 206 0 351 59 165 0 486 41 178	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9LR *DL9LR *DJ2XC *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL4BBQA *DL4BBQA *DL4BBQA *DL5BBQA *DL	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,457 4 300,330 5,529 949,355	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (DP: DJ5JH)
GADBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G6KDS G4ADJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C4ADJ G6CSY MEMORI MAGNE G6CSY G4LDL G4WGE G6SFP M5KJM G6UBM G4DDL G6UBM G4DDL G4NKG	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 48,767 45,500 45,500	735 81 360 *UA3AB. 375 91 348 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) *RA3OG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA3GG 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA3GG 399 32 157 *RV3YR 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME 265 32 125 *RA3TU 266 38 103 *UA1QV 277 29 121 *RV3GD 206 38 103 *UA1QV 277 29 121 *RU3DN 318 22 118 *UA6LP 181 32 108 *UA1WE	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 107,8 101,9 101,9 101,9 101,8 101,9	81 956 74 664 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 30 344 80 270 00 295 35 218 10 276 80 283 118 248 39 160 81 271	80 279 773 275 774 215 66 244 67 215 67 214 772 237 51 220 776 262 67 204 68 185 61 214 51 205 68 185 61 214 51 205 68 185 61 214 51 205 69 153 69 143 50 141 50 163 50 141 51 158 51 158 52 148 53 153 73 163 73 163 74 165 75 165 76 165 77 16	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HM *OH4YT F6DZU F5VHY F5BBD F5RAB F5PU F4CPF F6IQA FZJD	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 41, 32, 41, 32, 41, 32, 51, 41, 32, 51, 41, 32, 51, 41, 32, 51, 41, 32, 68, 2, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101, 100,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 1567 970 796	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 *** COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 36 94 31 98 20 85	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DH4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM3HZN *DM3HZN *DM3HZN *DF6WE *DM2BPG *DRØR *DF1HE *DK7FP *DL2KCK	62,946 61,826 61,826 14 784,944 50,040 42,726 2,366 7 133,504 19,306 3,75 4,201 165 A 1,422,656 743,792 623,392 585,714 513,966 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,009 173,446 170,666 155,228 151,536 144,936 136,906 115,776	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 2 800 59 269 1 544 72 270 1 569 74 279 1 625 62 265 657 61 216 2 800 59 269 1 544 72 270 2 569 74 279 1 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 3 625 62 265 3 657 61 216 3 597 63 237 3 601 52 228 4 84 55 216 4 891 56 208 (OP. DK2DQ) 3 544 49 216 4 891 56 208 (OP. DK2DQ) 5 44 49 216 4 86 41 178 4 837 44 174 3 91 52 164	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3DRN *DL3DRN *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL	168 1 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (DP: DJ5JH) 682 24 86 275 27 68
GADBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU 14 G3TXF *G8KDS *G4ADJ *G4ADJ *G4ADJ *G4FKA *2EØATY *MØMCX *G4DFI *M30XD *G4CSY *G4UDL *G4WGE *G6SFP *M5KJM *G6UBM *G6UBM *G4DDL *G4NXG *G6UBM *G4DDL *G4NXG *G8UGO *MEDYI *G8ZRE *G4RHR *MEMDR *G7RTI	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 45,500 45,500 45,500 34,932	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 617 47 189 *RU3VD 560 45 197 *RX3AG 536 39 188 *RX6LP 536 39 188 *UA1QV 537 29 121 *RV3MI 538 22 118 *UA3DC 539 56 124 *UA3DC 530 56 124 *UA3DC	M 389,8 M 334,0 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,9 101,8 101,8	81 956 74 654 80 640 97 584 94 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 90 243 30 344 80 270 90 295 80 283 18 248 39 160 80 292 92 297	80 279 773 275 774 215 66 244 68 175 66 207 59 214 72 237 51 220 76 262 60 204 65 185 61 214 51 205 42 195 47 176 42 147 57 174 69 153 47 143 53 153 73 163 54 147 55 158 47 148 55 149 56 141 57 148 58 162 48 162 48 163 48 163	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH4YT F6DZU F5VHY F5BBD F5RAB F5PU F4CPF F6IQA F2JD F5MNK F5FLN	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101, 100, 54, 7 464,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 520 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 100 727 336	**COHECUM)** 116 454 OH1NOA)** 64 237 66 241 60 209 36 141 15 38 17 67 ***COHECS)** 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 36 94 31 98	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DH4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM3HZN *DM3HZN *DM3HZN *DM2BPG *DRBR *DD1LD *DF9QG *DF1HE *DK7FP	62,946 61,824 14 784,044 50,040 42,726 7 133,504 19,304 3.7 54,201 165 7 43,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,001 173,448	320 27 90 305 25 103 (OP: DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP: DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP: DJ8GM) 1060 82 320 (OP: DJ1YFK) 1019 67 286 800 59 269 (OP: DJ1YFK) 1019 67 286 800 59 269 544 72 270 569 74 279 625 62 265 657 61 216 580 59 74 279 625 62 265 657 61 216 597 63 237 601 52 228 484 55 216 491 56 208 (OP: DK2DQ) 544 49 216 461 49 208 357 58 206 351 59 185 486 41 178 437 44 174 391 52 164 479 33 178 (OP: DF6QC)	*DLSASE *DL7JOM *DH8GDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3DRN *DL3DRN *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529 949,355	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (OP: 0J5JH) 682 24 86
GADBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF *G8KDS *G4ADJ *G4FKA *2EBATY *MOMCX *G4DFI *M30XD *G6CSY *G4UDL *G4WGE *G6SFP *M5KJM *G6UBM *G4DDL *G4WGE *G6UBM *G4DDL *G4WGE *G6UBM *G4DDL *G4WGE *G6UBM *G6UBM *G4DDL *G4WGE *G8UBO *MBDYI *G8ZRE *G4RHR *MBWDR *G7RTI *ZEBTGS *MBUSK *MBOIC	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 45,300 34,932 31,944 30,016 27,548	735 81 360 *UA3AB. 375 91 348 *UA3MC 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 349 32 140 *RX3OW 305 34 131 *UA3ME 305 34 131 *UA3ME 265 32 125 *RA3TU 294 24 107 *RU3DW 305 34 131 *UA3ME 266 32 125 *RA3TU 296 38 103 *UA1CV 297 29 121 *RV3MI 294 24 107 *RU3DW 305 34 131 *UA3ME 206 38 103 *UA1CV 318 22 118 *UA5LP 318 32 108 *UA1CV 318 22 118 *UA5LP 318 32 108 *UA1CV 318 22 118 *UA5LP 318 32 108 *UA1CV 318 32 108 *UA1CV 318 22 118 *UA5LP 318 32 108 *RA4NC 319 30 112 *RN3BU 319 30 112 *RN3BU	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8	81 956 74 654 80 640 97 584 98 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 30 243 30 243 30 243 30 243 30 243 30 243 30 243 31 250 32 251 34 293 35 218 36 250 37 253 38 250 38 250	80 279 773 275 774 215 66 244 68 175 66 207 59 214 772 237 51 205 66 185 61 214 51 205 66 185 61 214 51 205 66 185 67 176 69 153 69 141 57 174 69 153 69 141 50 160 60 141 51 128 60 142 61 147 62 158 63 149 64 147 65 148 65 149 66 147 67 148 68 149 68 149	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3RM *OH4YT F6DZU F5VHY F5BBD F5RAB F5PU F4CPF F6IQA F2JO F5MNK F5FLN TM2S F4DLM	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 37 9, A 61, 51, 41, 32, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101, 100, 54, 7 404, 116, 3.7 18,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 0757 100 CE 520 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 573 1567 970 796 727 336 888 1260 688 1299 484 1019	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 16 28 16 28 17 210 68 303 82 280 53 219 58 191 44 143 52 167 36 94 31 98 20 85 P. F5PED) 9 52 103 393 72 247 73 275	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DL4MCF "DK5DQ "DK5DQ "DK5DQ "DK5DQ "DK9CM "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DM3BPG "DM2BPG "DM2BPG "DR0R "DR0R "DK7FP "DL2KCK "DL8IH	62,946 61,824 14 784,044 50,040 42,726 2,366 7 133,504 19,304 3.7 54,201 A 1,422,655 743,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,003 173,448 170,660 155,220 151,530 144,936 155,776 113,300	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 800 59 269 1000 82 320 (OP. DJ1YFK) 1019 67 286 800 59 269 1000 544 72 270 1000 569 74 279 1000	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3DRN *DL3DRN *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL	168 1 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (0P. DJ5JH) 682 24 86 275 27 68
GADBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G6KDS G4ADJ G4FKA C4ADJ G4FKA C4ADJ G6CSY MEMORX G6CSY G4UDL G6CSY G4UDL G6SFP MSKJM G6UBM G6U	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LHI 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) *RA3OG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA3FZ 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME 265 32 125 *RA3TU 296 38 103 *UA1QV 277 29 121 *RV3YR 296 38 103 *UA1QV 277 29 121 *RX3QD 266 37 *UA1QV 277 29 121 *RX3QD 267 38 103 *UA1QV 277 29 121 *RX3QD 268 29 131 *RX3QD 277 29 121 *RX3QD 269 38 103 *UA1QV 277 29 121 *RV3WI 296 38 103 *UA1QV 277 29 121 *RX3QD 268 29 131 *RX3QD 277 29 121 *RX3QD 277 29 121 *RX3QD 277 29 121 *RX3QD 277 29 121 *RU3DN 305 34 131 *UA3ME 266 32 125 *RA3TU 296 38 103 *UA1QV 277 29 121 *RX3QD 277 270 *	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8 101,9 101,9 101,9 101,8 101,9	81 956 74 654 80 640 97 584 98 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 464 75 296 80 441 27 425 75 281 92 225 40 482 82 382 52 382 52 382 52 382 52 382 52 382 53 336 54 318 336 34 39 36 36 293 37 293 38 248 39 26 39 26 39 270 30 283 31 296 31 276 32 281 33 283 34 293 36 248 37 27 281 38 248 39 36 283 31 27 283 31 283 32 283 33 283 34 293 36 283 37 295 38 248 39 250 38 248 39 160 39 250 31 27 28 291 31 292 32 297 33 291 34 217 34 163	80 279 275 275 276 244 668 175 66 207 51	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6KY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *FINAN *FINAN FINAN *FINAN *	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101, 100, 7 464, 116, 3.7 18, A 1,005, 578, 533, 356, 356,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 081 80 160 182 080 43 821 158 540 294 556 183 375 196 656 183 375 196 658 88 068 39 480 19 257 100 CE 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 573 1567 970 796 (OF) 727 336 888 1250 966 1299 484 1019 (OF) 724 791	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 36 94 31 98 20 85 P. F5PED) 9 52 103 393 72 247 73 275 F4CWN) 61 263	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DL4MCF "DK5DQ "DL7UMK "DK5DQ "DL7UMK "DK5DQ "DL7UMK "DK8AX "DM9CM "DM5JBN "DM3HZN "DM5JBN "DM3HZN "DF6WE "DM2BPG "DM2BPG "DM2BPG "DRBR "DL8ULO "DJ8EW "DD1LD "DF3QG "DF1HE "DK7FP "DL2KCK "DL6UYA "DL6UYA "DC8RU	62,946 61,826 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,306 3,7 54,201 A 1,422,656 743,792 623,392 585,714 513,966 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,001 173,446 170,666 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 2 800 59 269 1 544 72 270 2 605 62 265 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 3 579 63 237 3 579 63 237 3 601 52 228 3 484 55 216 3 491 56 208 (OP. DK2DQ) 3 544 49 216 3 486 41 178 437 44 174 3 391 52 164 437 33 175 436 32 170 3 393 45 175 3 393 45 175 3 393 35 170 3 384 39 158 3 354 41 157	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL4SEM *DL	168 162,595 33,909 20,496 2,108 546 399 4189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 300,330 5,529 949,355 1100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 44,270 GUERNSEY 231,977 36,045 HUNGARY 44,270	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (DP: DJ5JH) 682 24 86 275 27 68 856 41 188 336 15 66
GADBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G4RDJ G4RDJ G4RDJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C5EBATY MØMCX G4DFI M30XD G6CSY G4LDL G4WGE G6SFP M5KJM G6UBM G4DDL G4NXG G6SFP MBKJM G6UBM G4DDL G4NXG G6UBM G6	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 48,787 45,500 4	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00X0) *UA4PJI 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: GBAEV) *RA3OG 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RN4AN 399 32 157 *RV3YR 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME 265 32 125 *RA3TU 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME 266 32 125 *RA3TU 277 29 121 *RV3YR 296 38 103 *UA1QV 277 29 121 *RV3YR 296 38 103 *UA1QV 277 29 121 *RV3DN 305 34 131 *UA3ME 268 29 131 *RX3OD 305 36 124 *UA5DN 306 26 124 *UA5DN 307 27 29 121 *RV3YR 308 29 131 *RX3OD 309 26 106 *RA4NC 309 26 106 *RA4NC 309 26 106 *RA4NC 309 27 *UA1CU 309 26 106 *RA4NC 309 27 *UA1CU 309 27 *UA1CU 309 27 *UA1CU 309 27 *UA1CU 309 28 100 *RV3DB 300 112 *RV3DB 300 112 *RV3DB 301 112 *RV3DB	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 107,8 107,8 107,8 101,9 101,9 101,8 101,9 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8 101,9 101,8	81 956 74 664 80 640 97 584 98 668 96 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 464 75 281 92 225 40 482 82 382 52 221 44 318 30 34 48 39 40 293 30 344 80 270 50 283 81 624 82 382 52 221 52 221 53 225 54 318 50 248 30 344 50 293 51 80 293 52 297 75 281 76 293 77 295 78 296 78 297 78 297 88 297 78 297 78 297 78 297 78 297 78 297 88 297 78 297 78 297 78 297 78 297 78 297 88 297 78 297 78 297 78 297 78 297 78 297 78 297 78 297 78 297 88 297 78 297 78 297 78 297 88 297 78 29	80 279 773 275 774 215 66 244 67 215 67 215 67 215 68 175 77 220 77 174 77 1	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH4YT F6DZU F5VHY F58BD F5RAB F5PU F4CPF F6IQA FZJO F5MNK F5FLN TM2S F4BKV *F8AKS *F5KSE *F3AR *F4ETG *F5QF	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	\$68 4189 (OP) \$68 2133 (OP) \$68 1604 166 1088 761 684 490 332 763 59 080 299 (OF) \$68 160 182 080 43 821 158 640 294 158 686 192 656 183 375 196 688 39 480 19 257 100 CE 1493 773 1567 739 1567 495 302 294 470 193 1567 970 796 (OF) \$727 336 888 1260 193 1567 970 796 (OF) \$724 791 680 670 449 401	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 8 16 14 45 77 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 73 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 77 210 68 303 82 280 53 219 58 191 59 52 103 393 72 247 73 275 F4CWN) 61 263 54 234 62 201	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM3HZN *DM3HZN *DM3HZN *DM3HZN *DM3HZN *DM3HZN *DM3HZN *DM3BPG *DM2BPG *DM2BPG *DR0R *DF1HE *DK7FP *DL2KCK *DL6UCA *DL7VX *DL6UYA *DL6UYA *DL6UYA *DC8RU *DC	62,946 61,826 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,306 3,792 623,392 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,009 173,446 170,666 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536 144,936 155,228 151,536	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 2 800 59 269 1060 82 320 (OP. DJ1YFK) 1019 67 286 2 800 59 269 1 544 72 270 1 569 74 279 1 625 62 265 1 657 61 216 2 800 59 269 1 544 72 270 1 569 74 279 1 625 62 265 1 657 61 216 2 800 59 269 1 544 72 270 2 569 74 279 2 625 62 265 3 657 61 216 3 800 59 269 3 544 72 270 3 569 74 279 4 625 62 265 4 657 61 216 4 800 59 269 3 544 72 270 3 569 74 279 4 625 62 265 4 657 61 216 4 800 59 269 3 544 72 270 3 569 74 279 4 625 62 265 4 657 61 216 4 800 59 269 3 544 72 270 3 569 74 279 4 625 62 265 4 657 61 216 4 800 59 269 3 544 72 270 3 569 74 279 4 625 62 265 4 67 276 4 77 4 77 4 77 4 77 4 77 4 77 4 77 4	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3DRN *DL3DRN *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 8 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 4 3646,030 151,840 129,560 84,611 80,344	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (0P DJ5JH) 682 24 86 275 27 68 856 41 188 336 15 66 1075 82 363 504 50 210 628 39 119 252 61 150 400 28 93
GADBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G4RAU G3TXF G4RDJ G4RAU G4RAU G4RAU G4RAU G4RAU G4RAU G6CSY G4LDL G4WGE G6SFP M5KJM G6UBM G4DDL G4WGE G6SFP M5KJM G6UBM G4DDL G4WGE G6SFP MSKJM G6UBM G4DDL G4WGE G6RAH GBERGO MEDYI G8ZRE GARRE GAR	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532 17,030 16,074 14,432 13,494	735 81 360 *UA3AB. 375 91 340 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 536 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME 265 32 125 *RA3TU 266 38 103 *UA1QV 277 29 121 *RV3VR 286 29 131 *RX3QD 277 29 121 *RV3VR 286 29 131 *RX3QD 277 29 121 *RV3VR 286 29 131 *RX3QD 277 29 121 *RV3VR 294 24 107 *RU3DN 305 36 124 *UA3DC 277 29 121 *RV3VR 296 38 103 *UA1QV 277 29 121 *RV3VR 286 29 131 *RX3QD 277 29 121 *RV3VR 286 29 131 *RX3QD 277 29 121 *RV3VR 296 38 103 *UA1QV 277 29 121 *RV3VR 206 38 103 *UA1QV 277 29 121 *RV3VR 207 29 121 *RV3VR 208 38 103 *UA1QV 277 29 121 *RV3VR 209 25 100 *RV3DR 200 26 97 *UA1CU 200 26 97 *UA1CU 201 201 201 201 201 201 201 201 201 201	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 101,8	81 956 74 654 80 640 97 584 98 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 464 75 296 80 541 92 225 40 482 81 425 75 281 92 225 40 482 81 336 81 336 81 336 82 382 82 382 83 336 84 293 90 243 90 243 91 276 92 297 75 281 92 297 75 281 92 297 75 296 80 243 91 276 92 297 75 253 18 248 92 297 75 253 18 248 19 292 19 292 19 292 19 292 19 292 19 292 19 292 19 292 19 293 18 248 18 293 18 248 18 293 18 294 18 295 18 297 18 297	80 279 773 275 774 215 66 244 677 215 678 207 679 214 679 214 679 215 670 204 671 205 671 205 672 207 673 207 674 205 675 207 676 204 677 205 677 2	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3RM *OH4YT F6DZU F5VHY F58BD F5RAB F5PU F4CPF F6IQA F5JID F5RAB F5FLN TM2S F4DLM *F4BKV *F8AKS *F5KSE *F2AR *F4ETG *F5QF *F4AGR *F5DRD	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	\$608 4189 (OP) \$308 2133 (OP) \$288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) \$288 1604 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 520 1493 367 739 255 1270 756 580 264 1213 074 253 167 495 302 294 470 193 1567 475 302 294 470 193 1567 475 302 294 475 475 475 475 475 475 475 475 475 47	0H6UM) 116 454 0H1N0A) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 16 28 16 28 17 210 68 303 82 280 53 219 58 191 44 143 52 167 77 210 68 303 82 280 53 219 58 191 44 143 52 167 77 210 68 303 87 280 58 280	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM5JBN *DM5JBN *DM3HZN *DF6WE *DM2BPG *DRØR *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL2KCK *DLBIH *DK7MCX *DL6UYA *DL6UYA *DL6UYA *DC8RU *DL4MNG *DG3OAT *DK7GH *DK3WJ	62,946 61,826 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,306 3.7 54,201 A 1,422,656 743,792 623,392 585,714 513,968 344,072 310,640 298,551 285,582 265,200 213,080 184,005 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 184,005 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 184,005 173,446	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. DJ1YFK) 1019 67 286 800 59 269 1060 625 62 265 657 61 216 6800 59 269 544 72 270 569 74 279 625 62 265 657 61 216 657 61 216 657 63 237 601 52 228 484 55 216 491 56 208 (OP. DK2DQ) 544 49 216 461 49 208 357 58 206 351 59 185 486 41 178 437 44 174 391 52 164 479 33 178 (OP. DF6QC) 393 45 175 436 32 170 383 35 170 384 39 158 364 41 157 419 29 154 373 39 148 295 39 156 306 45 162	*DLSASE *DL7JOM *DHBGDS *DL8WAA *DL1EFD *DO4ZN *DD1YCL *DJ6XB *DL3JRA *DL2ZA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DLØBKR *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL3DRN *DL3SEM *DL4BBQA *DL4BBQA *SV1GRD *	168 1 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 4 39,760 84,611 80,344 39,760 84,611 80,344 39,760 84,611 80,344 39,760 84,611 80,344 39,760 84,611	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (0P: 0J5JH) 682 24 86 275 27 68 856 41 188 336 15 66 1075 82 303 504 50 210 628 39 119 252 61 150 400 25 93 169 42 100 318 17 73
GADBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G8KDS G4ADJ G4ADJ G4ADJ G4FKA CEBATY MOMCX G4DFI M30XD G6CSY G4UDL G4WGE G6SFP MSKJM G6UBM G4DDL G4WGE G6SFP MSKJM G6UBM G4DDL G4WGE G6CSY G4RHR MEMDR G4DRI GARRE GBUGO MEDYI G8ZRE GARHR MEMDR GARRE GBUGO MEDYI GBZRE GARRE GARRE GBUGO MEDYI GBZRE GBRAH GBEYO MEDYI GBRAH GBEYO GBRAH GBEYO MEDITI GBITB	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532 17,030 16,074 14,432 13,494 10,224 8,584	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAI 617 47 189 *RU3VD 560 45 197 *RX3AG 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 349 32 140 *RX3OW 305 34 131 *UA3ME 305 34 131 *UA3ME 265 32 125 *RA3TU 294 24 107 *RU3DW 305 34 131 *UA3ME 266 32 125 *RA3TU 296 38 103 *UA1CV 297 29 121 *RX3OW 305 34 131 *UA3ME 268 29 131 *RX3OW 305 34 131 *UA3ME 306 38 103 *UA1CV 318 22 118 *UA5LP 318 32 108 *UA1CV 318 22 118 *UA5LP 318 32 108 *UA1CV 319 25 100 *RX3OW 318 22 118 *UA5LP 318 32 108 *UA1CV 319 30 112 *RU3DW 318 32 108 *UA1CV 318 32 108 *UA1CV 319 30 112 *RU3DW 318 32 108 *UA1CV 319 30 112 *RU3DW 318 32 108 *UA1CV 318 32 108 *UA1CV 319 30 112 *RU3DW 318 32 108 *RU3CS 310 30 30 30 30 30 30 30 30 30 30 30 30 30	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 164,1 101,8	81 956 74 654 80 640 97 584 98 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 75 281 92 225 40 482 82 382 221 44 318 30 336 34 293 30 243 30 243 30 243 30 243 30 243 31 225 40 292 81 276 82 281 83 270 84 293 85 218 86 270 87 296 87 297 88 248 89 250 80 270 80 295 81 20 292 82 297 83 211 84 293 85 250 86 270 87 291 87 292 88 292 89 293 80 295 80 296 80 297 81 297 82 297 83 291 84 293 85 291 86 291 87 292 87 293 88 293 89 293 80 294 80 294	80 279 275 275 275 275 275 275 275 275	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3RM *TM2S F5RAB F5PU F5CPF F6IQA F2JO F5MNK F5FLN TM2S F4BKV *F8AKS *F5KSE *F4BCR *F4BCR *F5QF *F4AGR	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	\$608 4189 (OP) \$308 2133 (OP) \$288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) \$288 1604 158 540 294 556 183 375 196 858 88 068 39 480 19 257 100 CE \$20 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 727 336 888 1260 193 573 1567 970 796 797 797	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 27 93 9 21 15 50 33 137 43 139 32 132 30 95 18 68 16 28 16 28 16 28 17 210 68 280 53 219 58 161 77 210 68 303 82 280 53 219 58 191 44 143 52 167 36 94 31 98 20 85 P F5PED) 9 52 103 393 72 247 73 275 F4CWN) 61 263 54 234 62 201 49 171 52 193 50 203 38 142	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DL4MCF *DK5DQ *DL7UMK *DJ4JF *DK8AX *DM9CM *DM5JBN *DM3HZN *DM5JBN *DM3HZN *DM5JBN *DM3HZN *DF6WE *DM2BPG *DRBR *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL8ULO *DJ8EW *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL8ULO *DJ8EW *DL8ULO *DJ8EW *DD1LD *DF3QG *DF1HE *DK7FP *DL8ULO *DL8ULO *DK7FP *DL8ULO *DK7FP *DL8ULO *DL8	62,946 61,826 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,306 3,7 54,201 A 1,422,656 743,792 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,586 265,200 213,080 184,006 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 173,446 170,666 155,226 151,536 144,936 151,536 144,936 153,776 113,306 165,166 102,616 100,866 198,106	320 27 90 305 25 103 (OP. DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP. DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP. DJ8GM) 1060 82 320 (OP. 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GADBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G8KDS G4RADJ G4FKA C4BDL G4FKA C4BDL G6CSY G4CDL G4WGE G6SFP MSKJM G6UBM G6U	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532 17,030 16,074 14,432 13,494 10,224 8,584 7,888 6,468	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) *UA3FD: 358 45 140 303 27 101 *RA3RG 277 36 91 *RD3DT (OP: M00XO) *UA4PJ: 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) *RA3OG 074 37 122 *RA4ST 992 25 97 *UA4PA! 617 47 189 *RU3VD 560 45 197 *RX3AG 536 42 202 *UA4WI 867 33 155 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 536 39 188 *RX6LP 506 38 168 *RN4CA 402 38 175 *RA6FZ 230 49 144 *RV2FW 349 32 140 *RX3ON 305 34 131 *UA3ME 265 32 125 *RA3TU 296 38 103 *UA1QV 277 29 121 *RV3MI 266 38 103 *UA1QV 277 29 121 *RV3MI 267 39 121 *RX3OD 305 34 131 *UA3ME 305 36 124 *UA3DC 306 37 120 *RX3OD 307 38 103 *UA1QV 308 38 103 *UA1QV 309 32 157 *RU3DN 309 32 157 *RU3DN 300 34 131 *UA3ME 300 36 106 *RA3ME 301 32 108 *UA1QV 302 38 103 *UA1QV 303 38 103 *UA1QV 304 38 103 *UA1QV 305 38 103 *UA1QV 306 38 103 *UA1QV 307 39 121 *RX3OD 307 39 121 *RX3OD 308 30 112 *RU3DN 309 30 112 *RU3DN 318 22 118 *UA6LP 318 32 108 *RU3DN 318 32 108 *R	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 222,4,7 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 101,8	81 956 74 654 80 640 97 584 98 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 60 484 81 441 27 425 75 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 30 243 30 243 30 243 30 250 40 283 16 26 80 270 80 283 16 283 17 287 81 296 82 382 83 39 40 84 318 85 250 86 270 87 281 88 248 89 250 80 295 81 276 82 297 83 291 84 293 85 291 86 292 87 291 87 297 88 291 88 291 89 291 89 291 89 292 89 294 89 29	80 279 275 275 275 275 275 262 264 568 175 265 262 265 265 265 265 265 265 265 26	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH2MFE *OH6KY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *FEDZU F5VHY F5BBD F5RAB F5PU F4CPF F6IQA F2JD F5KNK F5FLN TM2S F4BKV *F6BRP *F4BKV *F6BRP *F4DLL *F6DRP *F8DVD *F5LCU	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 3, 21 38, 14 1, 3.7 9, A 61, 51, 41, 32, 8, 2, 21 7, FRAN A 689, 528, 521, 359, 343, 106, 101, 100, 54, 7 404, 116, 100, 57 404, 116, 1171, 167, 146, 120, 115,	938 4189 (OP) 938 2133 (OP) 288 1604 116 1088 761 684 490 332 763 59 080 299 (OF) 081 80 160 182 080 43 821 158 540 294 506 192 656 183 375 196 658 88 068 39 480 19 257 100 CE 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 573 1567 970 796 (OF) 727 336 1260 1299 484 1019 (OF) 724 791 680 670 449 401 670 449 401 670 449 401 670 449 401 670 670 670 670 670 670 670 670 670 670	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 27 93 9 21 11 50 33 137 43 139 32 132 30 95 18 68 16 28 16 28 16 28 17 261 77 261 77 210 68 303 82 280 53 219 58 191 44 143 52 167 73 275 74 275 75 247 73 275 76 247 77 240 61 263 62 260 61 263 62 260 63 279 64 247 75 275 64 234 65 261 67 363 67 247 77 250 67 261 68 303 68 260 68 303	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DL4MCF "DK5DQ "DL7UMK "DJ4JF "DK8AX "DM9CM "DM5JBN "DM3HZN "DM3HZN "DM3HZN "DM5BPG "DM2BPG "DM2BPG "DM2BPG "DM2BPG "DM2BPG "DM2BPG "DM3HZN "DF6WE "DM2BPG "DM3HZN "DF6WE "DM2BPG "DM3HZN "DM5JBN "DM3HZN "DM5JBN "DM5BN "	62,946 61,826 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,306 3,7 54,201 A 1,422,656 743,792 623,392 585,714 513,966 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,001 173,446 170,666 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 155,226 151,536 144,936 173,446 170,666 184,245 178,966	320 27 90 305 25 103 (OP. 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GADBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G6KDS G4ADJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C5EBATY MØMCX G4DFI M30XD G6CSY G4LDL G4WGE G6SFP M5KJM G6UBM G4DDL G4NXG G6UBM G4DDL G4NXG G6UBM G4DDL G4NXG G6UBM G6	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 48,767 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 45,500 46,767 45,500 45,500 45,500 46,767 45,500 46,767 45,500 46,767 45,500 46,767 45,500 46,767 45,500 46,767 46,768 4	735 81 360 *UA3AB. 375 91 340 *UA3AB. 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK. 319 51 174 *UA3FD. 358 45 140 *UA3LH. 303 27 101 *RA3RG. 277 36 91 *RD3DT. (OP: M00X0) *UA4PJ. 197 34 114 *RL3AW. 061 26 109 *RV1CB. (OP: GBAEV) *RA3CG. 074 37 122 *RA4ST. 992 25 97 *UA4PA. 517 47 189 *RU3VD. 560 45 197 *RX3AG. 516 42 202 *UA4W. 517 47 189 *RU3VD. 560 45 197 *RX3AG. 516 38 168 *RN4CA. 402 38 175 *RA6FZ. 536 39 188 *RX6LP. 506 38 168 *RN4CA. 402 38 175 *RN4AM. 399 32 157 *RV3YR. 230 49 144 *RV2FW. 349 32 140 *RX3ON. 305 34 131 *UA3ME. 265 32 125 *RA3TU. 268 29 131 *RX3OD. 277 29 121 *RV3MI. 288 22 118 *UA6LP. 294 24 107 *RU3DM. 318 22 118 *UA6LP. 318 32 108 *UA1CU. 3290 26 106 *RA4NC. 318 27 108 *UA1CU. 3290 26 106 *RA4NC. 3290 26 106 *RA3NE. 3291 31 *RX3OD. 3291 32 *RU4C. 3291 31 *RX3OD. 3291 32 *RU4C. 3301 32 *RU4C. 3302 32 *RU4C. 3303 33 *UA1C. 3303 34 131 *UA3ME. 349 32 140 *RX3OD. 358 48 131 *UA3ME. 359 36 *UA1C. 368 29 131 *RX3OD. 379 12 *RV3MI. 389 32 140 *RU3DM. 399 32 157 *RU4C. 390 36 *RA4NC. 390 37 12 *RU3DM. 390 312 *RU4C. 390 36 *RU3AB. 391 31 *RU3	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 222,4 219,7 208,8 194,3 179,2 164,1 154,8 130,3 121,9 121,5 107,8 101,9 101,9 101,9 101,8 101,9	81 956 74 654 80 640 97 584 98 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 541 50 484 81 441 27 425 77 281 92 225 40 482 82 382 52 221 44 318 30 336 44 293 30 243 30 243 30 243 30 250 31 60 28 31 30 28 31 30 34 34 30 29 34 31 60 28 3 31 60 28 3 32 29 29 7 75 25 3 36 27 29 29 29 7 75 25 3 67 21 1 80 28 29 29 7 75 28 3 80 29 29 7 75 25 3 80 28 3	80 279 275 275 275 275 275 262 264 175 265 267 267 267 267 267 267 267 267 267 267	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HM *OH4YT F6DZU F5VHY F58BD F5RAB F5PU F4CPF F6IQA FZJO F5MNK F5FLN TM2S F4BKV *F8AKS *F5KSE *F4BCR *F4BCR *F4DLL *F6DRP *F8DVD *F5LCU *F5ARR *F1FPL	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	\$68 4189 (OP) \$38 2133 (OP) \$88 1604 166 1088 761 684 490 332 763 59 080 299 (OF) \$81 80 150 182 080 43 821 158 540 294 158 88 068 39 480 19 257 100 CE 1493 367 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 1567 970 796 (OF) \$727 336 588 1250 193 1567 970 796 (OF) \$727 336 1299 484 1019 (OF) \$724 791 680 670 499 401 620 475 990 562 739 529 880 591 198 449 401 620 414 295 348 285 322	0H6UM) 116 454 0H1NOA) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 9 21 15 50 33 137 43 139 32 132 30 95 18 68 16 28 16 28 16 28 17 210 68 303 82 280 53 219 58 191 44 143 52 167 77 210 68 303 82 280 53 219 58 191 61 263 54 234 62 201 61 263 54 234 62 201 61 263 62 201 63 201 64 201 65 201 66 201 66 201 67 20	DL4WA DP3D DJ4PT OL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DL4MCF "DK5DQ "DH4G "DL7UMK "DJ4JF "DK8AX "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DF6WE "DM2BPG "DM2BPG "DM2BPG "DR8R "DL8UCO "DJ8EW "DD1LD "DF3QG "DF1HE "DK7FP "DL2KCK "DL8UCO "DJ8EW "DD1LD "DF3QG "DF1HE "DK7FP "DL2KCK "DL8UCO "DJ8EW "DL5HE "DK7FP "DL2KCK "DL6UYA "DC8RU "DL6WA "DC8RU "DL4MNG "DK3WJ "DL6RBH "DK3WJ "DL1DJ "DL6RBH "DK3WJ "DL1DBR "DL6RBH "DK3WJ "DL1DBR "DL6RBH "DK6AY	62,946 61,826 61,826 14 784,044 50,040 42,726 2,366 7 133,504 19,306 3,797 623,392 623,392 585,714 513,968 344,072 311,220 310,640 298,551 285,582 265,200 213,080 184,009 173,448 170,666 155,228 151,538 144,938 140,379 136,904 115,778 113,306	320 27 90 305 25 103 (OP. 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GADBL MEWLF G3YBY G3KWK MØGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G4IIY G8KPW 28 G3RAU G4RADJ G4ADJ G4ADJ G4ADJ G4ADJ G4FKA C4ADJ G4FKA C4ADJ G4FKA C4ADI G4WGE G6CSY G4LDL G4WGE G6CSY G4LDL G4WGE G6SFP MSKJM G6UBM G4DDL G4NKG G6UBM G4DDL G4NKG G6UBM G4DDL G4NKG G6UBM G4DDL GANKG GBUGO MEDYI G8ZRE G4RHR MEMDR G6RAH GARDOL GARSO MBOCO CEBTLB MBCOP G3RSO GGRAH GGEYO MBJII G8JIB CARROL GARSO GGRAH GBEYO MBJII GBITB CARROL GARSO GGRAH GGEYO MBJII GBITB CARROL CAR	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 45,600 4	735 81 360 *UA3AB. 375 91 348 *UA3MO 279 61 243 *RA6GW 490 68 247 *RW1CV 581 52 221 *RN6FA 441 44 155 *RK6CK 319 51 174 *RN4AT (OP: G3NYY) 358 45 140 *UA3LH 303 27 101 *RA3RG 277 36 91 *RO3DT (OP: M00X0) *UA4PJM 197 34 114 *RL3AW 061 26 109 *RV1CB (OP: G8AEV) 074 37 122 *RA4ST 992 25 97 *UA4PAM 617 47 189 *RU3VD 560 45 197 *RX3AG 617 47 189 *RU3VD 560 45 197 *RX3AG 536 32 125 *RA6FZ 536 39 188 *RN4CA 402 38 175 *RN4AM 349 32 140 *RX3DN 305 34 131 *UA3ME 265 32 125 *RA3TU 230 49 144 *RV2FW 349 32 140 *RX3DN 305 34 131 *UA3ME 266 32 125 *RA3TU 230 49 144 *RV2FW 349 32 140 *RX3DN 305 34 131 *UA3ME 266 32 125 *RA3TU 296 38 103 *UA1CV 277 29 121 *RV3WN 294 24 107 *RU3DN 318 22 118 *UA5EP 296 38 103 *UA1CV 277 29 121 *RV3WN 277 29 121 *RV3WN 277 29 121 *RW3MI 294 24 107 *RU3DN 318 22 118 *UA6EP 181 32 108 *UA1CV 230 26 97 *UA1CU 230 26 97 *UA1CU 230 26 97 *UA1CU 231 24 106 *RU3DN 318 22 118 *UA5EP 170 25 86 *RA3ME 139 30 112 *RW3MI 131 17 57 *RW6AH 133 17 57 *RW6AH 133 18 60 *RU3XB 141 20 52 *RX3MN 153 17 57 *RW6AH 153 18 60 *RU3XB 154 34 *RA3EG 157 *RU3YB 158 44 *RU3YB 159 25 100 *RV3DB 170 25 86 *RA3ME 131 17 57 *RW6AH 133 17 57 *RW6AH 133 17 57 *RW6AH 134 17 57 *RW6AH 135 15 53 *RA1TV 86 15 51 *RA3EG 141 20 52 *RX3MN 151 17 57 *RW6AH 153 18 60 *RU3XB 154 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SV8CRI SV1GRD SV1GRD SV1GRD SV1GRD SV1GRD SV1CER *J43J *SV1UT 2* *SV1JG *MUBGSY *MUB	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,457 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 44,270	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 167 56 13 44 1511 89 332 (0P: 0J5JH) 682 24 86 275 27 68 856 41 188 336 15 66 1075 82 363 504 50 210 628 39 119 252 61 150 400 25 93 169 42 100 318 17 73 751 30 162 1621 28 166 817 9 65 296 70 158 404 32 116 166 54 114 90 14 43 73 23 47 (0P HA3DMF) 42 14 28 315 14 59
GADBL MEWLF G3YBY G3KWK MEGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G3TXF G8KDS G4RADJ G4RADJ G4FKA CEBATY MOMCX G4DFI M30XD G6CSY G4UDL G4WGE G6SFP MSKJM G6UBM G4DDL G4WGE G6SFP MSKJM G6UBM G4DDL G4WGE G6CSY G4RHR MEMDR G4DRI GARRE GBUGO MEDYI G8ZRE GARRE GBUGO MEDYI GBZRE GARRE G	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532 17,030 16,074 14,432 13,494 10,224 8,584 7,888 6,468 3,264 11,302 9,464 16,951 16,951 16,951 16,954 16,951 16,954	735 81 360 "UA3AB. 375 91 348 "UA3MO 279 61 243 "RA6GW 490 68 247 "RW1CV 581 52 221 "RN6FA 441 44 155 "RK6CK 319 51 174 "RN4AT (OP: G3NYY) "UA3FDI 303 27 101 "RA3RG 277 36 91 "RD3DT (OP: MØOXO) "UA4PJI 197 34 114 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"RX3MM 115 51 "RX3QD 36 164 "UA4AQ 37 170 "UA6AR 38 12 30 "RK6CM	### 414,0 ### 389,8 ### 334,0 ### 334,0 ### 334,0 ### 254,6 ### 254,6 ### 222,4 ### 219,7 ### 208,8 ### 154,8 ### 130,3 ### 121,9 ### 121,5 ### 130,3 ### 121,9 ### 121,5 ### 130,3 ### 13	81 956 74 654 80 640 97 584 98 652 90 649 51 616 80 499 81 624 84 394 94 540 50 464 75 296 80 444 75 281 80 484 81 441 27 425 78 225 40 482 82 382 52 221 83 336 84 39 4 80 293 30 243 30 243 30 295 31 276 32 227 35 218 36 299 37 297 38 291 39 297 37 291 38 291 39 292 39 297 30 295 31 297 32 297 33 291 34 293 36 293 37 297 38 291 39 297 39 299 39 299 30 31 32 33 30 31 32 34 30 30 31 32 34 30 31 32 32 34 30 31 32 32 32 32 32 32 32 32 32 32 32 32 32	80 279 275 275 275 275 275 262 264 265 277 275 267 267 267 267 267 277 277 277 277 277	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH8	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	\$68 4189 (0P) \$68 2133 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SV8CRI SV1GRD SV1GRD SV1GRD SV1GRD SV1GRD SV1CER *J43J *SV1JG *MU8GSY *MU8G	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,457 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 646,030 151,840 129,560 84,611 80,344 39,760 34,380 113,124 171,654 60,606 134,520 75,036 55,104 5,814 4,900 1,344 8 27,448 4 10,044	6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 167 56 13 44 1511 89 332 (0P: 0J5JH) 682 24 86 275 27 68 856 41 188 336 15 66 1075 82 303 504 50 210 628 39 119 252 61 150 400 25 93 169 42 100 318 17 73 751 30 102 1021 28 106 817 9 65 296 70 158 404 32 116 166 54 114 90 14 43 73 23 47 (0P: HA3DMF) 42 14 28
GADBL MEWLF G3YBY G3KWK MBGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G4IIY G8KPW 28 G3RAU G4RDJ G4ADJ G4ADI G4ADI G4ADI G4ADI G4ADI G4ADI G4ADI GALDL G4WGE G6SFP M5KJM G6UBM G4DDL G4NKG G6UBM G4DDL G4NKG G6UBM G4DDL GANKG G6UBM GADDL GANKG GANCO CEBTLB MBDYI G8ZRE GARHR MBMDR GANCO MBDYI GBARAH GANCO CEBTLB MBCOP G3RSD GANCO CEBTLB MBCOP G3RSD GBRAH GBITB CEBSJC GANGU CHANCO CHANC	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 48,787 45,500 4	735 81 360 "UA3AB. 375 91 340 "UA3MO 279 61 243 "RA6GW 490 68 247 "RW1CV 581 52 221 "RN6FA 441 44 155 "RK6CK 319 51 174 "RN4AT (OP: G3NYY) "UA3FD) 358 45 140 "UA3LH 303 27 101 "RA3RG (OP: M00XO) "UA4PJI 197 34 114 "RL3AW 061 26 109 "RV1CB (OP: G0AEV) "RA3OG 074 37 122 "RA4ST 992 25 97 "UA4PAI 617 47 189 "RU3VD 560 45 197 "RX3AG 536 42 202 "UA4WI 867 33 155 "RA6FZ 536 39 188 "RX6LP 506 38 168 "RN4CA 402 38 175 "RN4AWI 399 32 157 "RV3YR 230 49 144 "RV2FW 349 32 140 "RX3OW 305 34 131 "UA3ME 265 32 125 "RA3TU 296 38 132 "RU4CS 296 38 132 "RU4CS 296 38 132 "RU4CS 296 38 132 "RU3CD 297 29 121 "RV3MI 294 24 107 "RU3DW 305 34 131 "UA3ME 266 32 125 "RA3TU 296 38 103 "UA1CV 277 29 121 "RV3MI 297 29 121 "RV3MI 298 24 107 "RU3DW 305 36 124 "UA3DW 305 36 124 "UA3DW 305 37 118 "UA3DW 307 29 121 "RV3MI 298 24 107 "RU3DW 308 27 101 "RV3DW 309 30 112 "RU3DW 309 30 112 "RU3DW 309 30 112 "RU3DW 301 30 112 "RU3DW 302 30 8 103 "UA1CV 303 6 124 "UA3DW 305 34 131 "UA3ME 306 124 107 "RU3DW 307 128 "RU3DW 308 129 129 "RV3DW 309 30 112 "RV3DW 309 30 112 "RV3DW 309 30 112 "RU3DW 301 12 "RU3DW 301 12 "RU3DW 302 140 "RX3DW 303 141 "RX3DW 304 144 "RV2FW 349 32 140 "RX3DW 368 168 "RA4NCB 368 169 "RA4NCB 377 29 121 "RV3MI 388 22 118 "UA3DW 399 32 157 "RV3DW 305 34 131 "UA3DW 306 34 131 "UA3DW 307 128 "RU4CS 308 103 "UA1CV 309 25 100 "RV3DW 309 30 112 "RV3MI 300 112 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F6IQA FZJO F5KSE *F4CPF F6IQA FZJO F5KSE *F4CPF F6IQA F7JO F5KSE *F4CPF F6IQA F7SKSE *F4CPF *F4CP</td> <td>A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,</td> <td>\$68 4189 (0P) \$68 2133 (0P) \$88 1604 166 1088 761 684 490 332 763 59 080 43 821 158 640 294 656 183 375 196 858 39 480 19 257 100 CE 1493 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 1567 970 796 (0 727 336 1269 1299 484 1019 680 670 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 680 670 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311,226 310,646 298,551 285,586 265,206 213,086 184,009 173,446 170,666 155,228 151,538 144,938 170,666 155,228 151,538 144,938 173,448 170,666 155,228 151,538 144,938 173,448 170,666 155,228 151,538 144,938 173,968 173</td> <td>320 27 90 305 25 103 (OP DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP DJ8GM) 1060 82 320 (OP DJ1YFK) 1019 67 286 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 597 63 237 2 601 52 228 2 484 55 216 3 597 63 237 2 601 52 228 3 484 55 216 3 597 63 237 3 601 52 228 3 484 55 216 3 491 56 208 (OP DK2DQ) 5 44 49 216 3 491 56 208 (OP DK2DQ) 5 44 49 216 3 491 56 208 (OP DK2DQ) 5 44 49 216 3 491 56 208 (OP DK2DQ) 5 48 45 170 5 48 41 178 4 37 44 174 5 391 52 164 6 479 33 178 (OP DF6QC) 3 393 45 175 4 36 32 170 3 423 35 170 3 436 32 170 3 423 35 170 3 436 32 170 3 437 39 148 3 59 39 156 3 303 45 175 4 39 39 156 3 303 33 141 3 267 37 150 3 298 40 145 3 298 40 145 3 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*F8AKS *F5KSE *F4BC *F4CPF F6IQA FZJO F5MNK F5FLN TM2S F4CPF F6IQA FZJO F5MNK F5FLN TM2S F4CPF F6IQA FZJO F5KSE *F4CPF F6IQA FZJO F5KSE *F4CPF F6IQA FZJO F5KSE *F4CPF F6IQA FZJO F5KSE *F4CPF F6IQA F7JO F5KSE *F4CPF F6IQA F7SKSE *F4CPF *F4CP	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	\$68 4189 (0P) \$68 2133 (0P) \$88 1604 166 1088 761 684 490 332 763 59 080 43 821 158 640 294 656 183 375 196 858 39 480 19 257 100 CE 1493 739 255 1270 466 580 264 1213 074 253 167 495 302 294 470 193 1567 970 796 (0 727 336 1269 1299 484 1019 680 670 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 529 880 591 198 449 401 620 475 990 562 739 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GAUBL MEWLF G3YBY G3KWK MBGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G4RPW 28 G3RAU G4RDJ G4ADJ GAFKA CARDI GARDE CARDE CARD CARDE CARD CARD CARD CARD CARD CARD CARD CARD	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532 17,030 16,074 14,432 13,494 10,224 8,584 7,888 6,468 3,264 11,665 1,302 9,464 16,951 16,951 16,951 16,951 16,951 16,951 16,951 16,951 16,166 3,838 1,0372 8,844 7,888 6,468 3,264 11,665 1,302 9,464	735 81 360 "UA3AB. 375 91 340 "UA3MO 279 61 243 "RA6GW 490 68 247 "RW1CV 581 52 221 "RN6FA 441 44 155 "RK6CK 319 51 174 "RNAAT (OP: G3NYY) "UA3FD) 358 45 140 "UA3LH 303 27 101 "RA3RG 277 36 91 "RD3DT (OP: MØOXO) "UA4PJI 197 34 114 "RL3AW 061 26 109 "RV1CB (OP: G8AEV) "RA3OG 074 37 122 "RA4ST 074 37 122 "RA4ST 075 38 114 "RU3VD 560 45 197 "RX3AG 57 33 155 "RA6FZ 536 39 188 "RX6LP 506 38 168 "RN4CA 402 38 175 "RW3YD 550 49 144 "RV2FW 349 32 140 "RX3ON 305 34 131 "UA3ME 265 32 125 "RA3TU 296 38 132 "RU4CS 296 38 132 "RU4CS 296 38 132 "RU3CD 277 29 121 "RV3MI 265 32 125 "RA3TU 296 38 103 "UA1CV 277 29 121 "RV3MI 266 32 125 "RA3TU 296 38 103 "UA1CV 277 29 121 "RV3MI 294 24 107 "RU3DN 305 34 131 "UA3ME 268 29 131 "RX3OD 277 29 121 "RV3MI 296 38 103 "UA1CV 277 29 121 "RV3MI 296 38 103 "UA1CV 277 29 121 "RV3MI 297 24 106 "UBA 181 32 108 "UA1CV 277 29 121 "RV3MI 298 24 107 "RU3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3MI 294 24 107 "RU3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3MI 294 24 107 "RU3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3MI 294 24 107 "RU3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3MI 296 38 103 "UA1CV 277 29 121 "RV3MI 297 29 121 "RV3MI 298 24 107 "RU3DN 318 22 118 "UA5LP 130 30 112 "RN3BU 141 20 52 "RX3MN 150 12 44 "UA5YI 151 174 "RU3DN 315 24 70 "UA6AR 152 178 "UA5PA 153 178 "RA3AA" 164 14 53 "RA3AC 176 145 554 "UA4FU 177 RU3DN 318 22 118 "UA5LP 178 230 49 "UA1CV 277 29 121 "RV3MI 277 29 121	M 389,8 389,8 307,2 267,5 260,4 254,6 242,1 219,7 208,8 194,3 179,2 104,8 130,3 121,9 101,8	81 956 74 654 80 640 97 584 98 652 99 649 51 616 80 499 81 624 84 394 94 540 50 484 87 296 80 441 75 296 80 484 81 425 76 281 92 225 40 482 82 382 221 44 318 30 336 34 293 30 243 30 243 30 295 81 60 292 92 297 75 281 92 225 93 248 94 292 95 292 97 292 97 292 97 293 87 291 87 297 88 297 89 297 80 298 80 154 80 178 80 199 80 199	80 279 275 275 275 275 276 284 288 217 29 214 207 214 207 214 207 214 207 214 207 214 207 214 207 214 208 208 209 185 214 195 217 153 218 147 219 147 219 147 219 147 219 148 219 149 </td <td>OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6FF F5BBD F5RAB F5PU F4CPF F6IQA F5FLN TM2S F4DLM *F4BKV *F8AKS *F5KSE *F4ETG *F5CPU F5CPU F5</td> <td>A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,</td> <td> 189 189 189 189 188 1604 116 1088 1604 116 1088 1616 182 183 184 185 186 183 186 183 186 </td> <td>0H6UM) 116 454 0H1N0A) 64 237 66 241 60 209 36 141 15 38 17 67 27 93 1 150 33 137 33 139 32 132 30 95 18 68 16 28 16 14 45 77 210 68 280 53 219 163 383 72 247 73 275 F4CWN) 61 263 50 203 38 142 36 181 44 160 44 158 36 181 44 158 37 27 80 29 104 31 172 46 181 47 27 80</td> <td>DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DL4MCF "DK5DQ "DL7UMK "DJ4JF "DK8AX "DM9CM "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DM8EW "DM3HZN "DF6WE "DM2BPG "DR8R "DL8ULO "DJ8EW "DD1LD "DF3UG "DF1HE "DK7FP "DL2KCK "DL8ULO "DJ8EW "DD1LD "DF3UG "DF1HE "DK7FP "DL2KCK "DL8ULO "DJ8EW "DD1LD "DF3UG "DF1HE "DK7FP "DL2KCK "DL8ULO "DF3UG "DL6BH "DK7FP "DL2KCK "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "D</td> <td>62,946 61,826 61,826 14 784,044 50,046 42,726 2,366 7 133,504 19,306 3,7 54,201 3,7 54,201 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 6344,072 6310,646 634,072 6310,646 63155,226 6316,586 6316,666 6316,</td> <td>320 27 90 305 25 103 (OP DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP DJ8GM) 1060 82 320 (OP DJ1YFK) 1019 67 286 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 74 279 2 75 270 2 75 280 2 75 29 164 2 77 39 156 2 77 37 150 2 77</td> <td>*DLSASE *DL7JOM *DL7JOM *DL8WAA *DL1EFD 2*DD4ZN *DD1YCL *DJ6XB *DL3JRA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL2SAX *DH8BQA 1. SV8CRI SV1GRD *MUBFAL 1. HATTNX HASAUI HABBE *HABMM HASHW HASAUI HABBE *HABMM HABHW HABLI 2 HABAN</td> <td>168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 4 30,344 39,760 84,611 80,344 39,760</td> <td>6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (0P. D.J5JH) 682 24 86 275 27 68 856 41 188 336 15 66 1075 82 363 504 50 210 628 39 119 252 61 150 400 28 93 169 42 100 318 17 73 751 30 102 1021 28 106 817 9 65 296 70 158 404 32 116 166 54 114 90 14 43 73 23 47 (0P. HA3DMF) 42 14 28 315 14 59 140 10 52 229 6 48 542 27 89 322 23 93</td>	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6GFI *OH3HS *OH6FF F5BBD F5RAB F5PU F4CPF F6IQA F5FLN TM2S F4DLM *F4BKV *F8AKS *F5KSE *F4ETG *F5CPU F5CPU F5	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 31, 31, 31, 31, 31, 31, 31, 31, 31,	189 189 189 189 188 1604 116 1088 1604 116 1088 1616 182 183 184 185 186 183 186 183 186	0H6UM) 116 454 0H1N0A) 64 237 66 241 60 209 36 141 15 38 17 67 27 93 1 150 33 137 33 139 32 132 30 95 18 68 16 28 16 14 45 77 210 68 280 53 219 163 383 72 247 73 275 F4CWN) 61 263 50 203 38 142 36 181 44 160 44 158 36 181 44 158 37 27 80 29 104 31 172 46 181 47 27 80	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU "DL4MCF "DK5DQ "DL4MCF "DK5DQ "DL7UMK "DJ4JF "DK8AX "DM9CM "DM3HZN "DM3HZN "DM3HZN "DM3HZN "DM8EW "DM3HZN "DF6WE "DM2BPG "DR8R "DL8ULO "DJ8EW "DD1LD "DF3UG "DF1HE "DK7FP "DL2KCK "DL8ULO "DJ8EW "DD1LD "DF3UG "DF1HE "DK7FP "DL2KCK "DL8ULO "DJ8EW "DD1LD "DF3UG "DF1HE "DK7FP "DL2KCK "DL8ULO "DF3UG "DL6BH "DK7FP "DL2KCK "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "DC8RU "DL6UYA "D	62,946 61,826 61,826 14 784,044 50,046 42,726 2,366 7 133,504 19,306 3,7 54,201 3,7 54,201 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 623,392 6344,072 6310,646 634,072 6310,646 63155,226 6316,586 6316,666 6316,	320 27 90 305 25 103 (OP DK3KD) 2183 37 137 381 18 72 377 19 79 52 9 17 1145 21 91 409 14 62 (OP DJ2RG) 605 15 74 7 4 7 1551 107 452 944 89 375 1069 69 299 (OP DJ8GM) 1060 82 320 (OP DJ1YFK) 1019 67 286 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 544 72 270 2 569 74 279 2 625 62 265 2 657 61 216 2 800 59 269 2 74 279 2 75 270 2 75 280 2 75 29 164 2 77 39 156 2 77 37 150 2 77	*DLSASE *DL7JOM *DL7JOM *DL8WAA *DL1EFD 2*DD4ZN *DD1YCL *DJ6XB *DL3JRA *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL9URZ *DL7UIO *DG8AM *DF7GG *DG4MCB *DL3DRN *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL3SEM *DL2SAX *DH8BQA 1. SV8CRI SV1GRD *MUBFAL 1. HATTNX HASAUI HABBE *HABMM HASHW HASAUI HABBE *HABMM HABHW HABLI 2 HABAN	168 62,595 33,909 20,496 2,108 546 399 4 189,440 112,464 61,490 44,180 22,866 22,550 18,000 16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 4 30,344 39,760 84,611 80,344 39,760	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (0P. D.J5JH) 682 24 86 275 27 68 856 41 188 336 15 66 1075 82 363 504 50 210 628 39 119 252 61 150 400 28 93 169 42 100 318 17 73 751 30 102 1021 28 106 817 9 65 296 70 158 404 32 116 166 54 114 90 14 43 73 23 47 (0P. HA3DMF) 42 14 28 315 14 59 140 10 52 229 6 48 542 27 89 322 23 93
GAUBL MEWLF G3YBY G3KWK MBGHQ G7T G3VCQ G4MKP G5X G4IIY G8KPW 28 G3RAU G4IIY G8KPW 28 G3RAU G4RADJ G4ADJ GAPKA GAUBM G4DDL G4WGE G6SFP MBSKJM G6UBM G4DDL G4NKG GBUBM G4DDL GANKG GBUBM GADDL GANKG GBUBM GANKG GBUBM GANKG GBUBM GANKG GBUBM GANKG GANK	1,828,853 1 915,813 1 680,656 1 267,435 188,370 129,947 111,825 99,345 48,896 45,085 40,848 195,210 1 295,581 1 152,256 194,228 172,062 159,576 154,160 138,697 120,510 107,991 84,483 81,253 74,476 71,940 60,445 58,140 51,680 48,786 47,100 46,767 45,500 48,786 47,100 46,767 45,500 45,300 34,932 31,944 30,016 27,548 23,625 23,532 17,030 16,074 14,432 13,494 10,224 8,584 7,888 63,665 1,302 9,464 16,951 16,074 14,432 13,494 10,224 8,584 7,888 63,665 1,302 9,464 16,951 16,074 14,432 13,494 10,224 8,584 7,888 63,665 1,302 9,464 16,951 16,074 14,432 13,494 10,224 8,584 7,888 63,264 1,665 1,302 9,464 16,951 16,074 14,432 13,494 10,224 8,584 7,888 63,264 1,665 1,302 9,464 16,951 16,074 16	735 81 360 "UA3AB. 375 91 340 "UA3MO 279 61 243 "RA6GW 490 68 247 "RW1CV 581 52 221 "RN6FA 441 44 155 "RK6CK 319 51 174 "RN4AT (OP: G3NYY) "UA3FD) 358 45 140 "UA3LH 303 27 101 "RA3RG 277 36 91 "RD3DT (OP: MØOXO) "UA4PJI 197 34 114 "RL3AW 061 26 109 "RV1CB (OP: G8AEV) "RA3QG 074 37 122 "RA4ST 074 37 122 "RA4ST 074 37 122 "RA4ST 560 45 197 "RX3AG 536 42 202 "UA4WA 867 33 155 "RA6FZ 536 39 188 "RX6LP 506 38 168 "RN4CA 402 38 175 "RW3YB 506 38 168 "RN4CA 402 38 175 "RW3YB 203 49 144 "RV2FW 349 32 140 "RX3ON 305 34 131 "UA3ME 265 32 125 "RA3TU 296 38 132 "RU4CS 296 38 132 "RU4CS 296 38 132 "RU4CS 296 38 132 "RU3DN 305 34 131 "UA3ME 265 32 125 "RA3TU 296 38 103 "UA1CV 277 29 121 "RV3DN 305 34 131 "UA3ME 266 32 125 "RA3TU 296 38 103 "UA1CV 277 29 121 "RV3DN 305 34 131 "UA3ME 266 32 125 "RA3TU 296 38 103 "UA1CV 277 29 121 "RV3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3DN 318 22 118 "UA5LP 181 32 108 "UA1CV 277 29 121 "RV3DN 318 22 118 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82 221 83 248 84 293 85 250 86 270 87 281 87 287 88 248 89 250 80 276 80 283 81 295 82 297 83 291 84 297 85 191 86 154 87 287 88 191 88 191 89 292 89 297 80 154 80 292 80 154 81 293 82 291 83 291 84 287 85 191 86 158 87 287 88 191 88 191 89 292 89 297 80 154 80 292 80 154 80 293 80 154 80 293 80 154 80 293 80 154 80 294 80 154 80 295 80 154 80 297 80 154 80 156 80 158 80 158 8	80 279 275 275 276 277 275 276 286 277 297 297 297	OH1F OH3OJ OH2RA OH1BV OH5NE OH1BOI OH6AC OH3JR OH2XF OH8MNM OH3XA *OH2MFE *OH6XY *OH2LZC *OH8GZN *OH3HS *OH6GFI *OH3HS *OH4YT F6DZU F5VHY F5BBD F5RAB F5PU F4CPF F6IQA F5LID F5RAB F5FLN TM2S F4DLM *F4BKV *F8AKS *F5KSE *F4ETG *F5CR *F6CR *F5CR *F6CR *F5CR *F6CR	A 5,477, 1,737, 568, 426, 233, 65, 3, 28 31, 37, A 61, 37, A 61, 37, A 689, 528, 521, 359, 343, 106, 101, 100, 54, 7 404, 116, 101, 103, 66, 191, 171, 167, 146, 120, 1171, 167, 146, 120, 1171, 167, 146, 120, 1171, 167, 146, 120, 1103, 103, 103, 103, 103, 103, 103, 1	189 189 189 189 188 1604 116 1688 1604 116 1688 1616 182 183 184 185 186 182 186 182 186 183 186	0H6UM) 116 454 0H1N0A) 64 237 66 241 60 209 36 141 15 38 17 67 0H6CS) 7 32 9 21 15 50 33 137 43 139 32 132 30 95 18 68 16 28 18 18 18 28 18 18 28 18 28 28 18 28 28 18 2	DL4WA DP3D DJ4PT DL5JS DK8JB DF6RI DJ1AA DG5Q DL3KZA DF5AU *DL4MCF *DK5DQ *DR4G *DK5DQ *DR4G *DM7A *DL6DCD *DL7UMK *DJ4JF *DK8AX *DM9CM *DM3HZN *DM8EN *DM3HZN *DM3HZN *DM3HZN *DF6WE *DM2BPG *DM2BPG *DF1HE *DK7FP *DL2KCK *DL6UQ *DF1DD *DF3QG *DF1HE *DK7FP *DL2KCK *DL6UYA *DC8RU *DL6UQ *DL6	62,946 61,826 61,826 14 784,044 50,046 42,726 2,366 7 133,504 19,306 3,792 623,392 623,392 585,714 513,968 344,072 311,226 310,646 298,551 285,586 265,206 213,086 184,009 173,446 170,666 155,226 151,536 144,936 140,375 136,904 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 113,306 115,776 115,306 115,776 115,306 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16,215 2,650 2,030 44,736 17,214 GREECE 750,394 668,487 79,467 4 300,330 5,529 949,355 1 100,100 44,270 GUERNSEY 231,977 36,045 HUNGARY 646,030 151,840 129,560 84,611 80,344 39,760 84,611 80,344 39,760 84,611 80,344 39,760 84,611 80,344 39,760 84,611 80,344 39,760 84,611 80,344 39,760 81,13,124 4171,654 66,606 81,34,520 75,036 55,104 5,814 4,900 1,344 827,448 410,044 711,718 ICELAND 82,684	6 6 6 6 348 20 87 227 20 69 188 16 58 32 11 20 20 7 14 18 6 13 710 34 126 547 31 101 387 24 86 329 19 75 270 13 61 268 15 67 204 13 59 153 15 54 75 11 42 40 9 26 403 17 79 364 7 50 1135 93 364 826 103 340 322 49 150 1855 34 107 56 13 44 1511 89 332 (0P. D.J.J.H) 582 24 86 275 27 68 856 41 188 336 15 66 1075 82 363 504 50 210 628 39 119 252 61 150 400 28 93 169 42 100 318 17 73 751 30 102 1021 28 106 817 9 65 296 70 158 404 32 116 166 54 114 90 14 43 73 23 47 (0P. HA3DMF) 42 14 28 315 14 59 140 10 52 229 6 48

EI40W EI2JD	A	IRELAND 383,904 364,100	1091 61 218 950 59 272	*IZØFRN *IK7FMQ *IV3YIM	100	18,375 9,333 54,980	146 20 55 95 14 47 916 25 80	*PAØKDM *PA2CVD *PA1GS	*	7,224 7,056 1,628	93 1 130 1 37 1	9 67 11 52 13 31	*SP5COF *SP3CMA *SP3VSE		11,730 11,424 10,425	212 22 3	77 *Y0780 56 *Y02LS		2,769 1,656 17,860	75 11 32 13 186 16	28 23 60
EI48Z EI9HX *EI6JK *EI7CC *EI7JR *EI4CF	14 A	54,360 180,913 311,376 285,420 34,335 120,900	307 33 118 1353 27 86 778 58 254 707 55 229 277 18 91 604 25 99	*IW4BRG *IK2YGZ *IW4DGS *IZ7AUH *IW5ECP *IK3UMT		20,816 35,802 25,718 18,330 182 13,285	561 31 113 354 16 65 275 13 64 134 18 60 10 5 8 455 34 105	*PAGRBA *PAGADJ *PAGMIR	14 3.7 NORT	377 9,591 15,057 HERN IREL 214,320	23 113 209 1	8 21 5 54 0 53	*SP8HXN *SQ8IFG *SP5LMT *SP5ELM *SP5CJQ *SP68EN		10,368 10,148 8,611 7,986 7,770 7,420	93 24 1 170 9 5 64 30 6 68 20 4 49 27	"Y04AT "YRØHI 19 "Y03JV "Y03AI "Y04SI	W :	7,560 1,716	170 10 36 9 (OP: YO3HK) 999 28	30 17
II4A IK3UNA	A -	ITALY 1,911,455 1,247,750	2547 97 358 (OP: IK4ADE) 1778 101 333	*IV3AZV *IW4EGX *IZ4AKS *IW2NSE *IO1T		14,144 6,380 4,420 24 82,900	178 15 49 126 8 47 54 12 40 8 2 6 1191 22 96	GI4XSF MIBLLL *MIBJZZ *GIBKVQ *GI4AAM	21 A	8,030 538,736 242,352 186,367 95,183	101 2003 973 627	5 58 13 143 16 158 17 180 10 157	*SQ6MIP *SQ9JKD *SP9IVD *SQ8T *SP6LUV		7,370 7,107 6,916 6,512 5,888	52 20 4 107 14 5 88 16 6 57 24 5	7 *Y09CX 5 *Y09CV 0 *Y03GS 0 *Y07LF	N 14	1,634 48,678 3,720 95,551	49 9 358 17 94 9	29 69 31 88
IZBEPX IKZUCK IRZA INSVVK		826,428 494,312 276,660 231,064	1919 73 293 802 82 306 988 38 136 (OP: 12UIY) 1085 30 106	*IR58 *IK4SP8 *IK3YAA	1.8	42,804 8,250 1,376	(OP: IX1RQT) 467 14 73 116 8 47 34 6 26	*GI4SJQ *GI7AXB *MI3GZX *MIBAEX		92,560 56,718 24,153 1,148	350 3	14 164 10 107 18 79 11 17	*SQ1FYX *SP60HH *SP7TEX *SP5IKO *SP9PTG		5,698 3,620 3,402 2,466 2,175	111 18 6 50 18 3 25 19 3 53 11	1 IMB/IKE 6 ISB/WH 6 *ISBGR 4 *ISBXD	80 2 8 A	98,778 11,248	2274 32 1 422 34 1 83 24	182 120 168 50
IWOHOU IW1FPK IK2EGL IV3IPS IZDKBR	000000	194,806 182,886 140,448 134,312 101,850	502 56 201 596 45 142 489 47 129 429 56 150 361 45 130	*GJ3YHU *RAZFIA *RKZFXG	3.7 KALIN	RSEY 8,236 INGRAD 36,720 1,428	99 8 50 202 31 104 51 4 24	LB8IB LA1VNA LA3DV LA1BFA LA2U	A	NORWAY 2,734,453 48,910 24,024 18,616	296 2 221 3 161 2	15 452 15 109 10 113 12 82	*SP4AUN *SP2CA *SP2IKP *SP7EXJ *SP5COR		1,540 945 782 648 280	20 16 1 38 8 2 13 11 1 15 8 1	1 *ISØ/K7 9 16 3 2 GM7V	QB 1.	8 46,079 SCOTLAND 3,054,301	(OP: IN3Q8	475
IW4EIQ IZ4GWE IZ2GTO IZ5FSA IZ5BSA IW9CJO		58,981 55,535 34,650 27,559 21,600 11,316	189 42 127 321 36 109 198 38 116 100 50 77 164 24 72 102 24 68	YL6W YL2K0	A 2,0	TVIA 68,041	2430 121 480 (OP: YL2GD) 1100 85 287	LASVBA LASVBA LASVBA	28 14 3.7	11,514 84,150 160,792 14,756 13,728		11 46 23 87 19 82 LASKO) 9 53 10 56	*SP3LWP *SP9DSD *SQ6ELV *SP5LCC *SP4DC *SP9KJ	20	50,244 39,600 29,070 27,060 6,800 6,758	233 18 7 220 18 6 114 10 4	9 GMBF 77 MM800 10 GM3W0 19 GM6TVI	U 21	2,175,762 20,458 380,144 71,936	1657 27 1	400
IZSGST IX1CVF IX1LLZ IW7EGQ IKSAFJ	28	10,947 3,740 100 62,100 53,262	58 33 56 93 19 66 32 8 24 542 21 79 357 21 78	YL28J YL2PQ YL7A 'YL2CR	14 3.7 2	8,695 58,880 51,442 23,435	178 6 41 524 19 73 1863 24 98 (OP: YL2GM) 494 39 172	*LA7GNA *LAGNM *LABGK *LA6CF *LN7AZ	A	10,318 4,565 3,431 2,773 2,297	100 1 77 1 64 1 33 1	9 58 4 41 12 35 17 30 13 38	*SN9U *SP9OLY *SP2AYC *SP7FBQ	21	38,376 38,148 27,804 21,812	234 25 (OP: SP9UM 255 23 243 15 (9 MMGXA	U 3.7 D A B PS		216 8 858 57 2 410 41 1 568 30 1	46 255 189 183 131
IZBOXI IKOWRB IZBOPL IZBFWN IRST	21	8,195 4,326 387,180 228,582 650,916	106 15 40 100 8 34 1179 35 131 889 33 129 2206 39 125	"YL2VW "YL2II "YL3DQ "YL8M		76,896 28,980 28,809 19,422	322 37 141 195 30 110 229 25 72 112 30 87 (DP: YL2KL)	*L89LE *LA80M *LA2QJA *LA6NNA		1,643 1,435 812 483	(OP: 143 35 1 32 17	A6FJA) 8 23 11 24 7 21 7 14	SP9MRK SQ9BDB SP5SA SP2GCE SP4XQN	14	19,516 18,624 17,205 12,649 318,941	97 26 159 14 1 1092 34 1		HQ 2 AYO 1	16,368 7,008 1 47,955 4 10,808 3,902	186 18 95 17 238 24 76 24	70 56 91 32 29
IR2M IR4B IK4WKU	*	594,405 429,975 253,232	(OP: IKSORP) 1996 38 147 (OP: IZZFDU) 1387 38 137 (OP: IK4AUY) 1265 33 103	*YL2KF *YL2IP *YL3BZ *YL3FT *YL5W		4,446 2,548 1,867 71,868 97,616	54 16 41 40 17 32 66 6 23 461 25 88 1075 31 107 (OP: YL2GN)	*LASTY *LASWG *LB1LF	14 A	6,093 272 POLAND 2,835,448	122 17	7 40 3 13	*3Z6V *SQBJLU *SP98MH *SP800B *SP5DRE		44,267 30,422 27,200 11,913 11,466	(OP: SP6DW 273 15 (230 19 (159 10 4	10 P) 17 17 186 109A 17 180 1892	A .	SICILY 1,248,000 746,708	1882 66 2 (OP: IT9S	
IZBFDG IZSVA IKBSEU IZBCGS *IK2DZN	3.7 A	138,388 83,375 53,856 26,560 857,150	895 28 88 341 25 100 368 21 75 475 14 69 1398 79 316	TYL2PP LY4CW LY3CY	A 8	609 UANIA 36,200 17,170	30 3 18 1460 76 294 686 49 205	SN7Q SN5N		2,366,812 1,238,314	(OP: 2523 11 (OP: 5 1942 5	SP6IXF) 15 433 SP7GIQ) 16 377 SP5KP)	"SPSIKN "SPSAAJ "SP3ASN "SP1RW "SP4TKR		10,759 9,828 4,407 660 106,362	113 10 133 13 6 63 11 2 22 6 1 807 22 1	3 11 IT9ZMX 18 IT9YV0 6 "IT9YAI 12 "IT9ZV.	28 A	184,899 45,084 149,738 63,705	(OP: IT9VC 1062 30 1 492 20 567 51 1 249 42 1	CE) 113 58 159 113
*IW1ARB *IZ3KKE *IZ7EDQ *IW3SSA *IK6OIN *IK6XEX		766,743 430,688 363,456 361,884 282,424 278,730	1269 86 307 764 75 269 843 62 226 759 69 249 573 79 265 522 73 269	LYSR LYZCX LYZC LYZAE LYZK	: 1	43,058 74,108 68,076 61,000	332 68 202 (OP. LY38P) 595 46 165 349 37 154 291 46 140 632 15 85	SP2HYO SP588 SP6IEQ SP6OPZ SP9FT SP5GMM		206,208 76,231 72,718 58,450 54,096 45,640	263 4 300 3	99 219 18 145 12 154 12 133 14 127 15 118	*SN3X *SP1I *SP4LVK *SP1GZT *SQ5NBK		31,208 30,056 14,076 1,600 999	180 12 5 62 5 2	188 *179XTF 1 *1791ML 12 *179RJE 16 *179YSF 17		6,600 4,275 3,854 828 OVAK REPU	84 23 68 11 25 8	36 52 36 20
*IZ3GNG *IW4DUV *IZØEHL *IKTYLL *IKØRHS		239,904 228,697 227,891 212,004 179,088	397 70 224 698 65 194 528 64 217 479 68 234 487 64 182	LY280S LY1CM LY2W LY2FN LY2LJ	21 1 3.7	58,590 20,150 71,678 32,110 87,904	253 41 114 120 36 94 892 31 111 464 11 54 1059 12 70	SQ6R SN3A SN2F	28 21	28,275 467,676 13,840	325 1387 (0P: S	3 62 8 160 P3GEM) 7 63 P2GJV)	*SO9UM *SP4SHD *SP9UOP *SP3CYY *SP9BGL	3.7	46,152 25,668 23,115 15,276 9,700	660 10 1 324 10 1 296 11 1 202 12 1	2 OM3PC 59 OM7M 38 *OM4D 4 *OM5N	3.7	172,128	707 28 1 1635 21 (OP: OK2BF 834 49 2	104 93 FN) 241 253
*IW7EBE *IK2QLX *IK8YFU *IK7RVY *IR3P *IZ3DVU		164,104 162,855 147,420 129,800 117,369 105,930	396 69 223 441 55 176 416 52 182 510 47 173 499 46 161 327 49 149	*LYSMM	1,6	69,796	2486 112 463 2338 101 407 (OP: LY3BA) 1439 91 381 (OP: LY2BM) 887 68 278	SP4KDX SP3GTS SP9MR0/8 SN2B	14 7 1.8	46,072 44,304 275,919 104,497	(OP: \$ 300 2 1414 2 1287 1	73 81 (P2FAP) 73 81 13 114 13 70 (P2FAX)	*SP9HML *SP1FFC *SP5BUJ *SP3PJY *SQ5IZX *SP9LAS		8,928 8,415 7,680 5,220 2,380 1,566		11 *OM6A 18 *OM7A 11 *OM5U 10 *OM8A 28 *OM7A 23 *OM7Y	M :	89,816 89,232 71,060 44,354 20,854 16,275	396 40 1	169 168 150 112 72 79
*IZ5DKF *IK3SSJ *IK4QJF *IWØBCF/6 *IZ8FBU		105,168 93,890 92,650 92,004 85,050	414 36 132 289 53 152 400 45 125 363 42 162 293 51 159	*LY2T *LY4DX *LY2N *LY200 *LY4K	: 2	29,665 91,100 74,250 49,170 36,708	734 51 200 620 42 218 308 41 157 262 30 135 249 29 104	SP3KEY SQBJLA SP9ATE SP9BQJ		73,050 21,899 9,204 5,328	969 1	0 65 SP7VC) 8 53 8 44 6 42	*SP5CJY *SP2EXN *SN5J *SP9DEM	1.8	210 6,660 6,292	27 4 184 6	7 *OM4D. 19 *OM1TI 19 *OM3TI K) *OM4KI 19 *OM5F/	E	13,916 10,248 7,332 5,755	152 19 97 20 105 20 56 23 471 21	79 64 58 38 84
*IK2WXQ *IZ8FOV *IWØGYC *IKØJMS *IØLYO *IWØHLZ		84,150 82,414 80,925 79,212 67,374 56,496	291 46 152 427 32 146 286 52 143 264 40 121 218 42 129 321 46 130	*LY3NVV *LY2LF *LY2Y *LY1DT *LY4Q *LY1C		360 3,526 1,150 38,482 37,488 9,259	12 7 11 70 11 32 42 5 20 545 11 60 529 10 61 191 6 41	*SP1MV6 *SP9EW0 *SP1DTE/S	A .	437 347,193 330,366 296,298 273,812	(0P: S 561 8 800 6	6 17 99 228 PBONZ) 11 275 64 234 63 245	CT1ESV CT/DL5IC CT1AGS	A	432 PORTUGAL 1,324,836 674,216 124,055	22 3 1 1945 76 24 1975 66 21 341 50 16	8		36,335 6,439 1,169 880 SLOVENIA		55 42 26 19
*IZZABN *IBTWB *IKZSAU *IZØBXZ *IZZGMT		56,127 51,703 51,264 50,616 48,960	173 50 109 295 29 120 161 45 147 266 38 114 261 27 117	*LY2A *LY20U LX6T	LUXEN	1,575 25,761 MBOUR(69 3 22 425 8 55 G 1419 31 117	*SP3J *SP9NWN *SP6MLX *SP10 *SP6A		258,125 256,500 209,118 179,529 171,339	760 5 689 6 560 5 320 7	11 244 30 210 34 219 73 236 30 237	*CT1FMS *CT2HWP	3.7 A	54,448 2,026,357 284,748 134,521	390 14 (2371 105 38 (OP: CT1CJ 919 56 18 531 42 15	88 S5ØA 86 S59AA J) S53XX 88 S52QM 1 S58D	A	5,418,576 155,116 138,060 85,172 260,304	305 75 1 605 40 1 336 46 1 1314 27 1	536 172 140 153 105
*IZ4AIF *IZ5ILK *IZ7EUB *IK2YSJ *IZ8GNH *IK5FKF		46,454 44,010 42,366 39,216 37,230 36,897	225 40 141 219 35 128 118 48 90 240 34 118 222 36 110 193 36 111	*LX1ET *Z36W *Z356	411000000000000000000000000000000000000	924 EDONIA 71,968 1,540	(OP: LX1KC) 19 14 19 1003 71 272 33 12 23	*SP3JHY *SP4AAZ *SP2GJI *SP9MAN *SP1DMD *S06NES		145,167 133,280 109,729 106,372 103,212 102,592	2012	54 195 17 198 13 154 15 158 12 149 17 177	*CT1ESQ *CT4GQ *CT2FQA *CT2FUQ *CT4HA *CT1ETX	28 21 14	72,645 22,875 100 2,200 122,482 38,948	91 37 8 34 9 2 61 8 3 767 22 7	6 S59R 8 S57AL 3 S59K 2 S53M 2 S59ABC	21 14	475,209 925,106 794,034 359,240 157,077	2800 39 1 2404 39 1	135 143 147 107 FB)
*IW4ENR *IZ1A00 *IV3NVB *IZØESO *IK2WFN		35,433 26,390 24,794 18,120 17,955	215 31 96 191 27 103 139 42 112 131 23 97 135 26 79	*Z35T *Z37M ER2BAF ER10	7 MOL	31,265 DOVA 100	1983 37 122 445 14 51 75 19 46 1675 20 88	*SQ9ANS *SP3EPX *SP9WZJ *SP1KZE *SP3MEP		97,290 91,791 88,176	423 3 (OP: SP		YOSOEF YOSBL	7. A	11,360 ROMANIA 145,116 53,457	120 12 5 581 40 13 433 25	9 S52W \$53F 4 S51NZ 8 \$57M	7	151,256 697,288 97,090 86,728	2167 37 1: 919 18 1108 10	VG) 113 135 77 64
*IK1TTD *IZ2GNQ *IW2BZY *IZØCEZ *IQ2VA *IN3FHE		17,732 16,445 15,840 15,219 15,106 14,550	145 30 94 109 34 81 106 28 71 146 20 69 104 29 62 97 22 75	*ERSDX	A Z	24,100 NACO 23,856	454 67 233 194 20 92	*SPBLXE *SPBONB *SP2FTL *SP6NVK *SP7QJB	Salah e	82,460 77,737 74,210 70,844 70,760 70,656	368 3 360 3 337 3 345 3	10 150 19 152 17 144 18 140 13 112 18 154	YO3AK YO4AYE YO9HG YO2RR YO4NA YO9WF	21 14	4,959 2,100 1,890 144,256 48,403 3,977	61 9 3 51 12 3 795 28 10	6 *\$51F 3 *\$57U 3 *\$520T 0 *\$5300 6 *\$57J 1 *\$520W	•	1,005,480 891,594 670,236 246,740 234,300 114,444	996 89 3 493 59 2 697 47 1	383 315 233 166 142
*IZ2GIL *IK2IKW *IZ8KBW *I28ZN *IW4EQI *I4YUG		12,420 12,144 11,844 8,775 7,410 5,952	126 24 68 92 27 65 88 28 66 101 18 57 73 16 49 70 16 46	PABUM PABUNH PABLOU PA4A PH4U	A 1,0	RLAND: 62,558 82,671 06,175 49,636 48,256	\$ 2373 74 304 923 69 302 596 68 263 635 62 222 503 41 185	*SP7MC *SP9AUV *SP7DQR *SP6RGC *SP3BVI *SP4DDS		68,259 67,156 66,960 56,090 53,746 52,152	298 4 293 3 261 3	14 149 16 150 11 139 13 125 13 121 19 130	YR2V Y05P8F 'Y03FRI 'Y03CZW	7 3.7 A	240,024 61,582 719,378 660,956	(OP: YO9W 1334 32 11 (OP: YO2DF) 791 13 6 1227 92 32 1415 79 25	1) *\$57\$ 9 *\$500X 6 *\$50L	A 28	20,787 5,985 93,603 3,280 165,647	85 14 587 24 60 9	97 49 99 31 119
*IZBFVD *IV3YWT *IW8FCQ *IZBFTW *IK2AIT/2		4,982 4,950 4,275 2,565 2,538	66 15 32 69 17 38 58 19 38 56 17 40 47 14 33	PAGESK PAGESK PAGEAGA *PAGEAGA *PC4M	14 7 A 7	47,272 28,652 39,710 23,135 17,382	273 32 120 214 23 93 296 19 76 1385 75 288 740 55 258	*SP30L *3Z8Z *SQ9FCH *SP2AVE		51,799 47,376 46,629 45,101	222 4 199 3 (OP: 5 278 3 220 3	6 141 19 102 PBAJC) 14 123 18 124	"YOTARY "YOZMAX "YOSUG "YOSBPY "YOSUAS		196,840 151,443 103,824 95,265 91,140	600 54 26 423 57 18 338 53 15 322 50 16 345 46 17	5 *S58V 0 *S57RT 3 *S58L 9 *S56T 1 *S54A	7	57,600 4,662 103,251	632 29 645 20 422 20 81 8 648 26 1	96 71 76 34 101
*IW3IKX *IZ1DXS *IZ0BNR *IX2MLS *EZ7HAI *IZ1KGY		2,480 1,512 752 729 609 576	42 12 28 25 12 15 34 6 18 16 12 15 23 10 15 19 8 16	*PASKW *PA1TX *PA2W *PE1MMZ *PA2C *PF9A	1 1	38,278 24,301 83,090 80,774 24,320 01,493	597 60 242 639 50 181 553 49 206 428 49 193 415 40 182 391 40 149	*SP5WLO *SP9OYB *SP4BPH *SP9CTW *SP2HFH *SQ9OXT		43,555 41,100 40,469 36,958 35,733 34,776	253 3 230 2 189 3 149 3 246 2	12 123 59 121 10 113 10 114 13 106 16 100	"YOSAPJ "YOSAPJ "YOSAPJ "YOSAPJ "YOSAPJ "YOSAPJ		86,321 81,732 72,600 72,240 66,113	350 53 15 334 43 15 (OP: YO5PA 289 38 16 273 45 17 320 40 14	2 *\$562V 3 *\$550 *\$58ML 2 *\$560L	3.7	1,395	62 5 873 14 312 6	26 74 47 52 52)
*IZSHOB *IZBGUM *IWZNEK *IKBEIE *IZSICH	28	575 100 65 68,880 42,960	20 9 16 32 14 26 9 5 8 436 23 89 462 18 62	*PASEMC *PASEMC *PG2D *PHBAS *PAIPAT		97,427 56,794 46,650 43,218 42,600	469 27 160 357 26 120 250 30 120 196 39 108 242 32 110	*SP6JZP *SP4FDF *SP5ELW *SP2DKI *SQ9NRY	A. P. S. V. S.	28,496 21,546 19,758 19,680 17,556	130 3 124 3 128 3 144 2 150 3	5 102 15 91 10 81 18 95 77 87	"Y060T "Y06TP "Y060SC "Y02LXW "Y02BPZ		52,320 29,770 22,791 22,420 20,580	353 23 5 193 38 5 183 29 7 206 28 5 138 25 6	7 EA4KR 8 EA4KD 10 EA3OR 10 EA3OUN	A	SPAIN 3,815,724 2,721,325 405,840 377,136	961 58 1	434 275 185
*12808J *1W9HLM *1251MD *1250KJ *1R8M	21	37,904 24,236 5,418 167,608 167,472	365 22 70 223 20 63 71 11 32 680 31 115 790 28 116 (OP: IZSCCW)	*PE2JMR *PA2SWL *PA1PT *PA30BS *PE1PXY *PA3EWG		38,780 30,356 20,856 19,920 13,005 12,728	251 27 113 149 36 107 174 33 99 183 29 91 121 26 59 99 23 63	*SP7HTD *SQ5EBM *SP3GHK *SP9CLU *SQ4FXS *SP5TAM		17,316 17,028 16,376 15,180 14,924 12,994	86 1 280 3 141 2 128 2 116 2	9 88 6 63 2 137 6 84 5 66 70 69	"YO3DLK "YO9KW "YO3CDN "YO7AWZ "YO4HTX "YO4FTC		17,222 15,808 8,550 6,696 6,672 6,463	79 29 7 98 19 5			138,846 79,629 60,417 26,112 19,920 13,068	243 56 1 259 36 1 211 20 82 39 151 31	166 153 111 76 81 77
*IZBEPY *IW10N	2	63,468 62,595	313 28 95 379 27 90	*PA3HGF *PASP		9,652 7,921	102 21 55 81 21 68	*SP8HPW *SP2ILQ	7	12.827 12.502	118 2	14 77 12 72	"YO7LTO "YO7LYM	*	5,346 3,876	71 19 4	EA4DXP EA7J8		10,332 7,169	73 25	38

EA1D8 : 4,655 46 19 30 EA1EJ : 2,530 45 9 37	*EA1HP * 4,08 *EA1ASC * 1,88			148 15 66 121 17 58		AWAII 969,784 4040 122 242	PY2XAT PY2KP	235,710 919 28 69 114,144 419 49 74
EA7HW 1,978 29 17 29 EA1JJ 28 29,799 298 17 60	SWEDEN	*UR	8IDX 9,398 50Z 7,275	62 27 47 56 27 48	KH6FI :	329,670 744 67 95 57,385 237 54 61	PY3VB *	84,348 198 54 144 11,970 90 32 31
EA1FDI 21 644,528 2253 35 129 EA7HBP * 392,768 1443 33 119 EA5ON * 188,013 795 32 115	SM5Q A 670,99 8SBC 167,52	8 281 72 272 "UTI		84 9 49 43 13 29 10 4 6	Table 1	137,913 2763 37 112 (OP: N6TJ) 280,023 1133 28 65	PYZYU 28 PPSAMP PPSTR	634,502 1530 31 120 572,922 1632 25 101 161,880 700 24 71
EA4AID 104,610 761 26 84 EA1EXE 61,040 488 26 86	SM6FJY 162,67 SI3A 86,68	6 554 50 202 *UT1 0 320 43 154 *UR	11A 28 4,230 71KV 21 74,412	83 10 37 552 24 82	AH6JR .	18,720 187 16 24	ZXSJ 21	2,312,386 4218 40 157 (OP: PPSJR)
EA3ATM 7 62,424 335 21 81 EA1KY 40,716 357 20 67 EA1CNV 3.7 55,514 439 12 70	SM7C * 65,88	(OP: SM3LIV) *URI 225 40 140 *US (OP: SM7CFZ) *UY	7IGF 14 178,875	117 23 72 813 35 124 531 32 108	*KH6/NBCO A *KH6/NBCO A	45 3 2 3 30,628 161 34 42 752 21 8 8	ZY1A ** PPSNW 14	1,041,296 2427 31 120 (OP: IV3NVN) 878,322 2067 36 122
EA7ATX 48,544 404 12 62 EA1DVY 1.8 5,474 123 6 40	SM7BJW 51,96 SD3A 43,16	0 222 32 88 0 236 41 125 *UTS	5KO * 17,710	(OP: UY5LW) 156 19 58	*NH7PE 28	706 19 6 8	PPSNW 14 PPSFMM 1.8 *PR2A A	10 4 3 3 2,179,872 2644 88 236
*EA1WS A 881,992 1465 68 260 *EA4DAT * 423,640 1206 65 215 *EA3AKA * 376,488 986 65 259	SM7CQY 42,30 SM7E 32,99		3PGX * 1,754	113 10 37 47 7 25 305 22 82		ONESIA 154,682 354 58 120 35,805 149 31 62	*PY2SBY *	(OP: PY20E) 966,601 1445 73 178 463,188 1005 59 115
*ED5FKQ * 373,744 679 75 254 (OP: EA5FKQ) *EA3AGB * 363,916 788 70 247	SKØCT : 9,26 7,50 7,50		and a second	152 10 50 (OP: UTØFT) 135 9 43	YBØIR * 14 YB1YG * 14	34,056 132 34 65 45,120 175 26 70 10,730 89 19 39	*PY2EJ *PY30L *PY1SX	248,535 716 52 83 153,408 321 58 134 135,024 300 53 141
*EA7AA * 309,408 704 65 228 *EA3GEO * 305,550 850 50 160	SM5CEU 21 143,68 SM6WET 3.7 2,46	5 531 29 126 "UR! 0 40 9 32 "UX	5NGI 6,302 4LA 5,184	136 7 39 104 9 39	YB1AR 7 YBØA 3.7	35,364 215 25 59 2,871 48 13 20	*PY3DX *PP5BZ *	110,466 292 49 104 104,895 315 66 119
*EA7IA * 273,439 576 65 206 *EC7ANC * 251,160 469 71 209 *EA1AJV * 173,864 505 50 156	*SM3SJN A 50,37 *SM7YGZ * 48,76 *SM2KAL * 42,70	4 252 29 117 "UT	5KAT 660 1KY 650 4MKI 100	37 7 23 48 5 21 34 7 25	*YC1UGK * 1	456,960 757 77 163 122,932 352 46 100 116,263 409 41 78	*PY7VI *PY2BF *PY2SHF	56,949 196 40 83 40,273 179 35 68 25,000 109 34 66
*EA7TN * 148,480 528 42 190 *EA5GQM * 144,281 297 64 159	*SE5S * 37,15 *SM7UQH * 36,17	2 204 26 118 *UR: (OP: SM5XSH) *UZ:	5NKC 16,306 5UA 3.7 16,306 7HCX 8,004	2 2 2 269 11 51 184 8 38	*YBØKYM * *YBØEIN *	91,859 389 25 72 60,840 184 44 76	*PS8NF *PY2IQ *PX2Z	7,540 93 21 31 3,800 40 18 22 2,870 40 17 18
*EA1YR * 126,266 384 46 157 *EA7CWA * 125,721 321 62 167	*SMØBDS : 35,14 *SM7XFD : 30,80	0 210 31 109 *UT! 8 119 50 96 *US!	5UPN : 5,375 5ZCW : 4,633	121 8 35 123 7 34	*YB1UUN *YC9WZJ *YB3DIK	60,450 173 48 82 59,969 282 34 57 22,446 155 28 47	*PYZSRL *	(0P: PY2UZ) 1,221 26 14 19
*EA1CNF * 112,833 291 47 142 *EA1BLI * 94,850 418 47 128 *EB5KB8 * 82,894 248 46 145	*SM7CWI 17,17 *SE6C 14,01		9MZ 1,8 7,540 5ZLK 306	136 8 44 19 4 13	*YC6JRT * *YC6MJY * *YB0COU *	22,184 93 37 57 1,512 32 15 21 1,287 20 16 17	*PYZCX 28 *PUZMTS * *PYSWH *	187,153 657 27 82 68,222 362 20 57 22,715 173 22 37
*EA1AST 75,250 322 39 136 *EA4TX 68,303 185 51 116	*SM7LZQ/6 13.48 *SMØEPO 11,00	2 99 27 80 0 118 21 67 GW4		3620 111 448	*YC38BJ 21 5	579,410 1586 30 100 70,730 259 29 81	*PU1KGG *	15,834 118 17 41 6,519 108 17 24
*EA788 * 66,341 185 48 115 *EA5EVC * 65,598 304 39 135 *EA7FIQ * 65,403 216 50 119	*SM5AOG * 8,74 *SA7J * 8,50	The same of the sa	3NJW 52,578	2079 100 346 332 33 105 179 7 42	YCHBCU YCHDYY YBZECG 14	36,975 202 25 60 5,875 55 15 32 11,118 90 29 31	*PP2PR *PY1CMT *PY28K	4,387 77 13 28 3,708 58 16 20 1,978 66 11 12
*EB1GCA * 62,181 292 36 111 *EA1EWC * 61,944 239 42 132 *EC2AWD * 61,464 302 34 122	*SMØFM * 8,16 *SM5DXR * 4,89 *SD6DX * 3,87	0 67 24 56 *GW 5 59 18 54 *MW	VBTKX A 91,998 V1MDH 36,564	315 43 128 228 25 107 (OP: MW1MDH)	*YC7SKM 7 *YC8LZH * *YB2VTO *	11,884 58 13 14 7,524 86 19 38 3,848 50 17 20	*PP\$J0 21	581,840 1680 30 110 383,760 1212 31 92 (OP: PY2DN)
*EA1AUS * 55,068 186 46 110 *EA1OT * 54,849 240 39 102	*SM1W * 1,87	2 43 15 33 *MW (OP: SM1WXC) (OP:	WDCWJ 22,914 MMDCWJ)	159 27 87	NEW C	ALEDONIA	*PY3FBI * *PY3SGO *	157,113 614 23 76 51,780 317 17 43
*EA7NW * 53,328 156 53 123 *EA1CMP * 52,514 259 36 118 *EA1BGV * 52,299 309 39 110	*SA7AIY 1,75 *SM5NVF 1,63 *7S7V 75	3 25 19 23 *MW 5 18 11 16 *GW	73VO0 14,872 VØRZC 12,193 V8NBI 11,070	136 19 69 116 25 64 139 20 70	NEW	295,539 872 48 81 ZEALAND	*PP2RON *PT2BW *PP5JAK	27,984 239 16 32 6,600 60 14 30 5,428 50 15 31
*EA5EFU * 43,540 246 32 108 *EA2AVM * 43,520 213 35 101 *EA1CRL * 41,978 249 38 113	*SM4YPH * 37 *SM7ATL 28 16	8 9 6 8 GW	V5HOC 7,644 V3YVC 2,156 VØCRI 21 59,760	152 6 43 44 12 32 368 26 94		360,599 647 72 139 256,486 375 85 172 17,200 124 35 45	*PY4CEL *PY4PW 14 *PY2ZA	420 22 8 12 3,040 37 14 24 1,728 34 15 21
*EC1AIJ * 39,508 189 47 119 *EC5AAB * 36,162 130 50 97	*SMBKV 21 32,19 *SABQ 14 20,83	0 349 18 82 *GW 8 245 12 57	ØDCK 1.8 7,176	197 4 35 (OP: GØDCK)	ZL2DZ 14 ZL1ALZ	28,140 132 26 58 21,978 151 24 30	*PP5BB * *PT8CWA *	780 20 14 16
*EA1GAR * 34,553 242 30 79 *EA3ESE * 32,480 228 31 109 *EA5BAH * 31,932 126 37 87	*SF3E * 79	(OP: SM3EAE) VIITI	YUGOSLAVI BW A 1,435,616	A 1861 96 380	*ZL3AB A *ZL2AWH * *ZL3DW *	20,988 89 44 55 19,683 112 36 45 5,760 46 23 25	*PR7DZ 7	55,536 248 21 68 1,456 26 8 18
*EA2CE * 31,059 158 34 85 *EA7EYQ * 29,768 149 32 90 *EC4DPC * 27,376 154 31 87	*SK4UW 7 9.51 *SM3AG0 11 *SJ4F 3.7 26,92	2 152 10 48 YZ12 2 13 5 11 YT11	ZA 403,774 XN 28 16,530	877 70 232 255 11 46	WHOS A	N MARIANAS 11,880 117 19 21	*PV8IG *PY2VAI	748 35 10 24 648 23 8 16
*EB5FYF : 26,924 112 36 91 *EA1DKV : 25,080 167 27 87	"SM5ARL 1.8 2,97	(OP: SM4DHF)	M. SEGN INCOMES	2695 38 137 (OP: YU1ZZ) 2845 35 131	PHIL	IPPINES	CE4CT A	CHILE 2,058,400 2461 185 227 1,277,462 1650 89 194
*EASFFC 19,893 144 18 39 *EC7ANB 17,702 114 35 71	HBSACA 21 136,08	825 27 81 YTZ1	YU7SK) T 14 910,860	3144 38 152 (OP: 4N1JA)	DU1IVT . (004,111 1265 99 194 648,200 1430 62 113 84,535 216 52 93	CE3PG *	398,981 820 63 146
*EB5AN * 16,647 136 25 68 *EC2ADT * 16,625 187 33 100 *EA5HT * 16,198 164 12 77	"HB9TQG A 666,44 "HB9AWS ' 247,57 "HB9TSU ' 18,92	2 696 50 249	5. STORAGE	2248 34 111 (OP: YU1JW)	DU9NGNM DU1UGZ 21 *DV1JM A 3	39,729 129 52 71 66,551 419 22 39 362,781 804 72 101	*CETECF A *XQ4CW * *CE2WQ *	163,304 498 49 88 25,481 152 31 52 17,500 179 32 38
*EA3EYO : 15,150 133 26 75 *EA4WD : 14,418 136 23 66 *EA5PS : 13,221 94 37 76	"HB9TSA : 18.60 "HB9QA : 64 "HB9DHG 21 24.69	3 142 31 86 138 6 18 6 13 YT71	A 7 558,600	1073 25 76 (OP: YT1NT) 2225 37 138	*DV1JD *DV1EG 21 *DV1AV	26.663 184 35 56 45,510 240 26 48 7,498 85 19 27	*XQ5CIE 28 *CA2VDQ * *CA3SNA *	10,711 134 14 22 2,618 38 13 21 -112 9 8 8
*EA5JC 12,600 106 31 74 *EA7LU 10,890 101 21 45	*HB9SVT 3.7 78	0 51 2 18 YT6	A 3.7 410,108	1211 23 90 1955 32 116 1470 23 104	*DV1JSB *	6,345 94 19 28	*CE1E 14 *CE2SQE	40,338 249 26 57 6 1 1 1
*EA3BAK * 9,603 153 20 79 *EA7MT * 8,415 58 25 30 *EC1DMY * 8,352 99 15 43	US50 A 2,284,29	5 3062 115 449 (OP: UT7DX) 405/	A 1.8 87,840	(OP: YU18V) 1060 12 68 (OP: YU7AV)		OOK ISLANDS 31,502 308 18 20 (OP: KM9D)	HK6KKK A	
*EA3FHP * 8,120 132 10 51 *EA2BNU * 7,030 51 31 43 *EA1AQE * 5,610 56 19 36	UV5U * 1,270,81 UY8ZG * 1,104,41	6 1628 109 417 (OP: UX1UA) -YU: 4 1658 104 349	7LS * 95,526	572 35 119 396 38 141		AMERICA	HK3AXY HK3SVP 21 *HK3JJH A	438,110 877 50 143 10 8 6 5 1,144,856 1458 85 207
*EA1VM : 4,686 81 19 47 *EC2ADE : 3,965 54 16 45 *EC2AFI : 3,744 140 33 84	UY5ZZ 1,097,37 UR7HTZ 398,87 UR6QS 318,16	0 1390 113 421 -YU	1ADO * 61,787	343 42 152 368 34 103 (OP: YU1SZ)		ARCTICA 13,365 166 15 18	*HK6PSG *HK3BVD *HK3SGP 3.7	709,630 969 84 206 631,464 1005 82 167 17,490 132 16 37
*EA5FWW : 3,480 29 19 21 *EC1HD : 2,928 46 16 32	UR5AKU * 202,03 US5QR * 192,20	2 491 61 215 *YZE 0 370 76 234 *YZE	1EQ 45,024 6AMD 19,000 6ZMG 3,570	248 36 98 158 23 72 88 16 54		ENTINA 812,478 4486 118 340	Committee a	ECUADOR
*EA1AHA * 2,806 39 16 30 *EA5QB * 2,747 42 14 27 *EC1AQT * 2,610 42 17 28	UR2VA 190,07 UR5MW 177,66 UR7EM 169,00	2 572 68 143 *4N	ØW 21 322,321	1453 35 122 (OP: YT7AW) 192 22 69	LR1A . LU1HF 28 1,0	(OP: LU1FAM) 26,160 152 31 49 075,545 2584 30 125	*HC1JQ A	1,942,744 2146 91 237 KLAND ISLANDS
*EA2AP	UT6IS 154,48 UT5ECZ 132,81 UX5UO 91,94	8 505 53 193 • YU 0 422 51 182 • YU	7ZZ 14 323,850 1HFG 133,812	1621 33 117 939 26 92	LT1A 21	757,372 2009 34 120 (OP: LU3CT) 396,760 1284 33 97	VP8NO A	27,730 99 41 77 RENCH GUIANA
*EA7AEB 1,120 18 14 18 *EC3DEL 754 22 12 17	USSEEK 86,07 UYBLL 84,04	0 299 50 140 *YT1 8 168 65 141 *YT3	1VP 3.7 71,368	263 16 72 744 17 71 671 10 57	LW9ETQ .	(OP: LW4EU) 185,416 795 25 61	FY1FL A	30,130 112 48 83 GUYANA
*EG7DZL : 286 11 11 11 *EB1HPI : 100 31 18 29	UR5ZPV 79,68 UT7MD 45,43 UU2JG 29,70	6 174 37 111 *YZI 0 115 52 98 *YZI	BA 18,483	(OP: 4N1KW) 254 8 53 (OP: YT1AA)	Manager W 1979	440,572 1556 31 93 (OP: LU3HS) 998,150 2104 103 247	8R1EA 21	The second secon
*EB3EPR 28 62,094 648 16 63 *EA7GV 28,836 184 18 63 *EC4AJV 26,566 263 15 59	USBLO 13,73 UY2UQ 4,62 UW21 28 110,98	0 89 12 43 -VT		156 11 52 157 6 40		395,112 884 55 108 208,998 511 54 99 92,701 307 50 69	NETHE *PJ28VU 28	FRLANDS ANTILLES 46,053 417 17 26
*EA1DOU * 17,352 146 15 57 *EA1MR * 10,561 144 11 48	UT7QL : 35,34 UU5WW : 27,22	(OP: UT2U) 0 283 21 74	OCEANIA		*LUSCAB *	59,875 280 51 74 (OP: LU6KA)	*ZPSMAL A	PARAGUAY 2,076,896 2507 94 234
*EA3FZY * 185,136 915 26 88 *EA1YB * 147,752 581 31 115	UX2IO 21 389,13 US2IOO " 231,24	0 1607 35 135 VK40 0 1189 34 107 VK40		2015 116 227 420 69 131	*LW7HT 28 3	41,496 194 49 84 330,964 1270 21 76 293,408 1080 22 84	*ZP8VAO	496,218 975 58 133
*EA5EOR * 98,420 417 32 101 *EC7AKV * 95,616 492 28 100 *EA1BIM * 88,440 336 28 106	UW5Q 186,81 UW9I 14 501,16	3 689 32 121 VK3/ (OP: UR3QCW) VK3/ 0 2120 37 133 VK2/	AVV : 89,088 KE : 79,310	277 46 82 259 62 92 305 29 48		(0P: LW7DUC) 136,912 646 20 66 101,616 566 20 53	QA4WW A	PERU 7,452,256 4982 138 406
*EA7ANM * 76,320 540 21 75 *EA2BOV * 70,599 517 20 81 *EA1ASG * 68,256 290 24 84	UT5UML 143,38 UXØKN 40,68 UT2II 7 183,46	0 989 24 83 VK2I 0 195 30 90 VK2I	BCQ 52,704 IT 18,172	190 46 62 99 36 41	*LW2DX *	22,513 176 18 29 11,040 176 18 30 (OP: LU8SAN)	PZ5RA A	SURINAME 3,935,211 3135 107 346
*EA5KV : 63,291 432 19 54 *EA1GY : 35,145 220 26 73	E06F * 89,00	1 627 20 79 VK41 (OP: UXØFF) VK61	LAD 575 DXI 21 2,241	68 26 43 22 11 12 30 6 21	*L070 *	7,456 95 12 20 (OP: LW1DRH)	9Y4NZ TRII	NIDAD & TOBAGO 1,279,278 3095 33 121
*EC5AKW 1,647 28 11 16 *ED1CBX 14 165,300 748 23 93 *EA7KJ 66,300 480 22 78	UW5U 3.7 101,65	(OP: UY2UA) VK3	FY 2.444	728 31 71 48 13 13 348 75 128		570,752 1630 29 99 (OP: LW1DTZ) 452,738 1251 31 112	CX6VM A	URUGUAY 3,105,900 2683 108 312
*EA4UV * 54,075 343 23 82 *EA1ABS * 41,490 314 18 72	UT7QF 1.8 33,89 UT3SA * 21,88	(OP: UT7GX) *VK2 2 443 9 65 *VK4	3TZ A 177,219 2BJ 38,497 4VCC 24,624 2ZEN 9,052	134 58 79 132 40 48	Palatin and	(OP: LU9DAG) 181,288 542 33 91 13,845 120 22 43	CX2ABP CX5BW 21	49,968 258 31 41 1,441,940 3246 37 133
*EA1CCM : 31,840 215 19 61 *EA7FRX : 18,834 149 17 56	*UW8SM A 709,73 *US7IA * 325,80 *UY7MM * 275,91	4 1368 87 330 *VK3 3 704 72 250 *VK3 8 739 54 220 *VK3	2BPL 8,976 2MIC 4,416	71 25 37 70 33 35 50 20 26 46 18 24	Al	RUBA 068,480 6173 125 419	*CX4DX 28 *CX4AD *CX4ABO	101,552 428 22 66 101,280 494 20 60 36,540 254 15 45
"EA1AAW " 8,372 144 12 40 "EA5TN " 4,377 72 8 35	*UT1ML 270,98 *UT5PY 251,16	9 405 8 51 *VK3 4 1368 87 330 *VK3 3 704 72 250 *VK3 8 739 54 220 *VK3 6 633 66 208 *VK3 0 701 53 246 *VK4 4 679 53 219 *VK4	4EJ 21 109,335	19 11 12 517 26 53	The state of the s	(OP: W2GD) 564,486 3647 33 121	*CX7ACH *CX90X 21 *CX1AV 14	93,500 512 22 63
*EF2WW * 3,248 104 5 24 (OP: EA2RCA)	*UR8QR 243,55	4 1368 87 330 *VK3 3 704 72 250 *VK3 8 739 54 220 *VK3 6 633 66 208 *VK3 0 701 53 246 *VK4 4 679 53 219 *VK4 6 636 49 209 *VK3 5 512 53 223 *VK3 8 426 53 201 9 531 41 176	8AV 7 4,320	179 32 74 50 16 24 10 7 6	*P48A A 7,0	(OP: AE6Y) 660,224 5443 123 373 (OP: KK9A)	*CX9AU 7	2,706 38 15 26
*EA1AQN * 1,150 37 7 18 *EC5AQF * 165 10 6 9 *EA5CGU 7 46,640 366 25 85	*UY51E 144,73	5 400 53 184	EAST MALAYS	SIA	*CPBASE A	OLIVIA 10,868 121 21 23	YV1RDX A	VENEZUELA 424,490 992 57 113 31,536 157 31 41
*EA1ESX 4,505 88 11 42 *EA7HE 2,436 55 8 27	*USBKW ' 77,02 *UX5EF ' 65,35 *UXBFY ' 64,93	7 221 61 136 smo 0 292 39 142 sou	YY 28 192,685 GRAY 28 1,408	753 26 63 (OP: JR3WXA) 35 9 13	*CP1FF 21	24,970 198 14 41 RAZIL	4M5R 14 •YV7QP 21	371,525 1835 22 55 (OP: YV5TX)
"EA4AFP " 704 18 7 15	*UY1U * 57,87	6 272 46 136	THE RESERVE OF THE PERSON NAMED IN		PYZZXU A 3,5	903,496 3474 113 296	*YY5RED 3.7 *YW5CQ 1.8	6,290 90 11 23
*EASDIT * 89 7 3 3 *EA4ENF 3.7 13,420 185 9 52	*UY3AW 52,13 *UR7GW 48,33	6 261 32 120 2 144 50 122 WH2	2X 21 37,583	274 23 36	PP1CZ 1,0	929,336 1636 64 168 395,010 700 74 157	111111111111111111111111111111111111111	(OP: YVSSSB)

			NITE OF	Total I		DEST						1	
TI5N A	QRP 753,181 1368 8	M5AAV RA2FU	1,632 1,400	51 8 24 40 7 21	W3GM ·	1,223,632	911 111 385 (OP: K3ND)	K7RC A	14102173055	1707 137 365 (OP: KL2A)		ASIA ASIATIC RUSS	14
KA1LMR "	557,720 597 10		1,260	44 8 27 23 3 12	N3ZA W9GE/3	1,127,805 975,438	887 107 360 834 100 323	WU9B/7 * K7BTW *	440,146 218,286	605 87 211 405 59 142	RG9A	A 3,224,853	
JR4DAH "	269,584 500 8	7 268 EP3CQ 14 148 OH2GYT 12 262 LZ7H	133 99 63	9 4 7	KQ3V N3KS KQ3F	913,640 859,950 833,728	764 105 350 897 86 265 697 102 346	K7KR K7EG N6SS/7	213,600 203,592 139,239	299 78 189 405 58 146 287 60 131	UA9SP UA9CDC	* 794,490 752,928	762 95 331 788 85 287
EA3FF "	214,383 463 7	12 262 GWØVQR 12 227 GWØVQR	15	3 2 3 (OP: GØVOR)	K300 WT30	675,025 571,608	638 94 309 552 94 314	W7YES : W6SA/7	114,767 87,127	270 47 110 224 57 94	RM9RZ RA9DZ	276,192 199,626	474 65 187 432 54 140
IZ1ANK " N1TM "	154,020 669 5 121,638 263 5	55 200 OK2BYW 11 143 YT7TY	7 46,453 44,824	335 19 84 344 19 85	W2UP/3 KW3W	563,124 538,722	611 76 258 613 81 265	NJ7I N7XY	37,352 33,600	131 41 75 132 41 59	RN9XA UA9KM RV9YK	141,732 114,816 108,016	243 77 177 327 55 129 308 50 122
EA1TI " SP9RQH "	92,016 343 4	13 158 OK7CM 18 165 Y05BRZ 14 148 SP6T	32,164 25,670 20,418	325 12 74 257 12 73 166 16 67	N3AM W3OU K3DNE	518,502 474,025 454,280	606 78 231 532 83 252 603 60 217	WA7RR N6MZ/7 W7WHY	28,688 25,555 3,071	132 37 51 100 36 59 37 16 21	RA9KM RZ9IR	70,227 57,138	215 47 106 172 62 116
RW3AI " RD4HD " N7IR "	80,855 275 4	14 148 SP61 10 117 HA6IAM 54 88 SP9W	15,904 12,638	198 10 61 136 15 56	WA3G NY3C	378,252 271,392	479 82 234 399 64 200	W7IZL 1.8 WA1PMA/7		160 13 17 8 3 2	RA9AE RA9UAD	52,185 38,178	192 30 75 253 37 64
VA3DF "	76,464 221 4 73,112 179 3	0 104 JH1APZ 18 114 TA1HZ	3,852 2,880	52 16 20 77 9 36	N3KN K3WI	236,844 218,088	362 65 193 357 60 174	N8TR A	1,677,780	1061 129 456	RA9AC RU9WX UA9XLC	30,208 21 795,663 12,474	115 48 80 2092 33 138 89 16 50
RX1CQ " K7HBN "	57,824 210 3		2,849 1,566	68 8 29 38 5 13 (OP: UA9QCZ)	N3ST W3GNQ N3KV	197,316 138,645 91,816	392 45 144 294 52 143 204 57 127	WA3C/8 ** AA8LL ** N8BI	1,044,932 663,791 632,814	884 99 370 694 87 272 677 86 280	UA9UR RK9XXX	4,033 1,334	65 14 23 22 10 19
NE1RD - YO4AAC - RZ9IB -	51,246 259 3	18 96 17 111 LU1VK 12 71 7K1CPT	1,457	36 13 18 2 1 2	N3RW W2CDO/3	84,992 61,488	204 46 120 166 42 102	W8JY KC8IMB	469,980 260,848	560 83 232 441 65 173	RT9W	3.7 161,727	(OP: UA9XC) 700 17 76
JA2MWV "	43,758 254 3 39,160 174 4	4 119 OM7DX 8 62 LZ5T	3.7 33,280 16,064	503 8 57 222 8 56	WASKYY	55,491 26,964	154 51 108 99 33 74	K6VWE/8	258,542 191,388	406 69 188 362 76 170	UAØSE RWØUM	A 357,632 145,000	(OP: RX9WR) 756 84 172 570 49 96
RL3QR OK1CBB " SQ2BXI		9 114 HA506IGM	* 684	(OP: LZ3RR) 43 4 15 (OP: HA6IGM)	WR3L 2 W3/NH7C 7	1 53,200 93,868	205 24 76 317 27 97	AJ1M/8 W80HT KA8PTT	142,380 97,865 63,364	285 61 149 225 54 131 169 42 104	UAØSC RAØANO	85,888 1,426	293 58 118 28 14 17
PEZKP "	31,590 259 2	6 104 K3TW 10 77 IK5WGK	407 325	20 6 5 19 3 14	W4WTB A	2,390,284 1,502,160	1559 129 430 1048 134 435	N8KOJ N8BJQ	43,053 37,760	158 41 86 124 37 81	UAØZAZ	140	7 7 7
HG5Y K4JAF	24,360 184 2 23,406 105 3	1 84 SP2FNC 3 61 OL4W	1.8 6,820	21 3 11 162 6 38 (OP: OK1IF)	N4WW K1PT/4 N4KG	1,344,440 1,330,964 1,209,576	918 130 450 962 121 408 920 122 377	K9TRV/8 KJ8G W8CZN 14	26,793 9,945 177,045	100 38 79 78 19 46 496 35 130	TC2T	ASIATIC TURKI 21 224,510	793 26 84 (OP: TA2MW)
VK4HTM LY2FE		4 57 5 47 DL9SXX 7 71 G4CWH	3,510 3,290	93 5 34 96 4 31	N2TU/4 W30A/4	928,620 886,550	847 98 322 820 106 319	K3BU/8 1.8	34,419	496 35 130 338 16 61		CHINA	(or. themm)
YO2MBA VE3DRV	13,992 151 2 13,898 79 2	0 68 YU1RA 4 51 SM3C	1,054	29 5 26 46 3 16	K1GU/4 W4MYA	753,472 608,088	713 93 293 735 70 242	N2BJ/9 A K9IMM *	1,168,310 734,274	1026 103 327 817 85 254	BD1DRJ BA4DW	A 328,105 21 114,425	884 65 146 505 31 84
W8VE UW6G UABSBQ	10,887 210 1	3 49 0 47 9 34	ASSISTED	(OP: SM5CCT)	N4PJ K1KO/4 W4UNP	556,969 553,196 529,869	628 74 243 663 76 246 601 94 253	W09Z N9ZM WE9V	481,390 430,563 367,786	555 78 244 529 81 222 442 74 233	BA4RF	3.7 57,840	422 24 56
US5IND LA5WNA	10,038 245 3 9,010 96 1	0 119 6 69	NORTH AMER	ICA	K4DLI N4GG	480,080 333,106	551 90 250 440 85 217	W9GIG KA9FOX	163,480 151,526	263 70 174 272 73 166	VU2PTT	A 79,728	207 54 122
GØKTN 2EØZEO N8XA	7,526 105 1	6 58 4 57 KI1G 3 90 W3UA/1		1995 127 462	K4CZ K4LQ W200/4	311,404 275,172 273,676	460 65 189 390 70 206 423 66 181	WE9R W9LYN	122,576 108,329 52,624	269 54 134 267 47 122 157 50 93	JF2SKV	JAPAN A 808,758	1124 100 206
NC6A/KH6 UT2AB	6,786 71 2 6,612 91 1		1,779,215	1559 118 421 1242 116 405 1247 103 369	K3K0/4 K4GMH	263,891 257,712	328 79 244 419 54 182	WW9R K9DUR	44,280 42,693	151 43 92 134 41 92	JH8SLS JR3NZC	" 350,672 137,632	564 85 163 287 67 117
IZØCKO :	6,557 98 2 5,544 103 1	1 58 N1LI 2 44 WB1DX	1,512,541 1,260,378	1223 104 357 1042 99 342	N4JF W4JAM NF4A	212,014 208,330 203,168	403 72 181 315 71 180 339 65 159	K9GY AD9T	14,694 6,660 1,728	79 28 51 57 14 31 29 10 22	JA1MZM JA3PYC JG7AMD	117,780 80,454 49,220	299 63 93 212 60 99 189 47 68
SP2DNI ** W2JEK ** PAØFAW **	4,218 44 1 4,154 71 1	6 51 N8RA/1 6 32 K2TE/1 5 47 W1NR	1,254,987 1,043,128 971,560	969 105 372 994 87 317 801 105 349	W4FDA N4TL	202,724 202,356	311 65 171 364 56 163	N9MW 14	207,018	523 30 129	JG2REJ 7K1PTT	36,276 29,040	143 43 70 130 49 61
KC9HAV NF2L		7 23 KZ1M 0 26	818,706	791 90 296 (OP: W1EQ)	KU5B/4 KB4ET K4NAU	199,430 190,404 183,200	341 65 180 320 70 188 318 63 166	KØSR A KTØR " WBØHCH '	1,066,280 388,740 356,048	953 112 325 515 89 221 511 81 208	JH1GUO/4 JA1IZZ JH4UTP	16,810 10,112 28 4,256	109 36 46 67 33 46 63 13 19
VA3RKM ** KC9ECI ** PAØRBO **	2,800 50 2	8 20 W1EBI 0 30 W1HR 2 34	576,875 543,780	610 80 275 557 89 291 (OP: K1QX)	W4IR N4QS	182,054 176,115	296 63 164 328 49 150	KØKX N5IN/Ø	326,882 287,777	452 80 194 364 96 247	JL3VUL/3 JL3MCM	21 134,676 3,952	490 35 85 51 15 23
MMØGOR : USØYA	2,494 43 1 1,665 23 1	4 29 W1NT 5 22 N1RK	530,142 520,020	688 74 224 582 72 252	W3YY/4 ND4V	159,936 134,919	273 72 152 291 45 126	K9BWI/Ø WØLSD	224,104 174,270	340 87 170 331 68 154	JN3DSH JL1ANP	14 29,565 3,905	148 28 53 47 14 20
VE9QRP DL1JB ON3RR	1,088 33 1,026 40 858 37	8 9 W1ZZ 6 21 KV1J 7 19 KE1IH	423,808 399,360 390,735	441 86 266 500 82 230 508 72 213	KU4V AD4IE NE4M	128,400 119,850 109,140	267 64 136 280 43 127 257 49 121	W4RK/Ø WA2MNO/Ø KØOB	160,195 154,660 136,451	353 67 132 316 59 150 265 57 136	JAØFVU JI1ALP	7 14,818 2,784	100 21 41 35 15 17
K6MI PA3GNZ	744 19 1 735 32	1 13 KA2KON/1 9 26 W1QK	301,840 286,604	407 70 210 391 69 205	W6UB/4 KG4VPC	101,598 70,468	216 51 126 162 42 116	KØCS : WRØDK :	92,092 65,604	238 58 103 191 47 95	UN9L	KAZAKHSTAN A 795,652	1077 87 251
SQBJMZ KG6TGI YO9GVN	616 26 238 10 135 10	7 21 K1TC 7 7 K1JC 6 9 W1NG	249,682 242,088	357 57 197 390 57 174 276 78 234	W4VIC WW4E K8NZ/4	69,825 66,402 64,824	183 42 105 160 49 104 173 47 101	NØAT KFØGE NRØL	23,220 20,458 19,608	91 37 71 108 39 67 100 35 51		KYRGYZSTAN	
RW3VZ JK1TCV	104 10 16 2	5 8 N1API 2 2 KI4YY/1	217,152 189,210 170,040	276 78 234 385 48 162 352 61 157	N4DWK W8RJL/4	64,260 58,930	156 56 124 175 41 101	WØLM .	18,592 9,768	89 30 53 57 24 42	EX8MAT	THE PERSON	155 15 50
UA1CAK 4X6DK 28	36,098 292 1	4 4 K1FWE 1 35 WB1EDI	165,338 143,871	279 55 174 269 62 159	K4NNX N4VA K4XD	53,851 43,355 39,872	141 45 112 144 30 83 147 34 78	KØAD KVØQ 14 KEØL	553,280 61,404	14 10 9 1225 38 144 227 25 77	EY8CQ	A 104,949	255 52 117
LW3DN " Y05PCY "	14,144 166 2	6 55 AA1QD 0 44 W1MAT 2 43 W01N	116,025 108,924 84,000	209 60 161 247 43 131 189 47 121	KI4TZ K1ZZI/4	34,506 31,773	121 41 101 140 21 68	KØKT 3.7		163 22 60	HSØZDX	THAILAND A 103,362	216 63 151
YT1V " Y09BXC "	10,168 123 1: 9,686 149 1	2 50 NF1A 4 44 WA1ZYX	55,440 49,395	157 44 96 156 28 83	N9JRZ/4 K4RO K4EJ	22,473 20,493 16,287	102 36 63 93 29 52 79 33 56	AL2F A	ALASKA 110,292	495 42 49	E2ØPFE	WEST MALAYS	58 16 23
JH7RTQ " JA9QOY	2,726 40 1,178 23 738 19	9 20 W1RZF 8 11 W6ZF/1 8 10 K1RV	41,250 31,772 21,340	158 31 79 125 26 68 88 33 64	KA40TB KC4HW	14,193 5,076	96 30 53 38 17 37	AL4T	1,479	19 12 17	9M2CC0	A 18,414	107 38 55
DO1FT WBØIWG/3	266 15 182 11	5 9 K1KD 5 9 NE1F	13,926 7,488	81 18 48 50 32 40	KK3Q/4 W4WLC	3,770 2,013	45 24 34 33 11 22	8P2K 14	BARBADOS 448,500	1470 31 107	1/2402	EUROPE	- NATIONAL PAIN
PY2HL " Y050AG "	84,079 414 2 79,299 384 2 69,690 370 2	1 62 4U1WB 1 60 2 93 W1RM	3,234	68 14 19 (OP: AJ3M) 21 9 20	W4CU 2 W4WR	330 1 30,184 6,027	143 20 57 59 15 26		CANADA	(OP: 8P6SH)	OE2G OE1KDK	A 11,990 21 62,799	108 19 36 (OP: 0E2BZL) 285 28 93
HA7MW " USØYW "	47,008 224 2 32,942 259 2	5 88 4 67	0.245	ALCONOMIC TO A STATE OF THE STA	WD4DDU 1	4 109,330 67,760	311 27 103 247 25 87	VO1MP A VE3/W1AJT "	2,754,529 890,940	1962 119 450 1046 94 278		BELARUS	
US5QSF " YB5AQB " KN5G "	29,790 193 2 27,813 160 2 22,200 146 1			1299 143 519 1249 120 448 1037 99 368	WK4Y WW4LL 7	52,820 51,084 93,692	294 22 73 158 28 101 429 24 94	VB4MWA - VE9NC - VE1DHD -	884,925 502,496 417,726	2097 72 153 578 77 251 1005 53 154	EU2MM	14 27,839 BELGIUM	188 23 74
WA6FGV T	16,530 110 1 15,048 92 1	8 39 W2RD 8 48 W2LE	* 888,536 723,477	758 104 335 748 80 269	K2PT/4 AA4MM 3.	12,045	80 11 44 214 19 70	VE3ZZ/2 = VE7KET =	409,997 299,611	622 65 194 508 74 173	OT1A	A 1,496,850	2041 92 333 (OP: ON4CCP)
KIØG/5 YO5AIR JR1NKN	12,932 194 1	9 46 KF20 0 51 K2XF 9 27 W2GDJ	694,824 631,800 604,633	600 96 346 687 80 271 622 94 279	W5ZO A		679 105 282 680 77 257	VE3XB VA3NR VE2BR	280,953 262,752 246,645	396 78 201 604 63 141 398 65 196	ON6LR OR4K ON4BHQ	263,110 161,460 70,281	417 82 235 505 46 188 246 42 129
7K4QOK "	10,241 114 2 7,644 131 1	0 29 K2BX 0 42 K2TTT	587,265 575,168	654 77 252 702 76 276	N5JR K5NZ NA4M/5	620,238 300,108 253,927	680 77 257 423 90 191 372 80 191	VE4EAR VA2AM	221,556 148,750	445 72 150 312 59 179	ON4TTT ON3MAX	16,320 3,364	148 18 62 64 15 43
SQ4LP " JL3SBE " IN3PEE	6,794 67 1	3 43 N1EU/2 7 26 N1JP/2 2 47 W2LK	490,860 490,827 331,692	463 97 308 556 75 252 469 63 199	W5GZ KE3D/5	225,675 198,900	403 72 153 345 74 160	VE1RAR VE9FX VY1MB	95,170 77,935 14,952	262 39 116 200 39 104 282 14 14	ON4WW BC	1.8 108,880 SNIA-HERZEGO	1221 11 69 IVINA
JL7XBN "	6,440 78 13 6,298 76 13	3 43 N2AB 8 29 K2ONP	322,385 321,912	407 68 237 403 71 235	N5KDV K5HTE W5GA	177,870 95,370 50,196	312 66 165 249 65 122 164 51 90	VE5MX VA3SX	11,814 7,670	70 25 41 77 22 37	T96C	A 936,491	1388 97 340
OK1AIJ 7N4WPY DL9GTI	3,219 77 2,926 36 1 1,260 39	7 30 K2GN 4 24 NA2U 4 26 KA2D	302,820 270,354 235,872	411 72 222 352 69 218 380 57 177	K5EWJ N5DEE	47,436 11,470	160 45 89 65 29 45	VEGJY 14 VE3MGY 1.8	161,395	365 37 132 245 3 3	LZ8A	BULGARIA 98,604	390 50 148 (OP-1728E)
JA1KPF JD1/JE1LCK	720 18 544 72	7 11 N2SQW 4 4 K2XA	173,888 130,255	330 55 153 228 69 170	W9DX/5 2: KA5M 1: N5JB 7	4 47,553	405 28 101 150 28 93 328 27 88	EMARINA	MARTINIQUE		LZZZG LZ7J	38,982 28 38,106	(OP: LZ2BE) 131 46 100 385 20 67
YV5IAL UT4UWT	220 22 10 10	5 6 WK2H 4 8 NA2NA T5UPN) W2RZS	115,020 112,005 80,755	249 43 137 239 45 126 217 40 115				FM/K9NW A FM5JC	7,238,810 180,894	589 40 106 (OP: F5JKK)		CROATIA	(OP: LZ1RGT)
VE3KZ 14 VE6EX "	126,238 379 2 68,400 436 2	8 99 2 53 K2SQS	* 71,996	(OP: W82NVR) 194 44 120	N6ED K6TA	622,875 544,027	774 105 228 617 114 261 567 103 258	FM5FJ 14		907 28 98	9A3GI 9A3KS	A 153,374 67,996	514 44 177 244 43 135
PG2AA SP4GFG YT15ØCS	50,127 370 1 47,564 365 2 24,336 392 1	9 74 N2NHN	62,040 49,750 48,960	169 36 105 157 37 88 148 41 95	N6QQ :	454,113 297,135	594 73 224 420 95 184	XE1MEX A XE2WWW 14	286,110	359 91 215 725 29 73	9A7D		1780 36 125 (OP: 9A3HX)
IZ1DGG "	22,411 264 1	YT1CS) W2YJ 1 62 WF2B	46,169 29,300	145 46 91 116 30 70	K6ST K6RIM N6AJR	287,985 269,760 199,206	448 84 179 372 82 199 416 77 140				OK1KT		1137 114 418
S56C " HA1ZV "	21,016 218 1 16,704 163 1	4 60 N2DWS 5 57 N2VM	26,260 18,336 435	99 30 71 102 31 65 11 6 9	N6NG KZ5OM/6	153,062 140,976	297 65 138 303 66 112	NP2KW A	507,345	1110 67 160	OK2FD OK7Y	* 855,570 * 471,580	830 118 452 897 78 302
KF8BT " UA1CEC " SP1RFC "	14,885 97 1: 13,847 204 1: 13,545 185 1:	3 48 KS2G 0 53 W2TB	21 41,366 14 159,711	176 18 68 440 28 111	N6VH AE6RR	138,367 70,641	(OP: K6III) 289 58 121 189 64 103		AFRICA ALGERIA		OK1CO OK2BEN	306,590 174,482	(OP: OK1FDY) 724 62 248 614 44 198
G4DBW ". VE3IAE	13,452 191 10 13,014 107 1	0 49 WR2G 7 37	114,070	345 23 99	NGIC KGGEP	69,333 54,270	239 37 84 177 52 82	7W2W A		4851 102 425 (OP: OK1CDJ)	OK1BOA OK2ZC	117,056 81,253	380 52 184 239 50 143
Y08CQM " EABARG " S56L "	10,384 179 12	6 43 K3WW 2 47 N3AD	" 3,088,684	2050 148 547 1874 129 497 1732 130 467	WB6JJJ N6DA AK6DV	51,800 48,783 48,636	143 54 94 178 37 64 153 51 75	EASBZH 14	NARY ISLAM	IDS 229 21 58	OK1FHI OK4DZ OK7M	61,710 45,240 14 786,227	205 47 140 222 37 119 2209 40 157
sasww •	8,094 123	S57LX) AA3B 9 48 W3PP	" 2,009,815 1,857,457	1375 115 426 1208 129 452	KG6TT W6EB	33,578 25,441	131 42 61 109 42 61	EA8AJO -	14,940	71 20 63	102000000	1.8 37,510	(OP: OK1DIG) 673 9 53
ON3TO * K2HN * 9A2EY	3,627 56 1	9 34 K9RS/3 1 28 NN30 8 29 W3CC	1,487,904 1,339,205 1,256,375	1039 124 404 1071 96 365 887 120 409	W6SZG K6GT N6RO 7	18,190 12,089 76,100	75 43 64 62 31 46 305 30 70	C52T A	GAMBIA 1,814,720	1997 70 250 (OP: GØTSM)	OZ1FAO	DENMARK A 27,270	144 38 97
58707	77.5548 T	211 110000	in-exist.	199	CONTROL CONTROL	.0,100				A CONTRACTOR		TO THE PARTY OF	STREET, SELL PRIN

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4PWA 3TBK	A	ENGLAND 1,804,725 380,422	1424 119 505 80		GU6RWD GU4EON	A C	GUERNSEY 94,880 20,349	457 149	34 126 26 93	S57DX S51DX	A	SLOVENIA 3,828,697 149,872	3499 139 497 46	534 186	LU1BJW LU4DX	14	203,580 619,680	509 1439		90 25 XE	IRCS	MEXIC 2,669,280		122	2
ISSVL MØUNI MØVXE	14	158,268 14,490 126,585	429 51 129 17 621 33	191 53	HA6M	A	HUNGARY 137,700		49 176	\$58P \$52ZW \$530	28 21 14	206,733 676,236 618,878	1124 27 2008 38 2283 37	110 150 132	ZX2B	A	BRAZIL 5,846,880	3881 (OP:	124 3 PY2MI	196 YN:	2EJ	NICARAG 982,756		87	1
ØVDZ	1.8	2,405 ESTONIA	92 5	32	назм	14	CHEFT CHE	2909	HA5PT) 39 155 HA3MY)	S51CK S57UN S58M	3.7	175,763 151,298 139,360	1378 26 1149 18 1275 20	93 89 84	ZX7A PR7AB		644,652 387,684	1050	65 1 PS7TI	89	3U	PUERTO F 1,163,678		85	1
S6Q S5RW	14	360,510 178,560	1191 38 953 31		HG1A		189,874	1130	33 106 HA1ZN)			SPAIN			PR7AF PY5ZD PY2BRZ	:	273,686 94,887 22,072	468 326 120	62 1 35	64 82 53 V49	9A	ST. KITTS & 2,219,271		92	3
RW3WWW RD4WA		962,724	2470 112 1338 108	363	EI9ES EI6CPB	A 7	1RELAND 40,672 11,780	289 181	23 101 10 52	EA7RU EA7OT EA5BY EA3CHZ		2,125,983 776,000 562,244 433,610	1939 109 1047 88 744 86 887 73	428 312 281 258	PR7AP PY3CAL PY2MTV	28	16,800 2,294 81,291	104 48 428	36 14 19	64 17 FS/	WY3P	3,080,096 3	3778	97	3
RA3DNC RK3QS RW3DD		444,385 248,688 189,810	1003 70 726 54 341 76	210	IR4M	A	ITALY	4167	151 559	EA5YJ EA5FID EA1WX		416,008 332,766 289,520	1037 68 556 64 960 35	230 202 105	PY2XC PY5TJ PY5IO		38,628 1,400 836	203 23 47	13 17	54 15 27 IF9		AFRICAN I	TALY	106	24
A4CCC U3LA W4PL		187,093 159,809 135,952	586 53 496 64 259 80	176 183	IR4T		4,847,472	3866 1	IK4MGP) 150 537 P: 14UFH)	EA3LF EA5BWR EA4TA	*	272,935 165,170 141,010	417 96 518 44 419 54	227 155 185	PY2NDX PY2DY PR7AR	3.7	42,330 20,664 750	197 126 26	26 21 9	76 63 16 VQ		CHAGOS ISL	ANDS	77	
X6LD A3LZ V3ZQ	:	121,095 109,836 67,704	386 46 356 50 217 39	161 176	IZ2FOS IZ7GWZ IK3SCB		1,637,635 1,087,653 605,143		103 432 95 248 68 251	EC4CIY EC5ANF EA4DLX	:	62,511 61,019 28,764	221 53 222 43 202 31	148 118	CE3BFZ	A	CHILE 2,187,204	2174	105 2			MADEIRA ISI 5,551,492	LANDS	114	
A30Q A6YY Z3ARO		51,256 28,890 22,356	229 42 100 40 149 31	130	IK1JJM IQ6FU IV3MGN		281,082 85,488 72,982	870 281 320	61 176 50 158 41 141	EB2CYQ EA1DBC EA1FBJ		22,987 14,616 4,860	192 32 98 24 89 15	95 60 45			I-OPER			CN		MOROCO	co	162	
A3VE A3NZ	:	15,390 12,546 9,483	127 20 109 22 63 25	60	IZ4AFW IW3BAS IWBHBY	28	41,199 31,878 99,684	183 243 778	27 66 26 100 24 84	EC2AUD EA1BFZ EA1ACP	28 21	756 39,000 160,805	23 8 352 16 575 31	19 62 114	21	NORT	TRANSI	RICA	:H	ZSS		SOUTH AF		66	
A6YIU A6ADC A3MNB		4,850 3,417 2,318	76 12 40 13 23 17	38	IZSASZ IC8FAX IV3JVJ	21	3,195 735 220,632	53 34 737	11 34 5 16 37 137	EA1DAX EA1CUB EA1APV	14	14,112 199,268 196,131	89 19 1003 30 872 33	53 94 108	K1KI K1IR	5,8		1002 1	50 56 22 45	6		ASIA	SIGNES CESSON C	15	
W6FO N3VR N4SD	:	1,431 1,131 676	43 8 42 1 21 9	19 0 29 17	IZ5CML IW7EFC IZ5DKG		199,206 187,124 74,970	708 758 250	33 120 33 131 32 115	EA1CS EA7TV EA2CLU	7 3.7	93,692 24,765 88,825	602 26 172 19 597 18	92 67	K2BA N2KPB	66		03 9	29 29	6 UA	90Z0 9UZZ	2,529,900 2	3540 2779	130 113	
N3GM J4A0 A3BS	21	96 50 225,549	4 4 20 10 844 33	15 138	IU3X IR3Z	14	673,466 354,960	(OP:	38 153 (V3HAX) 38 132	V=-12(-212)(5)		SWEDEN		245	N2LBR N2BZP NE2I	40 18	5,126 53 6,651 3	32 7 45 6	76 24 77 24 33 16	10 RK	9CWW 9AWN 9TWA	1,051,948 1 758,286	1075 982	97 77	
.3BM 43Q0 \3VJV	14	205,076 279,049 10,692	778 33 1082 38 154 11		IR8C IW2MWZ	*	290,394 15,825	1400	31 115 17 58	SM3PZG		456,785 368,856	793 75 (OP: SM: 862 63 197 33	346 50JZ) 264 110	K20AK N2NGW	3	8,226 1	42 4		96 RZS	9XWO 9WXK 9CYA 9WZZ	253,970 177,840 166,315 147,810	517 363 412 341	51 53 47 51	
J6LA	7	357,696 FINLAND	1425 35	4 (200)	IQ8EB		332,046 39,396	(OP 353	31 112 : IV3ZXQ) 18 80	SA1A SEØW		33,891 21,120	(OP: SM1 141 28 (OP: SM2	TDE) 68	W3MF W3NX K3MD NI7T/3	1,519	5,972 12: 9,388 12: 0,916 10: 3,748 9:	47 10 10 10	77 37	12		CHINA		97	
HEDX HIMM	^	1,249,236 434,721 112,240	1318 104 478 100 256 54	389 190	IC8POF IR1R	3.7 1.8	62,062 44,170	576 623 (OP	15 76 9 61 : IK1HJS)	SM4FYX 8S4S/6	28	627 874	38 8 50 4 (OP: S	25 15	K3II N3BNA W3ZGD	71 25	0,094 74 2,144 3	40 8 86 7	37 28 78 22 76 18	84 B71		1,473,241 1		102 97	
12BJ 18L 17M	14	90,404 867,620	312 54 2519 38 (OP: 00	150 H8LQ)	YL9T	A	LATVIA 690,801		82 327	SM6YOU SM6U 7S5C	21 14	41,600 290,500 30,960	255 23 972 37 216 18	77 129 68	K300 W3LJ	9	7,728 2	33 5	57 13	35	AJ20	16,083,132		153	
12BO	1.8	769,986 11,100 FRANCE	2316 39 174 9	150	YL2IS		600 LITHUANIA	18	13 17	SJ2W	1.8	14,363	(OP: SM5 265 8 (OP: SM3)	CBM) 45	N4RV K3EST/4 K4HR	2,50	0,448 17 2,624 18 9,012 12	69 11	9 40	74 15 33	wv	1SRAEI 4,529,547		102	
I7F BNH	A .	3,373,290 504,315	3209 113 (OP: FI 819 69	6GLH)	LY1R	A .	2,552,094	3058 1 (OP	125 441 : LY1PM) 88 333	HB9FBS	S	WITZERLAN 53,975	4 Paralla Continues	68	W3GQ/4 N4TP W7IG/4	1,59	9,430 12 1,720 4	34 11 24 6	18 39	33 39 JA7	YAA		2127	138 125	
CMF IN RKF	:	176,697 167,328 117,992	369 62 351 69 257 63	199	LX7I		UXEMBOUR 4,695,376	G		UZ7U	A	UKRAINE 3,406,032	3392 135	519	K5NA K5TR	3,47	2,950 23: 7,336 25	96 14	(L) (V.D)	JM JA1	ILPN IYPA ZEY	2,036,521 1,430,924	1905 1591	136 115 108	
TIM ICGL IABQ	:	35,772 30,257 910	207 30 268 17	Committee of the Commit	LAM		MOLDOVA		P: LX2A)	UT6EE UT5UKY	2	325,080 5,103	634 67 63 16	248 47	K5FD W5WP W5LCC	1,25	2,242 12 1,246 8	01 11 54 10	19 31 01 29 33 14	19 JA2	ZJW BYKC IZYI	335,664 325,128 41,496	654 618 240	82 91 30	
PHW BAKC IEBN	28 3.7	480 18,768 21,320	15 11 260 12 303 8	13 56 57	ER1FF ERØND	A 14	5,412 645,150		6 38 39 148 : UT7ND)	UR6IJ UR4MRD U5WF	28 14 7	2,688 304,920 60,876	41 9 1460 34 396 22	33 120 92	AA5RO K6LRN	30	1,275 2 7,050 4	16 5 49 8	50 E	39 JA1	YOU	14,280 MONGOI		22	
JAAX	A	GERMANY 4,584,400	3060 146		PIATUE	NE	ETHERLAND 352,065	s	52 193	GWØGEI	A	WALES 891,737	1540 83	324	W6YX W6VLD W6TOI	13 5	8,600 30 7,096 20	62 5 41 4	70 12 50 10 16 7	76	IDX	THAILAN		89	
180G 12YA ØWW	:			547 488	PA3C PAØKHS		244,822 133,371	467	P: PC5A) 69 265 40 179	GW3YDX	21	79,134 YUGOSLAVI	The second secon	96	K6HRP KW6H		3,813	41 1	18 2	23	BAC	EUROF	PE	112	
HØGHU L5KUT K1QH		838,880 783,591 740,792	1121 92 1054 83 1165 82	364 337	PH3BDJ PE1FTV PA50		107,322 52,909 48,960	436 305 202	38 148 31 126 40 113	YU9VK YU7WI 402A	21	209,342 136,875 706,140	504 50 2531 36 (OP: 4N	169 144	W7VJ NN7SS	1,22		14 12 18 10	22 28	60 OE	50	10 DUMBER.	562	29	
5ZV 05M		673,000 667,520	866 103 911 90 (OP: D	358 JØZY)	PE4BAS		11,776 NORWAY	104	26 66	YZZA YT1BB	14	974,826 768,626	3059 40 (OP: Y2 2787 40	146	N7YX W7ED W7TU W7JQ	13 11	8,504 3 7,852 2	16 4 88 5		N. 40.	822	TORRESPONDE CO.	151	13	
BDAZ SWE 1RG		596,942 560,300 540,570	905 89 1084 77 934 71	348 354 299	LA20KA LA5UJ	÷	44,840 8,892		34 118 11 41	4N8A YZ500A	7	583,038 102,704	2418 35 (OP: YU	127	KBAZ NG9T/8	1,63	5,096 10	98 13	35 44 79 21	4 OT	6P	1,340,757	2 605 1885	114 95	
19MH 14PI .7ON		484,812 412,455 347,852	697 83 490 100 520 86	365 312	SQ9IDE	A	POLAND 485,826	975	69 305	TESUUN	3.7		(OP: YU	7CM)	WC8VOA W8VM	8	1,620 2	16 4	16 10			204,709	1037 664	61 55	
.4RCK .8AAM		345,840 317,170 293,280	681 75 429 80 729 55	314 257	SP6RLK SP3KCL		313,608 174,244		76 282 58 196 SQ3LLR)	VK2ATZ	A	OCEANIA AUSTRALIA 27,234	125 41	61	WN90 K9VV WB9AYW/9	15		96 6	3 15	54 9A	38	2,570,736	6213 2946	162 119	
2080 2RMC	:	287,625 266,328 251,034	625 62 538 65 474 67	178 234	SP4Z SP5XO SP4PSU		105,728 104,060 69,973	311 406 338	64 160 42 178 38 129	VK2KRM VK1AA VK4NEF	21	3,828 1,820 54,780	55 25 28 15 322 23	33 13 43	NØNI KBRF	3,14	8,368 21: 0,661 20	39 14	Ser 63	58		CZECH REP		86	
SNC 100 34A		232,645 199,920 161,550	556 57 501 58 376 58 (OP: DL	236 167	SQ5MGG SP1S SP8QED		67,774 25,058 22,848	311 116 157	34 172 42 92 31 88	VK4AN	3.7 EA	1,827		15	WØ/EA1BXI WC7WB/Ø KØUE	N 62 20	9,766 10 3,619 3	67 9 86 5	94 26 59 16 71 15	50 OL 58 OL 53 OL	7R 1X	5,354,427 3,619,000	4200	150 135 99	
BZAJ 1GDS BYR		150,255 148,512 114,271	410 55 408 43 376 45	210 195	SP9KJU SQ9IWS SP1RKT	28	9,120 8,640 24,402	73 127 235	26 50 14 50 17 66	9M6DXX	A	GUAM	2289 115		WØEEA NØUNL WØEF	13 9 5	9,728 2: 3,219 2: 5,675 2	50 6 39 5 19 3	55 14 52 10 36 9	48 OK 09 OL	2BDF	269,180 197,286	691 507	58 64	
12SR 4YAO 4WF		105,648 99,990 70,447	344 49 290 51 257 46	164 151	SQ8LSC SN1X	21	984 250,826	19 922	8 16 35 131 SP5XVY)	WH60	A	1,611,668 HAWAII 23,177	Date of the	229	WBØTRA	2	0,691 1	07 4	12 5	0Z	8W	The state of the s	681	50	
9KM HAD 8QT		56,772 46,620 32,805	143 52 128 56 203 28	119	SP8IMG SP8BRQ SP3GXH	14	247,828 725,036 98,704	973 2115 406	34 133 39 152 28 96	KH7U KH6RZ	21 14	791,440 676,022	112 36 2735 31 2205 35 (OP: W	73 83 6YM)	KL2R	8 E	7,634 4 BAHAMAS			65 66		4,165,560	4547 3221	146 143	
3YA 9MDM 1DRS		29,120 27,588 21,780	156 30 126 36 176 23	74 96	SP8TJU SP1GZF SQ7FPD	?	69,716 30,870 23,040	400 334 394	28 88 21 77 8 52	KH6/AF7DX	3.7	14,976 INDONESIA	119 19	29	C6APR	61	6,528 13 CANADA	73 7	73 15	53 M4 G21 M5	A	2,267,870 1,244,092 1,194,084	2462 1666 1754	121 100 97	
GRS .3APM .3EBX		21,712 21,000 19,367	96 40 92 38 155 18	78 82 89	SP5ABB	1.8	2,275 ROMANIA	81	5 30	УСЗММ	A	117,710 FW 7FALAN	271 48 ID	110	VE3RM VC7G VA3SK	1,79	9,630 31 4,000 34 4,164 20	24 11 24 10	18 28	91 G31 B2 M2 04 M2	W H	1,094,140 1,023,264 644,800	1598 1688 1109	86 90 75	
THE R. P. LEWIS CO., LANSING, MICH.		14,664 7,448 6,490	124 28 104 17 105 8	59 51	YO4RST YO3CTK YO8BFB		141,525 137,004 24,750	349 184	45 180 61 172 24 75	ZL4PW ZL4AS ZL3WW	A	461,745 13,692 31,875		181 48 30	VE6SV VO2MK VA2TG	1,37		38 7	73 24	19 M4	U T	444,027 292,800	1456 1028 767	65 52 60	
2VE 4KUG	100	5,400 3,800 442	70 15 39 15 23 7	35 19	YO7LKO YO6EZ YO9GJX	*	5,346 5,208 403	84 75 28	24 57 16 40 12 19	DU1IST	A	PHILIPPINE			VA3VO VA3OC VA2ZM VE2CO	18	8,100 5: 6,430 4	09 7 25 5 09 6 71 4	12 11 70 15 51 12 50 14 16 13 10 10	63 M5 20 G3' 46 36	YNN	181,692 152,086	570 466	44 49	
C2VE L4KUG L5SVB L2KUF L4KBB		15,096	136 12 1579 37	161 (F9ZP)	YP3A Y04RIU	14	403,712	(OP:	37 145 Y03GDA) 37 129	VK9AA		1,307,339	NG 3026 35	122	VE2CQ VA2RC VE7OGO VE2UMS	8 7	4,672 2 1,173 3	71 4 47 4 47 4 74 3	10 10 11 6 34 6	07 RL: 52 RT 52 RO 43 RK	6A	5,447,582	4422 4140	160 161 149	
C2VE L4KUG L5SVB L2KUF L4KBB L1NUX P9Z	28 21	594,396	(OP: U	0.00	YO4AB		86,394	498	26 95 2 6		sni	UTH AMER	(OP: V	K2IA)	VE7NA VE1SLL	1	7,963 1	26 2 62 1	28 4	33 RF	3DZB 3A	2,259,435 2,082,448	2493 2624	128 120	
C2VE L4KUG L5SVB L2KUF L4KBB L1NUX P9Z L4KW M3PKK L2ARD		19,355 4,182 1,027,984	147 17 46 15 2683 38	36 150	YO3III	1.8	56				00	O I I I FRIELD	IIUN							-	3112 00	2 040 702	23E4	1.75	
L8ZVG C2VE L4KUG L5SVB L2KUF L4KBB L1NUX P9Z L4KW M3PKK L2ARD L2YL F2UU L1RWN F8AA		19,355 4,182 1,027,984 579,020 30,624 19,942	147 17 46 15 2683 38 1961 39 531 7 374 7	36 150 131 59 52			SCOTLAND 85,065		31 128	LU8YE A8A		ARGENTINA 2,889,881	2984 117	272 304	T48M		CUBA 8,508 24		73 15	55 RV	3DXW 4CWW 6AWM 4W	1,603,056 950,404	2199 1726	132 110 88 87	
C2VE L4KUG L5SVB L2KUF L4KBB L1NUX P9Z L4KW M3PKK L2ARD L2YL F2UU	14	19,355 4,182 1,827,984 579,020 30,624	147 17 46 15 2683 38 1961 39 531 7	36 150 131 59 52 34	YO3III	A S	SCOTLAND	435	31 128 25 61	LUSYE AYSA LR1F		2,889,881 2,806,558	2984 117 2523 105 (OP: LUB	304 (ADX) 162	THE REAL PROPERTY.	DOMIN 2,20		UBLIC 11 9		SS RV RL RK S4 RK	4CWW	1,603,056 950,404 828,000	2199	110	

RK4HYT RK3AWK	238,497 603 202,350 588	56 57	221 228	AO3BE EB1WW	2,363,136 1,464,564	3110 2209	117 82	427 299	HR2RCH	HONDURAS 1,127,902 2137	82 189
RK4CYW UA3R RK3SWB	67,900 235 61,125 205 12,474 70	47 48 28	128 115 53	EA2BI EA2RKO ED2WW EA1FCR	579,285 385,884 289,413 208,250	1443 893 967 564	59 72 62 50	256 252 181 188	VPSDX TU	7,356,720 5642 13	
OH5Z OH6XX	FINLAND 3,227,301 3072 1,851,350 2123	145 131	547 479	EASTV	123,692 SWED	367	56	158	NP28	U.S. VIRGIN ISLANDS 7,208,825 6252 13	
OH2TI TM6M	5,456 66 FRANCE 7,819,830 5110	16	46	7\$2E SM6RXZ SK7A	1,445,310 29,592 6,765	2013 248 89	101 23 16	404 85 39	EABAH	AFRICA CANARY ISLANDS 21,141,571 9465 10	62 659
TM2T TM7Z TM2B	4,844,100 4159 4,495,568 4242 2,348,568 2839	143 148 110	580 572 414	HB9BLQ	SWITZER 2,377,548	-	126	500	ZS9X	SOUTH AFRICA 6,943,845 4830 13	33 412
TM8D F8KCF F5KEE F5KIN	2,098,140 2866 1,206,150 1584 587,836 1243	108 98 70	402 375 288	UZ2M UZ11	4,328,124 495,292	3621 1055	151 73	628 288	3DABWW	SWAZILAND 4,985,264 4345 1	18 354
FEKEV FSKKD FSKAR	233,160 595 141,960 501 139,997 848 90,538 430	57 41 30 36	233 154 91 167	UWBL UR4EXW UR4PWC UT1KWA		680 628 315 300	71 59 33 22	260 215 113 102	3V6T	TUNISIA 23,901,295 10972 10 ASIA	67 636
DK1MM	27,661 184 GERMANY 6,017,193 4026	157	112	YTBA YU7AJM	YUGOSL 5,234,649 61,410	AVIA 4081 268	155 40	622 138	R7C RKØAYT	ASIATIC RUSSIA 3,342,240 3615 1	36 524 86 212
DP4K DR5A DL4GBA DL2F	3,656,924 3143 1,975,788 2037 1,166,330 1498 968,863 1659	139 123 98 77	585 516 408 350	VK1CC	OCEAI AUSTRA 1,517,454	ALIA	101	205	B7P BY1TT		33 362 42 62
DL1M DLØGL DL1RYD DRØT	797,615 1035 767,076 1396 675,584 978 413,976 727	92 66 96 83	363 225 368 284	9M6BRC	EAST MAI 511,128	AYSIA	71	158	JA6ZPR JA1ZGP		13 271 90 144
DA3A DKØED DKØDH	299,808 645 261,385 573 35,313 292	70 66 25	277 239 124	AH2R	GUA 4,979,040		147	359	JATYAI	2,415 29 KOREA	16 19
DLØHFC	GREECE	9	10	YEØX YE1ZAT	1,630,590 1,220,560	1881 1598	99 81	240 211	JT1C	MONGOLIA	46 74 78 160
J48RT J42WT	1,557,600 3485 443,460 1275 HUNGARY	78 68	322 217	WHBAC	NORTHERN N 541,444	MARIAN 1059	NAS 86	137	37.10	EUROPE AUSTRIA	100
HG1S	7,832,204 5048 ICELAND	159	669	DX6M	PHILIPP 2,002,560	arrena arr	113	223	OE2S OE9R	8,382,465 6183 11 1,995,662 2823 10	59 660 09 453
TF1KW	782,782 1569 5,928 78	71 16	251 41	LR2F	SOUTH AN ARGEN 9,554,200	200	145	474	9A7A	The state of the s	67 700
EI7M EI9E	8,065,260 6345 1,911,012 2709	146 94	631 395	LUSHM LU7HN LU8XW	6,847,996 5,129,208 327,666	4391 4091 752	142 126 57	444 378 137	OKSM OK10UE		22 491 79 322
IR2C IO4T	ITALY 4,886,832 3890 4,032,081 3554	148 134	584 577	LR7E LW6DW	214,795 104,086	639 347	46 57	87 85	0Z3RIN		82 338
IQSGR. IZGERS IQØPG	2,011,310 2692 1,078,640 2264 794,170 1667	106 82 85	381 306 325	ZY7C ZW58 PY2AA	BRAZ 10,652,910 6,374,073 3,457,400	5648 4207 2777	142 134 117	548 437 353	SX5P	DATE OF THE OWNER OF	24 524
IW9GTD IQ1AO IQ5FI IQ8PZ	730,944 1206 558,175 1093 256,940 734 65,275 293	102 81 64 45	384 334 226 130	PYSEW PW2C ZW1TT ZV5C	2,203,234 1,393,821 1,186,020 470,554	2177 1736 1394 1008	110 108 87 75	264 243 243 128	M8C G4UJS M1P G6M	2,129,472 2304 1 2,008,593 1915 1	26 518 08 468 22 481 96 393
RK2FWA	KALININGRAD 6,883,352 5168	155	653	PYZERA	62,700 CHIL	The second second	38	62	ES1A	ESTONIA	88 339
YL1XN	71,712 422	39	127	CEZLS	673,948 668,479 ECUAD	934 1247	83	173	RU1A	EUROPEAN RUSSIA	62 640
Z36A	MACEDONIA 981,866 2096 MOLDOVA	82	316	HD2A	1,578,660 FRENCH 6	2357	80	237	OH4A	FINLAND	33 539
ER3R	1,434,349 2678 NETHERLANDS	85	328	FY5KE	19,720,610 NETHERLANDS	8196	170	675	DO4W	GERMANY	51 609
PA7MM PI4CC PA1T PAØAA PFØX PI4ZI PI4ZOD PA25FMF	3,148,600 2754 1,517,233 1800 676,377 1105 600,732 1362 367,030 989 347,115 1005 26,536 242 8,601 131	135 105 70 81 56 67 25 15	565 422 281 288 198 250 99 46	PJ4E	MULTI-OPI TWO TRANS NORTH AN UNITED S	SMITT MERIC TATES	ER A	530	DR5N DLØCS DR5Z DP6A MU5W	4,765,696 4003 1: 4,648,959 3916 1: 4,497,345 3618 1: 4,474,470 3741 1: GUERNSEY 752,862 1745	38 578 44 619 39 556 49 596 65 309
LN3Z LN3C	NORWAY 2,187,548 2521 595,424 1203	112	487	KBTV/1 NG1G KC1F	3,380,383 1,684,674 602,374	2191 1421 674	129 112 85	478 407 264	HG6N	HUNGARY 8,624,550 6834 1	58 667
LAIK	24,205 213 POLAND	68 22	300 81	N2RM W2CG W2ZQ W2YC	2,657,187 2,593,470 2,341,926 603,992	2073 1864 1659 636	110 121 120 103	397 421 438 309	IR4X PI4COM	13,654,120 8265 1 NETHERLANDS	76 719
S09Q S050 SN9Z SN2K SP@PZK	2,725,272 3215 1,689,405 2018 1,447,776 2111 1,199,780 1961 848,320 1449	112 125 104 101 88	482 490 424 377 352	N3RS K3DI N3MX	6,964,156 1,641,413 1,571,688	3679 1260 1215	147 110 106	577 381 392	PI4WNO	161,245 732 NORWAY	15 490 48 223 31 155
SP9KRT SN5T SP4P8I SP6KCN	290,686 918 222,547 645 129,389 340 123,717 446	75 68 68 53	287 255 201 200	WASEKL WAWS WARM	878,475 3,948,870 3,902,130	2741 2726	99 130 131	326 460 442	SP9KDA	POLAND 1,044,820 1871	90 386
SP3KPN	906 13 PORTUGAL	10	12	ABSK KSYA	550,456 1,708,488 1,439,395	702 1477 1164	81 126 120	251 362 359	CG4T	and the vertical of	83 306
CQ4U CS2P CT1GG0	2,237,200 2982 1,399,880 2116 346,541 692	99 92 57	377 351 190	W5N0 W6YI	241,175 3,143,400	534 2435	75	200	178A	SAN MARINO 2,664,900 5474 SPAIN	80 325
YOSKRR YOSKRW	ROMANIA 303,072 836 3,870 45	56 16	231 27	W60AT NK7U	1,577,339 3,440,613	1207 2685	139	360 416	EA1URG ED1RGT	662,178 1412 419,980 1071	71 316 65 267
IQ9BF	SICILY 376,678 653 195,640 526	86 64	245 228	K8ZIZ NØIJ	57,682 871,370	175 892	45 110	106 285	UU7J	UKRAINE 8,727,840 7000 1 OCEANIA	78 677
IR9K	60,726 326	46 IC	128	KC8PQJ VY2TT	2,310 CANA 6,775,225	72 DA 5226	119	23 456	VK4WR VK6ANC	AUSTRALIA 2,555,218 2582 1	15 264 01 214
IR9K IR9P	SLOVAK REPUBLI 9,431,424 5807	168		VE7SV	5,318,640 4,231,810	5559 3575	128 123	317 404	ZM2M	NEW ZEALAND 2,291,883 2546 1	15 234
	9,431,424 5807 5,724,484 4133 194,134 773	158 47	651 179	VE3SY VE6FI VE5RI	1,593,568	2676	87	217		and the second second	
OMBA OM5M	9,431,424 5807 5,724,484 4133	158					87 89 82 71 55	217 193 184 169 136	LTSH	SOUTH AMERICA ARGENTINA 749,265 1450	69 140



The #1 JA Multi-Single was JA7YAA.

CV5D	URUGUAY 1,991,642 2449	89	245	DQ5T DLØNT	630,075 23,655	942 333	97 59	368 190
	MULTI-OPERATO MULTI-TRANSMITT			MD4K	ISLE OF 10,949,400	77 177 177	148	544
	NORTH AMERICA	-		нве/нвел	LIECHTEN ON 5,520,138	A-10.001A-1	112	486
K3LR KC1XX W3LPL	14,957,712 7257 12,399,972 6190 11,663,872 5842	170 157 167	666 630 669	LY7A	LITHU/ 4,944,264	ANIA 6039	132	557
NQ41 K3NA/1 K1RX	6,971,692 4495 6,777,000 3575 6,292,208 3575	158 147 147	558 603 569	PASZ	NETHERI 4,823,148	ANDS 5437	135	536
K1TTT KB1H W2AX	6,188,628 3478 3,551,205 2252 2,851,938 1879	149 137 127	559 514 462	LNZT	NORW 83,496	454	36	150
NE3F WBAIH K2AX	2,663,628 2030 2,156,000 1949 1,552,446 1216	121 130 114	440 430 404	SN4L	POLA 175,560	ND 827	57	223
WZXL AC4RC K3PU	934,038 863 242,929 438 136,184 271	103 75 72	338 202 160	ISBA	352,086	NIA 1019	60	243
W9VT V268	56,631 192 ANTIGUA 16,736,711 10722	146	545	GM8B GM2T GM6NX	SCOTL 4,973,792 4,443,504 548,613	5405 5606 1602	136 114 62	561 510
VE7UF	CANADA 114,784 419	48	88		SLOVAK RI	EPUBLI	C	289
JSA	GRENADA 12,809,306 8991	139	508	ОМВМ	7,324,666 SPA	IN	159	643
WP4BH	PUERTO RICO 448,745 1052	52	147	EASEJI	1,148,642 SVALB	ARD	100	379
XF4DL	REVILLA GIGEDO 8.843.208 8441	143	100000	JW5E JW7QIA	535,432 135	8	7	182
	TURKS & CAICOS ISLA 5,390,539 4929	-	391	VK4UC	OCEA AUSTR 4,356,970	ALIA	142	336
WP2Z	U.S. VIRGIN ISLAND 8,129,720 6673	135	428	ZL6QH	NEW ZEA 5,980,928		144	344
	AFRICA CANARY ISLANDS			DX1D8T	PHILIPF 493,272		74	130
EF8A	10,279,720 6511	130	480		SOUTH A	MERIC	A	
CT3YA CT9L	MADEIRA ISLANDS 23,587,600 9753 20,530,520 9413	175 158	697 632	PJZT N	17,208,288	S ANTIL 9652		504
	ASIA	ATT.	75,700	YV4A	15,007,586		146	525
INTYRK		157	457					

JA3YEK

JATYRR JA2YKA

UP56

9KZHN

XXSC

BY2B

OHØZ

OE7B

OT6A

RK6YZZ

TM2Y

DR1A

DFØHQ

DK3W

6,288,534 4087 4,761,140 3686 51,830 236

KAZAKHSTAN

7,170,701 4936

KUWAIT

MACAO

9,230,724 8207

TAIWAN

683,728 1524

EUROPE

ALAND ISLANDS

AUSTRIA

BELGIUM

EUROPEAN RUSSIA

899,610 1601

FRANCE 8,031,452 6491

GERMANY 16,893,040 11290

14,074,620 10412

928,872 1380

11,921,840 9344 161

34,224 195

7,179,900 4271 137 513

9,438,984 8826 157 644

151 55

146

151 452

91

29

151

175

175 89

693

745

755 367

97 374

354 87

CHECKLOGS

The following logs were used as check logs. Check logs are always appreciated: 4X4REM, 4Z5FL, 4Z5ML, 4Z5OZ, 9A3MA, AA5AU, CT3MD, CU2JT, DG18QC, DG1LS, DK5QCE, DL1DUQ, DL3MG, DL5MG, EA1AHC, EA2RY, EA3BJM, EASDKU, EABMQ, EABNQ, EBSKB, EC4DU, EC5KB, ER3DX, F5NZD, F6HMQ, F6IRF, G3UHU, GIBOUM, GMØNBM, GM7NVA, HAØGK, HA1SN, HASAZZ, HA6PX, HA7UL, IOBST, ISØLLJ, IT9BLB, IW4EMG, IW7ECJ, JA2KVD, JT1CS, K3SWZ, K5WW, K9HY, KFØIQ, LA3BO, LA4OGA, LA6BNA, LA6PBA LASHGA, LASTJA, LASXKA, LY1CT, LY2IC, LZ1AQ, LZ1JZ, LZ1ND, LZ1VCT, MØPCB, OH1PY, OH2BCD, OH3NWQ, OH5NZ, OH5PT, OH6IO, OK1KDO (OP: OK1WN), OK2EQ, OK2PCL, OK2SG, OKSOK, OK7RJ, ON3OS, PABJED, PYBFF, PY5ZHP, RABALM, RABQD, RA1AUW, RA1QX, RASAD, RASCO, RASCO, RASXDX, RASZOM, RA6HSM, RA6YDX, RK3XWO, RK6MY, RN4ACQ, RN6FK, RUØAT, RU3DZ, RU3EJ, RU6YY, RV6FG, RW3CW, RW3SU, RW4NX, RW4UW, RZ4AWA, RZ9WF, SA2Z (OP: SM2YPZ), SA7AOI, SA7AOM, SM6IQD, SN2M (OP: SP2XF), SO8N (OP: SQ8GHY), SP2UKT, SP3BVA, SP3FLQ, SP3YM, SP5ANY, SP5BYC, SP5GDY, SP6CZ, SP7HOV, SP7TES, SP8TDV, SP9CVY, SP9RRH, SQ3JVW, SQ4HRN, SQ5MX, SQ5NF, SQ6MS, SQ9E, SQ9ITM, SQ9MZ, SV1XV, UA1AKE, UA3AAJ, UA9CEP, UA9CL, UA9JLL, UA9LGD, UR4UGL, UT4EK, UT4ZG, UUØJC, UW7W, V73RY, VE2AXO, VE2TZT, VE3FDT, VE3IQ, YB6LD, YL2TQ, YO2CMI. VE2TZT, VE3FDT, VE3IQ, YB6LD, YL2TQ, Y02CMI, YO3BZF, YO5OAW, YO6OAF, YOBGF, YT1AA, ZL1TM.

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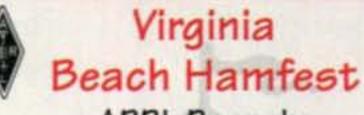
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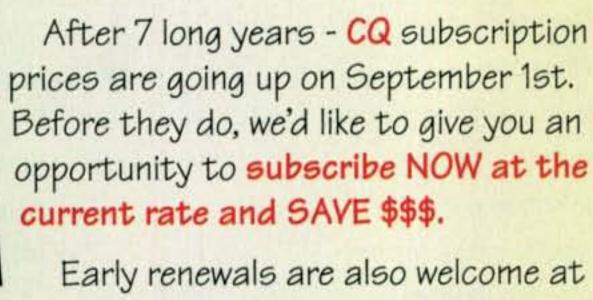
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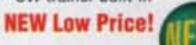
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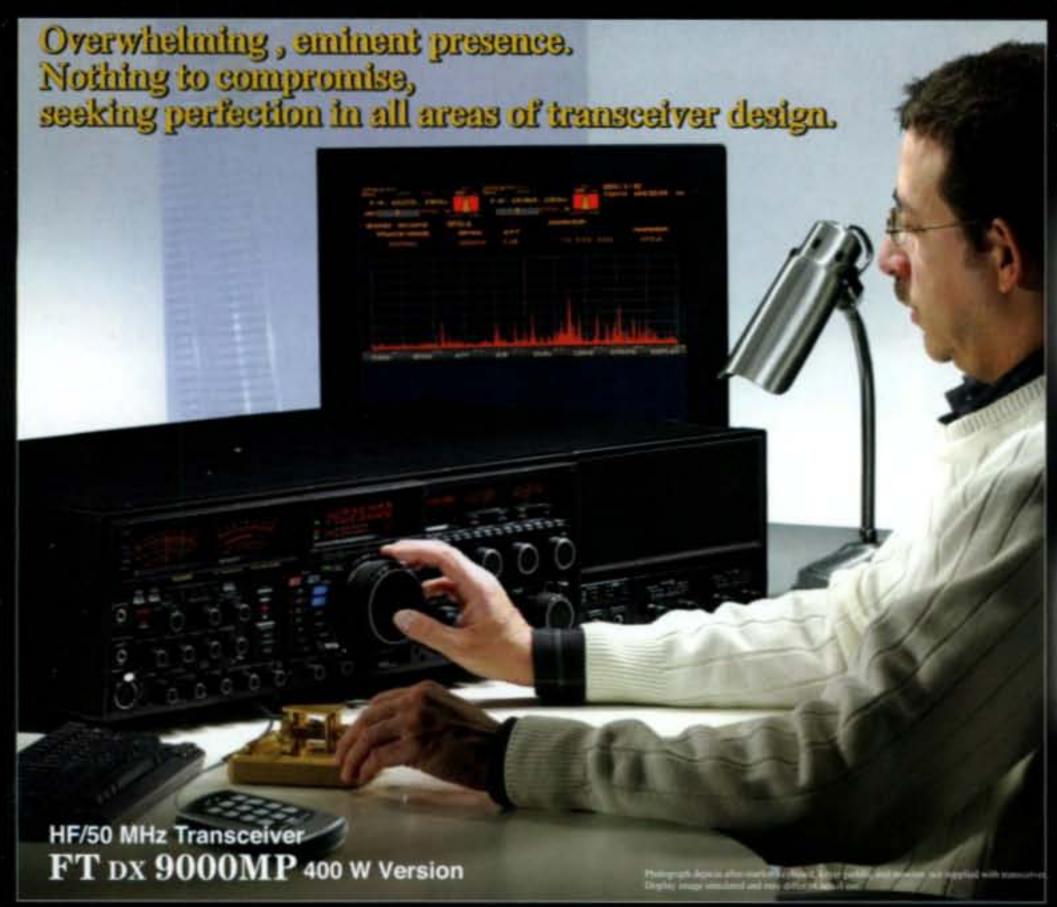
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